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**STATUS OF WATER SUPPLY,
SANITATION AND SOLID WASTE MANAGEMENT
IN URBAN AREAS**

Sponsored by
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PREFACE

The urban population of India is growing rapidly and exerting considerable pressure on urban services. It is evident that urban infrastructure has been unable to keep pace with the growing population. A great challenge for Indian cities is to make cities livable by providing every citizen with basic services of acceptable quality. Urban local governments are the institutions which are entrusted with the task of providing these basic services but they are often strapped of funds and unable to discharge their duties satisfactorily. In order to understand what needs to be done to improve the provision of basic services, we need to know the level of provision of these services. It is for this reason the Ministry of Urban Development, Government of India, commissioned a study to assess the Status of Water Supply, Sanitation and Solid Waste Management in Urban Areas of the country.

The main objective of the present study is to assess the status of water supply, sanitation and solid waste management in 300 selected cities and towns and to estimate the requirement of funds for full coverage of population by these services in the urban areas of the country. The study is based on a detailed survey of the agencies responsible for the provision, operations and management of these services in the selected cities and towns including all the metropolitan cities in the country. The study, commissioned in 1999, took about two years to complete. However, due to a number of reasons the study took unusually long to be brought to its final form.

We would like to thank the Ministry of Urban Development and CPHEEO for entrusting this study to NIUA. We are especially thankful to the then Secretary, Department of Poverty Alleviation, in the Ministry, Shri S.S.Chattopadhyay, for assigning this study to us. Dr. S.R. Shukla, Mr. V.B. Ramaprasad (Former Advisers, PHE), Mr. Sethuraman (present Jt.Adviser, PHEE), Mr. B.B. Uppal, Mr. Sankara Narayanan and Mr. Sukanta Kar of CPHEEO provided their full support throughout the study and gave their valuable comments, which have greatly helped bring this report to its final shape.

The data from local governments and other line agencies were collected by engaging a number of regional institutes, viz. Centre for Research for Rural and Industrial Development (Chandigarh), ORG-MARG (Vadodra), National Centre for Human Settlements and Environment (Bhopal) and Institute of Local Government & Urban Studies (Calcutta) and NGOs viz. INDEP (Bangalore) and MaMista (Ghaziabad). We are thankful to Mr. J.P. Gupta, Dr. S Ramarao, Mr. Ashok Gupta, Mrs. Chhanda Sarcar, Mr. Prashant Karkare, and Mr.

Pankaj Bhargav for coordinating the arduous task of data collection work at these institutions.

At the Institute Ms Usha P. Raghupathi very ably conducted this study. Ms. Anjali Pancholy and Mr. Viraj Srivastav, Project Associates, Mr. Ajay Nigam and Mr. M. Ahmed, Junior Research Officers who provided very valuable research support in the project assisted her. Dr. Kusum Lata provided special assistance in the latter part of the study. Ms. Sangeeta Vijn and Mr. Tek Chand Sharma of the computer unit carried out the tedious task of processing the primary data, generating the final tables and printing the final report.

Finally, we would like to express our appreciation to all the local governments and line agencies and others for providing data to us for this study.

New Delhi
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Prof. Usha P. Raghupathi
(Officer in-Charge)

SPECIAL NOTE

The present study "Status of Water Supply, Sanitation and Solid Waste Management in Urban Areas" was commissioned in 1999. The study started in April 1999. However, the declaration of General Elections in the same year delayed data collection as most local governments were engaged in election related work. Since the services selected for the study were local subjects, local situations such as elections, floods, droughts, cyclones and so on had a great impact on the time required for data collection. However, despite these problems, the data were collected from most local bodies through personal visits. Only in some cases, such as north-eastern states, Andaman and Nicobar Islands and Lakshadweep Islands, the questionnaires were obtained by post.

The data obtained were scrutinized, cross-checked for inconsistencies and then finalized. However, since the data management in local bodies is generally very poor, with some exceptions, the information obtained from them, at times, did not seem very reliable, despite the authentication by the local government with stamp and/or signature. NIUA then reverted back to the local authorities to clarify/ correct the figures provided in the questionnaire. This also proved to be a time-consuming process.

The report went through many iterations (over a period of 2-3 years) before finalisation, each iteration incorporated useful and insightful comments of CPHEEO. However, some data gaps still remained that were required to be filled. NIUA requested the Ministry's help in this matter. The Ministry was very helpful and sent letters, in early 2004, to all the states and union territories to assist NIUA in filling the data gaps. However, even after sending reminders and following up on telephone and making an all out effort, very few states/towns responded. It was then decided to not wait any longer and the report was finalised in May 2005. Hence, there are still some 'n.a. s' in the report despite all these efforts. The report therefore, is being submitted with some data gaps remaining.

In spite of these problems, the study is very useful. The uniqueness of the study is that it covers all the states and union territories of the country and has put together data for each service for the same year. This makes it possible to make inter-city comparisons.

Researchers and practitioners working with local governments would appreciate the value of this effort and we hope that this study will be useful to all – administrators, policy makers, practioners and researchers.

Study Coordinator

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LIST OF ABBREVIATIONS

Civic Status

CMC	City Municipal Council
CT	Census Town
M	Municipality
M.Corp.	Municipal Corporation
MB	Municipal Board
MC	Municipal Committee, Municipal Corporation
MCI	Municipal Council
NM	Non-municipal
NMCT	Non-municipal Census Town
NTAC	Notified Town Area Committee
TC	Town Committee

Institutions

BWS&SB	Bangalore Water Supply and Sewerage Board
CMDA	Calcutta Metropolitan Development Authority
CMW&SA	Calcutta Metropolitan Water & Sanitation Authority
CMWS&SB	Chennai Metropolitan Water Supply and Sewerage Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
DJB	Delhi Jal Board
GWS&SB	Gujarat Water Supply and Sewerage Board
HMWS&SB	Hyderabad Metropolitan Water Supply and Sewerage Board
KUWS&DB	Karnataka Urban Water Supply and Drainage Board
KWA	Kerala Water Authority
MJP	Maharashtra Jeevan Pradhikaran
PHD	Public Health Division
PHED	Public Health Engineering Department
PWD	Public Works Department
PWS&SB	Punjab Water Supply and Sewerage Board
TWAD	Tamil Nadu Water Supply and Drainage Board

Others

n.a.	Not available
n.r.	Not reliable
ltrs.	Litres
bu.n.a.	Breakup not available
kl.	Kilolitre (1000 litres)
lpcd	Litres per capita per day
mld	Million litres daily
m	Metre
km.	Kilometre
sq. km.	Square kilometre
lakh	100,000
crore	10,000,000
gm.	Gram
MT	Metric tonne
arv	Annual rateable valule
nrv	Net rateable value
BOO	Build-own-operate
IBT	Increasing block tariff
LCS	Low cost sanitation
O&M	Operation and maintenance
NGO	Non-governmental organisation
UFW	Unaccounted for water
SWM	Solid Waste Management
STP	Sewage Treatment Plant
WTP	Water treatment plant

EXECUTIVE SUMMARY

Providing water and sanitation to India's millions is a challenging task. With over 20 million people without access to safe water supply and 100 million without safe sanitation, the sheer numbers indicate the massive effort required to provide these basic services to the people of the country. Just providing access, however, will not solve the problem unless the issues of quality and adequacy are also addressed. The minimum needs should be met and the quality of the services provided should be acceptable.

The present study assesses the status of three basic services - water supply, sanitation and municipal solid waste management. It covers over 300 cities and towns in the country including all metropolitan cities and selected Class I and Class II urban centres. The study covers all the states and union territories including the capitals, excepting Patna and Gandhinagar. The study was commissioned in 1999 and the data collection work took about a year.

The main objectives of the study were to a) assess the status of water supply, sanitation and solid waste management; b) analyse the revenue receipts and revenue expenditure of these services; and c) estimate the additional capital investment requirements for full coverage of population by these services from 1999 to 2022 (at five yearly intervals). The study covers the physical and financial aspects of all the three services selected for the study. A conscious decision was taken in the study to cover only the municipal area of the urban centres and not the areas falling within the jurisdiction of other authorities such as development authorities, cantonment boards, railways etc. This was done due to the time-frame of one year for the study which did not permit data collection from different agencies for the same service. The study gives the status of these services as provided by the public agencies and does not cover private provision.

A study of this magnitude can be successful only with the cooperation of the local agencies, which gave information on various aspects of the selected services. While every effort was made to collect as accurate a data as possible, it was not always possible to check it with the records of the agency. Records are often not computerised or kept properly, making data authentication difficult. However, wherever other data sources were available, attempts were made to cross-check the data collected and verify the authenticity of figures. Despite these problems, the data provided by this study does give a broad picture of the overall situation with respect to these services in the country.

Summary of Findings

Overall, the study confirms the normal notion that the metropolitan cities are better provided for than the other size class of urban centres. The coverage of population with basic services is higher for metropolitan cities than for other size class of urban centres. The investment levels are higher in the metropolitan cities due to large concentration of population in them. This could be one of the reasons for more people flocking to metropolitan cities – due to better provision of basic amenities.

The water supply situation, though much better in metropolitan cities at an aggregate level, is reasonably good in many Class I and Class II urban centres too. The situation with respect to wastewater management is much worse in smaller urban centres than in metropolitan cities. A similar situation is obtained in respect of solid waste management where the metropolitan cities fare much better than the other size class of urban centres. Financially also, the metropolitan and larger urban centres fare much better than the smaller ones. However, there are large variations in the status of individual urban centres with respect to these services. The study found that in some cases the smaller urban centres showed much better service provision than others. These isolated instances would be exceptions than the rule.

Water Supply

The study indicates that the overall water supply situation, when looked at the city level, is reasonably adequate in most cities and towns, the problem in many cases lies in the poor distribution infrastructure. The water crisis is often related to the poor distribution of water than the lack of water at source (e.g. Delhi). However, there are urban centres where water source itself is depleting and is unable to cater to the water requirements of the urban centres (e.g. towns of Tamil Nadu, Andhra Pradesh).

In most cities there are more households than water supply connections, indicating that either there are many shared connections or households depend upon public stand posts. The data indicates that many households have their own sources of water supply while others complement own sources of supply with that of the public agency.

Unaccounted for water (UFW) data have been the most difficult to obtain. UFW is generally an estimate worked out by the technical staff based on their perception of the situation. Most cities do not have bulk meters or meters at all the user's end. This makes the task of calculating UFW very difficult. Therefore, the figures of UFW should be taken as the best estimates that could be made by the technical staff of the water-supplying agency. Smaller size towns that supply water from nearby sources or use ground water source have indicated very small quantity of UFW. Therefore, the study indicates that the larger cities have greater quantity of UFW than smaller size class of cities.

A very small percentage of urban centres have all connections metered (e.g. Bangalore, Pune). About one-third of the urban centres covered do not have any metered connections. In many urban centres a large percentage of domestic connections are unmetered while in a little above one-fourth urban centres all non-domestic connections are also unmetered. This needs to be taken up if tariff structures are to be rationalised and made a deterrent to wastage of water.

Tariff data indicates that uniform volumetric charges and fixed charges (ferrule based etc.) are the most common methods of charging. Incremental block tariff is mostly used in the larger cities, with a few exceptions. In many cities, non-domestic connections are metered while the domestic connections are unmetered. Since meters often do not work, many cities charge fixed tariff for water supply based on the calculated consumption patterns.

Most large cities depend upon surface sources for water supply, supplementing it with ground water sources to meet the demand. However, the share of ground water increases with a decrease in city size, with smaller size class of urban centres showing greater dependence on ground water for water supply. The large investments required to supply water from surface sources could be one reason for this pattern. This also reflects in the existence of water treatment plants. While all metro cities using surface source have water treatment plants, there is a small percentage of urban centres in other size classes that use surface water but do not have water treatment plants.

There are many different types of institutional arrangements for water supply in the urban areas of the country. The most common arrangement is that the capital works are done by a state level agency and the local government does the O&M. However, there are wide variations to this arrangement. These variations range from the state level agency managing the entire water supply system in the entire state (Rajasthan) to the urban local body performing all the tasks related to water supply (Mumbai).

Privatisation or public-private partnerships are still not very common in water supply with less than one-tenth of the urban centres using private participation in this service.

Cost recovery is a major concern in water supply. While it is possible to achieve cost-recovery in water supply, the fact is that almost four-fifths of the urban centres are unable to recover even the O&M cost in this service. This indicates that while theoretically water can be treated as an economic good, there are practical difficulties in implementing decisions on raising water tariff. Water continues to be treated, as a social good and even recovering O&M cost in most cities would require political consensus.

The additional capital investment requirements for covering the entire population with water supply in the years to come is enormous, running into thousands of crores of rupees. While it may be difficult to find resources to finance such large investments, private sector participation could be encouraged. Public-private partnerships could reduce the financial burden of public agencies to some extent and bring in some financial discipline into this sector. While efforts have to be made to improve efficiency of water supply to reduce operating costs, maintenance of existing assets would help in reducing new investment requirements in the near future.

Recommendations

1. Problems of intra-city distribution should be taken up immediately by the local authorities to address the problems of water shortage.
2. Steps should be taken to initiate capacity building in urban centres for estimation of UFW. Financial assistance should also be provided to the water supplying agencies to equip them with instruments for estimating UFW.
3. Metering of connections, both for bulk supply and retail distribution, must be encouraged. Standard meters should be made available, at reasonable cost, to all urban centres for this purpose.

4. Tariff is a major concern in the water sector. Tariff should be increased at certain given intervals, indexed to inflation and power tariff.
5. Getting surface water from distant sources is proving to be very expensive. Ground water depletion can be controlled by undertaking rainwater harvesting in all urban centres. Specific programmes/schemes should be initiated for aquifer re-charge.
6. In line with the provisions of 74th Constitution Amendment Act, the capacity of local governments should be built to manage water supply systems. The local governments should be given sufficient autonomy to decide on increase in water tariff required to cover at least O&M costs.
7. Improving cost recovery should be linked to giving grants. Financial incentives could be given to urban centres showing improved cost recovery. Technical assistance and guidance should also be provided to local authorities to improve financial performance.
8. Private sector participation in this sector should be encouraged, wherever possible. Unbundling of the service would allow private sector to participate in this service and improve efficiency levels.
9. The additional capital investments required to cover the entire urban population with water supply at the required norms will require huge investments that are not possible for the Government to provide. Therefore, public-private participation must be encouraged. New ways of financing for this sector should also be explored.

Sewerage and Sanitation

Wastewater disposal and treatment is a very major problem in most Indian cities. Non-collection of wastewater and discharge of untreated wastewater into low-lying areas or various water bodies causes severe water and land pollution problems. This situation reduces the availability of usable water for water supply.

The study indicates that while all the metropolitan cities have a sewerage system, a third- of the Class I cities and less than one-fifth of the smaller sized urban centres have a sewerage system. However, the coverage of population by the sewerage system is partial in all these urban centres.

Wastewater generation is calculated at a minimum of 80 per cent of water supplied. However, since people use their own sources of water, additional amounts of wastewater may be generated, which have been taken into account in the present study. Wastewater collection in most urban centres with sewerage system usually does not exceed about two-thirds of that generated. However, the wastewater treatment situation is quite alarming. While the smaller sized urban centres with sewerage system treat less than one-fourth of the wastewater generated, even the metropolitan cities treat only about two-fifths of the wastewater generated. Wastewater disposal is done both on land and in water body by most urban centres. Proximity to water body, local conditions and financial constraints determine the place and method of wastewater disposal.

Recycling/reuse of wastewater is practised in very few urban centres and wherever it is done, it is mostly used for agriculture or horticultural purposes. Recycling/reusing wastewater will reduce the demand for fresh water, thereby also postponing the capital investment requirements for water augmentation.

There is no fixed mechanism for charging for wastewater collection and disposal. The charging may be through property tax, a charge on water closet or an additional charge on water supplied.

Wastewater is not charged for in all urban centres, therefore, the cost recovery is generally very low from this service with even the metro cities showing a very small recovery rate. The situation is even worse in urban centres of smaller size. In most cities where the recovery rate has been very good, the reasons have been either due to provision of new connections (connection charges) or due to levying of sewerage/drainage tax.

The additional capital investment required for providing safe sanitation to all in the coming years many is thousands of crores, which would be very difficult to finance. Private sector participation as well as citizen's contribution can help provide some of the additional capital investment requirements.

Recommendations

1. Rehabilitation of sewerage systems must be taken up in all the cities where the sewerage system exists but has become non-functional.
2. Wastewater treatment must be made mandatory for all sizes of urban centres. The smaller urban centres could use less capital-intensive technologies to reduce capital cost as well as maintenance cost of treatment.
3. Pollution of land or water body with untreated wastewater should be made punishable with fine.
4. Recycling/reuse of wastewater must be encouraged. Technical and financial assistance must be provided for this, if required.
5. All agencies dealing with wastewater must prepare plans for cost recovery from this service. Private sector participation could be encouraged in managing this service to reduce public expenditure.
6. Successful examples of people's participation in contributing to the cost of construction of sewerage system (e.g. Alandur) must be examined and adopted in other urban centres of the country.

Solid Waste Management

Municipal solid waste management is an obligatory function of the urban local governments. And this is one service that remains a major problem for urban centres of all sizes.

The per capita waste generation has a positive correlation to the size class of urban centres i.e. the larger the urban centre the more the waste generated.

The collection efficiency of solid waste is much better in larger cities than in smaller urban centres. This could also be due to the motorised transportation vehicles deployed in larger cities. Some of the smaller urban centres still depend on tricycles and animal carts for waste collection. A factor that affects waste collection and transportation is the maintenance of vehicles. Poor maintenance of fleet affects collection and transportation efficiency. Vehicles, especially in smaller urban centres, are often not replaced even when there is a dire need to replace them. Lack of finances for fleet replacement is a major cause of this state of affairs.

The main method of waste disposal continues to be open dumping in most urban centres. While many urban centres have landfill sites, not all dispose their waste in these landfill sites as sometimes the sites are far away from the city and the transportation costs become prohibitive. Therefore, waste is dumped in some low-lying areas or disposed off just outside the city periphery.

Hospital waste, though should be collected separately, is collected in a combined manner in a majority of urban centres, including some of the metropolitan cities.

Solid waste management is a labour intensive activity requiring adequate staff. However, with a few exceptions, most urban centres fall short of staff for this activity. This impacts the quality of service provided.

Privatisation is much more prevalent in this service than in the other two services covered in the study. Many urban centres that have used this arrangement have been able to reduce their expenditure on this service.

Cost recovery from solid waste management is extremely poor and therefore it becomes an expenditure heavy service. Expenditure on establishment is the biggest head of expenditure on this service. Most urban centres spend over three-fourths of their solid waste management budget on establishment.

The additional capital investment requirements worked out for this service in the coming years indicate an investment of a couple of hundred crores per annum. However, these figures will need to be revised taking into account the Hon'ble Supreme Court's directives. As construction of sanitary landfills is very expensive, this would add considerably to the investment requirements.

Recommendations

1. Three 'R's of solid waste management i.e. reduce, reuse and recycle must be adopted by all urban centres. This will help in reducing the quantum of solid waste that the local governments have to deal with.
2. Efficiency of waste collection must be improved in cities by bringing about the necessary changes in the design of equipment used by sanitary staff, manpower management and planning.

3. Transportation fleet needs to be maintained well and needs to be modernised to improve collection and transportation efficiency.
4. Crude/open dumping of waste must be completely discouraged by encouraging controlled tipping.
5. All urban centres should identify landfill sites that are usable. In order to reduce the quantity of waste that goes to landfill sites, waste treatment such as neighbourhood composting and recycling of waste must be encouraged.
6. Separate collection of hospital waste must be ensured in every city and incinerators must be installed to deal with this waste. Landfill sites should apportion an area for the disposal of hazardous waste from hospitals.
7. Private sector participation must continue to be encouraged in this sector to achieve efficiency of operations and cost reduction. However, monitoring of privatised activities should be improved in order to provide better quality of services to the people.
8. Plans to improve cost recovery from this service must be made by every local government. New sources of revenue generation must be thought of.
9. People's participation must be encouraged to keep cities clean and NGOs must be used to do IEC work in communities.

Summary of Key Indicators for Water Supply – 1999				
				(Averages)
Indicators	Metropolitan cities	Class I cities	Class II towns	Total
No. of sampled urban centres	22	164	115	301
Estimated population (1999) in '000	71,429	59,123	10,473	141,025
Population coverage (%)	98	91	89	94
Per capita supply (lpcd)	182	124	83	150
Per capita domestic supply (lpcd)	148	106	69	128
% urban centres with p.c. supply below CPHEEO norm	50	40	52	46
% urban centres with p.c. supply below city norm	68	76	79	77
% supply required to be added to reach city norms	5	25	42	13
Quantity of water required to be added to reach city norms (in mld)	1397	2209	439	4045
Unaccounted for water (%)	24	16	11	21
% connections metered	60	52	39	55
Staff per 1000 connections	14.5	7.9	6.8	10.9
Cost recovery (%)	70	55	44	65
Revenue receipts (Rs.) per kl.	2.16	1.02	1.21	1.73
Revenue expenditure (Rs.) ` per kl.	3.09	1.88	2.44	2.66
Deficit per kl. (Rs.)	-0.93	-0.86	-1.23	-0.93
Revenue receipts per capita (Rs. /annum)	149.43	48.65	39.41	100.55
Revenue expenditure per capita (Rs./annum)	214.12	89.40	77.86	153.89
Per capita deficit (Rs./ annum)	-64.69	-40.75	-38.45	-53.34
Additional capital investment requirements* (1999-2022) range between Rs. 32118 and Rs. 35420 crores or between Rs.1396 and Rs. 1540 crores per annum.				
<i>Note: Revenue and expenditure figures are for financial year 1997-98. pc. refers to per capita</i>				
<i>*These requirements are for covering the entire urban population, in all size classes of urban centres, till the year 2022 and are based on two different per capita estimates used for projection.</i>				

Summary of Key Indicators for Wastewater Management and Low Cost Sanitation - 1999				
(Averages)				
Indicators	Metropolitan cities	Class I cities	Class II towns	Total Sample
No. of urban centres with sewerage system	22	57	21	100
Population covered by sewerage system (%)	63	48	51	58
% Wastewater treated to generated	41	25	11	37
% Urban centres without STP	4	28	17	49
Wastewater discharged untreated (mld)	6483	2472	185	9140
Cost Recovery (%) – excluding outliers#	15	14	2	15
Cost Recovery (%) – including outliers#	146	29	35	127
Low Cost Sanitation (LCS)				
No. of urban centres giving LCS data	18	127	95	240
% population dependent on LCS	25	41	55	34
Additional capital investment requirements* (1999-2022) range between Rs. 52361 and Rs. 86103 crores or between Rs. 2276 and Rs. 3744 crores per annum.				
<p><i>Note: All data relating to sewerage system and wastewater pertain only to urban centres having sewerage system.</i></p> <p><i># Cost recovery figures refer to financial year 1997-98. Outliers are those few urban centres that are showing exceptionally high recovery rate of over 100 per cent. These urban centres include those that are collecting sewage/ drainage tax or cess or those that have generated unusually large revenues from providing new connections in 1997-98.</i></p> <p><i>* These requirements are for covering the entire urban population, in all size classes of urban centres, till the year 2022 and are based on two different per capita estimates used for projection.</i></p>				

Summary of Key Indicators for Solid Waste Management - 1999				
(Averages)				
Indicators	Metropolitan cities	Class I cities	Class II towns	Total Sample
No. of responding urban centres	22	164	112	298
Population coverage (%)	90	95	93	92
Per capita waste generation (grams)	500	377	297	433
Waste collection efficiency (%)	91	85	75	88
Quantity of uncollected waste (MT/ day)	3170	3383	765	7318
Crude dumping of waste (% urban centres)	64	76	79	76
Sanitary workers per 1000 population	2.8	1.9	2.1	2.4
Share of establishment exp. on the service	81	84	81	82
Cost recovery (%)	7	9	5	7
Revenue receipts per capita (Rs. /annum)	12.8	6.66	2.96	10.12
Revenue expenditure per capita (Rs./annum)	189.39	73.12	63.15	140.63
Per capita deficit (Rs./ annum)	176.59	66.46	60.19	130.51
Additional capital investment requirements* (1999-2022) are projected to be about Rs. 3954 crores or Rs. 172 crores per annum.				
<i>Note: Revenue and expenditure figures refer to financial year 1997-98</i>				
<i>*These requirements are for covering the entire urban population, in all size classes of urban centres, till the year 2022.</i>				

CHAPTER I

INTRODUCTION

1.1 BACKGROUND

Over 20 million people without access to safe water supply and over 100 million people without safe sanitation facilities is the present (1999) basic services scenario in the country. Clearly, the task at hand is challenging by any standard. With almost 7 million people being added to urban India every year, the situation is likely to get worse if the problem of basic services is not addressed immediately. Efforts are being made to provide basic services to those deprived of them, yet much more needs to be done to improve the quality of life in urban India.

India's ongoing economic liberalization programme aimed at increasing economic growth along with poverty reduction, needs to be supported by provision of basic infrastructure. Provision of water supply and sanitation will be essential to such growth to ensure sustainability. These services have to not only be provided but should meet minimum standards in terms of quantity, quality and reliability. Constraints and bottlenecks in this sector have to be addressed on a priority basis to keep up the momentum of economic growth.

Urban India is today faced with major problems such as shortage of safe drinking water, inadequate sanitation facilities and poor solid waste management services. With the urban population increasing from 160 million in 1981 to 217 million in 1991, and reaching 285 million in 2001 (Census of India, 2001), the infrastructure in urban areas has reached a breaking point. This situation has arisen because basic infrastructure has not kept pace with demand. In 1991, the urban population of the country was residing in 4689 towns/3768 urban agglomerations, as per the Census of India, 1991. The number of cities and towns has now increased to 5167 (Census, 2001). Increasing attention, therefore, needs to be focused on water supply, sanitation and solid waste management services as these affect the quality of life of citizens and the economic growth of the country.

Despite the importance of this sector, only a broad assessment of these services is available in the country. The Economic Survey, 1998-99' showed that while 91.82 per cent of the urban population in the country was covered by water supply, only 49.32 per cent of the urban population was covered by sanitation facilities. The data available with CPHEEO (for end-March, 1997) puts these figures at 90 per cent and 49 per cent respectively. The main data source, widely available, on the status of water supply, waste-water, and solid waste management for Class I and Class II cities and towns in the country is the one published by the Central Pollution Control Board. These data, however, cover only limited aspects of these services. There is almost a complete absence of data on the financial aspects of these services (such as water

tariff, income and expenditure on the service) as well as on the newly emerging aspects such as private sector involvement in municipal services.

Another aspect that is a cause of concern is the neglect of this sector from the standpoint of investments. While “water supply and sanitation sector continued to receive its due importance from the First Plan to the Fifth Plan, from the Sixth Plan onwards, there has been a gradual shift in the priority from urban to rural sector resulting into decreased percentage allocation”.² This shift has occurred despite the increase in the proportion of urban population to the total population of the country over the years. In the First Five Year Plan, the Plan outlay for urban water supply and sanitation sector was Rs.43 crores and this increased to Rs. 549.44 crores in the Fifth Plan. However, in the Sixth Plan the relative allocation to the urban sector decreased to 1.81% as compared to 2.34% for rural. This downward trend continued in the subsequent Five Year Plans, resulting in inadequate outlays (1.38% of the public sector outlay) for urban sector as compared to 2.47% for the rural in the Eighth Plan. This has had an impact on the coverage of population by these services.

A serious attempt has to be made in the country to assess the financial requirements for this sector. The only estimates available today come from the Rakesh Mohan Committee Report³ or from the Report of the Working Group on Urban Water Supply and Sanitation Sector for Ninth Five Year Plan (1997-2002). However, the Rakesh Mohan Committee's financial requirement estimates give the investment requirements for these sectors for urban areas as a whole and do not disaggregate them by size class of urban centres. The Working Group's estimates, on the other hand, are grouped into two - Class I and Class II to VI, but have a target year only till the end of the Ninth Plan i.e. till March 2002. There is thus a need to estimate the financial requirements for a longer period of time in a disaggregated manner. This would help in long term planning for the sector.

In the present study an attempt is made to provide the status of water supply, sewerage & low cost sanitation, and solid waste management (for the year 1999) in 300 selected cities and towns in the country including metropolitan cities (Table 1.1).

1.2 OBJECTIVES

The main objective of the present study is to assess the status of water supply, sanitation and solid waste management in selected 300 cities and towns of India and to estimate the requirement of funds for full coverage of population by these services in the urban areas of the country. The detailed objectives of the study are:

- To assess the current status of water supply, sanitation (including on-site sanitation) and solid waste management in the metropolitan cities, Class I and Class II towns of the country using data from a sample of 300 metropolitan, Class I and Class II towns.

² Report of the Working Group on Urban Water Supply and Sanitation Sector for Ninth Five Year Plan (1997-2002), Department of Urban Development, Ministry of Urban Affairs and Employment, Government of India, New Delhi, July 1996.

³ “The India Infrastructure Report: Policy Imperatives for Growth and Welfare”, Expert Group on the Commercialisation of Infrastructure Projects, NCAER, New Delhi, 1996.

- To analyze the revenue receipts and revenue expenditure of the selected services, i.e. water supply, sanitation and solid waste management and also to study the capital investments on these services for the sampled cities and towns.
- To estimate the capital investment requirements for full coverage of population by these services from 1999 to 2022 A.D. (at 5 yearly intervals) for metropolitan cities and for all classes of towns by size class.

The status of water supply broadly covers the following aspects:

- (a) institutional arrangements for water supply
- (b) the population served and per capita availability of water
- (c) sources of water supply and distance to sources
- (d) water supply by uses
- (e) water losses
- (f) water connections and other physical aspects
- (g) water treatment
- (h) privatisation aspects
- (i) staff position
- (j) water tariff
- (k) revenue and expenditure on water supply
- (l) capital works undertaken and proposed to be undertaken and their per capita costs

The status of sewerage and sanitation broadly covers the following aspects:

- (a) population coverage by sewerage system
- (b) waste water generation and collection
- (c) treatment of waste water
- (d) recycling and reuse of waste water
- (e) revenue and expenditure on the sewerage system
- (f) staff position
- (g) privatisation aspects
- (h) capital works undertaken and proposed to be undertaken and their per capita costs
- (i) population covered by septic tanks and low cost sanitation facilities

The status of solid waste management broadly covers the following aspects:

- (a) population covered by the service
- (b) quantity of waste generated and collected

- (c) transportation of waste
- (d) waste disposal methods
- (e) details of treatment and disposal
- (f) staff position
- (g) privatisation aspects
- (h) revenue and expenditure on solid waste management
- (i) capital expenditure incurred and proposed to be incurred and their per capita costs

A further attempt is made in the study to estimate the future investment requirements. This estimate is based on:

- (a) population projected for various years
- (b) per capita cost of services
- (c) backlog population to be covered and additional population to be covered in the years to come

1.3 DATA BASE

The study covers a sample of 300 cities and towns drawn from metropolitan, Class I and Class II population size classes (for a list of selected cities/towns see Table 1.1). The study covers the entire country, i.e., all the 25 States and 7 Union Territories⁴. All state and union territory capitals have also been covered in the study, regardless of their size class, except for, Patna and Gandhinagar, where despite efforts, information could not be obtained from the concerned agencies.

The data for the study has been obtained from the respective urban local bodies, water supplying authorities and agencies doing capital works in the selected sample cities and towns. The data, in the present study, has been organised into three groups – metropolitan cities, Class I cities and Class II towns based on 1991 Census population figures.

The metropolitan cities include 22** cities and urban agglomerations with million plus population (as per Census of India, 1991). However, the population of only the main city in the agglomeration has been taken in the present study. Therefore, six cities in the metropolitan urban agglomerations list, which do not reach the million mark (as per 1991 Census), have been included in the metropolitan cities group (Table 1.2). This has been done in order to keep with the general perception of 23 metropolitan cities in the country.

The Class I cities, in the present study, include cities with a population of between 100,000 and 1,000,000. In all the tables in the report, metropolitan cities have been

⁴ At present there are 28 states in the country but at the time of survey there were only 25 states.

** Patna could not be included in the sample due to lack of response.

excluded from Class I cities group. This has been done in order to highlight the status of services in the Class I cities, other than the metropolitan cities.

The Class II towns, are towns with a population of between 50,000 and 100,000. However, in the tables in the report, six towns with a population of less than 50,000 have been included in Class II towns. These are the capitals of the relatively small states and union territories (Table 1.1). This has been done to avoid a fourth classification of towns and arriving at extreme results due to the very small number of sample towns in this category. The inclusion of these six towns in Class II category does not alter the major findings of the study.

1.4 METHODOLOGY

As mentioned earlier, the responsibility for providing water supply and sanitation rests with different agencies in different states. Therefore, data in respect of these services has been obtained only from the respective agencies.

1.4.1 Selection of Towns

- Selection of cities/towns has been done on purposive sampling basis. Of the total 305 cities/towns that were selected, the sample was divided amongst the Class I and Class II towns in a 2:1 ratio. This was done purposely in order to give greater representation to Class I cities as these cities form a very large proportion of the total urban centres in the country.
- While selecting the towns from Class I size class, due consideration was given to the towns with population of upto 5 lakhs, between 5 to 10 lakhs and above 10 lakhs.
- All the state and union territory capitals, irrespective of their size class and all the metropolitan cities were included in the sample selected. However, response could not be obtained from Patna and Gandhinagar.
- Keeping in mind the time frame for the fieldwork, it was decided to select cities that had relatively better accessibility. Some towns were also selected in clusters in order to facilitate information collection.
- In selecting the sample towns, care was taken to see that there was sufficient geographical coverage within each state. In states where there were very few Class I and II towns, this type of geographical coverage was not possible.
- Urban agglomerations, as agglomerations, have not been included in the sample. In most cases, only the main city/town in urban agglomerations have been included in the list of selected towns. If the population of the main town in the agglomeration fell below Class II level then the town was not selected.
- Only towns with municipal status were selected. Exceptions were only those state/ union territory capitals which had to be selected but did not have a municipal civic status.

- In the selected towns, only the area falling under municipal jurisdiction has been covered. Areas outside municipal jurisdiction have not been covered by the study.
- In the towns without municipal bodies, area within the jurisdiction of the main authority in-charge of providing the selected services have been covered.
- A list of alternate cities/towns was also prepared simultaneously. This list consisted of the remaining Class I and II towns, which were not included in the main list of sample towns. This list was made in order to provide alternate sample towns for survey in case there was a problem in data collection in the selected towns.
- Selection of cities/towns was done in consultation with CPHEEO.

1.4.2 Questionnaires

A specially designed questionnaire was prepared for each service covered in the study i.e., water supply, sanitation and solid waste management for collecting information from the selected cities and towns.

- Based on a questionnaire given by CPHEEO, a specially designed questionnaire was prepared, incorporating many new aspects in order to provide better understanding of the subject.
- The questionnaires were designed keeping in mind the objectives of the study and the clarity required at the field level for filling the questionnaire.
- The size of the questionnaire was also an important consideration while designing the questionnaire as the survey had to be completed within a specified time frame.
- Based on the agencies providing the services covered by the study, the questionnaire was divided into three parts viz., water supply, sewerage and sanitation, and solid waste management.
- The questionnaire was also translated into Hindi in order to facilitate collection of information in the northern states of the country.
- The questionnaires were field tested before finalization. This step helped in refining the questionnaires – both in content and in design (see Annex 1 for the questionnaires used in the survey).

1.4.3 Data Collection

While the institutional arrangements for providing water supply and sewerage in different states and union territories vests with different agencies, at times, even within the same state different towns have different arrangements. In a given state there could be one agency responsible for capital works (i.e. execution of projects)

and another for operation and maintenance. The agencies could be fully government departments, semi-autonomous boards and autonomous boards. Therefore, the study had to obtain data from different public agencies in different states for water supply and sewerage. However, in almost all the states and union territories, the responsibility for solid waste management vests only with the local governments. Exceptions to this are mainly found in small states and union territories.

Data was collected by first mailing the questionnaires and then making personal visits to the selected towns.

a) Mailing

Questionnaires were mailed to different agencies in different towns. The questionnaire pertaining to water supply and sewerage was mailed to the agencies providing these services in the selected towns while the questionnaire pertaining to solid waste management was sent to respective local governments, with some exceptions.

b) Personal visits

Mailing of questionnaires to the selected towns was followed by personal visits to almost all the towns, exceptions being the North-eastern states, Andaman & Nicobar Islands, and Lakshadweep Islands. For personal visits, assistance of six agencies was sought covering different regions of the country (see Annex 2 for the list of collaborating agencies). This was done not only to save time and costs, but also to overcome the language barrier.

1.5 SCOPE AND LIMITATIONS

The study looks at only the public provision of selected services but does not cover private arrangements made by individuals, communities or NGOs. The study focusses on the city as a whole, and does not focus in detail on any specific group such as the community groups or slums. The study does not cover intra-city distribution of services, it only looks at the whole city as one unit.

The present study has not collected time series data but has collected data for one year only. Since the present study's focus is an overview of the status of the selected services in the country, there is no in-depth analysis of problems in the report.

1.6 TIME FRAME

The study had a time frame of one year starting March, 1999. However, due to the all-India nature of the survey, the holding of one General Election during the survey period and the happening of a major natural disaster like the cyclone in Orissa, and other problems like floods in Bihar and so on, and also local level problems in data collection, the study took longer to be completed than anticipated.

The major findings emerging from the survey were presented to the CPHEEO and the draft report with the major findings was submitted in June 2000. A suggestion was

made by the CPHEEO, at this stage, to change the organization of the data in the report so that instead of presenting the data state-wise, it would be presented class-wise. This entailed redoing all the tables and calculations, which further delayed the submission of the final report. A revised draft report, incorporating the suggestions given by the CPHEEO, was submitted to the Ministry of Urban Development (MOUD&PA) in March 2001. The report was scrutinized by the CPHEEO and comments sent to NIUA towards the end of 2001. The present report has incorporated all the comments given by the CPHEEO on the draft reports.

The data in the study pertains to the year 1999, except for the data on revenue and expenditure, which pertains to the financial year 1997-98.

1.7 PROCESSING OF DATA

The entire data collected from the field was processed and tabulated by the Institute's computer unit. This process, included writing of programme for data feeding, coding of data, scrutinizing, preparing tables for the report as well as for the statistical volumes.

1.8 STUDY OUTPUT

The study's outputs are the following:

- Assessment of the current status of water supply, sanitation (including on-site sanitation) and solid waste management in the metropolitan cities and selected Class I cities & Class II towns of the country.
- Analysis of revenue income and revenue expenditure on the selected services, i.e. water supply, sanitation and solid waste management services.
- Estimation of future investment requirements for full coverage of population up to 2022 A.D. at five year intervals, i.e., for 2002, 2007, 2012, 2017 and 2022, for all classes of cities and towns in the country.

1.9 ORGANISATION OF THE REPORT

The present report has been organised into five chapters. Chapter I contains the introduction to the study. Chapters II, III and IV present the status of water supply, sewerage & low cost sanitation, and solid waste management services respectively, along with the additional investment requirements for each service. The final chapter, Chapter V, presents the broad conclusions and summary of results emerging from the study.

The data pertaining to the three services covered in the study have been presented in the appendices. Appendix I gives data on Water Supply and Water Tariff, Appendix II gives data on Wastewater Management and Low Cost Sanitation and Appendix III gives data on Solid Waste Management.

Table – 1.1: List of Sampled Cities and Towns

Sl. No.	City/town	State	Population 1991 (Census)
Metropolitan Cities			
1	Ahmedabad M.Corp.	Gujarat	2,876,710
2	Bangalore M. Corp.	Karnataka	2,660,088
3	Bhopal M. Corp.	Madhya Pradesh	1,062,771
4	Calcutta M. Corp.	West Bengal	4,399,819
5	Chennai M. Corp.	Tamil Nadu	3,841,396
6	Coimbatore M.Corp.	Tamil Nadu	816,321
7	Delhi M. Corp.	Delhi	7,206,704
8	Greater Mumbai M.Corp.	Maharashtra	9,925,891
9	Hyderabad M. Corp.	Andhra Pradesh	2,964,638
10	Indore M. Corp.	Madhya Pradesh	1,091,674
11	Jaipur M. Corp.	Rajasthan	1,458,483
12	Kanpur M. Corp.	Uttar Pradesh	1,874,409
13	Kochi M. Corp.	Kerala	564,589
14	Lucknow M. Corp.	Uttar Pradesh	1,619,115
15	Ludhiana M. Corp.	Punjab	1,042,740
16	Madurai M. Corp.	Tamil Nadu	940,989
17	Nagpur M. Corp.	Maharashtra	1,624,752
18	Pune M. Corp.	Maharashtra	1,566,651
19	Surat M. Corp.	Gujarat	1,498,817
20	Vadodara M. Corp.	Gujarat	1,031,346
21	Varanasi M. Corp.	Uttar Pradesh	929,270
22	Visakhapatnam M. Corp.	Andhra Pradesh	752,037
Class I			
Andhra Pradesh			
1	Anantapur MCI		174,924
2	Chittoor M		133,462
3	Cuddapah MCI		121,463
4	Eluru M		212,866
5	Guntur MCI		471,051
6	Hindupur M		104,651
7	Kakinada M		279,980
8	Kurnool MCI		236,800
9	Machilipatnam M		159,110

Sl. No.	City/town	Population 1991 (Census)
10	Nandyal MCI	119,813
11	Nellore MCI	316,606
12	Nizamabad M	241,034
13	Ongole MCI	100,836
14	Qutubullapur M	106,591
15	Rajahmundry M. Corp.	324,851
16	Tenali M	143,726
17	Tirupati MCI	174,369
18	Vijayawada M. Corp.	701,827
19	Warangal M. Corp.	447,657
Bihar		
20	Bihar Sharif M	201,323
21	Chhapra M	136,877
22	Gaya M. Corp.	291,675
23	Katihar M	135,436
24	Munger M	150,112
25	Ranchi M. Corp.	599,306
Gujarat		
26	Anand M	110,000
27	Bharuch M	133,102
28	Bhavnagar M. Corp	402,338
29	Bhuj M	102,176
30	Jamnagar M. Corp.	341,637
31	Junagadh M	130,484
32	Nadiad M	167,051
33	Navsari M	126,089
34	Porbandar M	116,671
35	Rajkot M. Corp.	559,407
36	Surendranagar M	106,110
Haryana		
37	Ambala MCI	119,338
38	Faridabad M. Corp.	617,717
39	Gurgaon MCI	121,486
40	Hisar MCI	172,677
41	Karnal MCI	176,131

Sl. No.	City/town	Population 1991 (Census)
42	Rohtak MCI	216,096
Jammu & Kashmir		
43	Jammu M. Corp.	716,000
Karnataka		
44	Belgaum M. Corp.	326,399
45	Bellary CMC	245,391
46	Davangere MCI	266,082
47	Gadag-Betigeri CMC	134,051
48	Gulbarga M. Corp.	304,099
49	Hubli-Dharwar M. Corp.	678,298
50	Mandya M	120,265
51	Mangalore M. Corp.	273,304
52	Mysore M. Corp.	480,692
53	Shimoga CMC	179,258
54	Tumkur M	138,903
Kerala		
55	Alappuzha MC	174,666
56	Kollam MC	139,852
57	Kozhikode M. Corp.	419,831
58	Thalaserry M	103,579
59	Thiruvananthapuram M. Corp.	524,006
Madhya Pradesh		
60	Bhind M	109,755
61	Burhanpur M. Corp.	172,710
62	Dewas M. Corp.	164,364
63	Guna M	100,490
64	Gwalior M. Corp.	690,765
65	Jabalpur M. Corp.	741,927
66	Khandwa M	145,133
67	Morena M	105,135
68	Murwara (Katni) M. Corp.	163,431
69	Ratlam M. Corp.	183,375
70	Rewa M. Corp.	128,981
71	Satna M. Corp.	156,630
72	Shivpuri M	108,277

Sl. No.	City/town	Population 1991 (Census)
Maharashtra		
73	Amravati M. Corp.	421,576
74	Aurangabad M. Corp.	573,272
75	Bhusawal MCI	145,143
76	Chandrapur MCI	226,105
77	Dhule MCI	278,317
78	Ichalkaranji MCI	214,950
79	Jalgaon MCI	242,193
80	Kolhapur M. Corp.	406,370
81	Nanded Waghala M. Corp.	275,083
82	Nashik M. Corp.	656,925
83	Parbhani MCI	190,255
84	Solapur M. Corp.	604,215
85	Wardha M	102,985
86	Yavatmal MCI	108,578
Orissa		
87	Bhubaneswar M. Corp.	411,542
88	Cuttack M. Corp.	403,418
89	Puri M	125,199
90	Rourkela M	140,408
91	Sambalpur M	131,138
Punjab		
92	Amritsar M. Corp.	708,835
93	Bathinda MCI	159,042
94	Hoshiarpur MCI	122,705
95	Jalandhar M. Corp.	509,510
96	Moga MCI	108,304
97	Pathankot MCI	123,930
98	Patiala M. Corp.	238,368
Rajasthan		
99	Ajmer MCI	402,700
100	Alwar M	205,086
101	Beawar M	105,363
102	Bhilwara M	183,965
103	Bikaner M	406,289

Sl. No.	City/town	Population 1991 (Census)
104	Jodhpur M. Corp.	666,279
105	Kota M. Corp.	537,371
106	Sriganganagar M	161,482
Tamil Nadu		
107	Cuddalore M	144,561
108	Dindigul M	182,477
109	Erode M	159,232
110	Kanchipuram M	144,955
111	Kumbakonam M	139,483
112	Nagercoil M	190,084
113	Rajapalayam M	114,202
114	Salem M. Corp.	366,712
115	Thanjavur M	202,013
116	Tiruchirapalli M. Corp.	668,648
117	Tirunelveli M. Corp.	374,050
118	Tiruvannamalai M	109,196
119	Tiruppur M	235,661
120	Tuticorin M	199,854
121	Vellore M	175,061
Uttar Pradesh		
122	Agra M. Corp.	891,790
123	Aligarh M. Corp.	480,520
124	Allahabad M. Corp.	792,858
125	Bareilly M. Corp.	587,211
126	Etawah MB	124,072
127	Faizabad MB	124,437
128	Firozabad MB	215,128
129	Ghaziabad M. Corp.	454,156
130	Gorakhpur M. Corp.	505,566
131	Haldwani-cum-Kathgodam MB	104,195
132	Hapur MB	146,262
133	Hardwar MB	147,305
134	Jhansi MB	300,850
135	Mathura MB	226,691
136	Meerut M. Corp.	753,778

Sl. No.	City/town	Population 1991 (Census)
137	Mirzapur MB	169,336
138	Moradabad M. Corp.	429,214
139	Muzaffarnagar MB	240,609
140	Rae Bareli MB	129,904
141	Rampur MB	243,742
142	Saharanpur MB	374,945
143	Sitapur MB	121,842
144	Unnao MB	107,425
West Bengal		
145	Asansol M. Corp.	262,188
146	Baharampore M	115,144
147	Balurghat M	119,796
148	Bankura M	114,876
149	Barasat M	177,097
150	Burdwan M	102,660
151	Halisahar M	114,028
152	Krishnagar M	121,110
153	Midnapore M	125,498
154	North Barrackpore M	100,606
155	Santipur M	109,956
156	Siliguri M. Corp.	338,361
Small States		
Assam		
157	Guwahati M. Corp.	584,342
158	Jorhat MB	112,000
Manipur		
159	Imphal MCI	198,535
Meghalaya		
160	Shillong MB	131,719
Mizoram		
161	Aizawl NM	155,240
Tripura		
162	Agartala MCI	157,358
Union Territories		
163	Chandigarh M. Corp.	504,094

Sl. No.	City/town	Population 1991 (Census)
164	Pondicherry M	203,065
Class II		
Andhra Pradesh		
1	Anakapalle M	84,356
2	Dharmavaram M	78,961
3	Gudur MCI	55,984
4	Kapra M	87,747
5	Kavali MCI	65,910
6	Madanapalle M	73,820
7	Narasaraoper M	88,726
8	Rajendra Nagar MCI	84,520
9	Sangareddy MCI	50,123
10	Srikakulam MCI	88,883
11	Srikalahasti M	61,578
12	Suryapet MCI	60,630
Bihar		
13	Buxar M	55,753
14	Deoghar M	76,380
15	Hajipur M	87,687
16	Hazaribagh M	97,824
17	Jehanabad M	52,332
18	Madhubani M	54,091
19	Mokama M	59,528
Gujarat		
20	Amreli M	67,827
21	Ankleswar M	51,739
22	Dabhoi M	50,641
23	Dohad M	66,500
24	Gondal M	80,584
25	Jetpur M	73,560
26	Mehsana M	88,201
27	Palanpur M	80,657
Haryana		
28	Jind MCI	85,315
29	Kaithal MCI	71,142

Sl. No.	City/town	Population 1991 (Census)
30	Rewari MCI	75,342
31	Thanesar MCI	81,255
Jammu & Kashmir		
32	Srinagar M. Corp.	N.A.
Karnataka		
33	Bagalkot CMC	76,903
34	Chikmagalur CMC	60,816
35	Gokak CMC	52,080
36	Hospet CMC	96,322
37	Kolar CMC	83,287
38	Rabkavi-Banhatti CMC	60,609
39	Ramanagaram CMC	50,437
Kerala		
40	Changanessry MC	52,445
41	Payyanur M	64,032
42	Taliparamba M	60,226
43	Thrissur MC	74,604
Madhya Pradesh		
44	Hoshangabad M	70,914
45	Itarsi M	77,334
46	Khargone M	66,786
47	Mandsaur M	95,907
48	Nagda M	79,622
49	Neemuch M	86,439
50	Sehore M	71,456
51	Shahdol M	55,508
52	Vidisha M	92,922
Maharashtra		
53	Amalner MCI	76,442
54	Ballarpur MCI	83,511
55	Bhandara M	71,813
56	Kamptee MCI	78,612
57	Manmad MCI	61,312
58	Ratnagiri MCI	56,529
59	Satara MCI	95,180

Sl. No.	City/town	Population 1991 (Census)
60	Virar MCI	57,600
Orissa		
61	Balangir M	69,920
62	Bhadrak M	76,435
Punjab		
63	Firozpur MCI	78,738
64	Kapurthala M	64,567
65	Mansa MCI	55,089
66	Phagwara MCI	83,163
67	Sangrur MCI	56,419
Rajasthan		
68	Banswara M	66,632
69	Barmer M	68,625
70	Bundi	65,047
71	Churu M	82,464
72	Hanumangarh M	78,525
73	Sawai Madhopur M	72,165
Tamil Nadu		
74	Ambur M	75,911
75	Arajjiban M	71,928
76	Attur M	55,667
77	Cambam M	52,435
78	Dharmapuri M	59,318
79	Guduivattam M	83,232
80	Nagapattinam M	86,489
81	Pudukkottai M	99,053
82	Sivakasi M	65,593
83	Srivilliputtur M	68,644
84	Tindivanam MC	61,579
85	Udhagamandalam M	81,763
Uttar Pradesh		
86	Auraiya MB	50,772
87	Balrampur MB	59,619
88	Basti MB	87,371
89	Bhadohi MB	64,010
90	Chandpur MB	55,825

Sl. No.	City/town	Population 1991 (Census)
91	Etah MB	78,458
92	Ghazipur MB	76,547
93	Gonds MB	95,553
94	Lakhimpur MB	79,951
95	Lalitpur MB	79,870
96	Mughalsarai MB	66,529
97	Nawabganj-Barabanki MB	65,582
98	Orai MB	98,716
99	Roorkee MB	80,262
West Bengal		
100	Bishnupur M	56,128
101	Chakdaha M	74,769
102	Contai M	53,484
103	Cooch Behar M	71,215
104	Darjeeling M	71,470
105	Jalpaiguri M	68,732
106	Jangipur M	55,981
107	Katwa M	55,541
108	Raniganj M	61,997
Small States		
Himachal Pradesh		
109	Shimla M.Corp.	82,054
Nagaland		
110	Kohima TC	51,418
Union Territories		
111	Port Blair MCI	74,955
Others (Smaller than Class II towns)		
Arunachal Pradesh		
112	Itanagar CT	16,545
Goa		
113	Panaji MCI	43,349
Sikkim		
114	Gangtok NTAC	25,024
Union Territories		
115	Daman MCI	26,906
116	Kavarathi NMCT	8,677
117	Silvassa	11,725

Table – 1.2: Population of Metropolitan Urban Agglomerations and Metropolitan Cities

<i>(as per 1991 Census)</i>			
Sl. No.	City	Population of urban agglomeration	Population of the main city in the agglomeration
1	Greater Mumbai	12,596,243	9,925,891
2	Calcutta	11,021,918	4,399,819
3	Delhi	8,419,084	7,206,704
4	Chennai	5,421,985	3,841,396
5	Hyderabad	4,344,437	2,964,638
6	Bangalore	4,130,288	2,660,088
7	Ahmedabad	3,312,216	2,876,710
8	Pune	2,493,987	1,566,651
9	Kanpur	2,029,889	1,874,409
10	Lucknow	1,669,204	1,619,115
11	Nagpur	1,664,006	1,624,752
12	Surat	1,518,950	1,498,817
13	Jaipur	1,518,235	1,458,483
14	Kochi	1,140,605	564,589
15	Vadodara	1,126,824	1,031,346
16	Indore	1,109,056	1,091,674
17	Coimbatore	1,100,746	816,321
18	Patna	1,099,647	917,243
19	Madurai	1,085,914	941,989
20	Bhopal	1,062,771	1,062,771
21	Vishakhapatnam	1,057,118	752,037
22	Ludhiana	1,042,740	1,042,740
23	Varanasi	1,030,863	929,270
	Total	70,996,726	52,667,453

Note: 1. There are 23 million plus cities/urban agglomerations and only 18 million plus cities in country as per 1991 Census.
2. Kalyan Municipal Corporation, falling within Greater Mumbai urban agglomeration, has a population of 1,014,557.
This makes Kalyan a metropolitan city, by definition. However, Kalyan has not been included in the above list of metropolitan cities because only the main city of the agglomeration has been considered.
Source: Census of India 1991, Series 1 – India, General Population Tables Part II-A (ii) Towns and Urban Agglomerations 1991 with their Population 1901-1991, Tables A-4, P.42 and p.204

CHAPTER II

STATUS OF WATER SUPPLY

2.1 INTRODUCTION

Indian cities and towns are increasingly facing potable water crisis due to mounting demand and inadequate measures to meet the demand. This situation is the result of an increase in urban population, depletion of nearby water sources, water pollution, inefficient use of water, inefficient management of water supply systems and multiple institutional arrangements. This situation needs to be improved so that water is available to all at a reasonable cost. The present scenario of the public water supply system, thus, needs to be understood well in order to take steps to improve the system.

This chapter presents the status of public water supply system in 301 sampled Class I and Class II urban centres, including most of the metropolitan cities in the country (as per Census of India, 1991). The total population covered by these 301 urban centres is 141.02 million, that is, 71.43 million in 22 metropolitan cities, 59.12 million in 164 Class I cities and 10.47 million in 115 Class II towns (Table A-1 in Appendix I). The chapter covers different aspects of water supply including coverage, quantity supplied, per capita supply, norms for supply, unaccounted for water, water connections, source and storage of water, water treatment, institutional arrangements, staff position, privatisation and financial aspects of water supply. The chapter finally gives the additional capital investment requirements for covering the entire population by water supply till the year 2022.

2.2 COVERAGE OF POPULATION BY WATER SUPPLY

The Approach Paper to the Ninth Plan (1997-2002) estimates that 85 per cent of the country's urban population has access to water supply. The Plan states that 100 per cent of the population should be covered by water supply by the year 2002.

One of the obligatory functions of local bodies is to provide water supply to the residents. Although this function has been taken over by para-statal or city level boards in many urban centers, providing safe water to the entire population remains the duty of the concerned public authority. However, covering the entire population by water supply requires continuous investment in expanding and improving the water supply system. The coverage of population by water supply has improved over the years, however, 100 per cent coverage of urban population will take sometime to achieve.

The average coverage of population by formal water supply in the sampled urban areas is reasonably high with 94 per cent of the population being covered by the service. The coverage is higher in the metropolitan cities (98%) than in Class I cities (91%) and Class II towns (89%). (Table 2.1).

However, the term coverage⁵ has to be read with caution as it only indicates the reach of the public water supply system but does not indicate the quantity, quality, and duration of supply or the mode of provision to the covered population.

Table - 2.1: Coverage* by Water Supply (1999)					
<i>(no. of cities/towns)</i>					
Population covered by the service (%)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 50	0	6	7	13	4
50 to <75	3	21	10	34	11
75 to <100	0	27	25	52	17
100	19	108	72	199	66
Data not available	0	2	1	3	1
No. of cities/towns	22	164	115	301	100
Average coverage (%)	98	91	89	94	
Range (%)	50-100	20-100	12-100	12 - 100	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 1 for details</i>					
<i>* Coverage indicates coverage by house service connections, tankers and by public stand posts.</i>					

Most metropolitan cities have 100 per cent of population covered by water supply except for Kanpur, Ludhiana and Varanasi which have reported coverage between 50 and 70 per cent.

Two-thirds of the Class I sampled cities have 100 per cent population covered by the service while in Class II towns about 63 per cent, have reported 100 per cent coverage. Overall, two-thirds of the sampled urban centres have reported 100 per cent coverage of population by the service while about 4 per cent of the sampled urban centres have indicated a coverage of 50 per cent or less.

As mentioned earlier, coverage does not indicate the quality of service to the people. In some of the sampled cities there are no house service connections while in some others water is not available to residents on a daily basis because of acute shortage of water - yet the survey indicates a high coverage of population by the service. Two instances can be cited here:

- a) Six sampled urban centres provide only stand-post supply to the residents, as there are no individual house service connections in these towns. These towns are Balurghat, Sanitpur, Chakdaha, Contai and Siliguri in West Bengal, and Kavarathi in Lakshadweep Islands. In two other towns i.e., Katwa (West Bengal) and

⁵ Coverage generally refers to the coverage of areas by pipelines, i.e. if the agency has laid pipelines to service the area, the entire area is considered covered, even if all households in the area have not taken the connection,. In some cities coverage means water provision to the population not only by means of house service connections but also by means of tankers and stand posts. If people are being provided water by the local authority, by any means, they are considered covered. Therefore, coverage has to be read with caution as it only means that the public water supplying agency is serving the people by some mode, not necessarily by household connections. Coverage does not give any indication of the quantity or quality of water provided to consumers. Therefore, a 100% coverage should not be misinterpreted as everyone getting adequate water.

Payannur (Kerala) the population mainly depends on public stand-posts as there are negligible individual connections. The population in these towns mostly use informal sources of water supply, such as wells, handpumps, rivers, ponds etc. to meet their daily water needs.

- b) Twenty two sampled urban centres, despite 100 per cent coverage of population by water supply, are unable to ensure daily water supply to the population. Surendranagar in Gujarat, for example, gets only 30 minutes of water once a week while Gondal in the same state gets 20 minutes supply once in four days. (Table 2.2).

Table - 2.2: Urban Centres with Acute Water Problems – 1999		
Sl. No.	State/city/town	Frequency of water supply
Gujarat		
1	Surendranagar	30 minutes once a week
2	Gondal	20 minutes once in four days
3	Amreli	60 minutes once in three days
4	Jetpur	20 minutes daily
5	Rajkot	30 minutes daily
Tamil Nadu		
6	Attur	Twice a week
7	Gudivattam	Twice a week
8	Nagercoil	Alternate days
9	Rajapalayam	Alternate days
10	Tiruppur	Alternate days
11	Vellore	Alternate days
12	Sivakasi	Alternate days
13	Srivilliputtur	Alternate days
14	Udagamandalam	Alternate days
Karnataka		
15	Bangalore	Alternate days
16	Tumkur	Twice a week
17	Hubli – Dharwad	Alternate days
18	Bagalkot	Alternate days
19	Rabkavi-Banahatti	Alternate days
Rajasthan		
20	Bhilwara	Twice a week
21	Barmer	Twice a week
22	Beawar	Alternate days
<i>(In the above towns of Tamil Nadu, Karnataka and Rajasthan water is supplied for 1 to 3 hours)</i>		
<i>See Table A – 2 in Appendix – I for details</i>		

2.3 QUANTITY OF WATER SUPPLIED

The total quantity of water supplied to any urban centre depends upon the city size (which determines the demand) and the source of water supply used by the city (which determines the supply). In the sampled urban centres the water supply varies between 2978 mld in Mumbai to 0.04 mld in Kavarathi. The total water supplied by the 22 metropolitan cities amounts to 13014 mld while the 164 Class I cities supply about 7309 mld. The 115 Class II towns supply about 871 mld of water (Table A-2 in Appendix - 1). The present study covers only the supply by the public agencies.

2.3.1 Water Supplied for Domestic and Non-Domestic Uses

The bulk of the water supplied by the public agencies is for domestic purposes, although in terms of revenue generation the non-domestic supply is likely to generate greater revenues due to higher tariff for non-domestic uses. However, supplying water for domestic purposes is the obligatory duty of the public authority. Large industrial and commercial users usually have their own private arrangements for meeting their daily needs of water supply and, in some cases, they supplement it by public supply.

Supply for non-domestic uses exceeds one-fourth of the total supply in only 48 sampled urban centers (Table 2.3). While overall less than one-fifth of water supplied goes for non-domestic uses in the sampled urban centres, a disaggregation of data indicates that there are certain cities where the non-domestic supply is over 50 per cent (e.g. Vishakhapatnam, Qutuballapur and Panaji). In cities with significant non-domestic supply the scope for improving revenues increases.

% Water supplied to total supply	<i>(no. of cities/towns)</i>							
	Metropolitan cities		Class I cities		Class II towns		Total	
	Dom.	Non-dom.	Dom.	Non-dom.	Dom.	Non-dom.	Dom.	Non-dom.
<25	0	16	0	98	0	65	0	179
25 - 50	1	5	1	25	3	14	5	44
50 - 75	5	1	23	1	14	3	42	5
75 - 90	16	0	92	0	53	0	161	0
90 - 100	0	0	10	0	12	0	22	0
Break up not available	0	0	36	36	32	32	68	68
Data not available	0	0	2	4	1	1	3	5
No. of cities/towns	22	22	164	164	115	115	301	301
Average (%)	81.5	18.5	80.1	19.5	84.2	15.8	81.2	18.7
Range (%)	40-97	2-59	35-100	0-64	33-100	1-66	33-100	1-66
<i>Note: Dom. refers to domestic and non-dom. refers to non-domestic</i>								
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 2 for details</i>								

2.3.2 Utilization of Production Capacity

Many urban centres have not been able to utilize the production capacity to the full. This could be due to factors such as insufficient water (from source), intermittent supply of electricity, aging pumps etc. The present study indicates that in only about one-third of the sampled urban centres there is full utilization of the installed production capacity. In little above one-third of the sampled urban centres the capacity utilization is between 75 and 99 per cent while in one-fifth it is between 50 and 75. In the remaining urban centres the capacity utilization is less than 50 per cent (Table 2.4). Better utilization of the unused production capacity may help urban centres to improve supplies.

Percentage utilization	<i>(no. of cities/towns)</i>							
	Metropolitan cities		Class I cities		Class II towns		Total	
	No.	%	No.	%	No.	%	No.	%
> 100	0	0	1	1	3	3	4	1
100	5	23	48	30	36	31	89	30
75 to <100	12	55	60	36	34	29	106	35
50 to <75	2	9	33	20	24	21	59	20
< 50	2	9	13	8	10	9	25	8
Data not available	1	5	9	5	8	7	18	6
Total	22	100	164	100	115	100	301	100

Source: NIUA Survey, 1999. See Appendix - I, Table A – 2 for details

2.3.3 Duration of Supply

In most Indian cities water is supplied only intermittently and in the present survey the duration of supply generally ranges between 1 and 6 hours daily. Thiruvananthapuram, the capital of Kerala, with a per capita supply of 308 lpcd, has 24 hours supply. In the sampled urban centers, 15 per cent have duration of supply of less than one hour while in 42 per cent of the urban centres the duration is between 1 to 4 hours. Only in 13 per cent of the sampled urban centres the duration of supply exceeds 6 hours (Table 2.5).

In some of the sampled urban centres severe water shortages have led to a drought like condition where water supply has been highly rationed. For instance, in Surendranagar, water is supplied for only half-an-hour once in six days while in Gondal water is supplied for 20 minutes once in four days (in 1999). Water shortages have been mainly reported from the states of Gujarat, Tamil Nadu, Karnataka and Rajasthan (see Table AX-2.1 at the end of this chapter). The availability of water (and electricity) and the capacity centers, determine the duration of the supply system, rather than the size class of urban of supply.

Table - 2.5: Duration of Supply (1999)					
<i>(no. of cities/towns)</i>					
Duration of supply (hours/ day)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 1	0	2	1	3	1
1 to <2	3	18	20	41	14
2 to < 4	8	50	39	97	32
4 to <6	3	26	17	46	15
6 and above	5	47	19	71	24
Uncertain/ variable/ non-daily	3	21	19	43	14
No. of responding cities/ towns	22	164	115	301	100
Range (hours/day)	1-8	1-24	1-12		
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 2 for details</i>					

2.3.4 Water Consumption in Metropolitan Cities

The total water requirement in the urban areas of the country is increasing with urbanization. Larger cities, with higher levels of consumption and huge population base, need more water than other sizes of urban centers. The present study shows that the total water consumed in 22 metropolitan cities is about 13014 mld (through formal supply system) for an estimated population of about 70 million (1999). Water supply in the three largest cities Mumbai, Delhi and Calcutta (in municipal area only) is over 6600 mld for an estimated population of about 29 million. As against the per capita supply norm of 150 lpcd recommended for these cities by CPHEEO, the supply is 268 lpcd in Mumbai, 218 lpcd in Delhi and 173 lpcd in Calcutta (Table 2.6). In comparison, the 164 sampled Class I cities consume only 7309 mld of water for an estimated population of about 59 million while the 116 sampled Class II towns consume 871 mld of water for a population of about 11 million. Clearly then, limiting the city size would have a bearing on the water requirement of urban areas. Since it has not been possible to restrict the growth of large cities, distant water sources have to be tapped at high cost to keep the citizens healthy and the economic activities flourishing.

An examination of the ratio of water consumed to population, amongst metropolitan cities, indicates that Pune, Mumbai and Delhi consume a larger proportion of water than the proportion of population residing in them. Pune, with only 3 per cent of the metropolitan population consumes 5 per cent of the water consumed in metropolitan cities (1.56 times the metropolitan average) while Greater Mumbai with 16 per cent of the population consumes 23 per cent of the water (1.48 times the metropolitan average). Delhi with 17 per cent of the population consumes 20 per cent of the water (1.2 times the metropolitan average).

Table - 2.6: Ratio of Water Consumed to Population in Metropolitan Cities –1999

City	Water supplied (mld)	% consumed to total metropolitan water supply	Estimated total population 1999 ('000)	% population to total metropolitan population	Coefficient of % water consumed to % population	Per capita supply to total population (lpcd)	Per capita supply to served population (lpcd)
Pune	650	4.99	2,300	3.22	1.55	283	283
Greater Mumbai	2978	22.88	11,100	15.54	1.47	268	268
Delhi	2620	20.13	12,000	16.80	1.20	218	218
Varanasi	220	1.69	1,152	1.61	1.05	191	291
Bhopal	270	2.07	1,500	2.10	0.99	180	180
Nagpur	370	2.84	2,100	2.94	0.97	176	176
Calcutta	1035	7.95	6,000	8.40	0.95	173	173
Jaipur	340	2.61	2,000	2.80	0.93	170	170
Vadodara	237	1.82	1,400	1.96	0.93	169	169
Lucknow	410	3.15	2,500	3.50	0.90	164	164
Hyderabad	682	5.24	4,163	5.83	0.90	164	164
Indore	238	1.83	1,600	2.24	0.82	149	149
Bangalore	705	5.42	5,000	7.00	0.77	141	141
Surat	320	2.46	2,300	3.22	0.76	139	139
Ahmedabad	486	3.73	3,500	4.90	0.76	139	139
Visakhapatnam	168	1.29	1,280	1.79	0.72	131	131
Kanpur	310	2.38	2,500	3.50	0.68	124	248
Kochi	84	0.65	680	0.95	0.68	124	124
Ludhiana	234	1.80	2,000	2.80	0.64	117	195
Coimbatore	105	0.81	971	1.36	0.60	108	108
Chennai	461	3.54	4,363	6.11	0.58	106	106
Madurai	90	0.69	1,020	1.43	0.49	88	88
Total	13014	100	71,429	100	1.0	182	189

Source: NIUA Survey, 1999.

2.4 NORMS FOR WATER SUPPLY

Water is basic to survival and well-being and, therefore, adequate quantity of water of potable quality must be provided to all. Water needs may be broadly classified into domestic and non-domestic. Domestic needs include water for drinking, cooking, washing and cleaning (utensils, clothes, house) and for use in water closet. To this, other requirements such as watering plants/garden and washing personal vehicle etc. may be added. Non-domestic use of water would include industrial, commercial and institutional uses, and water used for public purposes such as fire fighting, street washing, watering trees/public gardens etc.

2.4.1 CPHEEO Norms

Norms for water supply suggested by the Central Public Health and Environmental Engineering Organisation (CPHEEO) are given in Table 2.7. These norms are to be followed by Indian cities and towns while designing water supply schemes.

Sl. No.	Classification of towns/cities	Recommended maximum watersupply levels (lpcd)
1.	Towns provided with piped water supply but without sewerage system	70
2.	Cities provided with piped water supply where sewerage system is existing/contemplated	135
3.	Metropolitan and Mega cities provided with piped water supply where sewerage system is existing/contemplated	150

*Note: i) In urban areas, where water is provided through public stand posts, 40 lpcd should be considered. Figures exclude "Unaccounted for Water (UFW)" which should be limited to 15%. Figures include requirements of water for commercial, institutional and minor industries. However, for bulk supply such establishments should be assessed separately with proper justification.
Source: Ministry of Urban Development, Central Public Health and Environmental Engineering Organisation Manual on Water Supply and Treatment, Third Edition – Revised and Updated (May 1999), New Delhi.*

2.4.2 Ninth Five Year Plan Norms

The norms for water supply followed by the Eighth Five Year Plan which have also been maintained for the Ninth Five Year Plan are as follows:

- 125 lpcd for urban areas where piped water supply and underground sewerage systems are available.
- 70 lpcd for urban areas provided with piped water supply but without underground sewerage system.
- 40 lpcd for towns with spot-sources/stand posts. One source for 20 families within a maximum walking distance of 100 meters.
- These norms are marginally lower than the norms suggested by CPHEEO.

2.4.3 Norms Determined by the Individual Cities

Apart from the above norms, the cities themselves fix their own norms (Table 2.8). These norms are used by the cities/towns to project their demand for water. The city norms are based on the water needs of the city and on the availability of water there. As per the individual cities, the norms for metropolitan cities vary from 65 lpcd in Vishakhapatnam to 250 lpcd in Lucknow. To what extent should the public water supply system meet these requirements? Since potable water is required for drinking, cooking and washing utensils, the formal water supply system should, at the least, meet these requirements. The non-domestic requirements of water will vary

considerably between city sizes and will depend on the type of economic activities being carried out.

City	Own norms of cities (lpcd)
Ahmedabad	170
Bangalore	140
Bhopal	150
Calcutta	227
Chennai	110
Coimbatore	150
Delhi	225
Greater Mumbai	240
Hyderabad	160
Indore	200
Jaipur	180
Kanpur	200
Kochi	150
Lucknow	250
Ludhiana	200
Madurai	110
Nagpur	175
Pune	160
Surat	140
Vadodara	180
Varanasi	270
Visakhapatnam	65

Source: NIUA Survey, 1999. See Appendix - I, Table A - 3 for details

2.5 PER CAPITA WATER SUPPLY AND ITS ADEQUACY

Per capita water supply, a measure of the quantity of water available per head, is an indicator of the water supply situation in an area. However, this indicator is highly sensitive to changes in population, as any change in population figures will directly affect the per capita supply figures.

The per capita supply can be calculated in at least two different ways – one, by dividing the total water supply by the total population, and two, by dividing the total water supply by the population covered by the formal water supply system. Both these methods of calculation can yield different results depending upon the coverage of population by the service (The analysis presented in this report uses the former method of calculation of per capita supply). These per capita calculations only give

the gross availability of water per head in a city but do not indicate the intra-city distribution of water, which in some cities is highly inequitable. It also does not indicate the water availability to domestic consumers as these gross per capita figures include water supplied for all uses, i.e. domestic, industrial, commercial, institutional and public uses (fire fighting, horticultural uses etc.). Dividing the water supplied for domestic purposes by the total population can make a refinement to the calculation and give an indication of the per capita water availability for domestic users. Subtracting the unaccounted for water from the total supply and using only the net water available for the calculation of per capita supply can make a further refinement to the calculations.

Adequacy of supply can be gauged by measuring the actual supply against the norm for supply. Therefore, adequacy of water supply in any city will depend on the norm used. The norms for per capita supply recommended by CPHEEO (Table 2.7) are based on the requirements of water taking into account the existence of sewerage system. The norm for cities provided with piped water supply where sewerage system exists or is contemplated is 150 lpcd for metropolitan and mega cities and 135 lpcd for other size class of urban centres. However, irrespective of the size class, all urban centres provided with piped water supply where no sewerage system exists or is envisaged, the recommended norm is 70 lpcd. The norm for stand-post supply is 40 lpcd. These norms, however, exclude unaccounted for water (UFW) which, as per the CPHEEO manual, should be limited to 15 per cent. The adequacy of per capita supply discussed below, therefore, takes into account these aspects of recommended norms.

While norms recommended by the CPHEEO are the most widely used (by local authorities), each city/ town also often sets its own norm, which may differ from the norm given by the CPHEEO. For instance, while the CPHEEO recommends a norm of 150 lpcd for metropolitan and mega cities having a sewerage system or contemplating one, the present survey indicates that 14 of the 22 metropolitan cities in the sample use norms that are higher than 150 lpcd (Table 2.8). However, the present study uses only the CPHEEO norms for analyzing the adequacy of water supply.

2.5.1 Per Capita Supply

The present survey indicates that the average per capita supply in the sampled urban centres is 150 litres per capita per day (lpcd) with a range of 20 lpcd to 308 lpcd (with a few exceptions of less than 20 lpcd supply, particularly, in urban centers with only stand post supply). The metropolitan cities, with an average per capita supply of 182 lpcd, have almost one-and-a-half times the average supply available in Class I cities (124 lpcd) and over two times the average supply available in Class II towns (83 lpcd) (Table 2.9). When an acceptable level of 15 per cent unaccounted for water is deducted from the supply levels given above, the average per capita figure for the sampled urban centres falls to 127 lpcd, for metropolitan cities it drops to 155 lpcd, while for Class I cities and Class II towns the per capita supply drops to 105 lpcd and 71 lpcd respectively.

Table - 2.9: Per Capita Water Supply (1999)					
<i>(no. of cities/towns)</i>					
Per capita water supply (lpcd)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 40	0	7	22	29	9.6
40 to < 70	0	21	32	53	17.6
70 to <135	7	99	41	147	48.8
135 to <150	4	10	8	22	7.3
150 and above	11	26	12	49	16.3
Data not available	0	1	0	1	0.3
No. of cities/ towns	22	164	115	301	100
Average (lpcd)	182	124	83	150	
Range (lpcd)	88 - 283	23-308	14 - 210	14 -308	
<i>Note: The average excludes outliers such as 4 lpcd for Tenali and 3 lpcd for Kavarathi</i>					
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 3 for details</i>					

2.5.2 Per Capita Domestic Supply

The per capita domestic supply has been calculated by dividing the total water supplied for domestic purposes by the population. The per capita total supply, calculated by using the total water supplied for all uses, does not give a clear picture with regard to what the domestic consumers get for their use. Therefore, to understand if water supply is adequate for domestic purposes, the per capita domestic supply needs to be looked at. The domestic per capita supply will almost always be less than the total per capita supply, unless an urban centre does not supply any water for non-domestic uses.

The average per capita domestic supply in the sampled urban centers is 128 lpcd with a range of 14 to 258 lpcd. (Table 2.10). The average domestic supply in the

Table - 2.10: Per Capita Domestic Water Supply (1999)					
<i>(no. of cities/towns)</i>					
Per capita water supply (lpcd)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 40	0	9	22	31	10
40 to <70	2	27	25	54	18
70 to <135	12	68	29	109	36
135 to <150	2	9	2	13	5
150 and above	6	12	4	22	7
Data not available	0	39	33	72	24
No. of cities/ towns	22	164	115	301	100
Average (lpcd)	148	106	69	128	
Range (lpcd)	53 - 226	16-258	14-177	14-258	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 4 for details</i>					

metropolitan cities is 148 lpcd with only 6 out of 22 metropolitan cities being supplied more than 150 lpcd of water. Similarly the average for Class I cities is 106 lpcd and that for Class II towns is 69 lpcd.

Overall, almost 70 per cent of the sampled urban centers get a domestic supply ranging between 40 to 135 lpcd. It is important to highlight here that there are 31 sampled urban centers, a majority of them being Class II towns, which do not get domestic supply of even 40 lpcd, i.e. their supply level is even below that prescribed for stand posts. When a minimum of 70 lpcd for domestic supply is taken as the minimum supply level then 85 sampled urban centers do not reach this norm.

2.5.3 Exceptions

There are certain towns in the sample where the per capita supply levels are extremely low. These towns are Kavarathi (3 lpcd), Tenali (4 lpcd) and Balurghat, Santipur and Taliparumba (7 lpcd each). The reasons for the low level of supply in these town are: a) low coverage of population by water supply; b) public water supplying agency has been able to provide only a small number of households with domestic connection; and c) dependence of most households on public stand posts and private sources of supply such as open wells, hand pumps etc.

2.6 WATER SHORTAGE

Using the norms recommended by the CPHEEO, which takes into account the needs of sewerage system, the results of the survey indicate that the water supply situation in urban India is distressing with almost 46 per cent the sampled urban centres not getting adequate water supply, that is, getting a per capita supply below the recommended norm. A further disaggregation by size class of urban centers indicates that almost half the metropolitan cities have inadequate water supply while 40 per cent of Class I and and 52 per cent of Class II urban centres have a supply below the recommended norm (Table 2.11 and Table AX- 2.1 at the end of this chapter).

The picture changes considerably when the norms used by the cities themselves are taken into account. As per the city norms, almost 77 per cent of the sampled urban centers do not get adequate water supply, that is, they get water below the norms adopted by them. According to the city norms, 68 per cent of the metropolitan cities, 76 per cent of the sampled Class I cities and 79 per cent of the sampled Class II towns do not get adequate water (Table 2.12).

As a result of urbanization and changing requirements the demand for water is increasing. An estimation of the demand-supply gap in water supply indicates that an additional 1466 mld of water (using CPHEEO norms) would be required to bridge the gap between demand and supply in the 137 urban centers that do not get adequate water. The average gap per metropolitan city works out to 53 mld while those for Class I and Class II cities and towns the gap works out to 11 mld and 3 mld respectively (Table 2.11).

Size class of urban centres	Urban centres with supply below norm	Quantity of water supplied (mld)	Demand as per norm (mld)	Demand - Supply Gap (mld)	Average per capita gap (lpcd)
Metropolitan	11	3201.60	3782.10	580.50	23
Class I	66	2154.36	2857.10	702.74	29
Class II	60	286.18	468.98	182.81	33
Total	137	5642.14	7108.18	1466.05	26

Source: NIUA Survey, 1999. See Appendix - I, Table A – 3 for details

Using the city norms, the demand-supply gap for the 231 urban centers with a supply below norm, works out to 4045 mld. The average gap per metropolitan city works out to 93 mld, while for the Class I and Class II urban centers the gap is 18 and 5 mld respectively (Table 2.12). Amongst the steps needed to bridge the gap between demand and supply are efficiency improvements in the present system and new investments to augment supplies.

Size class of urban centres	Urban centres with supply below norm	Quantity of water supplied (mld)	Demand as per norm (mld)	Demand - Supply Gap (mld)	Average per capita gap (lpcd)
Metropolitan	15	7190.22	8586.90	1396.68	32
Class I	125	4433.08	6642.36	2209.28	52
Class II	91	599.66	1038.38	438.72	52
Total	231	12222.96	16267.64	4044.68	43

Source: NIUA Survey, 1999. See Appendix - I, Table A – 3 for details

2.7 UNACCOUNTED FOR WATER (UFW)

One of the main problems in the water supply sector today is the high level of unaccounted for water (UFW). UFW includes both physical losses as well as revenue losses (which include theft of water and illegal connections). The UFW in many Indian cities is said to be as high as 40 – 50 per cent while the acceptable level is about 15 per cent (according to CPHEEO norms). Although the problem is huge, many local governments find it difficult to realistically estimate UFW mainly due to lack of knowledge of how to calculate UFW and also lack of equipment for determining UFW. In addition, since meters are not installed on pipelines at the point of origin and at consumers end (not all connections are metered), the estimation of physical leakages as well as revenue losses is difficult.

Lack of reliable data on UFW is giving a somewhat distorted picture, which indicates that in over three-fourths of the responding urban centres the UFW is less than 25 per cent (Table 2.13). In 22 responding metropolitan cities, almost 3007 mld of water is unaccounted for, that is, the water is wasted and/or is unpaid for. While the UFW

in the three largest metropolitan cities (Mumbai, Chennai and Delhi) is between 20-26 per cent of the total supply, in absolute terms the quantity of UFW is over 1400 mld. Just the daily physical losses in these cities would be sufficient to provide at least one and-a-half day's water supply to the 115 sampled Class II towns.

Table - 2.13: Unaccounted for Water (1999)

<i>(no. of cities/towns)</i>					
Unaccounted for Water (%)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 15	3	95	75	173	57
15- 25	9	44	18	71	24
25 - 30	2	5	9	16	5
30 - 35	5	7	3	15	5
35 - 55	2	5	2	9	3
Data not available	1	8	8	17	6
No. of cities/ towns	22	164	115	301	100
Average (%)	24	16	11	21	
Range (%)	10-55	10-45	10-50	10-55	

Source: NIUA Survey, 1999. See Appendix - I, Table A - 4 for details

2.8 WATER CONNECTIONS

2.8.1 Total Water Connections

It is often recommended that all connections should be metered so as to improve revenues from water supply as also to monitor supplies. Metering will allow charging by the quantity of water consumed and will also allow for leakage detection.

Table - 2.14: Percentage Metered Connections to Total - 1999

<i>(no. of cities/towns)</i>					
% Metered connections to total	Metropolitan cities	Class I cities	Class II towns	Total	%
0	2	50	44	96	32
<25	5	31	17	53	18
25 - 50	1	8	6	15	5
50 - 75	4	11	7	22	7
75 - 99	4	27	10	41	14
100	3	23	19	45	15
n.a.	3	12	9	24	8
not applicable	0	2	3	5	2
Total no. of cities/ towns	22	164	115	301	100
Average (%)	60	52	39	55	

Source: NIUA Survey, 1999. See Appendix - I, Table A - 5 for details

Unmetered connections will generally encourage wastage of water, though the amount of water that can be drawn will be determined by the duration of supply.

However, 15% sampled urban centres have reported metering of all connections (domestic and non-domestic). Little less than one-third (32%) of the sampled urban centres do not have any metered connections. Amongst the 19 metropolitan cities (which responded to this question), in only two cities, i.e. Bangalore and Kochi, 100 per cent of the connections are metered, while in Calcutta and Ludhiana none of the connections are metered (Table 2.14).

2.8.2 Metering of Connections

a) Metering of Domestic Connections

Metering of connections does not necessarily imply that the meters are in working order and that the meters are read regularly. In many towns, particularly where the supply is for a very short duration – often for an hour or less a day, metering of domestic connections is not a preferred option because the meters do not function properly and meter reading is not cost effective.

This is reflected in the results of the survey, which shows that in 126 of the sampled urban centres (42%) none of the domestic connections are metered. However, there are 46 cities/ towns (15%) where all the domestic connections are reportedly metered (Table 2.15).

% metered domestic connections	<i>(no. of cities/towns)</i>				
	Metropolitan cities	Class I cities	Class II towns	Total	%
0	5	68	53	126	42
<25	2	12	7	21	7
25 – 50	1	6	6	13	4
50 – 75	4	13	7	24	8
75 – 99	4	25	10	39	13
100	3	24	19	46	15
n.a.	3	14	10	27	9
not applicable	0	2	3	5	2
Total no. of cities/ towns	22	164	115	301	100
Average (%)	59	49	38	52	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 5 for details

b) Metering of Non-domestic Connections

Metering of non-domestic connections is a must as the tariff for non-domestic uses is much higher than for domestic use. Therefore, charging non-domestic

users by the quantity of water consumed will increase revenue collection from water charges. However, metering of all non-domestic connections is not practiced in many urban centres.

The present survey indicates that non-domestic connections are metered in only 17 metropolitan cities while in 5 metro cities between 50 and 100 per cent of non-domestic connections are metered. In 86 of the sampled urban centres (i.e. about 29%) none of the non-domestic connections are metered while in 128 urban centres (i.e., about 43%) all the non-domestic connections are metered (Table 2.16). This indicates that metering of non-domestic connections needs to be taken up on a priority basis.

Table - 2.16: Percent Metered Non-Domestic Connections					
<i>(no. of cities/towns)</i>					
% Metered non-domestic connections	Metropolitan cities	Class I cities	Class II towns	Total	%
0	2	45	39	86	29
<25	0	6	3	9	3
25 – 50	0	3	1	4	1
50 – 75	2	1	2	5	2
75 – 99	3	8	4	15	5
100	12	76	40	128	43
n.a.	3	14	10	27	9
not applicable	0	11	16	27	9
Total no. of cities/towns	22	164	115	301	100
Average (%)	84	81	60	81	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 5 for details</i>					

2.9 SOURCE AND STORAGE OF WATER

2.9.1 Dependence on Surface and Ground Water Sources

Urban centers depend on both surface and ground water sources for supplying water. However, the dependence on any source would be based on the availability and the cost factors. While some urban centers may depend entirely on surface sources, such as rivers, lakes and reservoirs, others may use a combination of surface and ground water sources. The result of the present survey indicates that almost two-thirds of the urban centres depend on surface water and one-third on ground water. According to the present survey 43 per cent of the sampled urban centres depend entirely on surface water, 34 per cent depend entirely on ground water while 22 per cent use both surface and ground water sources (Table 2.17).

Metropolitan cities mainly depend on surface water sources with partial dependence on ground water sources. Amongst the 22 metropolitan cities 12 depend entirely on

surface water sources while one city (Ludhiana) depends entirely on ground water. The remaining 9 cities use both surface and ground water sources. In 7 of these cities the share of surface water is more than 50 per cent.

Most of the Class I cities also depend mainly on surface water sources to meet their daily water needs. In sampled Class I cities 43 per cent depend entirely on surface water sources, 33 per cent on only ground water sources while 24 per cent depend on surface and ground water sources. In about 18 per cent of the cities the share of surface water is greater than 50 per cent.

In relative terms, a larger proportion of Class II towns depend on ground water sources to meet their water requirements. Amongst the sampled Class II towns, 43 per cent depend only on surface water sources, 42 per cent depend on only ground water sources and 14 per cent use both surface and ground water sources. In 11 per cent of the towns the share of surface water is greater than 50 per cent.

Size class of urban centres	Only Surface Water (SW)		Only Ground Water (GW)		Urban centers with both sources SW & GW				Data not available		Total	
	No.	%	No.	%	SW <50%		SW >50%		No.	%	No.	%
					No.	%	No.	%				
Metros	12	55	1	4	2	9	7	32	0	0	22	100
Class I	69	42	54	33	10	6	30	18	1	1	164	100
Class II	49	43	48	42	4	3	13	11	1	1	115	100
Total	130	43	103	34	16	5	50	17	2	1	301	100

Source: NIUA Survey, 1999. See Appendix - I, Table A - 7 for details

A look at the different states in this respect indicates that in sampled urban centres in Maharashtra, Andhra Pradesh, Gujarat, Tamil Nadu and Karnataka surface sources are the main sources for water supply while in Punjab, Uttar Pradesh and West Bengal ground water is also a significant source (see Appendix I, Table A-7).

Based on the quantity of water obtained from ground and surface sources, it is clear that the share of surface water is higher in metropolitan cities and relatively lower in

Size class of urban centres	% Water drawn from	
	Surface source	Ground source
Metropolitan cities	88	12
Class I cities	64	36
Class II towns	52	49
Total	78	22

Source: NIUA Survey, 1999. See Appendix - I, Table A - 7 for details

Class II towns (Table 2.18). Overall, the survey result indicates that as city size decreases the dependence on ground water increases.

Augmentation of water from surface sources, if located at great distances, is an expensive option. However, wherever the option of using ground water is viable, efforts should be made to maintain water tables at reasonable depth by recharging ground water.

2.9.2 Distance to Source of Water Supply

Most settlements initially came up near sources of water, many of them on the banks of rivers. However, rapid growth of many cities has rendered the nearby water sources inadequate and cities have had to go further and further to get water for their citizens. The present survey indicates that in a majority of the sampled cities the source of water is in the city itself or adjoining it (Table 2.19).

Distance (km)					<i>(no. of cities/towns)</i>	
					Total	
	Metropolitan cities	Class I cities	Class II towns	No.	%	
< 10	4	44	27	75	25	
10 - 20	2	32	17	51	17	
20 - 30	5	13	8	26	8	
30 - 50	3	6	6	15	5	
50 - 80	2	7	2	11	4	
> 80	3	7	0	10	3	
Data not available	3	55	55	113	37	
Total	22	164	115	301	100	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 7 for details

These are cities that mainly depend on ground water source or nearby surface source. At present some of the Class I cities are bringing water from over 100 kms. In most such cases the source of water is a dam and therefore the distance is large (Table 2.20).

Cities	Distance (km.)
Ranchi	292
Thaleserry	280
Gadag-Betigeri	255
Jodhpur	209
Ajmer	140
Jalgaon	140
Solapur	103

Source: NIUA Survey, 1999. See Appendix - I, Table A – 7 for details

Metropolitan cities present a different picture. At present, only Mumbai goes as far as 119 km. for getting water for its citizens. In most other cities the distance to water source is less than 30 kms. However, the future sources of water supply for some metropolitan cities are as far as 400 kms away (Tables 2.21).

City	Present source (km.)	Future source (km.)
Mumbai	29 - 119	135 - 150
Delhi	26	320 - 400
Chennai	-	400
Hyderabad	15 - 18	60 - 100
Jaipur	25	120
Vishakhapatnam	15 - 73	60 - 150

Source: NIUA Survey, 1999. See Appendix - I, Table A - 7 for details

2.9.3 Storage Capacity of Service Reservoirs

The minimum storage capacity of service reservoirs depends on many factors. The CPHEEO Manual states that "A system supplied by pumps with 100% standby will require less storage capacity than that with less standby provision. Similarly a system divided into interconnected zones will require less storage capacity for all the zones except for the zones at higher elevations"⁶. However, on an average, according to CPHEEO, the storage capacity should be at least 30 per cent of the total water supplied daily.

Storage as % of Supply	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
< 10	0	16	13	29	10
10 - <30	7	49	24	80	27
30 - <50	6	40	23	69	23
50 - <75	2	24	22	48	16
75 - <100	2	7	10	19	6
100 & above	0	17	14	31	10
Data not available	5	11	9	25	8
Total	22	164	115	301	100

Note: 37 sampled urban centers did not provide information on this aspect.
Source: NIUA Survey, 1999. See Appendix - I, Table A - 8 for details

⁶ Ministry of Urban Development, 'Manual on Water Supply and Treatment' - Third edition - Revised and updated, CPHEEO, New Delhi, May 1999.

The results of the present survey show that 109 sampled urban centres (37%) do not have the minimum required storage capacity of service reservoirs. In fact, 29 of these urban centres have a storage capacity of less than 10 per cent. These urban centres are almost equally divided between Class I cities and Class II towns. Amongst metropolitan cities, 7 cities do not have a storage capacity of 31 per cent. These cities are Mumbai, Delhi, Calcutta, Coimbatore, Indore, Kanpur and Vishakhapatnam. The survey has also revealed that 23 urban centres have storage capacity of 100 per cent or more (Table 2.22).

2.10 WATER TREATMENT

2.10.1 Water Treatment Plants

Water treatment plants are required in urban centres that use surface water sources (either fully or partly). Of the metropolitan cities 21 use surface water sources, while amongst the sampled Class I and Class II urban centers 109 and 65 respectively use surface water sources.

The present survey indicates that almost 85 per cent of the sampled urban centres (using surface water sources) have water treatment plants (WTPs). Amongst the metropolitan cities, all the cities with surface water sources have WTPs. However, 12 per cent of Class I cities and 26 per cent of Class II towns do not have WTPs (Table 2.23). Most of the urban centres without WTPs are in the states of Andhra Pradesh and Tamil Nadu. Kavarathi, the capital of Lakshadweep Islands, is the only town in the sample that uses reverse osmosis process to purify water.

Table - 2.23: Water Treatment Plants – 1999

Size class of urban centres	Number of sampled urban centres		
	Using surface water	Without WTPs	% without WTPs
Metropolitan cities	21	0	0
Class I cities	109	13	12
Class II towns	65	17	26
Total	195	30	15

Source: NIUA Survey, 1999. See Appendix - I, Table A – 9 for details

2.10.2 Monitoring Water Quality

Regular monitoring must be undertaken in order to ensure the quality of water. Monitoring is done at various stages of supply such as monitoring of raw water, monitoring at treatment plants and monitoring at distribution network. Water quality monitoring is done at various intervals, which could vary, from a number of times a day to weekly/ fortnightly monitoring. Monitoring is also done at greater intervals than these, but that may affect the quality of water supplied.

The present survey indicates that about one-fourth (24%) of the sampled urban centres monitor raw water quality on a daily basis while almost three-fifths (57%) do

not monitor the quality of raw water at all. Amongst the metropolitan cities, almost 14 cities (64%) monitor raw water quality daily while in Class I cities and Class II towns daily monitoring of raw water is done by 37 cities (23%) and 21 towns (18%) respectively. However, in as many as 7 metropolitan cities raw water quality is not monitored at all. The number of Class I cities not monitoring raw water quality is 93 (57%) while the corresponding figure for Class II towns is 72 (63%) (Table 2.24).

<i>(no. of cities/ towns)</i>					
Size class of urban centres	Monitoring frequency				
	Nil	Daily	Monthly	Others	Total
Metropolitan cities	7	14	-	1	22
Class I cities	93	37	12	22	164
Class II towns	72	21	6	16	115
Total	172	72	18	39	301
% to total	57	24	6	13	100

Source: NIUA Survey, 1999. See Appendix - I, Table A - 9 for details

At the treatment plant, water quality is not monitored at all in 38 (23%) urban centers with WTPs, while in 14 (9%) it is done on a monthly basis and in 8 (5%) on a weekly basis. In the other sampled urban centres the periodicity of monitoring water quality at the treatment plant varies between alternate days to once in 6 months. In 18 of the 21 metropolitan cities with WTPs, the water quality is tested daily at the treatment plant. In 73 per cent of Class I cities (with WTPs) water quality is tested at the treatment plant daily while the corresponding figure for Class II towns is 65 per cent (see Appendix. I, Table A-9).

At the distribution network, water quality is monitored on a daily basis in 152 sampled urban centres (50%) while it is not monitored at all in 59 urban centres (20%). Water quality is monitored once a week in 20 sampled urban centers while in another 22 it is monitored once a month. In about 40 sampled urban centers monitoring at the distribution network is done at other frequencies (see Table 2.25).

<i>(no. of cities/ towns)</i>							
Size class of urban centres	Frequency of monitoring						Total
	Nil	Daily	Weekly	Monthly	Others	n.a.	
Metropolitan cities	1	20	-	-	1	-	22
Class I cities	33	76	12	15	22	6	164
Class II towns	25	56	8	7	17	2	115
Total	59	152	20	22	40	8	301

Source: NIUA Survey, 1999. See Appendix - I, Table A - 9 for details

2.10.3 Adequacy of Laboratory Facilities

In order to test water quality, adequate laboratory facilities should be available. Laboratory facilities may be available with the concerned public agency or they may use facilities of other institutions. In any case, laboratory facilities should be adequate for providing potable water to people.

Laboratory facilities for testing water quality are not available in almost 54 per cent of the sampled urban centres. In 5 of the 22 metropolitan cities, the laboratory facilities for testing water quality are not adequate, while in 86 Class I cities and 73 Class II towns these facilities are reported to be inadequate (Table 2.26).

Table - 2.26 : Adequacy of Laboratory Facilities - 1999					
<i>(no. of cities/towns)</i>					
Adequate (Yes/No)	Metropolitan cities	Class I cities	Class II towns	Total	%
Yes	17	77	41	135	45
No	5	86	73	164	54
n.a.	0	1	1	2	1
Total	22	164	115	301	100
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 9 for details</i>					

2.11 INSTITUTIONAL ARRANGEMENTS FOR WATER SUPPLY

The responsibility for maintaining public health rests largely with the local governments and falls within the purview of their obligatory functions. Provision of water supply had for long been a function in the municipal domain, and still is in many urban centres in India. At present, this function is divided between at least two bodies in most urban centres - capital works are executed by state level agencies and the operation and maintenance (O&M) function is performed by the local governments. Most large capital works are funded by higher levels of government, which also provide technically qualified manpower for construction purposes. The local government is then handed over charge to maintain the water supply system. However, there are many variations to this arrangement. In different states there exist different arrangements and even within the same state different cities may have varying arrangements.

In some cities, the municipal body is still responsible for providing water supply, while in some others, city level water supply and sewerage boards have been constituted to perform this function (mainly in metropolitan cities). While in still others, state level water supply and sewerage boards are responsible for this function. The common pattern observed in most cities is that a state level agency, such as Public Health Engineering Department/ Division (PHED) or a state level water supply and sewerage board, does the capital works and once the construction is over, hands over the responsibility of O&M to the local government. In some cities the state level agency does the capital works and O&M while the revenue functions are with the local government.

In four of the metropolitan cities in the country viz., Bangalore, Chennai, Hyderabad and Calcutta there are separate metropolitan authorities for water supply and sewerage, which perform all the functions, related to water supply and sewerage. In Delhi there is a city level board that performs these functions. These boards are as follows:

City	Name of city – level board
Delhi	Delhi Jal Board (DJB)
Bangalore	Bangalore Water Supply and Sewerage Board (BWS&SB)
Chennai	Chennai Metropolitan Water Supply and Sewerage Board (CMWS&SB)
Hyderabad	Hyderabad Metropolitan Water Supply and Sewerage Board (HMWS&SB)
Calcutta	Calcutta Metropolitan Water & Sanitation Authority (CMW&SA), since merged with CMDA

States with state-level water supply and sewerage boards or equivalent state-level agencies are as follows:

State	Name of state-level board/agency
Gujarat	Gujarat Water Supply and Sewerage Board (GWS&SB)
Karnataka	Karnataka Urban Water Supply and Drainage Board (KUWS&DB)
Kerala	Kerala Water Authority (KWA)
Maharashtra	Maharashtra Jeevan Pradhikaran (MJP)
Punjab	Punjab Water Supply and Sewerage Board (PWS&SB)
Tamil Nadu	Tamil Nadu Water Supply and Drainage (TWAD) Board
Uttar Pradesh	Jal Nigam

2.11.1 Institutional Arrangements in Major States

In most states the state level agencies do only capital works while in some others they perform other functions too. For instance, KWA in Kerala manages all the functions of water supply throughout the state, KUWS&DB in Karnataka produces water and sells it to most city governments for further distribution and MJP in Maharashtra also performs O&M function in some cities in the state (Table 2.27).

In Rajasthan the entire function of water supply in all urban areas is with the state PHED. Similarly, in Haryana, in all the towns, except in Faridabad where the Corporation is responsible for water supply, it is the PHD that is responsible for provision of water supply.

In Uttar Pradesh there are seven Jal Sansthan, five of which are city level agencies while two are regional level agencies. The cities of Kanpur, Lucknow, Varanasi, Allahabad and Agra have city level Jal Sansthan to manage mainly O&M functions; the two regional agencies are Kumaon Jal Sansthan and Jhansi Jal Sansthan.

Table - 2.27: Institutional Arrangements for Urban Water Supply in Major States			
State	Capital works	O & M	Revenue functions
Andhra Pradesh	PHED	Municipal body	Municipal body
Bihar	PHED & Municipal body	PHED & Municipal body	Municipal body
Gujarat	Municipal body & GWS&SB	Municipal body	Municipal body
Haryana	PHD	PHD	PHD
Karnataka	KUWS&DB	Municipal body	Municipal body
Kerala	KWA	KWA	KWA
Madhya Pradesh	Municipal body & PHED	Municipal body & PHED	Municipal body
Maharashtra	MJP & Corporation	Municipal body	Municipal body
Orissa	PHED, Rural Water Supply and Sanitation Department, Housing and Urban Development Deptt.	PHED, Rural Water Supply and Sanitation Department	PHED, Rural Water Supply and Sanitation Department
Punjab	PWS&SB	Municipal body & PWS&SB	Municipal body
Rajasthan	PHED	PHED	PHED
Tamil Nadu	TWAD Board	Municipal body & TWAD Board	Municipal body
Uttar Pradesh	Jal Nigam & Municipal body	Jal Sansthan & Municipal body	Jal Sansthan & Municipal body
West Bengal	PHED & Municipal body	PHED & Municipal body	Municipal body

Source: NIUA Survey, 1999. See Appendix - I, Table A – 10 for details

2.11.2 Exceptions

There are exceptions, though, to the above pattern in many states. For instance, in Hindupur and Srikalahasti in Andhra Pradesh, the municipality performs all the above functions. In Kerala, Thrissur Municipal Council does the O&M and revenue related functions in a state where KWA performs all the functions for all towns. In Madhya Pradesh, in the towns of Satna and Rewa, PHED performs the O&M as well as revenue related functions. In Maharashtra, the MJP performs all the functions related to water supply in Amravati, Yavatmal, and Ballarpur.

2.11.3 Institutional Arrangements in Smaller States and Union Territories

In most of the smaller states and union territories the PHED or Public Works Department (PWD) performs all the functions related to water supply. However, there are exceptions to this pattern. For instance, in Port Blair, the Andaman PWD does the capital works while the O&M function is shared between the PWD & the Municipal Council, and the revenue related function is entirely with the Municipal Council. In Agartala only the revenue related functions are with the local body, while O&M and capital works are with PHED. In Chandigarh, the Corporation performs all the functions related to water supply. In Shimla and Shillong the PHED & Irrigation Department are responsible for capital works while O&M functions are performed by the PHED and the municipal body. (Table 2.28).

Table – 2.28: Institutional Arrangements for Urban Water Supply in Smaller States and Union Territories					
S.N.	State/ U.T.	City/ town	Capital works	O & M	Revenue functions
State					
1	Arunachal Pradesh	Itanagar	PHED	PHED	PHED
2	Delhi	Delhi	Delhi Jal Board	Delhi Jal Board	Delhi Jal Board
3	Goa	Panjim	PWD	PWD	PWD
4	Jammu & Kashmir	Jammu	PHED	PHED	PHED
5	Himachal Pradesh	Shimla	H.P.Irrigation Deptt. & PHD	Municipal Body & PHD	Municipal Body
6	Manipur	Imphal	PHED	PHED	PHED
7	Meghalaya	Shillong	PHED	PHED & Municipal Body	Municipal Body
8	Mizoram	Aizwal	PHED	PHED	PHED
9	Nagaland	Kohima	PHED	PHED	PHED
10	Sikkim	Gangtok	n.a.	n.a.	n.a.
11	Tripura	Agartala	PHED	PHED	Municipal Body
Union Territory					
1	Andaman and Nicobar Islands	Port Blair	PWD	PWD & Municipal Body	Municipal Body
2	Chandigarh	Chandigarh	Municipal Body	Municipal Body	Municipal Body
3	Dadra & Nagar Haveli	Silvassa	PWD	PWD	PWD
4	Daman and Diu	Daman	PWD	PWD	PWD
5	Lakshadweep	Kavarathi	PWD	PWD	PWD
6	Pondicherry	Pondicherry	PWD	PWD	PWD
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 10 for details</i>					

2.12 STAFF POSITION

The staff position can be analysed by using indicators such as staff per 1000 connections or staff per km. of distribution lines. However, any attempt to analyse whether the water utilities/ departments are overstaffed/ understaffed or have the right number of staff would require a norm against which this can be judged. In the absence of such norms, only the situation as it exists today can be described. The staff here refers to the total staff, including managerial, technical and O&M staff.

The present study indicates that the average staff per 1000 connections is 10.9 in the sampled urban centres. The metropolitan cities have 14.5 staff per 1000 connections while in the sampled Class I cities, the staff per 1000 connections averages 7.9 while the average for Class II towns is 6.76 (Table 2. 29).

Table - 2.29: Staff Per 1000 Connections (1999)					
<i>(no. of cities/ towns)</i>					
Staff/1000 connection	Metropolitan cities	Class I cities	Class II towns	Total	%
<5	8	54	32	94	31
5 – 10	1	43	33	77	26
10 – 15	3	20	16	39	13
15 – 20	5	12	6	23	8
20 – 25	4	5	4	13	4
25- 50	1	10	4	15	5
Data not available	0	20	14	34	11
Data not reliable	0	0	6	6	2
Total	22	164	115	301	100
Average	14.5	7.9	6.76	10.9	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 11 for details

Table - 2.30: Staff Per Km. of Distribution Line (1999)					
<i>(no. of cities/towns)</i>					
Staff/Km. of distribution line	Metropolitan cities	Class I cities	Class II towns	Total	%
< 0.5	5	48	28	81	27
0.5 - < 1.0	6	42	24	72	24
1.0 – 2.0	5	32	23	60	20
2.0 and above	5	22	25	52	17
n.a.	1	20	15	36	12
Total	22	164	115	301	100
Average	1.73	0.80	1.09	1.26	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 11 for details

A disaggregation of these figures indicates that a little less than one-third of the sampled urban centres have a staff of less than 5 per 1000 connections while another little over one-fourth have a staff of between 5 to 10 per 1000 connections.

A look at the staff per kilometer of distribution line indicates that, on an average, there are 1.26 staff per kilometer of distribution line in the sampled urban centers. While metropolitan cities have more staff than this average, Class I and Class II urban centers have less staff than the average (Table 2.30). The present survey indicates that almost half the sampled urban centers have less than one staff per kilometer of distribution line, with 27 per cent have less than 0.5 staff per kilometer of distribution line.

2.13 PRIVATISATION

Involvement of private sector in the provision of water supply does not appear very common in the sampled cities. Only 8 per cent of the cities have used private sector for activities related to water supply. Private sector has been mainly involved in the operation and maintenance of pipelines, treatment plants, tube-wells and pumping stations. Private sector is also involved in billing and revenue collection activities (Table 2.31).

Contracting has been the main mode of privatisation in these cities. While most cities have only been able to give the cost of the activity after privatisation, which is the payment actually being made to the contractor, only a few have calculated the cost of the activity to the water supplying agency before the activity was privatised. This indicates that privatisation in these cities has not been undertaken as a measure of economy and efficiency but for reasons other than these.

Only 24 urban centres have used private sector for activities related to water supply. One-third, that is, 8 of these urban centres are in Rajasthan, and the remaining are in the states of Maharashtra, Karnataka, Gujarat, Uttar Pradesh and Andhra Pradesh. Private sector participation has been used in water supply sector since 1989, though in most of the urban centres it was introduced in 1992 and later.

Most urban centres have not provided information on cost of the activity before and after privatisation. However, for the few cities for which this information is available indicates that privatisation has helped in saving costs. For instance, in Ludhiana maintenance of tube-wells has helped in cost savings of Rs. 5.5 lakhs and in Nashik a cost saving of Rs. 8.45 lakhs has been achieved by giving maintenance of pumping stations to private sector.

Table - 2.31: Details of Privatisation in Water Supply – 1999

Sl. no.	City/Town	Activity	Specific aspects/areas	Privatisation mode	No. of contractors	Year privatised	Cost before (Rs. '000)	Cost after (Rs. '000)
Metropolitan cities								
1	Nagpur	O & M	Pumping station	n.a.	1	1994	n.a.	75
		O & M	Treatment plant	n.a.	1	1994	n.a.	105
2	Jaipur	O & M	Pipe lines	Contract	1	n.a.	n.a.	n.a.
3	Ludhiana	O & M	Tubewells	Contract	10	1995	750	200
4	Visakhapatnam	O & M	Pumping station Treatment plant & Pipe lines	Contract	n.a.	1995	n.a.	n.a.
Class I								
1	Agra	O & M	Treatment plant	Contract	1	1997	n.a.	1,182
		O & M	Pumping station	Contract	1	1997	n.a.	150
2	Allahabad	O & M	Tube-wells	Contract	18	1989	180	270
3	Nashik.	O & M	Pumping station	Contract	1	1992	2,800	1,955
4	Jodhpur	Billing	Entire city	Contract	1	1992	n.a.	360
		Revenue collection	Entire city	Contract	1	1992	n.a.	900
5	Bareilly	O & M	Tube-wells	Contract	1	1998	75	40
6	Rajkot	O & M	Pumping station	Contract	2	1998	n.a.	n.a.
7	Kota	O & M	Pipe lines	Contract	1	1996	n.a.	162
		Billing	Entire city	Contract	1	1994	n.a.	1,420
		Revenue collection	Entire city	Contract	1	1994	n.a.	140
Class II								
1	Amravati	O & M	Pipe lines	Contract	7	1998	n.a.	2,000
		Billing	Entire city	Contract	1	1998	n.a.	n.a.
2	Ajmer	O & M	Pipe lines	Contract	2	1996	n.a.	n.a.
		O & M	Pumping station	Contract	2	1996	n.a.	n.a.
3	Gulbarga	O & M	Head Pump	Contract	4	1996	n.a.	n.a.
4	Bhilwara	Billing	Entire city	Contract	1	n.a.	n.a.	n.a.
5	Sriganganagar	Billing	Entire city	Contract	1	1995	n.a.	100
		O & M	Pipe lines	Contract	1	1996	n.a.	300
		O & M	Pumping station	Contract	2	1995	n.a.	200
6	Bhusawal	O & M	Pipe lines	Contract	1	1998	600	n.a.
7	Qutubullapur	O & M	Pipe line & Bore wells	Contract	1	1994	n.a.	n.a.
8	Hospet	Water distribution	n.a.	n.a.	3	1996	n.a.	n.a.
9	Mahesana	O & M	Pumping station	Contract	1	1992	n.a.	n.a.
10	Bhandara	O & M	Treatment plant	Contract	1	1999	n.a.	613
11	Barmer	Revenue	Entire city	Contract	1	1996	n.a.	54
		Billing	Entire city	Contract	1	1996	n.a.	89
12	Bundi	Billing	Entire city	Contract	1	1994	150	50
13	Virar	O & M	Head work	Contract	1	1997	n.a.	3,000
		O & M	Treatment plant	Contract	1	1998	n.a.	360

Source: NIUA Survey, 1999. See Appendix - I, Table A – 12 for details

2.14 WATER TARIFF

2.14.1 Charging for Water

Tariff for water should ideally cover not only the cost of operation and maintenance of the system but also the capital replacement cost. However, in most Indian cities and towns even the operation and maintenance cost is not recovered. Water is considered to be an essential good and therefore, to be either provided at very low rates or even free of cost. The rates fixed are also not revised frequently to reflect the prevailing costs, widening the gap between the cost of production and tariff charged. The present survey, however, reveals that this situation has undergone some change and that many cities and towns have revised their tariff in the 1990s.

Water is charged for in three ways:

- Through consumption based tariff
- Through flat rates
- Through water taxes

Tariff for water supply varies considerably between cities and between states. Water tariff is different for domestic and non-domestic uses. The tariff is generally much higher for industrial and commercial uses than for domestic use.

2.14.2 Types of Water Tariff

Water connections (domestic and non-domestic) can be of two types - metered and unmetered. Water tariff for metered connections is consumption based, i.e. based on the quantity of water consumed. Water tariff for unmetered connections is a flat rate (fixed amount), which is not related to the quantity of water consumed.

a) Metered Rates

Consumption based water rates for metered connections are of two types:

- a uniform volumetric rate per kilo litre (kl i.e.1000 litres) for the entire quantity of water consumed in a month; and
- an increasing block tariff (IBT) or slab based rate with higher rate per kilo litre for higher quantities of water consumed per month, with a minimum monthly fixed charge in some cities.

Uniform volumetric rate is a single rate per kilolitre of water for the entire quantity of water consumed per month through a single connection, applied uniformly to large as well as small consumers. Therefore, the monthly bill, where this rate is used, is directly proportional to the quantity of water consumed.

On the other hand, IBT differentiates between the low end users and the high end users and often cross-subsidises low end users by high end users. In IBT it is

assumed that the poorest would have a consumption, which will generally not exceed the first block, and so they will pay the lowest rates. However, the lowest block, though it generally varies between 10 kl. to 25 kl., can be as high as 50 kl. (e.g. Coimbatore). Most domestic consumers in the last case would fall in the first block itself, while in others they may go upto the second or the third blocks. So IBT needs to be studied in detail to know whether subsidies are being targeted properly.

b) Unmetered Rates

Flat rate for unmetered connections can be grouped into four categories. These categories are:

- based on ferrule size of connection;
- based on the number of taps in a house;
- a fixed flat rate; and
- a variable flat rate based on the annual rateable value (ARV) of property.

Ferrule based rates depend on the ferrule size (i.e. the diameter) of the connection. Most domestic connections are only of half-inch diameter; larger ferrule size connections are generally taken by large consumers such as apartment blocks. Ferrule based rates are common in only a few states.

Tap based rates depend upon the number of taps in a house. Generally, the rate for the first tap is higher than the rate for additional taps. These rates are much less commonly used in the sampled urban centers than the ferrule based rates.

The fixed flat rate, charged either annually or at lesser intervals, is the most common method of charging for water (for unmetered connections). The basis of this flat rate is not explicitly stated but could be based on ferrule size, or the duration of supply or some other basis known to local authorities.

Water tax, charged in a few urban centers in the sample, is a certain percentage of the property tax. This ARV based charge for unmetered connections is not very common in the sampled urban centers. However, the survey reveals that in some urban centres a flat rate is charged but it is called water tax. While in yet other cases, a flat rate, which is actually based on ferrule size but not explicitly stated, so, is called water tax and not a water charge. These variations in the nomenclature used for flat rates sometimes make it difficult to classify them (as water tax or water charge).

Tariff for non-domestic uses, in some cities, are very elaborate. Cities differentiate between different types of non-domestic uses in a fairly detailed manner and charge different water rates for different uses. The schedule of tariff for large cities often follows an elaborate categorisation by uses and the scale of

activity. For instance, the water rates are different for small eating-places, big restaurants and hotels. Domestic tariff is also fairly elaborate in larger cities where there are individual houses as well as large apartment blocks. Tariff is often higher for apartment blocks than for individual houses mainly on account of larger ferrule size of connections. Water rates are also different for treated and untreated water and for supplies within city limits and outside city limits.

Tariff for domestic connections are often significantly lower than those for non-domestic connections, particularly industrial and commercial connections. There is a cross-subsidy within the water sector whereby domestic consumers are subsidised by industrial and commercial consumers. The extent of cross-subsidy varies, though on an average industrial consumers pay between 2 to 10 times higher tariff than domestic consumers. While in many cities in the sample, industrial and commercial users are charged the same rate, institutional users are often charged a different rate which may be the same as domestic rate or a rate that is lower than the industrial and commercial rates.

With a few exceptions, stand posts are supplied water free of charge. In some cities, such as Mumbai and Hyderabad, a system of metering of stand post supplies is being introduced.

c) Water Tax

Water tax, in the sampled urban centres, is levied mainly in the states of Andhra Pradesh, Tamil Nadu, Uttar Pradesh, Maharashtra, and Madhya Pradesh with a few cities of Gujarat and Karnataka also levying water tax. The rate of water tax varies from 3.5 per cent to 25 per cent in the sampled urban centres. Mumbai levies a water tax of 50 per cent of the rateable value of the property.

2.14.3 Water Tariff in Metropolitan Cities

A comparison of tariff used by different metropolitan cities is made somewhat difficult by the non-uniformity of structure. Each city uses a slightly different structure such as different blocks in IBT or different ferrule sizes (see Appendix I) or an entirely different basis of charging, such as property tax based rates. Despite these, a broad overview of the tariff structure and rates is presented below.

a) Domestic Metered Rates

i) Uniform Volumetric Rates

In 12 of the 22 sampled metropolitan cities uniform volumetric rates are charged for metered connections. Most metropolitan cities charge a rate ranging between Rs. 2.00 and Rs. 3.50 per kl. per month. Only two metropolitan cities viz., Madurai and Vishakhapatnam charge Rs. 5.00 per kl. per month from their domestic consumers.

ii) Increasing Block Tariff

Eight metropolitan cities use increasing block tariff (IBT) for metered domestic connections. The number of blocks in IBT generally varies between 3 to 5 in the sampled metropolitan cities. IBT for metered connections vary from Re.0.35 (+ 50% surcharge) (Delhi) to Rs. 5.00 (Chennai) for first 10 kl (Delhi). The IBT is the lowest in Delhi while it is the highest in Chennai. Broadly stated, Chennai's rates are roughly 10 times that levied in Delhi. The ratio of charges (Rs./kl.) in the last to first block is the highest in Chennai (ten times) and the lowest in Nagpur (one-and-a-half times). This means that consumers in the last block pay a much higher rate per kilolitre of water than the consumers in the first block (Table 2.32).

Sl. No.	City	No. of blocks	First block	Rs/kl.in the first block	Last block	Rs/kl. in last block	Minimum payment, if any (Rs.)	Ratio of charges (Rs./kl.) in last to first block
1	Bangalore	5	upto 25 kl.	3.50	above 100 kl.	33.00	65	9.43
2	Chennai	4	upto 10 kl.	2.50	above 25 kl.	25.00	-	10.00
3	Coimbatore	4	upto 50 kl.	2.50	above 200 kl.	4.00	-	1.60
4	Delhi	4	upto 10 kl.	0.35	above 30 kl.	3.00	20	8.57
5	Hyderabad	4	upto 15 kl.	3.70	above 500 kl.	14.00	55	3.78
6	Jaipur	3	upto 15 kl.	1.56	above 40 kl.	4.00	-	2.56
7	Nagpur	3	upto 10 kl.	1.00	above 30 kl.	1.50	-	1.50

Source: NIUA Survey, 1999. See Appendix - I, Tables AT-1, AT-4, AT-7, AT-10, AT-11 and AT-14 for details

b) Domestic Unmetered Rates

i) Ferrule Based Rates

Only seven metropolitan cities use ferrule base rates for unmetered connections. Ferrule based rates vary from Rs. 120 (Surat) to Rs. 750 (Pune) per year for a ½" domestic connection and the average payment for ½" ferrule size is approximately Rs. 296 per annum. Larger size ferrule connections pay much higher rates in some cities. For instance, in Jaipur those with one-inch ferrule connection pay 18.5 times the rate paid by those with a half-inch ferrule connection. Whereas in Surat this difference is only 5.4 times (Table 2.33).

ii) Flat Rate

Only eight metropolitan cities charge non-ferrule based flat rates. Flat rates vary from Rs. 240 (Madurai) to Rs. 1680 (Hyderabad) per year with the

Table - 2.33: Metropolitan Cities With Ferrule Based Rates - 1999				
(in Rs. /year)				
Sl. No.	City	Ferrule size		
		1/2" (15mm)	3/4" (20mm)	1" (25mm)
1	Calcutta	120	480	780
2	Jaipur	min. 240	min. 1440	min. 4440
3	Kanpur	min. 360 - 1200	min. 540 - 1800	min. 840 - 2400
4	Nagpur	300	600	-
5	Pune	750	1500	4000
6	Surat	120	252	648
7	Vadodara	180	720	1440
	Average	296	544	1059

Source: NIUA Survey, 1999. See Appendix- I, Tables AT – 2, AT-7, AT-10, AT-12, & AT-13 for details

average charge working out to approximately Rs. 668 per year (Table 2.34).

Table - 2.34: Meropolitan Cities With Flat Rates - 1999		
Sl. No.	Metro cities	Charges/ year (in Rs.)
1	Bhopal	720
2	Chennai	600
3	Coimbatore	300
4	Hyderabad	1680
5	Indore	720
6	Ludhiana	600
7	Madurai	240
8	Visakhapatnam	480
	Average	667

Source: NIUA Survey, 1999. See Appendix - I, Tables AT-1, AT-6, AT-9, AT-11 for details

c) Non-Domestic Tariff

The non-domestic tariffs are of two types – in some cities all the non-domestic uses are clubbed together under one head “non-domestic”, while in other cities non-domestic uses are broken up into industrial, commercial and institutional uses. In yet other cities, industrial tariff has been separated while tariff for all the other non-domestic uses have been clubbed together.

A strict comparison of rates is difficult, as explained earlier, due to different blocks used by different cities. Broadly though, Coimbatore has the lowest rates for non-domestic supply of Rs. 5.00 per kl. upto 50 kl. per month. Bangalore has the highest rates in this category with the base block rate being Rs. 33 per kl. upto 10 kl.

i) Industrial Tariff

The industrial tariff in the metropolitan cities varies from Rs. 8.00 (Surat) to Rs. 22 per kl. per month (Indore) for metered connections. For unmetered industrial connections the minimum tariff varies from Rs. 5760 per annum (Kanpur) to Rs. 25200 per annum (Vadodara) for a 25 mm connection. Non-ferrule based flat rate for industrial connections vary from Rs. 1200 (Ludhiana) to Rs. 4800 per annum (Chennai). In Ahmedabad, the industrial connections are charged 25-30 per cent of annual rateable value or a minimum of Rs. 720 per annum.

2.14.4 Water Tariff in Major States

a) Andhra Pradesh

In Andhra Pradesh, the tariff for domestic metered connections varies from Rs. 1.50 per kl. in Nellore to Rs. 5.75 per kl. in Vijayawada (Table 2.35). Industrial tariff for metered connections varies between Rs. 10.00 per kl. in Warangal to Rs. 15.00 per kl. in Tirupati. The tariff for metered industrial connections is almost six times higher than the domestic rate in Nellore while it is about two-and-a-half times the domestic rate in Vishakhapatnam. The flat rate tariff for unmetered domestic connections varies from Rs. 360 per annum in Srikakulam to Rs. 720 per annum in Warangal.

The domestic water connection charges mostly range between Rs. 4000 and Rs. 6000, though there are exceptions to this. In Hyderabad the connection charges vary between Rs. 900 to Rs. 40,000 depending on the size of pipe and the size of the plot. Tariff revisions in most of the sampled urban centres were done in 1999 (see Appendix – I, Table AT-1 for details).

Sl. No.	State	Metered				Unmetered			
		Uniform volumetric rate (in Rs./kl.)				Flat rate (in Rs./ annum)			
		Domestic		Industrial		Domestic		Industrial	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1	Andhra Pradesh	1.50	5.75	10.00	15.00	360	720	-	
2	Gujarat	1.50	5.00	8.00	25.00	120	300	360 - 6300 (Fr.)	
3	Haryana		1.00		2.50	125 - 200 (Fr.)		-	
4	Karnataka	1.25	3.50		-	360	540	2160	
5	Madhya Pradesh	0.33	3.00	2.20	22.00	144	720	480	3600
6	Maharashtra	1.00	5.75	8.00	28.00	160	806	213	3576
7	Punjab		1.20		2.50	240	360	360	1200
8	Tamil Nadu	1.00	5.00	3.75	20.00	240	816	480	4800
9	Uttar Pradesh	0.18	3.00		-		-		-

Note: Fr. refers to ferrule based rates
Source: NIUA Survey, 1999. See Appendix - I, Tables AT- 1,2,3,4,6,7,9,11 & 12 for details

b) Gujarat

In the sampled urban centres of Gujarat, the tariff for domestic metered connections varies from Rs. 1.50 per kl. (Vadodara) to Rs. 5 per kl. (Bharuch). Industrial tariff for metered connections varies between Rs. 8.00 (Surat) to Rs. 25.00 per kl. (Jamnagar) (Table 2.35). The tariff for metered industrial connections is four times the domestic rate in Surat while they are seven times in Vadodara.

The tariff for unmetered connections based on ferrule size varies considerably between cities ranging from Rs. 60 per annum for a ½" domestic connection in Anand to Rs. 360 in Bhuj. The tariff for industrial unmetered ferrule based connections varies between Rs. 360 per annum for a ½" connection in Palanpur to Rs.6300 in Vadodara. The variation between domestic and industrial tariff is as high as 35 times in Vadodara and as low as three times in Palanpur for a ½" connection. The flat rate for unmetered connections (non-ferrule based) varies from Rs. 120 per annum in Mehsana to Rs. 300 in Bhavnagar. The variation between domestic and industrial tariff is as high as 42 times in Bhavnagar while it is as low as two times in Junagadh.

The water connection charges in the state are highly variable with each city charging a different amount. The connection charges in the sampled cities/towns vary from Rs. 25 to Rs. 400 in Palanpur to Rs. 100 to Rs. 20000 in Ahmedabad for various sizes of connections.

The water tariff was last revised in Surendranagar in 1976 though in most other sampled cities/towns in the state the tariff was revised either in late 1980s or in 1990s (see Appendix – I, Table AT-2 for details).

c) Haryana

Similar to Punjab, Haryana too has a uniform water tariff for most of its cities and towns. The domestic metered water rate is Re. 1.00 per kl. per month in almost all the sampled cities and towns (Table 2.35). Industrial tariff is two-and-a-half times the domestic rate at Rs. 2.50 per kl. per month while the commercial water tariff is Rs. 2.00 per kl. per month. Unmetered domestic connections are charged both by tap rates as well as by ferrule size of connection. The tap rate charges are Rs. 50 per month for one tap and Rs. 80 per month for more taps in Rohtak while the ferrule size based rates vary between Rs. 125 for 15 mm connection and Rs. 200 per year for connections above 20 mm.

The connection rates for all uses are fixed at Rs. 300. The water tariff in the sampled urban centres of the state was revised mostly in 1993 and 1994 (see Appendix – I, Table AT-3 for details).

d) Karnataka

In Karnataka, larger cities have IBTs for water supply while almost all the other sampled urban centres charge a fixed monthly amount for water. The cities with

IBTs include Bangalore, Mysore, Hubli-Dharwad and Mangalore while Belgaum has ferrule-based rates. The minimum rates for domestic metered connections are Rs. 3.50 per kl. in Bangalore, Rs.1.25 in Mysore and Hubli-Dharwad and Rs. 1.40 per kl. in Mangalore. The fixed rates are generally Rs. 360 or Rs. 540 per year (Table 2.35, also see Appendix – I, Table AT-4 for details).

e) Kerala

Kerala uses a block tariff structure for charging for water. However, the charging system in Kerala is different to other states. Kerala charges a fixed amount for each block and not a rate for each block. The lowest block in the state for domestic users starts from 10 kl. with a rate of Rs. 22 and the amount increases for every kilo litre (Table 2.35, also see Appendix – I, Table AT-5 for details).

f) Madhya Pradesh

In the sampled urban centres of Madhya Pradesh, the per kl. rate for domestic metered connections varies between Rs. 0.33 in Satna to Rs. 3.00 in Jabalpur (Table 2.35). The tariff for industrial metered connections varies from Rs. 2.20 per kl. in Satna to Rs. 22.00 per kl. in Jabalpur. The industrial tariff for metered connections is eleven times the domestic rate in Indore while it is less than double in Rewa.

The tariff for unmetered domestic connections varies from Rs. 144 per annum in Rewa to Rs. 720 per annum in Bhopal. Industrial tariff for unmetered connections varies from Rs. 480 per annum in Morena to Rs. 3,600 in Indore.

The water connection charges in Madhya Pradesh vary a great deal ranging from Rs. 61 in Satna to Rs. 3,000 in Gwalior. The water tariff was last revised between 1997 and 1998 in most of the sampled urban centres in the state (see Appendix – I, Table AT-6 for details).

g) Maharashtra

The water tariff for domestic metered connections, in the sampled urban centres of Maharashtra, varies from Rs. 1.50 per kl. in Mumbai to Rs. 5.75 per kl. in Ballarpur. Industrial tariff for metered connections varies between Rs. 8.00 per kl. in Ichalkaranji to Rs. 28.00 per kl. in Ballarpur (Table 2.35). The tariff for metered industrial connections is eight times the domestic tariff in Nanded while it is four times in Ichalkaranji.

The tariff for unmetered domestic connections varies from Rs. 106 per annum in Yavatmal to Rs. 806 per annum in Amalner. The tariff for unmetered industrial connections varies from Rs. 213 per annum in Bhandara to Rs. 3,576 per annum in Ratnagiri.

The water connection charges varied between Rs. 21 in Chandrapur to Rs. 955 in Bhandara. The tariff revisions in the sampled urban centres in the state were mostly done between 1997 and 1999 (see Appendix – I, Table AT-7 for details).

h) Orissa

The water tariff for domestic metered connections, in the sampled urban centres of Orissa, varies from Rs. 1.50 per kl. in Sambalpur to Rs. 2.00 per kl. in Cuttak and Puri. Industrial tariff for metered connections varies between Rs. 3.00 per kl. in Sambalpur to Rs. 4.65 per kl. in Cuttak. The tariff for metered industrial connections is about twice the domestic tariff in sampled urban centres.

The tariff for unmetered domestic connections varies from Rs. 360 per annum for two taps in Sambalpur to Rs. 480 per annum for two taps in Cuttak, Puri and Balangir. While in Bhadrak the tariff for unmetered domestic connections is 10% of ARV.

The water connection charge is uniform for the sampled urban centres. Though within an urban centre water connection charge varies from Rs. 3000 for residential areas to Rs. 5000 for industrial and commercial areas. The tariff revisions in the sampled urban centres in the state were done in 1996 (see Appendix – I, Table AT-8 for details).

i) Punjab

Punjab has a uniform water tariff for most of its urban centres. Amongst the sampled urban centres almost all domestic metered connections are charged Rs. 1.2 per kl. per month (Table 2.35). The industrial and commercial rate is double the domestic rate i.e. Rs. 2.5 per kl. per month. The domestic unmetered rates are by the number of taps in some cities and a fixed amount in some others. The rate for the first tap is Rs. 20, and Rs. 7.5 for a second tap per month. Fixed flat rate for unmetered domestic connections varies between Rs. 240 and Rs. 360 per annum in most sampled urban centres with the exception of Ludhiana where this rate is Rs. 600 per annum.

In Punjab, water connection charges varied from Rs. 15 in Jalandhar to Rs. 800 in Sangrur. The tariff revisions in the sampled urban centres in the state were done between 1992 and 1999 (see Appendix – I, Table AT-9 for details).

j) Rajasthan

The urban centres of Rajasthan have a block tariff structure for domestic and non-domestic connections. The domestic metered rates vary from Rs. 1.56 per kl to Rs. 4 per kl in different blocks while the un-metered rates vary from Rs. 240 to Rs. 1440 per year for ferrule sizes of 15mm and 20 mm. For non-domestic connections the metered rates vary from Rs. 4.68 per kl. to Rs. 11.00 per kl in different blocks while the un-metered rates vary from Rs. 612 to Rs. 4440 for ferrule sizes of 15mm to 25 mm (see Appendix – I, Table AT-10 for details).

k) Tamil Nadu

In the sampled urban centres of Tamil Nadu the tariff for domestic metered connections varies from Rs. 1.00 per kl. in Ambur to Rs. 5.00 per kl. in Madurai

(Table 2.35). Industrial tariff for metered connections varies from Rs. 3.75 per kl. in Thiruvannamalai to Rs. 20.00 per kl. in Madurai. The tariff for metered industrial connections is five times the domestic rate in Madurai while it is three times in Thiruvannamalai.

The tariff for unmetered domestic connections varies from Rs. 240 per annum in Madurai to Rs. 816 per annum in Puddukottai. The industrial tariff for unmetered connections varies between Rs. 480 in Tirunelveli to Rs. 4,800 per annum in Chennai.

The water connection charges varied from Rs. 1,000 in Madurai to Rs. 25,000 in Salem. The water tariff was last revised between 1991 and 1999 in the sampled urban centres in the state (see Appendix – I, Table AT-11 for details).

l) Uttar Pradesh

The water tariff in Uttar Pradesh is amongst the lowest in the country. The per kl. rate for domestic metered connections varies from a low Rs. 0.18 in Ghazipur to Rs. 3.00 in Agra (Table 2.35). The variation between domestic and industrial tariff for metered connections varies from less than double in Saharanpur to about eight times in Agra.

Water connection charges vary from Rs. 120 to Rs.5000 depending on size of connection and other charges involved. Tariff revision in some cities has not been done for many decades while in others the revision has been more recent, that is in 1990s (see Appendix – I, Table AT-12 for details).

m) West Bengal

The urban centres of West Bengal have a ferrule based tariff structure for unmetered domestic and non-domestic connections. The tariff ranges from Rs. 120 per annum for a ½" domestic connection in Calcutta to Rs. 360 in Darjeeling. The annual tariff for non-domestic unmetered ferrule based connections in Calcutta varies between Rs. 1560 per annum for a 1/8" connection to Rs.28,800 for 1"connection. The variation between domestic and industrial tariff is as high as 60 times for a ½" connection (see Appendix – I, Table AT-13 for details).

2.15 REVENUE RECEIPTS AND REVENUE EXPENDITURE

Non-uniformity in the method of keeping municipal accounts across states and cities makes the analysis of revenue receipts and revenue expenditure a difficult task. Urban local governments keep accounts in different ways – some keep by departments while others keep by major revenue expenditure heads such as establishment, electricity, consumables and so on. This makes it difficult to segregate revenue expenditure for a particular department. These differences in the methods of keeping accounts have an impact on the analysis of revenue receipts and revenue expenditure presented here.

Another factor which has an impact on the analysis of revenue receipts and revenue expenditure is the fact that the financial data analysed here are not time series data, but pertain to just one year i.e., 1997-98 financial year, which could be an unusual year for some urban centres. However, such a large sample nullifies such differences in the aggregate.

2.15.1 Revenue Receipts

The main sources of revenue receipts for the water supply department are water tax, water charges, connection charges, bulk supply charges and other sources that vary from city to city. Water tax, which is a certain percentage of property tax, is the main source of revenue receipts for some urban centres while for some others water charges are the main source of revenue receipts. Some urban centres levy water tax as well as water charges. Water cess is also a source of revenue receipts for a few urban centres. Water tax is a fixed amount that is recovered from all property tax assessees, regardless of the quantity of water consumed. Water charge, on the other hand, is related to consumption of water. Water charges that are fixed are not directly related to water consumption, though they are fixed on the basis of the water that can be consumed given the duration of supply and the ferrule size of the connection.

Water charge is a more common source of revenue receipts than water tax in the sampled urban centres. A larger percentage (29%) of the sampled urban centres raise revenue through water charges than water tax (20%). However, about a third of the urban centres (31%) raise revenues from both water charge and water tax. In the remaining urban centres other sources of revenue receipts are more significant than water charge and water tax⁷.

a) Water Charge

Water charge contributes an average of 69 per cent to the total revenue receipts from this service in the sampled urban centres. The share of water charges to the total revenue receipts from the service reduces with city size indicating that the larger urban centres raise a larger proportion of revenue receipts from water charge than water tax. Water charge is generally consumption based and therefore, a significant share of revenue receipts from water charge is healthy for the water supplying agency. About 74 urban centres that do not raise any revenue receipts on this head (Table 2.36).

b) Water Tax

Water tax, on an average, contributes only about 15 per cent to the total revenue receipts from this service. The share of water tax, to the total revenue receipts, increases as the city size reduces (Table 2.37). This indicates that the smaller size of urban centres rely more on tax than on charge. It is important for these

⁷ The analysis of revenue receipts is somewhat hampered by the fact that for some urban centres only aggregate figures of revenue receipts are available and in some certain revenue receipt heads are clubbed together. Disaggregated figures (i.e. by individual revenue heads) are available for only 254 sampled urban centres.

Table - 2.36 : Percentage Revenue Receipts from Water Charges – 1997-98					
(no. of cities/towns)					
% Revenue receipts from water charges	Metropolitan cities	Class I cities	Class II towns	Total	%
0	1	48	25	74	25
1 to <20	2	25	16	43	14
20 to <40	3	10	13	26	9
40 to <60	1	12	9	22	7
60 to <80	3	11	4	18	6
80 and above	8	39	23	70	23
Break up not available	4	9	11	24	8
Data not available	0	10	14	24	8
No. of cities/towns	22	164	115	301	100
Average (%)	74	54	42	69	
<p><i>Note: The total number of urban centres in the above table are 254 but the urban centres which do not generate revenues from water charges (first row) have been excluded for calculating the average. Therefore, the calculations are based only on 179 urban centres.</i></p> <p><i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 13 for details</i></p>					

urban centres to switch to water charges to increase their revenue receipts from sale of water as water tax is not an elastic source of revenue receipts.

Table - 2.37: Percentage Revenue Receipts from Water Tax - 1997-98					
(no. of cities and towns)					
% Revenue receipts from water tax	Metropolitan cities	Class I cities	Class II towns	Total	%
0	8	61	32	101	34
1 to <20	3	9	7	19	6
20 to <40	3	7	6	16	5
40 to <60	2	18	14	34	12
60 to <80	2	9	8	19	6
80 and above	1	42	23	66	22
Break up not available	3	8	11	22	7
Data not available	0	10	14	24	8
No. of cities/towns	22	164	115	301	100
Average (%)	11	25	37	15	
<p><i>Note: The total number of urban centres in the above table is 254 but the urban centres which do not generate revenues from water tax (first row) have been excluded for calculating the average. Therefore, the calculations are based only on 152 urban centres.</i></p> <p><i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 13 for details</i></p>					

c) Connection Charges

The share of water connection charges in the total revenue receipts from water

supply averages only about 2 percent in the sampled urban centers (Table 2.38). While some consider connection charges to be a part of revenue receipts, others consider it to be a part of capital receipts. However, while revenue receipts from connections charges is included in the revenue receipts in this study, the overall results do not alter due to its inclusion, as its contribution to the total revenue receipts from this service is insignificant.

Table - 2.38: Percentage Revenue Receipts from Connection Charges – 1997-98					
<i>(no. of cities and towns)</i>					
% Revenue receipts from connection charges	Metropolitan cities	Class I cities	Class II towns	Total	%
0	10	51	35	96	32
1 to <5	9	72	42	123	41
5 to <10	0	11	1	12	4
10 to <20	0	1	7	8	3
20 to <50	0	3	1	4	1
50 and above	0	8	4	12	4
Break up not available	3	8	11	22	7
Data not available	0	10	14	24	8
No. of cities/towns	22	164	115	301	100
Average (%)	1	7	8	2	
<p><i>Note: The total number of urban centres in the above table is 254 but the urban centres which do not generate revenues from connection charges (first row) have been excluded for calculating the average. Therefore, the calculations are based only on 158 urban centres.</i></p> <p><i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 13 for details</i></p>					

Connection charges are the main source of revenue receipts for some urban centres. For instance, in the sampled urban centres of West Bengal, where water is supplied free of charge in most cities and towns, the main source of revenue receipts is from connection charges.

2.15.2 Revenue Expenditure

Data on revenue expenditure suffers from the same problems explained earlier, i.e. from different methods of keeping accounts. Different heads of revenue expenditure are at times clubbed together⁸ or are available for the local body as a whole but not for the water department separately. These have some impact on the revenue expenditure analysis, though broad trends are available with the existing data.

The main heads of revenue expenditure on water supply are establishment, electricity, consumables, repairs and replacements and certain other heads, which vary from one city to the other.

⁸ Disaggregated figures for expenditure on establishment is available for 267 urban centers, while figures for expenditure on electricity, as a separate head, is available for only 130 sampled urban centers.

a) Establishment

Expenditure on establishment, as a proportion to total revenue expenditure on water supply, is lower than expenditure on O&M. On an average, a little over one-fourth (28%) of the total revenue expenditure on water supply is spent on establishment in the sampled urban areas. While in a majority (37%) of the urban centres between 20 and 40 per cent of the total revenue expenditure on the service is spent on establishment, in about 5 per cent the establishment expenditure exceeds 80 per cent (Table 2.39). A larger share of revenue expenditure on establishment considerably reduces the funds available for operation and maintenance of water supply system.

<i>(no. of cities and towns)</i>					
% Revenue expenditure on establishment	Metropolitan cities	Class I cities	Class II towns	Total	%
<20	6	24	12	42	14
20 to <40	11	56	45	112	37
40 to <60	3	36	15	54	18
60 to <80	2	16	15	33	11
80 and above	0	6	9	15	5
Break up not available	0	12	4	16	5
Data not available	0	14	15	29	10
No. of cities/towns	22	164	115	301	100
Average (%)	26	31	33	28	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 14 for details

b) Operation and Maintenance (O&M)

Expenditure on electricity, consumables, repairs and replacements and other related expenses together constitute the operation and maintenance head. O&M expenditure would, to a large degree, determine the quality of service provided by the agency. A high O&M expenditure should result in better quality of service.

About half the total revenue expenditure on water supply service is spent on O&M in the sampled urban centers (Table 2.40). While a majority of urban centers spend between 60 to 80 per cent of the total revenue expenditure on the service on O&M, there are some cities (11%), which spend less than 20 per cent of the total revenue expenditure on this head. Low revenue expenditure on O&M would result in poor quality of service. The minimum necessary expenditure on the service must be incurred to ensure good quality of service to the people.

i) Electricity

The expenditure on electricity is often a significant proportion of the total revenue expenditure on water supply due to pumping requirements in this

Table - 2.40: Percentage Revenue Expenditure on Operation and Maintenance – 1997-98					
<i>(no. of cities and towns)</i>					
% Revenue expenditure on O&M (including electricity)	Metropolitan cities	Class I cities	Class II towns	Total	%
<20	0	7	12	19	6
20 to <40	5	17	16	38	13
40 to <60	4	43	16	63	21
60 to <80	9	53	43	105	35
80 and above	4	18	9	31	10
Break up not available	0	12	4	16	5
Data not available	0	14	15	29	10
No.of cities/towns	22	164	115	301	100
Average (%)	46	63	52	50	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 14 for details</i>					

service. On an average, the expenditure on electricity forms 36 per cent of the total revenue expenditure on the service in the sampled urban centers (Table 2.41).

Table – 2.41: Percentage Revenue Expenditure on Electricity – 1997-98					
<i>(no. of cities and towns)</i>					
% Revenue expenditure on electricity	Metropolitan cities	Class I cities	Class II towns	Total	%
<20	3	33	32	68	22
20 to <40	7	26	15	48	16
40 to <60	5	36	20	61	21
60 and above	5	12	5	22	7
Break up not available	2	43	28	73	24
Data not available	0	14	15	29	10
No.of cities/towns	22	164	115	301	100
Average (%)	33	45	32	36	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 14 for details</i>					

Only 199 urban centers could furnish disaggregated data on this head, the others have given data only in a clubbed manner along with other expenses. Not being able to segregate expenditure on electricity for water supply department from the rest of the departments is one of the reasons for local governments not being able to furnish data on expenditure on electricity. Urban centers that rely on gravity would spend less on electricity as compared to urban centers relying heavy on pumping. High expenditure on electricity considerably increases the cost of production of water. Water tariffs are often kept low for considerations other than cost. Making water

tariff more realistic by indexing it to electricity charges can help reduce the revenue deficit on water supply account.

ii) Consumables and Repairs & Replacements

Consumables, such as bleaching powder, chlorine, alum etc. that are used for treating water, are absolutely essential for making water potable. Therefore, expenditure on consumables will necessarily be incurred by all water supplying departments/ agencies. Repairs and replacements of machinery, pipelines etc. are also essential to keep the water supply running efficiently. Therefore, expenditure on these two heads must be reflected in the water supply accounts, though, often they are clubbed together. Expenditure requirement on these heads will vary from one city to the other, depending on the source of water and other local variations.

Expenditure on consumables and repairs & replacements do not exceed 10 per cent of the total revenue expenditure in little less than one fourth of the sampled urban centers while it lies between 10 to 30 per cent in about one-third of the urban centers (Table 2.42).

Table - 2.42: Percentage Revenue Expenditure on Consumables and Repairs & Replacements – 1997-98					
<i>(no. of cities and towns)</i>					
% Revenue Expenditure on consumables and repairs & replacements	Metropolitan cities	Class I cities	Class II towns	Total	%
<10	11	31	23	65	22
10 to 20	7	36	9	52	17
20 to 30	1	23	17	41	14
30 to 40	1	8	9	18	6
40 to 50	0	6	8	14	5
> 50	0	3	6	9	3
Break up not available	2	43	28	73	24
Data not available	0	14	15	29	9
No.of cities/towns	22	164	115	301	100
Average (%)	9	13	15	10	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 14 for details</i>					

2.15.3 Cost Recovery

Water supply is a service from which cost recovery is possible. However, this would depend on the tariff structure as well as the efficiency of collection of dues in any given city/ town. It is generally true that most water supply accounts show deficit and the service has to be subsidized by higher levels of government to carry on functioning. Yet there are urban centres where water supply accounts show a positive balance with revenue receipts exceeding revenue expenditure.

a) Extent of Cost Recovery

A majority of urban centres (79%) show revenue* deficit on water supply account, that is, the revenue receipts are not sufficient to meet the revenue expenditure on the service. The general pattern of cost recovery indicates that, on an average, only 65 per cent of the cost incurred on providing water supply is recovered. However, the recovery rate is much better in metropolitan cities (70%) than in other Class I (55%) and Class II (44%) urban centers (Table 2.43). The recovery in metropolitan cities could be better due to better efficiency coupled with the fact that some metropolitan cities have city level autonomous boards, which are run more professionally than the departments of local government. These boards also have a much better structured water tariff and have a larger percentage of metered connections. These factors lend themselves to better recovery rate in water supply.

Cost recovery is less than 50 per cent in a little less than half the urban centres (45%). In fact, about a fifth of the sampled urban centres are not able to recover even 25 per cent of the revenue expenditure on the service.

Table 2.43: Revenue Receipts as a Percentage of Revenue Expenditure in Water Supply -1997-98

<i>(no. of cities and towns)</i>					
Revenue receipts as a % of revenue expenditure	Metropolitan cities	Class I cities	Class II towns	Total	%
<25	3	37	27	67	22.4
25 to <50	7	40	21	68	22.6
50 to <75	3	22	15	40	14
75 to <100	0	19	15	34	11
100 and above	9	29	17	55	18
Data not available	0	17	20	37	12
No. of cities/towns	22	164	115	301	100
Average (%)	70	55	44	65	

Source: NIUA Survey, 1999. See Appendix - I, Table A – 15 for details

This situation has come about not only because of inefficiency in managing the service but also because charging for water has not been given due attention. While the water tariff itself is very low in many urban centres, charging for water through flat rates or through tax is not a very efficient way of recovering cost. Consumption based tariff should form the basis of charging while flat rates for charging should be discouraged by making flat rates unattractive.

b) Revenue Receipts Surplus

Despite the general deficit scenario, nearly 21 per cent of the urban centres (i.e., 56 cities/ towns) are able to generate revenue surplus on water supply account

* Revenue receipts include connection charges

(Table A-2.2.). However, this needs to be qualified. Surplus revenue receipts over revenue expenditure could be due to a number of reasons. Positive reasons include improved water tariff, efficient management, efficient revenue collection mechanism, and professional management and private sector participation amongst others. Negative reasons include non-payment of outstanding bills and loans (which do not get reflected in the budget) or low level of revenue expenditure on O&M. Costs are also sometimes understated because of book adjustments between service providers and electricity boards – these do not get reflected in the revenue receipts and expenditure statement for the service. Adjustments made to grants (for outstanding expenditure or loans) also do not get reflected in the revenue receipts and expenditure statement, which could lead to a situation of revenue surplus. However, if all payables and receivables are taken into account

City/ town	Percentage revenue receipts to revenue expenditure
Metropolitan cities	
Visakhapatnam	274
Chennai	137
Hyderabad	106
Bangalore	103
Class I cities	
Warangal	144
Jamnagar	129
Mangalore	202
Kolhapur	107
Cuddalore	150
Dindigul	122
Erode	102
Kanchipuram	154
Nagercoil	158
Rajapalayam	122
Salem	109
Tiruppur	259
Class II towns	
Amalner MCI	166
Ambur M	109
Dharmapuri M	133
Pudukkottai M	104
Tindivanam MC	108
Udhagamandalam M	109
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A – 15 for details</i>	

then the revenue surplus situation may change. It must be mentioned here that the above analysis is for the financial year 1997-98 which could be an unusual year for some water supply departments. A time-series data analysis would give a clearer picture of the long-term trends in these urban centres.

However, a refinement can be made in order to understand whether these urban centers are generating surplus after incurring some minimum necessary O&M expenditure. If an O&M expenditure of Re. 1.00 per kilolitre is taken as a cutoff⁹ (assuming that this is the minimum amount that should be spent to supply treated water) then only 22 of the 56 urban centres show revenue surplus (Table 2.44).

Of these 22 urban centres, 13 are in Tamil Nadu. The surplus revenue receipts position in water supply in Tamil Nadu could be due to efficient management or non-payment of dues and deferred payments in 1997-98.

c) Revenue Receipts and Revenue Expenditure Per Kilolitre

The average revenue receipts generated per kilolitre (kl.) of water supplied is Rs. 1.73 in the sampled urban centers as compared to the average revenue expenditure of Rs. 2.66 per kl., thus leaving a deficit of Rs. 0.93 per kl. Considering the fact that over 21,000 million litres of water is supplied daily in the sampled urban centers, this deficit will add up to a huge sum. The metropolitan cities spend more and generate more revenue receipts per kl., yet they are in deficit of 0.93 per kl. (Table 2.45 and Table 2.46).

Revenue receipts (Rs.)/kl	(no. of cities and towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
< 0.25	1	25	15	41	13
0.25 - 0.50	2	26	22	50	16.6
0.50 - 0.75	3	34	12	49	16.4
0.75 - 1.00	7	15	12	34	11
1.00 - 2.00	2	32	24	58	19
2.00 - 3.00	2	14	7	23	8
> 3.00	5	8	10	23	8
Data not available	0	10	13	23	8
No. of cities/towns	22	164	115	301	100
Average (Rs./ kl.)	2.16	1.02	1.21	1.73	

Source: NIUA Survey, 1999. See Appendix - I, Table A - 15 for details

As compared to the expenditure per kl., the tariff charged is generally low. For instance the average volumetric (per kl.) receipt in metropolitan cities is Rs. 2.16

⁹ If the cutoff is lowered to 0.50 paise per kilolitre then 41 urban centres show surplus revenue over expenditure (see Table-A-2.2).

per kl. While the expenditure is Rs. 3.09 per kl. Bridging the gap between tariff and expenditure is essential if water-supplying agencies have to break-even and reduce dependence on higher levels of government for providing this basic service.

Table - 2.46: Revenue Expenditure Per Kilolitre of Water Supplied - 1997-98					
<i>(no. of cities and towns)</i>					
Revenue expenditure (Rs./kl.)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 0.50	0	12	5	17	6
0.50 - 1.00	3	30	19	52	17
1.00 - 2.00	8	49	32	89	30
2.00 - 3.00	6	35	16	57	19
3.00 - 4.00	1	12	12	25	8
> 4.00	4	12	16	32	11
Data not available	0	14	15	29	9
No. of cities/towns	22	164	115	301	100
Average (Rs./ kl.)	3.09	1.88	2.44	2.66	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 15 for details</i>					

d) Per Capita Revenue Receipts and Revenue Expenditure

As stated earlier, the gap between revenue receipts and revenue expenditure is significant in Indian cities and towns. The average per capita revenue receipts generated from water supply is a low Rs. 100.55 per annum or Rs. 8.38 per month (Table 2.47), as compared to a per capita revenue expenditure of Rs. 153.89 per annum or Rs. 12.82 per month (Table 2.48).

Table - 2.47 : Per capita Revenue Receipts from Water Supply - 1997-98					
<i>(no. of cities and towns)</i>					
Per capita revenue receipts/annum (Rs.)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 10	1	29	23	53	17
10 - 20	2	29	18	49	16
20 - 30	2	25	18	45	15
30 - 40	1	13	11	25	8
40 - 50	3	17	12	32	11
> 50	13	41	20	74	25
Data not available	0	10	13	23	8
No. of cities/towns	22	164	115	301	100
Average (Rs.)	149.43	48.65	39.41	100.55	
<i>Source: NIUA Survey, 1999. See Appendix - I, Table A - 16 for details</i>					

Table - 2.48: Per capita Revenue Expenditure on Water Supply					
(no. of cities and towns)					
Per capita revenue expenditure/annum (Rs.)	Metropolitan cities	Class I cities	Class II towns	Total	%
< 25	1	25	20	46	15
25 - 50	2	38	28	68	23
50 - 75	2	30	15	47	16
75 - 100	5	22	14	41	14
100 - 200	7	26	16	49	16
> 200	5	9	7	21	7
Data not available	0	14	15	29	9
No. of cities/ towns	22	164	115	301	100
Average (Rs.)	214.12	89.40	77.86	153.89	

Source: NIUA Survey, 1999. See Appendix - I, Table A-16 for details

This creates a per capita deficit of Rs. 53.34 per annum or Rs. 4.44 per month (Table 2.49). When the total deficit in these urban centers is put together it adds up to a staggering Rs. 695.62 crores in 1997-98. While improving efficiency will cut down the deficit to some extent, government alone cannot finance such large annual deficits and the burden of bridging this gap must be also passed on to the consumers.

In the metropolitan cities the per capita revenue receipts is Rs. 149.43 per annum or Rs. 12.45 per month, while the per capita revenue expenditure is Rs. 214.12 per annum or Rs. 17.84 per month. The total deficit in just the 22 metropolitan cities is a massive Rs. 443.14 crores in 1997-98.

Table - 2.49: Summary of Revenue Receipts and Revenue Expenditure -1997-98				
(Average)				
Revenue	Size class of urban centres			
	Metropolitan cities	Class I cities	Class II towns	Total sample
% revenue receipts to revenue expenditure	70	55	44	65
Revenue receipts per kl. (Rs.)	2.16	1.02	1.21	1.73
Revenue expenditure per kl. (Rs.)	3.09	1.88	2.44	2.66
Deficit per kl. (Rs.)	-0.93	-0.86	-1.23	-0.93
Revenue receipts per capita (Rs. /annum)	149.43	48.65	39.41	100.55
Revenue expenditure per capita (Rs./ annum)	214.12	89.40	77.86	153.89
Per capita deficit (Rs./annum)	-64.69	-40.75	-38.45	-53.34
Total deficit (Rs. in crores)	443.14	215.36	37.12	695.62

Source: NIUA Survey, 1999. See Appendix - I, Table A - 15 &16 for details

2.16 CAPITAL INVESTMENTS

Improving the present supply of water as well as adding new infrastructure for augmenting supplies requires capital expenditure. Cities incur capital expenditure on source development, adding new infrastructure and upgrading existing systems.

It is important to point out here that most of the water augmentation schemes have a 25 to 30 year life span and, therefore, cities may not incur capital expenditure every year but would be doing so every few years. However, schemes for improving the existing infrastructure may be undertaken more frequently. The present survey looks at the capital expenditure incurred by the sampled cities in the last five years only, i.e. since 1994. The survey indicates that capital expenditure has been incurred on source development, laying new pipelines, adding new treatment plants, pumping stations, and reservoirs, and on digging new tubewells. In the last five years most cities have undertaken capital works on a combination of the above mentioned components and only very few cities have reported expenditure on only one of the above components.

The present survey indicates that only about two-fifths of the sampled cities have undertaken capital works since 1994. The main components of capital expenditure on laying pipelines has been the most common in the sampled cities since 1994 which has been reported by almost one-fifth of the cities. The other major items of capital expenditure have been pumping stations (in 13% of cities), reservoirs (in 11% of cities), tubewells (in 10% of cities), and treatment plants (in 9% of cities). Source development has been reported in only 4 per cent of the sampled cities (Table A-17 in Appendix - I).

Nearly one-third of the sampled cities have plans to undertake capital works in the future. The components of capital works are similar to the above. Again, most cities have indicated multiple components of capital works (Table A-18 in Appendix - I).

The total cost of capital works varies with the component and other technical details of the component. Therefore, the per capita cost of capital works undertaken also has a very wide range. Also many capital works components are not amenable to a per capita cost calculation.

For instance, for capital works on laying down pipelines it is not possible to give a per capita cost figure. Many cities have not given the per capita cost of capital works undertaken. Hence no analysis of capital expenditure has been possible.

2.17 ADDITIONAL INVESTMENT REQUIREMENTS

The coverage of population by public water supply system is 93 per cent in the sampled urban centres. The policy of the government aims at 100 per cent coverage of population by water supply and this requires additional capital investments. The present study gives the additional capital investment requirements for covering 100 per cent of the population by the public water supply system for the years 2002, 2007, 2012, 2017, and 2022 by the different size class of cities.

2.17.1 Projection Methodology

For projecting the additional capital investment requirements the following were required:

- the total urban population projected till the year 2022 at five year intervals starting 2002 A.D. – for which the Registrar General of India's population projection has been used (Table 2.50);
- the division of the projected additional urban population by size class of cities for different years (Table 2.51);
- the present coverage of population by the service by size class of urban centres (Table 2.52);

Year	Size class of cities and towns							Total
	Metro	I**	II	III	IV	V	VI	
% Urban population (1991)	23.00	33.67	13.33	16.35	9.77	3.43	0.45	100.00
1999	64.10	93.84	37.15	45.57	27.23	9.56	1.25	278.70
2002	69.34	101.51	40.19	49.29	29.45	10.34	1.36	301.48
2007	79.11	115.82	45.85	56.24	33.61	11.80	1.55	343.97
2012	89.58	131.14	51.92	63.68	38.05	13.36	1.75	389.48
2017	101.11	148.02	58.60	71.88	42.95	15.08	1.98	439.61
2022	114.16	167.13	66.17	81.16	48.50	17.03	2.23	496.37

*Note: The proportion of population in each size class is for the individual cities and towns and not for urban agglomerations and the proportions are assumed to be constant for the projected period i.e., upto 2022.
Source for proportion of population in each size class - Census of India 1991, Series 1 - India, General Population Tables Part II-A (ii) Towns and Urban Agglomerations 1991 with their Population 1901 - 1991, Statement-3, p.32
Source for size class-wise population distribution - Projections based on Census of India's 'Population Projections for India and States 1996-2016', Registrar General, India, New Delhi, 1996.
* Population as on 1st July of the respective years ** Class I cities exclude metropolitan cities*

Year	Size class of cities and towns							Total
	Metro	I	II	III	IV	V	VI	
Backlog 1999	1.92	9.38	4.09	5.01	3.00	1.05	0.14	24.59
1999-2002	5.24	7.67	3.04	3.73	2.22	0.78	0.10	22.79
2002-2007	9.77	14.31	5.66	6.95	4.15	1.46	0.19	42.49
2007-2012	10.47	15.32	6.07	7.44	4.45	1.56	0.20	45.51
2012-2017	11.53	16.88	6.68	8.20	4.90	1.72	0.23	50.13
2017-2022	13.05	19.11	7.57	9.28	5.55	1.95	0.26	56.76
Total	51.98	82.67	33.11	40.61	24.27	8.52	1.12	242.27

- d) division of the projected population of population by dependence on surface and ground water sources; and
- e) water requirement (in mld) for the projected additional population – for which the norm recommended by CPHEEO has been used (Table 2.53 & 2.54).

Table - 2.52: Coverage of Population by Water Supply - 1999		
<i>(used for calculating the backlog)</i>		
Size class of cities/ towns	% covered by water supply	% not covered by water supply
Metro	97	3
I	90	10
II	89	11
III	89	11
IV	89	11
V	89	11
VI	89	11
<i>Source: NIUA Survey, 1999</i>		

Table - 2.53: Water Supply Norms Recommended By CPHEEO		
Size class of cities and towns	Population	Norm in lpcd
Metropolitan	1,000,000 and above	150
Class I	1,00,000 to 9,99,999	135
Class II	50,000 to 99,999	70
Class III	20,000 to 49,999	70
Class IV	10,000 to 19,999	70
Class V	5,000 to 9,999	70
Class VI	Less than 5,000	70
<i>Note: The above norms include 15% leakage</i>		
<i>Source: Manual on Water Supply and Treatment, Third Edition, Ministry of Urban Development, Central Public Health and Environmental Engineering Organisation (CPHEEO), May 1999, p.11</i>		

Table - 2.54: Additional Water Requirements Using CPHEEO's Norms								
<i>(in mld)</i>								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
1999*	288.45	1266.79	286.06	350.86	209.66	73.61	9.66	2485.08
2002	786.05	1035.64	212.60	260.76	155.82	54.70	7.18	2512.74
2007	1465.97	1931.45	396.49	486.32	290.60	102.02	13.38	4686.25
2012	1569.99	2068.50	424.63	520.83	311.22	109.26	14.33	5018.76
2017	1729.52	2278.68	467.77	573.75	342.85	120.36	15.79	5528.73
2022	1958.22	2580.00	529.63	649.62	388.18	136.28	17.88	6259.81
<i>*Backlog</i>								

The additional population to be covered in different years by size class has been arrived at by subtracting the latter year's population by the previous one. The backlog population to be covered as in 1999 has been calculated by the population not covered as in 1999, which has been taken from the present survey.

a) Assumptions made for calculating investment requirements:

- i) The Census of India's publication (1996) titled 'Population projection for India and the states 1996-2016' projects the population till the year 2016. Thereafter, for projecting the population till the year 2022, the annual growth rate of urban population during 2015-2016 (2.46% per annum) has been used as a constant (see Table AX -2.3 at the end of this chapter).
- ii) The percentage of population living in different size class of towns has been kept constant at 1991 level for projections till the year 2022. Such an assumption was necessitated due to the absence of any projection of population by size class of towns available from the Registrar General's office.
- iii) To calculate the backlog of population not covered by water supply in 1999, the results of the present survey on coverage have been used for metropolitan cities, Class I cities and Class II towns. However, since the study does not cover the other size classes of towns (barring the capital towns) the coverage figures for Class II towns have been used as proxy for classes III to VI.
- iv) The proportion of population dependant on surface and ground water, as given by CPHEEO (i.e., 65% on surface water and 35% on ground water), has been assumed to be constant over the various size classes of towns till the year 2022.
- v) The norms for water supply used for different size classes of towns have been assumed to be constant till the year 2022.
- vi) The projection of investment requirements using Task Forces norms has assumed that the surface water source is river and the ground water source is not in hard rock.

b) Calculation of Additional Investment Requirements by Using Per Capita Costs

The calculation of additional investment requirements has been done by using the per capita costs given by the Planning Commission (Task Forces on Housing and Urban Development, 1983), and that given by HUDCO, (2000) (Tables 2.55 and 2.56).

The per capita cost of water supply schemes for metropolitan cities as obtained from the respective cities are presented in Table 2.57. The per capita cost estimates available are by the source of water i.e., surface and ground. Therefore, the additional population projected till the year 2022 has been divided by their dependence on surface and ground water sources. The

Table - 2.55: Task Forces Estimates of Per Capita Cost For Water Supply Schemes			
	(Rs. at 1998-99 prices)		
	Population		
	>1 Lakh	50,000-1 Lakh	< 50,000
Surface sources			
Dam	1465.1	1352.4	1210.3
River	1489.6	1283.8	1274.0
Ground sources			
Hard rock	1215.2	1117.2	1082.9
Others	1195.6	1215.2	1190.7
<i>Source: Task Forces on Housing and Urban Development, Vol. II – Financing of Urban Development, Planning Commission, Government of India, New Delhi, December 1983, p. 31 (inflated to 1998-99 prices)</i>			

Table - 2.56: HUDCO Estimates of Per Capita Cost For Water Supply Schemes	
	Rs. at 1998-99 prices
Surface source	1944
Ground source	567
<i>Source: Letter to NIUA dated 20th April, 2000 (deflated to 1998-99 prices)</i>	

CPHEEO average of 65% population's dependence on surface water and 35% population's dependence on ground water has been used to arrive at the number of people to be provided for by surface and ground water. The population dependent on surface water has been multiplied by the per capita cost of providing surface water and the population dependent on ground water has been multiplied by the per capita cost of providing ground water. The investment requirements thus worked out are given in Tables 2.58 and 2.59.

2.17.2 Projected Additional Capital Investment Requirements

In 1999, almost 25 million people were not covered by water supply in the urban areas of the country and between 1999 and 2022 another 217.68 million would be added to the urban population who will need to be covered by water supply (Table 2.50). Therefore, provision for water supply for 242.27 million people has to be made in order to cover the present uncovered population and future additions to the urban population till the year 2022. This requires large financial investments to be made in the water sector.

Estimation of per capita cost* of providing water supply have been made by the Task Forces on Housing and Urban Development set up by the Planning Commission (Table 2.55), HUDCO (Table 2.56), and the Working Group on Urban Water Supply and Sanitation sector for Ninth Five Year Plan (Table 2.60). HUDCO has also

* Information on per capita cost of capital works has been obtained from the metropolitan cities too through the present survey, Table 2.) .however, it has not been possible to use these figures due to the large variations in the responses.

Table - 2.57: NIUA Survey Estimates of Per Capita Cost of Water Supply Schemes In Metropolitan Cities			
(in Rs.)			
Sl. No.	City	Past schemes (1994 - 1999)	Future schemes
1	Ahmedabad	312	343
2	Bangalore	533	1400
3	Bhopal	382	521
4	Calcutta	318	399
5	Chennai	400	n.a
6	Coimbatore	564	920
7	Indore	816	816
8	Kanpur - Barrage unit	160	374 - 1233
	Ganga Pollution Control Unit	1000	600
9	Lucknow - Reorganisation scheme		
	a) Tubewell schemes	600 - 1000	720 - 1200
	b) Hilly region	1500 for gravity source with minor treatment works	1800
		4000-5500 for pumping sources with full treatment works	4800 - 6600
10	Ludhiana	650	650
11	Madurai	398	n.a
12	Surat	1154	429
13	Vadodara	380	769
14	Vishakhapatnam	414	577
15	Varanasi	n.a.	1235

Note: The per capita cost of water supply schemes includes water treatment. The information presented in this table has been furnished by the respective cities.

Source: NIUA survey, 1999.

estimated the per mld cost of urban water supply (Table 2.62). The present financial requirement estimations are based on the cost estimates of these three sources. All cost figures are at 1998-99 prices.

The additional capital investment required for providing water supply to the uncovered population in 1999 and the additional population from 1999 to 2022 A.D is Rs. 32,117.87 crores (Table 2.58) or Rs. 1338.24 crores per annum using Task Forces per capita costs.

Using HUDCO's per capita cost estimates, the additional capital investment requirement rises to Rs. 35,420.25 crores (Table 2.59) or Rs. 1540 crores per annum for the same period. As against these, if the Ninth Plan's per capita costs are used

Table - 2.58: Additional Capital Investment Requirement Using Task Forces Per Capita Costs								
(Rs. in crores at 1998-99 prices)								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
1999*	266.66	1301.23	514.81	623.96	372.85	130.90	17.17	3227.58
1999-2002	726.68	1063.79	382.61	463.73	277.10	97.28	12.76	3023.95
2002-2007	1355.24	1983.96	713.57	864.85	516.79	181.43	23.80	5639.65
2007-2012	1451.40	2124.73	764.20	926.21	553.46	194.31	25.49	6039.81
2012-2017	1598.89	2340.63	841.85	1020.33	609.70	214.05	28.08	6653.53
2017-2022	1810.31	2650.14	953.17	1155.25	690.32	242.36	31.80	7533.35
Total	7209.18	11464.48	4170.22	5054.33	3020.23	1060.33	139.11	32117.87
*Backlog	Rs. 1 crore = Rs. 10,000,000 or Rs. 10 million							

Table - 2.59: Additional Capital Investment Requirement Using HUDCO's Per Capita Costs								
(Rs. in crores at 1998-99 prices)								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
1999*	281.15	1371.94	597.47	732.83	437.90	153.74	20.17	3595.19
1999-2002	766.17	1121.59	444.04	544.64	325.45	114.26	14.99	3331.14
2002-2007	1428.88	2091.76	828.13	1015.75	606.97	213.09	27.96	6212.54
2007-2012	1530.27	2240.18	886.89	1087.82	650.03	228.21	29.94	6653.35
2012-2017	1685.77	2467.81	977.01	1198.36	716.08	251.40	32.98	7329.42
2017-2022	1908.68	2794.14	1106.20	1356.82	810.77	284.64	37.34	8298.61
Total	7600.91	12087.43	4839.75	5936.22	3547.21	1245.34	163.38	35420.25
*Backlog	Rs. 1 crore = Rs. 10,000,000 or Rs. 10 million							

Table - 2.60: Ninth Plan Estimates of Per Capita Cost for Water Supply			
(in Rs.)*			
	Population		
	>1 Lakh	50,000-1 Lakh	< 50,000
Surface source	1800	1500	1500
Ground source	1800	1500	1500
Rehabilitation/ Augmentation	750	750	750
<p>Source: Report of the Working Group on Urban Water Supply and Sanitation Sector for Ninth Five Year Plan (1997-2002), Department of Urban Development, Ministry of Urban Affairs and Employment, Government of India, New Delhi, July 1996, p. 86-87</p> <p>* The source does not give the year of prices</p>			

then investment requirements further rise to Rs. 40,379.52 for the same period or Rs. 1682.48 crores per annum, including augmentation and rehabilitation (for those already covered upto 1999) (Table 2.61).

Table - 2.61: Additional Capital Investment Requirement Using Ninth Plan's Per Capita Costs								
<i>(Rs. in crores at 1998-99 prices)</i>								
Year	Size class of cities and towns							Total
	Metro	I	II	III	IV	V	VI	
1999*	346.14	1689.06	612.98	751.85	449.27	157.73	20.69	4027.71
1999-2002	943.26	1380.85	455.56	558.77	333.9	117.23	15.38	3804.95
2002-2007	1759.17	2575.27	849.63	1042.12	622.72	218.62	28.68	7096.21
2007-2012	1883.99	2758.00	909.91	1116.06	666.91	234.13	30.72	7599.71
2012-2017	2075.43	3038.25	1002.37	1229.47	734.67	257.92	33.84	8371.94
2017-2022	2349.87	3440.00	1134.92	1392.04	831.82	292.03	38.31	9478.99
Total	9357.85	14881.42	4965.37	6090.31	3639.29	1277.66	167.62	40379.52
1999 **	4663.26	6333.97	2479.77	3041.57	1817.50	638.08	83.71	19057.87
Grand Total ***	14021.11	21215.39	7445.14	9131.88	5456.79	1915.74	251.34	59437.39
* Backlog ** Augmentation/ Rehabilitation for those covered till 1999								
*** Grand Total is the sum of Total row and Augmentation/Rehabilitation for those covered till 1999 row								

Using the per mld cost of providing water, (using HUDCO's estimates) (Table 2.62) the requirements vary between Rs. 15825 crores (low estimate) to Rs. 40502 crores (high estimate) during the period 1999-2022 for covering the entire population by water supply (Table 2.63 and 2.64). The per annum investment requirements vary between Rs. 688 crores (low) to Rs. 1761 crores (high) during the period 1999-2022 if the goal of covering 100 per cent of the population with water supply is to be achieved.

Table - 2.62: HUDCO's Estimates of Per mld Cost for Water Supply		
<i>(at 1998-99 prices)</i>		
	Low Estimate Rs./ mld (in crores)	High Estimate Rs./ mld (in crores)
Surface source	0.81	2.03
Ground source	0.20	0.61
<i>Source: Letter to NIUA dated 20th April, 2000 (deflated to 1998-99 prices)</i>		

These estimates are based, as stated earlier, on the population projections by the Census of India, the assumptions made regarding size class distribution of population, the division of population by dependence on surface and ground water sources, and the per capita supply norms of the CPHEEO. The estimates do not include the O&M costs of the existing or future systems (except the estimates made using Ninth Plan per capita costs).

A few estimates are available on the additional investment requirements for the urban areas of the country, though they are not strictly comparable with one another as each estimate is based on different sets of assumptions regarding physical specifications, service standards and the population to be covered. However, a

Table - 2.63: Additional Capital Investment Requirement Using HUDCO's Per mld Costs - Low Estimate								
<i>(Rs. in crores at 1998-99 prices)</i>								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
1999*	172.31	756.75	170.88	209.60	125.25	43.97	5.77	1484.53
1999-2002	469.57	618.66	127.00	155.77	93.08	32.68	4.29	1501.05
2002-2007	875.74	1153.80	236.85	290.52	173.60	60.95	8.00	2799.45
2007-2012	937.87	1235.67	253.66	311.13	185.92	65.27	8.56	2998.08
2012-2017	1033.17	1361.23	279.44	342.74	204.81	71.90	9.43	3302.73
2017-2022	1169.79	1541.23	316.39	388.07	231.89	81.41	10.68	3739.46
Total	4658.45	6667.34	1384.22	1697.83	1014.54	356.18	46.73	15825.29
* Backlog								

Table - 2.64: Additional Capital Investment Requirement Using HUDCO's Per mld Costs - High estimate								
<i>(Rs. in crores at 1998-99 prices)</i>								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
1999*	441.00	1936.77	437.34	536.43	320.54	112.53	14.76	3799.38
1999-2002	1201.77	1583.36	325.04	398.67	238.23	83.64	10.97	3841.67
2002-2007	2241.29	2952.95	606.19	743.52	444.30	155.98	20.46	7164.69
2007-2012	2400.32	3162.47	649.20	796.28	475.82	167.05	21.92	7673.06
2012-2017	2644.22	3483.82	715.17	877.19	524.17	184.02	24.14	8452.74
2017-2022	2993.88	3944.50	809.74	993.19	593.48	208.36	27.34	9570.47
Total	11922.49	17063.87	3542.67	4345.28	2596.54	911.58	119.59	40502.02
* Backlog								

comparison of the present study's estimates with some of the earlier estimations is given below only for a broad comparison.

The India Infrastructure Report* (NCAER, 1996), gives a summary of some of the estimated investment requirements made by various institutions/ committees for urban water supply sector in the country. The additional investment requirement (for 1996-2001 period) estimated by the Planning Commission varies between Rs. 1722 crore to Rs. 2584 crore per annum, while that estimated by ORG varies between Rs. 1131 crore to Rs. 2975 crore per annum.

As against these, the present study estimates that the additional annual investments required for covering the backlog population and additional population till the year

* The India Infrastructure Report: Policy Imperatives for Growth and Welfare, Vol. 3, National Council of Applied Economic Research, New Delhi, 1996, p.9

2022 with water supply will range between Rs. 1396 crore (Task Forces costs) to Rs. 1540 crore (HUDCO costs) at 1998-99 prices for the period 1999-2022. Adding the cost of augmentation and rehabilitation (as given by the Ninth Plan Working Group) the investment requirements go up to Rs. 59437 crores for the same period. In annual terms, the additional investment requirement is estimated at Rs. 2584 crore till the year 2022.

As per The India Infrastructure Report, the funds required for providing infrastructure (water supply, sanitation and roads) to the urban population for the period 1996-2005 is about Rs. 28,000 crores, the annual requirement being Rs. 2800 crores for this period. As against this the funds available are less than one-fifth of the requirement. The remaining funds will necessarily have to be mobilised from other sources, including the private sector, if the urban population is to be provided with basic infrastructure.

ANNEX TABLES

Table - AX - 2.1: Urban Centres with Water Supply Below Norm and Additional Quantity Required to Reach Norms – 1999										
Sl. No.	City/Town	Sewered (S)/ Unsewered (US)	Estimated population 1999 ('000)	Water supply (mld)- 1999	Per capita supply (lpcd) - 1999		CPH-EEO norm (lpcd)	Demand as per norm (mld)- 1999	Additional water required - 1999	
					total pop.	served pop.			mld	lpcd
Metropolitan Cities										
1	Ahmedabad M.Corp.	S	3,500	486.00	139	139	150	525.00	39.00	11.14
2	Bangalore M.Corp.	S	5,000	705.50	141	141	150	750.00	44.50	8.90
3	Chennai M.Corp.	S	4,363	461.00	106	106	150	654.45	193.45	44.34
4	Coimbatore M.Corp	S	971	105.00	108	108	150	145.65	40.65	41.86
5	Indore M.Corp.	S	1,600	238.00	149	149	150	240.00	2.00	1.25
6	Kanpur M.Corp.	S	2,500	310.10	124	248	150	375.00	64.90	25.96
7	Kochi M.Corp.	S	680	84.00	124	124	150	102.00	18.00	26.47
8	Ludhiana M.Corp.	S	2,000	234.00	117	195	150	300.00	66.00	33.00
9	Madurai M.Corp.	S	1,020	90.00	88	88	150	153.00	63.00	61.76
10	Surat M.Corp.	S	2,300	320.00	139	139	150	345.00	25.00	10.87
11	Visakhapatnam M.Corp.	S	1,280	168.00	131	131	150	192.00	24.00	18.75
Class I Cities										
1	Anantapur MCI	US	250	14.06	56	56	70	17.50	3.44	13.76
2	Eluru M	S	247	23.71	96	96	135	33.35	9.63	39.00
3	Guntur MCI	S	557	74.90	135	135	135	75.17	0.27	0.49
4	Kakinada M	US	325	21.33	66	88	70	22.75	1.42	4.37
5	Kurnool MCI	US	282	6.50	23	23	70	19.71	13.21	46.91
6	Nandyal MCI	US	150	10.00	67	67	70	10.50	0.50	3.33
7	Nizamabad M	US	285	15.00	53	53	70	19.95	4.95	17.37
8	Tenali M	US	170	0.68	4	20	70	11.90	11.22	65.98
9	Munger M	US	210	10.00	48	80	70	14.70	4.70	22.38
10	Anand M	S	175	11.00	63	63	135	23.63	12.63	72.14
11	Bhavnagar M.Corp.	S	550	70.00	127	127	135	74.25	4.25	7.73
12	Nadiad M	S	300	21.00	70	70	135	40.50	19.50	65.00
13	Navsari M	S	139	16.30	117	117	135	18.77	2.47	17.73
14	Rajkot M.Corp.	S	1,000	106.60	107	107	135	135.00	28.40	28.40
15	Surendranagar M	US	150	5.60	37	37	70	10.50	4.90	32.67
16	Ambala MCI	S	141	16.20	115	120	135	19.04	2.84	20.11
17	Gurgaon MCI	S	175	18.50	106	124	135	23.63	5.13	29.29

Sl. No.	City/Town	Sewered (S)/ Unsewered (US)	Estimated population 1999 ('000)	Water supply (mld)- 1999	Per capita supply (lpcd) - 1999		CPH-EEO norm (lpcd)	Demand as per norm (mld)- 1999	Additional water required - 1999	
					total pop.	served pop.			mld	lpcd
18	Hisar MCI	S	250	24.76	99	141	135	33.75	8.99	35.96
19	Rohtak MCI	S	243	32.00	132	147	135	32.81	0.81	3.31
20	Jammu M.Corp.	US	1,051	58.29	55	66	70	73.56	15.27	14.53
21	Belgaum M.Corp.	S	470	36.00	77	77	135	63.45	27.45	58.40
22	Bellary CMC	S	297	30.65	103	103	135	40.10	9.45	31.80
23	Davangere MCI	S	455	31.50	69	70	135	61.43	29.93	65.77
24	Gulbarga M.Corp.	S	450	31.50	70	70	135	60.75	29.25	65.00
25	Hubli-Dharwar M.Corp.	S	850	87.75	103	103	135	114.75	27.00	31.76
26	Mysore M.Corp.	S	1,050	138.47	132	165	135	141.75	3.28	3.12
27	Dhule MCI	S	330	31.00	94	94	135	44.55	13.55	41.06
28	Ichalkaranji MCI	S	250	32.00	128	128	135	33.75	1.75	7.00
29	Nanded Waghala M.Corp.	S	410	39.00	95	95	135	55.35	16.35	39.88
30	Parbhani MCI	US	233	15.00	64	64	70	16.31	1.31	5.62
31	Bhind M	S	175	19.00	109	109	135	23.63	4.63	26.43
32	Dewas M.Corp.	US	200	9.00	45	45	70	14.00	5.00	25.02
33	Morena M	S	125	8.46	68	68	135	16.88	8.42	67.32
34	Satna M.Corp.	US	200	13.50	68	68	70	14.00	0.50	2.50
35	Shivpuri M	S	140	13.00	93	93	135	18.90	5.90	42.14
36	Bathinda MCI	S	174	17.00	98	247	135	23.49	6.49	37.30
37	Pathankot MCI	S	195	17.00	87	87	135	26.33	9.33	47.82
38	Ajmer MCI	S	550	52.00	95	118	135	74.25	22.25	40.45
39	Bhilwara M	US	225	14.00	62	62	70	15.75	1.75	7.78
40	Bikaner M	S	600	68.00	113	113	135	81.00	13.00	21.67
41	Cuddalore M	US	162	4.29	26	26	70	11.34	7.05	43.51
42	Dindigul M	US	214	12.00	56	56	70	14.98	2.98	13.93
43	Kanchipuram M	S	157	16.36	104	104	135	21.15	4.79	30.60
44	Kumbakonam M	S	147	10.60	72	72	135	19.82	9.22	62.81
45	Nagercoil M	US	206	9.00	44	72	70	14.39	5.39	26.20
46	Tiruchirapalli M.Corp.	S	800	88.00	110	110	135	108.00	20.00	25.00
47	Tirunelveli M.Corp.	S	414	34.00	82	82	135	55.89	21.89	52.87
48	Tuticorin M	S	217	16.00	74	74	135	29.25	13.25	61.15
49	Aligarh M.Corp.	S	600	46.50	78	78	135	81.00	34.50	57.50
50	Bareilly M.Corp.	S	750	80.00	107	133	135	101.25	21.25	28.33
51	Firozabad MB	US	250	12.00	48	64	70	17.50	5.50	22.00

Sl. No.	City/Town	Sewered (S)/ Unsewered (US)	Estimated population 1999 ('000)	Water supply (mld)- 1999	Per capita supply (lpcd) - 1999		CPH-EEO norm (lpcd)	Demand as per norm (mld)- 1999	Additional water required - 1999	
					total pop.	served pop.			mld	lpcd
52	Ghaziabad M.Corp.	S	887	110.00	124	124	135	119.75	9.75	10.99
53	Gorakhpur M.Corp.	S	600	74.00	123	164	135	81.00	7.00	11.67
54	Hapur MB	S	200	14.00	70	108	135	27.00	13.00	65.00
55	Hardwar MB	S	300	39.00	130	217	135	40.50	1.50	5.00
56	Mathura MB	S	400	26.73	67	103	135	54.00	27.27	68.18
57	Meerut M.Corp.	S	1,250	132.00	106	106	135	168.75	36.75	29.40
58	Mirzapur MB	S	210	25.00	119	183	135	28.35	3.35	15.95
59	Rampur MB	US	317	19.76	62	62	70	22.19	2.43	7.67
60	Balurghat M	US	132	0.86	7	7	70	9.24	8.38	63.50
61	Krishnagar M	US	145	5.97	41	68	70	10.17	4.20	28.94
62	Santipur M	US	134	0.91	7	23	70	9.37	8.47	63.22
63	Silliguri M.Corp.	US	500	17.97	36	36	70	35.00	17.03	34.06
64	Guwahati M.Corp.	US	995	55.00	55	126	70	69.65	14.65	14.72
65	Aizwal NM	US	244	10.80	44	135	70	17.08	6.28	25.74
66	Pondicherry M	S	290	33.35	115	115	135	39.15	5.80	20.00
Class II Towns										
1	Anakapalle M	US	115	3.64	32	32	70	8.05	4.41	38.35
2	Kapra M	US	120	4.55	38	47	70	8.40	3.85	32.08
3	Kavali MCI	US	85	4.95	58	58	70	5.95	1.00	11.76
4	Narasaraopet M	US	95	4.50	47	47	70	6.65	2.15	22.63
5	Rajendra nagar MCI	US	120	5.10	42	42	70	8.40	3.30	27.53
6	Sangareddy MCI	US	60	3.86	64	64	70	4.20	0.34	5.67
7	Srikakulam MCI	US	100	6.81	68	68	70	7.00	0.19	1.90
8	Buxar M	US	67	3.90	58	71	70	4.68	0.78	11.61
9	Deoghar M	US	100	3.00	30	38	70	7.00	4.00	40.00
10	Hazaribagh M	US	119	7.26	61	73	70	8.33	1.07	9.02
11	Mokama M	US	66	1.96	30	30	70	4.62	2.66	40.30
12	Mahesana M	S	138	14.80	107	107	135	18.63	3.83	27.75
13	Palanpur M	US	117	4.00	34	34	70	8.19	4.19	35.81
14	Kaithal MCI	S	95	10.75	114	142	135	12.76	2.01	21.30
15	Rewari MCI	S	105	11.35	108	108	135	14.18	2.83	26.90
16	Thanesar MCI	S	100	13.22	132	184	135	13.50	0.28	2.80
17	Gokak CMC	US	68	4.55	67	67	70	4.76	0.21	3.09
18	Kolar CMC	S	112	8.00	71	71	135	15.12	7.12	63.57
19	Rabkavi-Banhatti									

Sl. No.	City/Town	Sewered (S)/ Unsewered (US)	Estimated population 1999 ('000)	Water supply (mld)- 1999	Per capita supply (lpcd) - 1999		CPH-EEO norm (lpcd)	Demand as per norm (mld)- 1999	Additional water required - 1999	
					total pop.	served pop.			mld	lpcd
	CMC	US	72	4.54	63	63	70	5.04	0.50	6.94
20	Ramanagaram CMC	US	70	4.50	64	64	70	4.90	0.40	5.71
21	Changanessary MC	US	62	4.00	65	65	70	4.34	0.34	5.48
22	Payyanur M	US	71	1.50	21	21	70	4.94	3.44	48.72
23	Taliparamba M	US	52	0.39	7	7	70	3.64	3.26	62.60
24	Ballarpur MCI	US	109	7.00	64	64	70	7.62	0.62	5.72
25	Kamptee MCI	US	95	3.60	38	38	70	6.65	3.05	32.11
26	Itarsi M	US	105	5.86	56	56	70	7.35	1.49	14.19
27	Nagda M	US	100	3.03	30	34	70	7.00	3.98	39.75
28	Neemuch M	US	100	5.90	59	59	70	6.97	1.07	10.71
29	Sehore M	US	100	5.30	53	53	70	7.00	1.70	17.00
30	Shahdol M	US	75	4.67	62	62	70	5.25	0.58	7.73
31	Bhadrak M	US	93	3.00	32	32	70	6.51	3.51	37.74
32	Mansa MCI	S	67	7.95	119	241	135	8.99	1.04	15.57
33	Hanumangarh M	US	125	7.20	58	58	70	8.75	1.55	12.40
34	Ambur M	US	86	5.59	65	65	70	6.00	0.41	4.77
35	Arakkonam M	US	88	4.00	45	45	70	6.16	2.16	24.55
36	Attur M	US	64	2.98	47	47	70	4.48	1.50	23.44
37	Cumbum M	US	54	2.70	50	70	70	3.75	1.05	19.63
38	Dharmapuri M	US	67	3.00	45	45	70	4.66	1.66	24.95
39	Guduivattam M	US	95	5.80	61	61	70	6.66	0.86	9.06
40	Nagapattinam M	S	112	7.80	70	70	135	15.15	7.35	65.48
41	Srivilliputtur M	US	74	3.50	47	47	70	5.17	1.67	22.64
42	Tindivanam MC	US	70	1.90	27	30	70	4.90	3.00	42.86
43	Udhagamandalam M	S	100	4.00	40	40	135	13.50	9.50	95.00
44	Auraiya MB	US	90	4.50	50	50	70	6.30	1.80	20.00
45	Balrampur MB	US	70	2.79	40	186	70	4.90	2.11	30.14
46	Bhadohi MB	US	125	4.00	32	105	70	8.75	4.75	38.00
47	Chandpur MB	US	80	3.24	41	60	70	5.60	2.36	29.50
48	Etah MB	S	135	4.00	30	42	135	18.23	14.23	105.37
49	Mughalsarai MB	US	160	4.00	25	200	70	11.19	7.19	44.97
50	Orai MB	S	170	8.24	48	69	135	22.95	14.71	86.53
51	Bishnupur M	US	67	2.61	39	105	70	4.72	2.11	31.28
52	Chakdaha M	US	90	1.90	21	54	70	6.28	4.38	48.83

Sl. No.	City/Town	Sewered (S)/ Unsewered (US)	Estimated population 1999 ('000)	Water supply (mld)- 1999	Per capita supply (lpcd) - 1999		CPH-EEO norm (lpcd)	Demand as per norm (mld)- 1999	Additional water required - 1999	
					total pop.	served pop.			mld	lpcd
53	Contai M	US	114	1.57	14	14	70	7.98	6.41	56.20
54	Darjeeling M	S	150	6.00	40	40	135	20.25	14.25	95.00
55	Jalpaiguri M	US	101	4.91	49	n.a.	70	7.08	2.17	21.43
56	Jangipur M	US	78	3.00	38	71	70	5.47	2.47	31.63
57	Katwa M	US	68	1.50	22	55	70	4.74	3.24	47.83
58	Raniganj M	US	121	5.08	42	79	70	8.47	3.39	28.02
59	Kohima TC	US	103	2.90	28	28	70	7.21	4.31	41.84
60	Kavarathi NMCT	US	11	0.04	3	3	70	0.78	0.74	66.67

Note: CPHEEO norms state that where there is no sewerage system existing or envisaged 70 lpcd supply may be sufficient, irrespective of the size class of town.)
Source: NIUA Survey, 1999 Also see Appendix - I, Table A - 3

Table - AX -2.2 : Urban Centres with Surplus Revenue Receipts – 1997-98			
Sl.No.	City/Town	% Revenue receipts to revenue expenditure	O&M expenditure per kl. (Rs.)
Metropolitan cities			
1	Bangalore	103	3.70
2	Chennai	137	1.28
3	Coimbatore	282	0.24
4	Greater Mumbai	135	0.94
5	Hyderabad	106	2.14
6	Kanpur	118	0.23
7	Kochi	133	0.89
8	Madurai	123	0.53
9	Visakhapatnam	274	1.30
Class I			
1	Anantapur	143	0.97
2	Nellore	104	0.52
3	Tenali	122	1.98
4	Waranga	144	1.01
5	Gaya	188	break-up n.a.
6	Jamnagar	129	1.06
7	Belgaum	166	0.49
8	Bellary	134	0.52
9	Mangalore	202	1.30
10	Thiruvananthapuram	179	0.30
11	Kolhapur	107	1.94
12	Ratlam	218	0.68
13	Kota	130	0.14
14	Cuddalore	150	1.85
15	Dindigul	122	1.95
16	Erode	102	1.03
17	Kanchipuram	154	1.00
18	Kumbakonam	251	0.40
19	Nagercoil	158	1.81
20	Rajapalayam	122	1.35
21	Salem	109	1.20
22	Thanjavur	150	0.54
23	Tirunelveli	104	0.89
24	Tiruvannamalai	115	0.75
25	Tiruppur	259	1.44

Sl.No.	City/Town	% Revenue receipts to revenue expenditure	O&M expenditure per kl. (Rs.)
26	Aligarh	113	0.21
27	Haldwani-cum-Kathgodam	115	0.48
28	Muzaffarnagar	100	0.03
29	Saharanpur	102	0.06
Class II			
1	Anakapalle	176	0.91
2	Srikakulam	106	0.82
3	Suryapet	116	0.50
4	Gondal	99	0.07
5	Chikmaglur	167	0.29
6	Gokak	168	0.84
7	Amalner	166	2.03
8	Hanumangarh	207	0.58
9	Ambur	109	1.10
10	Attur M	229	0.74
11	Cambam M	122	0.83
12	Dharmapuri M	133	1.53
13	Nagapattinam M	148	0.57
14	Pudukkottai M	104	2.12
15	Tindivanam MC	108	2.03
16	Udhagamandalam M	109	1.81
17	Auraiya	105	0.10
18	Chandpur	177	0.80

Source: NIUA Survey, 1999. See Appendix - I, Table A – 13 & 14 for details

Table - AX-2.3: Year and Class Wise Projection of Urban Population								
<i>(In million)</i>								
Year	Size class of cities and towns							Total
	Metro cities	I	II	III	IV	V	VI	
Proportion of population in different size classes								
% population								
1991	23.00	33.67	13.33	16.35	9.77	3.43	0.45	100.00
1999	64.10	93.84	37.15	45.57	27.23	9.56	1.25	278.70
2000	65.83	96.36	38.15	46.79	27.96	9.82	1.29	286.20
2001	67.57	98.91	39.16	48.03	28.70	10.08	1.32	293.77
2002	69.34	101.51	40.19	49.29	29.45	10.34	1.36	301.48
2003	71.19	104.21	41.26	50.60	30.24	10.62	1.39	309.50
2004	73.09	107.00	42.36	51.96	31.05	10.90	1.43	317.80
2005	75.06	109.88	43.50	53.36	31.88	11.19	1.47	326.35
2006	77.07	112.82	44.67	54.79	32.74	11.49	1.51	335.09
2007	79.11	115.82	45.85	56.24	33.61	11.80	1.55	343.97
2008	81.17	118.83	47.05	57.70	34.48	12.11	1.59	352.93
2009	83.25	121.87	48.25	59.18	35.36	12.42	1.63	361.96
2010	85.35	124.94	49.46	60.67	36.25	12.73	1.67	371.08
2011	87.46	128.03	50.69	62.17	37.15	13.04	1.71	380.24
2012	89.58	131.14	51.92	63.68	38.05	13.36	1.75	389.48
2013	91.76	134.33	53.18	65.23	38.98	13.68	1.80	398.98
2014	94.01	137.62	54.48	66.83	39.93	14.02	1.84	408.74
2015	96.32	141.00	55.82	68.47	40.91	14.36	1.88	418.77
2016	98.68	144.46	57.19	70.15	41.92	14.72	1.93	429.06
2017	101.11	148.02	58.60	71.88	42.95	15.08	1.98	439.61
2018	103.60	151.66	60.04	73.64	44.01	15.45	2.03	450.42
2019	106.14	155.38	61.52	75.45	45.09	15.83	2.08	461.49
2020	108.75	159.20	63.03	77.31	46.20	16.22	2.13	472.83
2021	111.43	163.12	64.58	79.21	47.33	16.62	2.18	484.46
2022	114.16	167.13	66.17	81.16	48.50	17.03	2.23	496.37

CHAPTER III

WASTEWATER COLLECTION, TREATMENT AND DISPOSAL AND LOW COST SANITATION

3.1 BACKGROUND

Wastewater disposal is a major problem in most Indian cities. Only a small percentage of urban centres in the country have a sewerage system and even where the system exists, the coverage of population by the sewerage system is partial. In some cities the system does not function properly or is defunct. Many urban centres with sewerage system do not have sewage treatment plants to treat wastewater. Discharge of untreated sewage into water bodies pollutes the limited water sources near urban centres. Improper collection and treatment of wastewater creates insanitary conditions and results in serious health problems.

3.2 COVERAGE BY SEWERAGE SYSTEM

3.2.1 Urban Centres Covered

Providing most urban centres with a sewerage system requires substantial financial resources and in order to keep the system operational, a minimum required level of water supply has to be ensured. Most Indian cities do not have the funds to construct a sewerage system along with the required treatment facilities. The present survey indicates while all the responding metropolitan cities (22) have a sewerage system, only 57 out of the 164 sampled Class I cities (i.e. 35%) and 21 out of 115 sampled Class II towns (i.e. 18%) have reported having a functioning sewerage system. Overall, only about 34 per cent of the sampled urban centres (i.e., 100 cities/towns) have a sewerage system. (Table 3.1).

Table - 3.1: Sampled Urban Centres with Sewerage System - 1999						
<i>(no. of cities/towns)</i>						
Sewerage system	Metro cities	Class I	Class II	Total	%	
Yes	22	57	21	100	34	
Not functional	-	12	2	14	4	
No	-	88	86	174	58	
n.a.	-	7	6	13	4	
Total	22	164	115	301	100	
<i>Source: NIUA Survey, 1999</i>						

Of the urban centres with a sewerage system, about 38 per cent have a combined system of wastewater collection, i.e., combined with storm water drainage, while 60 per cent centres have a separate system (Table 3.2).

Type of sewerage system	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
Separate	16	31	13	60	60
Combined with drainage	6	25	7	38	38
n.a.	0	1	1	2	2
Total	22	57	21	100	100

Note: In two Class I cities and one Class II town the sewerage system is not functional, while in two Class I cities the system is under construction. Source: NIUA Survey, 1999 See Appendix - II, Table B -2 for details

3.2.2 Population Covered

The coverage of population by the sewerage system in the sampled urban centres is partial with an average coverage of 45 per cent. Overall, in the metropolitan cities only 63 per cent of the population is covered by the system. The coverage of population by the sewerage system in the sampled Class I cities is a low 26 per cent while the coverage is even lower in the sampled Class II towns with only 11 per cent population covered by the system (Table 3.3). This shows that most Class I and Class II urban centres have only surface drains for carrying wastewater (See Table AX – 3.1 at the end of this chapter).

Cities / Towns	No. of urban centres		% population covered	
	Total sample	With sewerage system*	In total sampled urban centres	In urban centres with sewerage system
Metropolitan	22	22	63	63
Class I	164	57	26	48
Class II	115	21	11	51
Total	301	100	45	58

** Sampled urban centers with functional sewerage system.
Source: NIUA Survey, 1999 See Appendix - II, Table B – 1 for details*

Even in urban centers with sewerage system, the average coverage of population by the system is only 58 per cent. This indicates that the coverage of population by sewerage system, even in the sewered urban centres, is only partial in most cases. This could be either because the sewerage pipelines do not cover the entire city or that people have not yet connected to the system.

3.3 WASTEWATER GENERATION, COLLECTION AND DISPOSAL

3.3.1 Generation and Collection

The quantity of wastewater generated depends largely on the quantity of water supplied. It is generally accepted that 80 per cent of water supplied goes out as wastewater. However, in urban centres where the formal supply does not cover the

entire population, informal sources of water supply would also contribute to wastewater generation. The wastewater collection system has to, therefore, be designed for at least 80 per cent of the formal water supply.

The present survey indicates that, on an average, only 59 per cent of the wastewater

Waste water volume	Metropolitan cities	Class I cities	Class II towns	Total
Wastewater generated (mld)	10907.0	3298.2	208.3	14413.5
Wastewater collected (mld)	6707.0	1703.7	135.8	8546.6
Wastewater treated (mld)	4424.3	826.1	23.6	5274.0
Wastewater discharged untreated (mld)	6482.7	2472.1	184.7	9139.5
% collected to generated	61	52	65	59
% treated to collected	66	48	17	62
% treated to generated	41	25	11	37
No. of cities/ towns	21	57	21	100
* Excludes Lucknow for which information on quantity of waste water treated was not available Source: NIUA Survey, 1999. See Appendix - II, Table B – 2 for details				

generated is collected by the sewerage system in the responding urban centres (having a sewerage system). This indicates that either the sewerage system has only a limited capacity to collect wastewater or that the entire population for which the system has been designed has not obtained connection to the system. The wastewater collection efficiency is not very different in the responding urban centres of different size classes with the percentage wastewater collected ranging between 52 to 65 per cent of the wastewater generated (Table 3.4 & 3.5).

In a little over one-third of the sampled urban centres, having a sewerage system, the wastewater collected amounts to less than half of what is generated daily. In fact, in 16 per cent of these urban centres less than a quarter of the wastewater generated

% waste water collected to generated	<i>(no. of cities/towns)</i>				
	Metropolitan cities	Class I cities	Class II towns	Total	%
≤ 25	2	12	2	16	16
>25 to 50	6	17	2	25	25
>50 to 75	11	17	12	40	40
>75 to 99	3	11	5	19	19
100	0	0	0	0	0
n.a.	0	0	0	0	0
Total no. of urban centres	22	57	21	100	100
Average (%)	61	52	65	59	
Source: NIUA Survey, 1999. See Appendix - II, Table B – 2 for details					

is collected daily (Table 3.5). Low coverage of population by sewers, even in the urban centres with a sewerage system, is the reason for the low collection efficiency. There is thus a need to expand the coverage of the sewerage system in order to improve the collection efficiency.

3.3.2 Discharge of Wastewater

Almost 36 per cent of the responding urban centres discharge wastewater only into water body while 22 per discharge only on land. Nearly 41 percent of the urban centres use both land and water body for discharging wastewater. The place of wastewater disposal depends on the option selected by the concerned authority, which may be based on local and financial considerations (Table 3.6).

Discharge of Wastewater into	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
Land	3	19	0	22	22
Water body	9	20	7	36	36
Land and water body	10	18	13	41	41
n.a.	0	0	1	1	1
Total	22	57	21	100	100

Source: NIUA Survey, 1999. See Appendix - II, Table B - 2 for details

3.3.3 Recycling/Reuse of Wastewater

Recycling/ reuse of wastewater is not practiced in many urban centres. The present study indicates that only 44 urban centres in the sample recycle/reuse wastewater for agriculture/ horticultural purposes. In 16 of these urban centres 100 per cent of the wastewater collected is recycled while in 6 urban centres less than ten percent of wastewater is recycled (Table 3.7).

A disaggregation of urban centers that recycle wastewater indicates that 26 per cent of wastewater collected is recycled in the 11 metropolitan cities, 55 percent in the 25 Class I cities and 100 per cent in the 8 Class II towns. This indicates that as the size of the urban centers decrease the greater is the recycling of wastewater (in percentage terms). This could be due to the proximity of agricultural fields allowing the wastewater to be recycled and also the lack of funds to set up water treatment plants. Overall, about 30 per cent of the wastewater collected is recycled.

Recycling of wastewater not only helps reduce pollution of land and water bodies but also has implications for water demand and additional investment requirements in water supply. Recycling/ reuse of wastewater can reduce or postpone the need for developing new sources of water supply and also help improve the environment.

Table - 3.7: Recycling of Wastewater - 1999					
<i>(no. of cities/towns)</i>					
% Recycle/reuse of sewage for agriculture/horticulture	Metropolitan cities	Class I cities	Class II towns	Total	%
<10	4	2	0	6	14
10 – 25	2	1	0	3	7
25 – 50	3	6	0	9	20
>50	2	16	8	26	59
Total	11	25	8	44	100
Average (%)	26	55	100	30	

Source: NIUA Survey, 1999. See Appendix - II, Table B – 4 for details

3.4 WASTE WATER TREATMENT

3.4.1 Treatment

Disposal of untreated wastewater pollutes water bodies/ land and is a major health hazard. Many urban centres, in the present study, either do not have any treatment facilities or have inadequate treatment facilities. Only 62 per cent of the wastewater collected, in 100 sampled urban centres with functional sewerage system, is given any form of treatment before disposal while the rest is disposed off untreated into land or water body. In actual terms, about 9139 million litres of wastewater is discharged untreated into land or water bodies everyday from just these 100 urban centres in the country. A larger percentage of wastewater collected is treated in the metropolitan cities (66%) than in the Class I cities (48%) and Class II towns (17%). In terms of volume, the quantity of wastewater discharged untreated from the 21 metropolitan cities is 6483 million litres daily (Table 3.4 & 3.8).

The present survey indicates that in 47 per cent of the sampled urban centres, with

Table - 3.8: Wastewater Treated to Collected - 1999					
<i>(no. of cities/towns)</i>					
% waste water treated to collected	Metropolitan cities	Class I cities	Class II towns	Total	%
0	3	29	15	47	47
1 to 25	1	2	1	4	4
25 – 50	2	5	0	7	7
50 - 75	5	5	0	10	10
75 - 99	0	5	0	5	5
100	10	11	5	26	26
n.a.	1	0	0	1	1
Total no. of urban centres	22	57	21	100	100
Average (%)	66	48	17	62	

Source: NIUA Survey, 1999. See Appendix - II, Table B – 2 for details

sewerage system, the entire wastewater collected is discharged without any treatment. While in almost one-fourth of the urban centres 100 per cent of the wastewater collected is treated before disposal (Table 3.8). A majority of the sampled class II towns and a significant percentage of Class I cities, with sewerage system, do not have wastewater treatment facilities, and hence do not treat the wastewater before discharging. The level of water and land pollution due to untreated wastewater in the relatively smaller urban centres can be gauged by this situation. Efforts will have to be made to provide at least primary wastewater treatment facilities in these towns to reduce the level of pollution created by the discharge of untreated wastewater.

3.4.2 Type of Treatment

In about 19 per cent of the responding urban centres only primary treatment is provided to wastewater before disposal into land or water body, while 38 per cent of urban centres also provide secondary treatment to wastewater before disposal (Table 3.9).

Table - 3.9: Type of Wastewater Treatment - 1999					
<i>(no. of cities/towns)</i>					
Type of wastewater treatment	Metropolitan cities	Class I cities	Class II towns	Total	%
Primary	9	8	2	19	19
Primary and Secondary	9	24	5	38	38
None	3	26	14	43	43
n.a.	1	1	0	2	2
Total	22	57	21	100	100

Source: NIUA Survey, 1999. See Appendix - II, Table B - 3 for details

A larger percentage of metropolitan cities provide secondary treatment to wastewater than the other size class of urban centres. Almost two-fifths of the responding urban centres do not provide any treatment to water before disposal.

3.4.3 Treatment Process

The most commonly used wastewater treatment process in the responding urban centres, with sewerage system, is extended aeration, which is practiced in 33 per cent of the responding urban centres. Activated sludge process is used in 9 per cent and stabilization ponds in 3 per cent of the responding urban centres (Table 3.10).

3.4.4 Sewage Treatment Plants

All urban centres with sewerage system should have STPs to treat wastewater. The present survey shows that STPs are available in only 50 of the 100 urban centres with sewerage system (Table 3.11).

<i>(no. of cities/towns)</i>					
Wastewater treatment process	Metropolitan cities	Class I cities	Class II towns	Total	%
Extended aeration	10	19	4	33	33
Activated sludge process	4	4	1	9	9
Stabilization pond	1	2	0	3	3
Up-flow anaerobic sludge blanket (UASB)	0	5	0	5	5
Others*	3	0	2	5	5
n.a.	1	1	0	2	2
None	3	26	14	43	43
Total	22	57	21	100	100

Source: NIUA Survey, 1999. See Appendix - II, Table B – 3 for details
** Others include cases where there is a combination of 2 treatment processes or a different process from the choices given.*

<i>(no. of cities/towns)</i>			
	With Sewage Treatment Plant	Without Sewage Treatment Plant	Total
Metropolitan Cities	18	4	22
Class I Cities	29	28	57
Class II Towns	4	17	21
Total	51	49	100

Source: NIUA Survey, 1999 See Appendix - II, Table B – 3 for details

While most of the metropolitan cities (18 out of 22) have STPs, only 28 of the 57 Class I cities and 4 of the 21 Class II towns with sewerage system have STPs. There is thus a need to construct sewage treatment plants in all the urban centres with sewerage system.

3.5 CHARGING FOR WASTEWATER

Providing sewerage system along with treatment facilities is an expensive proposition. In Indian cities and towns there is no established mechanism for cost recovery from this service. The present survey reveals that charging for wastewater collection and treatment in the sampled urban centres is done by three methods:

- Levying a tax (sewerage/ drainage tax) – this is a percentage of property tax and varies from 1 per cent to 25 per cent of annual rateable value (arv) of property.
- Levying a charge per water closet (WC) – this type of charge is common in most sampled urban centres of Haryana and in some urban centres of Punjab and Andhra Pradesh. The rate charged per water closet varies from Rs. 24 to Rs. 200

per year in the sampled urban centres. This charge, in some cities, is also called tax (and not a charge).

- Levying a surcharge on water – this is practised in only four of the sampled urban centres (Bangalore, Chennai, Hyderabad and Ajmer). The surcharge varies from 20 to 35 per cent of water charges in these cities.

Others methods of charging - In some cities the basis of charging is different to all the other sampled urban centres. Calcutta charges a certain percentage of water tax as sewerage tax while in Mangalore the basis of charging is by area (Table 3.12).

Table - 3.12 : Sources of Revenue for Wastewater Management – 1999	
Metropolitan Cities	Rate (percentage of property tax)
Delhi	5% of arv
Greater Mumbai	25% of arv
Jaipur	20% of arv
Kanpur	4 % of arv
Lucknow	3 % of arv
Pune	4% of arv
Other cities	Rate (percentage of property tax)
Allahabad	4 % of arv
Bareilly	4 % of arv
Bhind	1.5% to 2.5% on arv
Bhuj	6% of arv
Ghaziabad	2.5 % of arv
Hardwar	2 % of arv
Kolhapur	1.5 to 2.5% of arv
Mirzapur	2.5%of arv
Morena	3% of arv
Navsari	6% of arv
Rajkot	9% of arv
Roorkee	5 % of arv
Solapur	1% of arv
Tiruchirapalli	1.5 % of arv
City	Rate (per water closet - domestic)
Ambala	Rs. 60 per wc/ yr.
Bhubaneswar	Rs.120 per wc/yr.
Dhule	Rs. 200 per wc/yr.
Eluru	Rs. 24 per wc/ yr.
Guntur	Rs. 60 per wc/yr. & Rs. 120 per wc/ yr. (non-domestic)
Gurgaon	Rs. 60 per wc/ yr.

Hissar	Rs. 60 per wc/ yr.
Hoshiarpur	Rs.120 per wc/yr.
Kaithal	Rs. 60 per wc/ yr.
Karnal	Rs. 60 per wc/ yr.
Mansa	Rs.120 per wc/yr.
Rewari	Rs. 60 per wc/ yr.
Rohtak	Rs. 60 per wc/ yr.
Sangrur	Rs.120 per wc/yr.
Thanesar	Rs. 60 per wc/ yr.
Vijaywada	Rs. 120 per wc/ yr.& Rs. 192 per wc/ yr.(non-domestic)
City	Rate (charge on water)
Bangalore	30% of water charges
Chennai	25 % of water charges
Hyderabad	35% of water charges
Ajmer	20% of water charges
City	Rate
Calcutta	80 % of water tax (amount fixed based on ferrule size)
Mangalore	Rs. 2 per sq. ft.(dom.) & Rs. 5 per sq. ft. (non-domestic)
<i>Source: NIUA Survey,1999. See Appendix - II, Table B – for details</i>	

3.6 REVENUE RECEIPTS AND REVENUE EXPENDITURE

3.6.1 Revenue Receipts

The main sources of revenue for this service are sewerage/drainage tax (as given above) and connection charges. Amongst the sampled urban centres with sewerage facilities, 36

% Revenue Receipts	<i>(no. of cities/towns)</i>				%
	Metropolitan cities	Class I cities	Class II towns	Total	
<50	2	3	1	6	6
50-90	1	8	0	9	9
90-99	3	8	3	14	14
100	2	5	0	7	7
0	7	17	13	37	37
combined (n.a.)	5	1	1	7	7
n.a.	2	15	3	20	20
Total	22	57	21	100	100
Average	94	82	95	94	
<i>Source: NIUA Survey,1999. See Appendix - II, Table B – 9 for details</i>					
<i>'combined (n.a.)'. represents those sample cities/towns where data on waste water receipts are combined with water supply receipts</i>					

urban centres have indicated revenues from sewage/drainage tax (Table 3.13) while 48 have indicated revenues from connection charges in 1997-98. (Table 3.14).

Only 20 urban centres, with sewerage system, have generated revenues from both sewerage/drainage tax and connection charges in 1997-98. As can be seen from Table 3.13, sewerage/ drainage tax forms a very high percentage of revenues (over 50%) for this service. In 7 sampled urban centres the entire revenue comes only from tax sources.

Revenues from connection charges, forms a relatively smaller proportion of revenues for this service. In a large number of sampled urban centres the revenues from connection charges form less than a quarter of the total revenues from sewerage service. However, there are 18 urban centres whose entire revenue comes only from connection charges (Table 3.14).

Table – 3.14 : Percentage Revenue Receipts from Connection Charges – 1997-98					
% Revenue Receipts	<i>(no. of cities/towns)</i>				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<25	3	13	5	21	21
25 - 50	1	3	1	5	5
50 - 75	1	0	0	1	1
75 - 99	0	2	1	3	3
100	3	7	8	18	18
0	7	16	2	25	25
combined (n.a.)	5	1	1	7	7
n.a.	2	15	3	20	20
Total	22	57	21	100	100
Average	22	27	52	24	
<i>Source: NIUA Survey, 1999. See Appendix - II, Table B – 9 for details</i> <i>'combined (n.a.)' represents those sample cities/towns where data on waste water receipts are combined with water supply receipts</i>					

3.6.2 Cost Recovery

Wastewater management is a service from which cost recovery is generally very low and it is often considered an expenditure-dominated service. Although partial cost recovery is observed in some urban centres, the recovery rates are generally very low. There are some urban centres where no revenue is generated from the service. As indicated earlier, the main source of revenue for the service is from tax, though charges per water closet also allows reasonable recovery.

The present survey shows that, despite the general grim scenario, 12* sewerage urban centres are able to recover full cost of the service while a majority of urban centres are able to recover only less than 25 per cent of the expenditure on the service.

* These urban centres exclude Chennai, Bangalore and Hyderabad for which water and sewerage accounts are given together. These cities also show excess income over expenditure on water supply and sewerage services.

Some urban centres (12 in this sample) do not generate any revenue from the service (Table 3.15).

The average cost recovery in the metropolitan cities from this service is a mere 15 per cent if the outliers are excluded. These outliers are 4 metro cities (Mumbai, Pune, Madurai and Vadodara), which generate excess revenue to expenditure. If these cities are included in the calculation of average, then the cost recovery from the service, in metropolitan cities, goes up to a staggering 146 per cent. Similarly, the low cost recovery rates in Class I and Class II urban centers also show significant variations when extreme values (recovery of over 100 per cent) are excluded from the calculation of average (Table 3.15).

Table – 3.15 : Percentage Revenue Receipts to Revenue Expenditure – 1997-98					
<i>(no. of cities/towns)</i>					
% Receipts to Expenditure	Metropolitan cities	Class I cities	Class II towns	Total	%
0	0	11	2	13	13
0-25	6	22	8	36	36
25-50	3	5	2	10	10
50-75	0	4	3	7	7
75-100	2	1	1	4	4
>100	4	7	1	12	12
combined (n.a.)	5	1	1	7	7
n.a.	2	6	3	11	11
Total	22	57	21	100	100
Average (%)*	146	29	35	127	
Average (%)**	15	14	2	15	

Source: NIUA Survey, 1999. See Appendix - II, Table B -11 for details 'combined (n.a)'. represents those sample cities/towns where data on waste water receipts are combined with water supply receipts
 * Average with outliers ** Average without outliers

The reasons for a few urban centres generating excess revenue over expenditure in 1997-98 needs to be explained. The present study considers sewerage/drainage tax and connection charges as revenue sources for this service. Some of the urban centres that have shown an excess of revenue over expenditure in this service in 1997-98 have significant tax collections on this head, as is the case in Vadodara, Vijayawada, Bhuj and Mangalore. Mumbai generates substantial revenues from surcharge on measured water supplied, and from sewerage tax and sewerage benefit tax. Pune generates significant revenues from drainage charges, sewerage benefit tax and connection charges. Guntur and Tiruchirapalli have shown unusually high revenues in 1997-98 owing mainly to the underground drainage development charges (which are one time charges). Tiruchirapalli has also given the O&M of the sewerage system to private contractors, the cost of which is not entered in the books on this head. Some of the other reasons for excess revenues over expenditure

is the fact that the expenditure may be very low as is the case in Mehsana and Rae Bareli where no treatment is provided to wastewater – keeping the expenditure low. The sewerage system may also not be functioning properly in some urban centres and so the main expenditure remains only on establishment. Madurai generates significant revenue from connection charges, which allows it to show excess revenue over expenditure. Navasari and Dhule have also shown slight excess revenue over expenditure in 1997-98. While in Navasari, apart from revenues from tax, providing drainage lines to industries has proved to be a significant source of revenue, in Dhule the Maharashtra Jeevan Pradhikaran maintains the sewerage system hence the expenditure on the service is low. Bangalore, Chennai and Hyderabad, which have city level water and sewerage boards, also show excess income over expenditure on combined water and wastewater services.

Cost recovery, therefore, is an important issue and new ways of generating revenues from this service should be considered. Sale of wastewater for specified uses, producing gas from wastewater, sale of manure etc. have to be encouraged to expand the revenue from this service. One way of reducing expenditure and increasing revenues is through public-private partnerships or privatisation.

3.7 PRIVATISATION

Private sector participation in wastewater management has been reported in only 6 sampled urban centres i.e., in Chennai, Hyderabad, Rajkot, Bhavnagar, Nashik and Chandigarh. In all these cities private sector has been involved in the operation and maintenance (O&M) of either the sewage pumping stations or sewage treatment plants since mid 1990s. Privatisation has resulted in substantial cost savings for Chennai, that is, as much as 47 per cent (Table 3.16).

Table - 3.16 : Privatisation in Wastewater Management – 1999

Sl. No.	City/town	Function	Activity privatised	Mode used	Year privatised	No. of contractors	Cost before privatisation (Rs.)	Cost after privatisation (Rs.)
1	Chennai	O&M	Pumping stations	Contract	1996	3	27,00,000	14,40,000
2	Hyderabad	O&M	STPs	Contract	1999	2	n.a.	n.a.
3	Rajkot	O&M	Pumping stations	Contract	1998	3	n.a.	n.a.
4	Bhavnagar	O&M	n.a.	Contract	1994	1	n.a.	40,000
5	Nashik	O&M	STPs	Contract	1995	1	n.a.	9,52,000
6	Chandigarh	O&M	Pumping stations	n.a.	1999	1	n.a.	n.a.

Source: NIUA Survey, 1999. See Appendix - II, Table B – 6 for details

3.8 CAPITAL EXPENDITURE

While a majority of the cities do not have underground drainage systems, only a few unsewered cities have indicated capital investment in sewerage related works. Most of the capital works are Capital expenditure on sewerage related works has been undertaken in only about 21 per cent of the sampled cities. The expenditure has been incurred mainly for augmentation (12% cities), improving existing systems (4% cities) and adding new pipelines (5% cities). The components of expenditure also include treatment plants (3% cities), pumping stations and creating treatment facility such as lagoons. (See Appendix II, Table B-7).

As per the present survey, not too many unsewered urban centres are undertaking capital works in the near future to provide safe sanitation to their population. Only about 10 cities have indicated capital expenditure on sewerage related works of which only two are non-sewered urban centres. There is, thus a need to make additional capital investments to provide safe sanitation to all.

3.9 SEPTIC TANKS AND LOW COST SANITATION

Providing sewerage system in urban centres, though desirable, requires heavy capital investment for construction and requires regular funds for maintenance. However, providing sewerage system to all urban centres may not be feasible or desirable, given the water supply situation and the state of municipal finances (the present survey shows that almost half the sampled urban centres do not get adequate water). Therefore, the urban centres that do not have sewerage system and cannot provide one, can opt for low cost solutions. Septic tanks and low cost sanitation systems are the solutions for providing safe sanitation facilities for such urban centres and even for those that have partial coverage by sewerage system. A section of the population in most urban centres uses community toilets while the remaining resort to open defecation. Dry latrines too are still in existence in some cities. Data on this aspect was very difficult to obtain from local governments. Even where data has been provided by the agency concerned, the data were not found to be very reliable.

Most urban centres have population that depend on septic tanks and low cost sanitation, even in the urban centres that have a sewerage system (Table AX-3.1 at the end of this chapter). The present survey indicates that almost one-third (34%) of the population in the sampled urban centres¹⁰ is covered by septic tanks and low cost sanitation. The percentage of population dependent on low cost sanitation is higher in Class I and Class II urban centres as the population covered by sewerage system in these urban centres is low (Table 3.17).

¹⁰ Data on low cost sanitation has been furnished only by about 80 per cent of the sampled urban centres.

Table – 3.17 : Population Dependant on Septic Tanks and LCS					
% Population	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<25	8	46	15	69	26
25 - 50	10	26	26	62	23
50 - 75	0	27	30	57	22
>75	0	28	24	52	20
Data not available	4	15	5	24	9
Total	22	142	100	264	100
Average (%)	25	41	55	34	

Source: NIUA Survey, 1999. See Appendix - II, Table B – 12 for details

3.10 ADDITIONAL CAPITAL INVESTMENT REQUIREMENTS

A little above 50 per cent of the population is covered by sanitation facilities in urban India at present. Lack of facilities for wastewater management creates insanitary conditions and therefore, there is a need to accord high priority to wastewater management.

The target of the government is to eventually provide safe sanitation facilities to 100 per cent of urban population. However, the target for the immediate future (that is till 2002) is to cover 75 per cent of the population by the service. Achieving these targets requires substantial investments in this sector. The present study has projected the additional investment requirements in this sector to cover 75 per cent of the population by the year 2002 and the entire population with safe sanitation facilities thereafter till 2022.

3.10.1 Projection Methodology

For projecting the additional capital investment requirements the following were required:

- the total urban population projected till the year 2022 at five year intervals starting 2002 A.D. – for which the Registrar General of India's population projection has been used (Table 3.18).
- the division of the projected urban population by size class of urban centres for different years (Table 3.19);
- the present uncovered population by the service by size class of urban centres (Table 3.20).

The backlog population to be covered has been calculated by using the percentage population not covered in 1999, which has been taken from the present survey. The population to be covered in different years, including the backlog till 1999, by size class has been arrived at by using the 9th Plan target of covering 75 per cent of the population till the year 2002 and covering 100 per cent of the population thereafter.

Table – 3.18 : Class-wise Projection of Urban Population* in Different Years								
(in million)								
Year	Size class of cities and towns							
	Metro	I**	II	III	IV	V	VI	Total
1991(% Population)	23.00	33.67	13.33	16.35	9.77	3.43	0.45	100.00
1999	64.10	93.84	37.15	45.57	27.23	9.56	1.25	278.70
2002	69.34	101.51	40.19	49.29	29.45	10.34	1.36	301.48
2007	79.11	115.82	45.85	56.24	33.61	11.80	1.55	343.97
2012	89.58	131.14	51.92	63.68	38.05	13.36	1.75	389.48
2017	101.11	148.02	58.60	71.88	42.95	15.08	1.98	439.61
2022	114.16	167.13	66.17	81.16	48.50	17.03	2.23	496.37

Note: The proportion of population in each size class is for the individual cities and towns and not for urban agglomerations and the proportions are assumed to be constant for the projected period i.e., upto 2022.
Source for proportion of population in each size class - Census of India 1991, Series 1 - India, General Population Tables Part II-A (ii) Towns and Urban Agglomerations 1991 with their Population 1901 - 1991, Statement-3, p.32
Source for size class-wise population distribution - Projections based on Census of India's 'Population Projections for India and States 1996-2016', Registrar General, India, New Delhi, 1996.
** Population as on 1st July of the respective years. ** Class I cities exclude metropolitan cities.*

Table – 3.19 : Additional Population to be Covered in Different Years by Size Class								
(in million)								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
Backlog 1999	21.63	52.08	24.80	30.42	18.18	6.38	0.84	154.32
1999-2002	9.34	18.77	8.48	10.40	6.21	2.18	0.29	55.67
2002-2007	12.89	20.56	8.49	10.41	6.22	2.18	0.29	61.05
2007-2012	10.47	15.32	6.07	7.44	4.45	1.56	0.20	45.51
2012-2017	11.53	16.88	6.68	8.20	4.90	1.72	0.23	50.13
2017-2022	13.05	19.11	7.57	9.28	5.55	1.95	0.26	56.76
Total	78.91	142.73	62.08	76.14	45.50	15.97	2.10	423.43

Source: Derived from Table 3.18 Calculations till 2002 are based on 75% coverage of population

Table – 3.20 : Coverage of Population by Safe Sanitation - 1999		
(used for calculating the backlog)		
Size class of cities/towns	% Population covered	% Population not covered
Metro	59	41
I	70	30
II	65	35
III	50	50
IV	50	50
V	50	50
VI	50	50

Source: NIUA Survey, 1999. See Appendix - II, Table B – 12 for details

3.10.2 Assumptions used for Calculating Investment Requirements

The main assumptions for calculating the investment requirement in this sector relate to the choice of technology. For calculating investment requirements the following assumptions were made:

- 1) All metropolitan cities will be covered by sewerage system
- 2) In Class I cities, 60 per cent of the population will be covered by sewerage system and of the remaining 40 per cent - 20 per cent will be covered by septic tanks and 20 per cent will be covered by pit latrines.
- 3) In Class II towns 50 per cent of the population will be covered by septic tanks and 50 per cent by pit latrines.
- 4) Class III and IV towns follow the same pattern as Class II.
- 5) In Classes V and VI only low cost sanitation (i.e. pit latrines) will be provided.

3.10.3 Projected Additional Investment Requirements

The calculation of additional investment requirements has been done by using the per capita costs given by the Planning Commission (Task Forces on Housing and Urban Development, 1983) and that given by HUDCO, (2000) (Tables 3.21 and 3.22).

Type of technology	City size by Population		
	>1 Lakh	50,000-1 Lakh	< 50,000
Sewerage system	1622	1637	1534
Sewage treatment (plant)	240	818	480
Septic tank (household)	995	1103	1107
Pit latrine	647	691	627

Item	Rs./per capita
Sewerage augmentation	1620
Conventional treatment	162
Septic tank with soak pit	4050
Twin pit without superstructure	
5 users	648
15 users	377.5

The backlog population as well as the additional population till 2022 has been multiplied by the per capita cost of providing sewerage/ septic tanks/ pit latrines. The investment requirements thus worked out are given in Tables 3.23 and 3.24.

In 1999, an estimated 154 million people were not covered by safe sanitation in the urban areas of the country (figure based on the results of the present sample survey).

Table-3.23: Additional Investment Requirements for Providing Safe Sanitation to Population (Using Task Forces per capita cost estimates)								
<i>(Rs. in crores - at 1998-99 prices)</i>								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
Backlog 1999	4028.19	7528.07	2223.61	2727.38	1629.75	400.20	52.50	18589.71
1999-2002	1738.86	2713.69	760.15	932.37	557.14	136.81	17.95	6856.98
2002-2007	2254.48	2746.51	697.95	856.07	511.55	125.62	16.48	7208.64
2007-2012	1948.88	2214.83	543.95	667.18	398.68	97.90	12.84	5884.25
2012-2017	2146.91	2439.88	599.22	734.97	439.19	107.85	14.15	6482.17
2017-2022	2430.81	2762.51	678.45	832.16	497.26	122.11	16.02	7339.32
Total	14548.14	20405.48	5503.32	6750.14	4033.57	990.48	129.95	52361.07

Table - 3.24: Additional Investment Requirements for Providing Safe Sanitation to Population (Using HUDCO's per capita cost estimates)								
<i>(Rs. in crores - at 1998-99 prices)</i>								
Year	Size class of cities and towns							
	Metro	I	II	III	IV	V	VI	Total
Backlog								
1999	3855.13	10461.69	5824.97	7144.65	4269.31	413.48	54.25	32023.48
1999-2002	1664.15	3771.19	1991.30	2442.45	1459.49	141.35	18.54	11488.48
2002-2007	2157.61	3816.80	1828.34	2242.57	1340.05	129.78	17.03	11532.18
2007-2012	1865.15	3077.92	1424.92	1747.75	1044.37	101.15	13.27	9274.54
2012-2017	2054.67	3390.68	1569.71	1925.34	1150.50	111.42	14.62	10216.95
2017-2022	2326.37	3839.04	1777.28	2179.94	1302.63	126.16	16.55	11567.96
Total	13923.08	28357.33	14416.53	17682.70	10566.36	1023.33	134.26	86103.59
<i>Note: Rs. 1 crore = Rs. 10,000,000</i>								

Between 1999 and 2022 over 200 million would be added to the urban population of the country and this additional population will also have to be covered by safe sanitation. Provision, therefore, has to be made to cover over 400 million people by safe sanitation between 1999 and 2022. This requires huge financial investments to be made in the sanitation sector.

The present financial requirement estimations are based on the per capita cost estimates provided by the Task Forces on Housing and Urban Development and HUDCO. All cost figures are at 1998-99 prices.

The additional capital investment required to cover 75 per cent of the uncovered population upto the year 2002 (i.e. 209.99 million people) is Rs. 25,446.69 crores using Task Forces per capita cost estimates. Using HUDCO's per capita cost estimates, the additional capital investment requirement goes upto Rs. 43,511.96 crores for the same period. Almost three-fourths of this investment will be required

to cover only the backlog population. Between 2002 and 2022 an investment totalling Rs. 26,914.38 crores will be required to be invested to cover the additional population by safe sanitation (using Task Forces per capita cost estimates). For the same period, the total investment required would be Rs. 42,591.63 crores if HUDCO's per capita cost estimates are used.

The total investment required for the period 1999 to 2022 is a whopping Rs. 52,361.07 crores (using Task Forces per capita cost estimates) or Rs. 86,103.59 crores (using HUDCO's per capita cost estimates). The per annum investment during this period works out to Rs. 2,276.57 crores or Rs. 3,743.63 crores respectively using the above two estimates.

For financing such huge investments, government's resources should be supplemented by mobilizing resources from the private sector and from the people themselves. Mechanisms for charging for wastewater service must be accorded adequate attention to generate additional resources to maintain the infrastructure and assets created.

ANNEX TABLE

Table- AX- 3.1: Population Covered by Sewerage System and Low Cost Sanitation – 1999								
Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
Metropolitan Cities								
1	Ahmedabad M.Corp.	3,500,000	2,800,000	80	700000	20	3500000	100
2	Bangalore M.Corp.	5,000,000	3,900,000	78	1100000	22	5000000	100
3	Bhopal M.Corp.	1,500,000	200,000	13	300000	20	500000	33
4	Calcutta M.Corp.	4,870,000	2,200,000	45	1300000	27	3500000	72
5	Chennai M.Corp.	4,363,000	4,100,000	94	n.a.	n.a.	n.a.	n.a.
6	Coimbatore M.Corp.	971,000	270,000	28	388400	40	658400	68
7	Delhi M.Corp.	12,000,000	8,500,000	71	n.a.	n.a.	n.a.	n.a.
8	Greater Mumbai M.Corp.	11,100,000	8,400,000	76	2000000	18	10400000	94
9	Hyderabad M.Corp.	4,163,000	2,350,000	56	n.a.	n.a.	n.a.	n.a.
10	Indore M.Corp.	1,600,000	640,000	40	480000	30	1120000	70
11	Jaipur M.Corp.	2,000,000	1,000,000	50	860000	43	1860000	93
12	Kanpur M.Corp.	2,500,000	1,500,000	60	1000000	40	2500000	100
13	Kochi M.Corp.	680,000	20,000	3	n.a.	n.a.	n.a.	n.a.
14	Lucknow M.Corp.	2,500,000	800,000	32	950000	38	1750000	70
15	Ludhiana M.Corp.	2,000,000	1,200,000	60	37860	2	1237860	62
16	Madurai M.Corp.	1,020,000	350,000	34	26500	3	376500	37
17	Nagpur M.Corp.	2,100,000	1,260,000	60	112222	5	1372222	65
18	Pune M.Corp.	2,300,000	1,732,000	75	500000	22	2232000	97
19	Surat M.Corp.	2,300,000	1,200,000	52	1000000	43	2200000	96
20	Vadodara M.Corp.	1,400,000	875,000	63	375000	27	1250000	89
21	Varanasi M.Corp.	1,152,295	700,000	61	449395	39	1149395	100
22	Visakhapatnam M.Corp.	1,280,000	90,000	7	578000	45	668000	52
Class I								
Andhra Pradesh								
1	Anantapur MCI	250,000	0	0	175000	70	175000	70
2	Chittoor M	149,257	0	0	125000	84	125000	84
3	Cuddapah MCI	166,000	0	0	141000	85	141000	85
4	Eluru M	247,000	100,000	40	147000	60	247000	100
5	Guntur MCI	556,820	100,000	18	n.a.	n.a.	n.a.	n.a.
6	Hindupur M	140,000	0	0	28910	21	28910	21

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
7	Kakinada M	325,000	0	0	232750	72	232750	72
8	Kurnool MCI	281,507	30,000	11	24000	9	54000	19
9	Machilipatnam M	200,000	0	0	170000	85	170000	85
10	Nandyal MCI	150,000	0	0	42976	29	42976	29
11	Nellore MCI	404,000	0	0	183000	45	183000	45
12	Nizamabad M	285,000	0	0	26855	9	26855	9
13	Ongole MCI	180,000	0	0	n.a.	n.a.	n.a.	n.a.
14	Qutubullapur M	250,000	0	0	110000	44	110000	44
15	Rajahmundry M.Corp.	380,000	0	0	n.a.	n.a.	n.a.	n.a.
16	Tenali M	250,000	0	0	15710	6	15710	6
17	Tirupati MCI	210,000	0	0	170000	81	170000	81
18	Vijaywada M.Corp.	836,850	292,900	35	543950	65	836850	100
19	Warangal M.Corp.	680,000	0	0	187639	28	187639	28
Bihar								
20	Bihar Sharif M	250,000	0	0	22000	9	22000	9
21	Chhapra M	200,000	0	0	n.a.	n.a.	n.a.	n.a.
22	Gaya M.Corp.	400,000	0	0	300000	75	300000	75
23	Katihar M	200,000	0	0	20000	10	20000	10
24	Munger M	210,000	0	0	52000	25	52000	25
25	Ranchi M.Corp.	700,000	0	0	n.a.	n.a.	n.a.	n.a.
Gujarat								
26	Anand M	175,000	105,000	60	60000	34	165000	94
27	Bharuch M	159,000	0	0	30000	19	30000	19
28	Bhavnagar M.Corp.	550,000	300,000	55	125000	23	425000	77
29	Bhuj M	118,000	106,000	90	11000	9	117000	99
30	Jamnagar M.Corp.	500,000	0	0	250000	50	250000	50
31	Junagadh M	165,000	0	0	8000	5	8000	5
32	Nadiad M	300,000	140,000	47	60000	20	200000	67
33	Navsari M	139,000	118,000	85	n.a.	n.a.	n.a.	n.a.
34	Porbandar M	142,000	0	0	90000	63	90000	63
35	Rajkot M.Corp.	1,000,000	550,000	55	64000	6	614000	61
36	Surendranagar M	150,000	0	0	150000	100	150000	100
Haryana								
37	Ambala MCI	141,000	18,160	13	122470	87	140630	100
38	Faridabad M.Corp.	1,150,000	632,500	55	n.a.	n.a.	n.a.	n.a.

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
39	Gurgaon MCI	175,000	109,000	62	28900	17	137900	79
40	Hissar MCI	250,000	130,000	52	25000	10	155000	62
41	Karnal MCI	220,000	112,000	51	30525	14	142525	65
42	Rohtak MCI	243,000	183,000	75	50000	21	233000	96
Jammu & Kashmir								
43	Jammu M.Corp.	1050800	0	0	n.a.	n.a.	n.a.	n.a.
Karnataka								
44	Belgaum M.Corp.	470,000	235,000	50	n.a.	n.a.	n.a.	n.a.
45	Bellary CMC	297,000	129,000	43	30000	10	159000	54
46	Davangere MCI	455,000	318500	70	45500	10	364000	80
47	Gadag-Betigeri CMC	148,353	0	0	65000	44	65000	44
48	Gulbarga M.Corp.	450,000	150,000	33	75000	17	225000	50
49	Hubli-Dharwad M. Corp.	850,000	450,000	53	102000	12	552000	65
50	Mandya M	140,000	0	0	56000	40	56000	40
51	Mangalore M.Corp.	410,000	250,000	61	10230	2	260230	63
52	Mysore M.Corp.	1,050,000	400,000	38	150000	14	550000	52
53	Shimoga CMC	221,860	80,600	36	n.a.	n.a.	n.a.	n.a.
54	Tumkur M	300,000	0	0	49815	17	49815	17
Kerala								
55	Alappuzha MC	200,000	0	0	150000	75	150000	75
56	Kollam MC	160,000	0	0	112000	70	112000	70
57	Kozhikode M.Corp.	493,000	0	0	450000	91	450000	91
58	Thalaserry M	134,000	0	0	28652	21	28652	21
59	Thiruvananthapuram M.Corp.	585,000	0	0	585000	100	585000	100
Maharashtra								
60	Amravati M.Corp.	500,000	0	0	350000	70	350000	70
61	Aurangabad M.Corp.	868,000	684,000	79	155000	18	839000	97
62	Bhusawal M.CI.	200,000	0	0	113460	57	113460	57
63	Chandrapur MCI	295,000	0	0	n.a.	n.a.	n.a.	n.a.
64	Dhule MCI	330,000	150,000	45	105000	32	255000	77
65	Ichalkaranji MCI	250,000	197,500	79	52500	21	250000	100
66	Jalgaon MCI	400,000	0	0	217000	54	217000	54
67	Kolhapur M.Corp.	502,000	200,000	40	n.a.	n.a.	n.a.	n.a.
68	Nanded Waghala M.Corp.	410,000	250,000	61	150000	37	400000	98

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
69	Nashik M.Corp.	838,760	500,000	60	335500	40	835500	100
70	Parbhani MCI	233,000	0	0	28000	12	28000	12
71	Solapur M.Corp.	900,000	810,000	90	n.a.	n.a.	n.a.	n.a.
72	Wardha M	150,000	0	0	10370	7	10370	7
73	Yavatmal MCI	130,000	0	0	43000	33	43000	33
Madhya Pradesh								
74	Bhind M	175,000	40,000	23	n.a.	n.a.	n.a.	n.a.
75	Burhanpur M.Corp.	210,000	0	0	n.a.	n.a.	n.a.	n.a.
76	Dewas M.Corp.	200,000	0	0	n.a.	n.a.	n.a.	n.a.
77	Guna M	125,000	0	0	75000	60	75000	60
78	Gwalior M.Corp.	900,000	516,000	57	200000	22	716000	80
79	Jabalpur M.Corp.	1,000,000	0	0	900000	90	900000	90
80	Khandwa M	175,000	0	0	n.a.	n.a.	n.a.	n.a.
81	Morena M	125,000	16,000	13	106000	85	122000	98
82	Murwara-Katni M.Corp.	180,000	0	0	n.a.	n.a.	n.a.	n.a.
83	Ratlam M.Corp.	235,000	0	0	188500	80	188500	80
84	Rewa M.Corp.	180,000	0	0	102520	57	102520	57
85	Satna M.Corp.	200,000	0	0	172000	86	172000	86
86	Shivpuri M	140,000	5,000	4	100000	71	105000	75
Orissa								
87	Bhubaneswar M.Corp.	653,830	200,000	31	n.a.	n.a.	n.a.	n.a.
88	Cuttack M.Corp.	563,346	0	0	400000	71	400000	71
89	Puri M	149,802	0	0	98840	66	98840	66
90	Rourkela M	199,700	0	0	n.a.	n.a.	n.a.	n.a.
91	Sambalpur M	157,040	0	0	n.a.	n.a.	n.a.	n.a.
Punjab								
92	Amritsar M.Corp.	843,320	505,992	60	190560	23	696552	83
93	Bathinda MCI	174,000	68,848	40	40000	23	108848	63
94	Hoshiarpur MCI	145,000	87,000	60	29500	20	116500	80
95	Jalandhar M. Corp.	738,000	440,000	60	295200	40	735200	100
96	Moga MCI	147,865	99,500	67	30000	20	129500	88
97	Pathankot MCI	195,000	80,000	41	59640	31	139640	72
98	Patiala M.Corp.	328,000	200,000	61	128000	39	328000	100
Rajasthan								
99	Ajmer MCI	550,000	58,000	11	96000	17	154000	28

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
100	Alwar M	300,000	0	0	150002	50	150002	50
101	Beawar M	141,000	0	0	n.a.	n.a.	n.a.	n.a.
102	Bhilwara M	225,000	0	0	170000	76	170000	76
103	Bikaner M	600,000	126,000	21	330000	55	456000	76
104	Jodhpur M.Corp.	1,000,000	327,000	33	65055	7	392055	39
105	Kota M.Corp.	750,000	0	0	28660	4	28660	4
106	Sriganganagar M	225,000	0	0	64018	28	64018	28
Tamil Nadu								
107	Cuddalore M	162,000	0	0	140000	86	140000	86
108	Dindigul M	214,000	0	0	85000	40	85000	40
109	Erode M	173,600	0	0	136800	79	136800	79
110	Kanchipuram M	156,700	115,950	74	40750	26	156700	100
111	Kumbakonam M	146,833	38,000	26	94080	64	132080	90
112	Nagercoil M	205,500	0	0	185000	90	185000	90
113	Rajapalayam M	123,310	0	0	n.a.	n.a.	n.a.	n.a.
114	Salem M.Corp.	447,388	0	0	n.a.	n.a.	n.a.	n.a.
115	Thanjavur M	216,900	0	0	19275	9	19275	9
116	Tiruchirapalli M.Corp.	800,000	8,000	1	279700	35	287700	36
117	Tirunelveli M.Corp.	414,000	70,000	17	n.a.	n.a.	n.a.	n.a.
118	Tirunvannamalai M	128,500	0	0	6690	5	6690	5
119	Tiruppur M	294,761	0	0	229300	78	229300	78
120	Tuticorin M	216,670	40,000	18	n.a.	n.a.	n.a.	n.a.
121	Vellore M	176,000	0	0	175061	99	175061	99
Uttar Pradesh								
122	Agra M.Corp.	1,150,000	0	0	n.a.	n.a.	n.a.	n.a.
123	Aligarh M.Corp.	600,000	120,000	20	350000	58	470000	78
124	Allahabad M.Corp.	1,015,000	600,000	59	415000	41	1015000	100
125	Bareilly M.Corp.	750,000	300,000	40	150000	20	450000	60
126	Etawah MB	140,000	0	0	70000	50	70000	50
127	Faizabad MB	170,000	0	0	n.a.	n.a.	n.a.	n.a.
128	Firozabad MB	250,000	0	0	100000	40	100000	40
129	Ghaziabad M.Corp.	887,000	763,193	86	125000	14	888193	100
130	Gorakhpur M.Corp.	600,000	300,000	50	75000	13	375000	63
131	Haldwani-cum-Kathgodam MB	140,612	0	0	27500	20	27500	20

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
132	Hapur MB	200,000	75,000	38	18500	9	93500	47
133	Hardwar MB	300,000	184,000	61	n.a.	n.a.	n.a.	n.a.
134	Jhansi MB	506,600	0	0	230240	45	230240	45
135	Mathura MB	400,000	50,000	13	n.a.	n.a.	n.a.	n.a.
136	Meerut M.Corp.	1,250,000	315,000	25	650000	52	965000	77
137	Mirzapur MB	210,000	153,168	73	56740	27	209908	100
138	Moradabad M.Corp.	670,000	0	0	n.a.	n.a.	n.a.	n.a.
139	Muzaffarnagar MB	325,000	80,000	25	241000	74	321000	99
140	Rae Bareli MB	175,000	70,000	40	105000	60	175000	100
141	Rampur	317,000	0	0	n.a.	n.a.	n.a.	n.a.
142	Saharanpur MB	540,000	360,000	67	178200	33	538200	100
143	Unnao MB	121,000	0	0	33000	27	33000	27
144	Sitapur MB	150,000	0	0	33000	22	33000	22
West Bengal								
145	Asansol M.Corp.	314,625	36,000	11	183000	58	219000	70
146	Balurghat M	143,000	0	0	130000	91	130000	91
147	Bankura M	132,000	0	0	126035	95	126035	95
148	Barasat M	151,000	0	0	120000	79	120000	79
149	Berhampore M	150,000	0	0	n.a.	n.a.	n.a.	n.a.
150	Burdwan M	323,000	0	0	240000	74	240000	74
151	Halisahar M	149,000	0	0	15700	11	15700	11
152	Krishna Nagar M	145,272	0	0	116216	80	116216	80
153	Midnapur M	158,000	0	0	125000	79	125000	79
154	North Barrackpur M	118,374	0	0	20105	17	20105	17
155	Santipur M	133,911	0	0	65000	49	65000	49
156	Siliguri M.Corp.	500,000	0	0	341000	68	341000	68
Small States								
157	Agartala MCI	200,000	0	0	176000	88	176000	88
158	Aizwal	244,000	0	0	n.a.	n.a.	n.a.	n.a.
159	Guwahati M.Corp.	995,000	0	0	n.a.	n.a.	n.a.	n.a.
160	Imphal MCI	245,000	0	0	177000	72	177000	72
161	Jorhat MB	170,000	0	0	n.a.	n.a.	n.a.	n.a.
162	Shillong MB	216,732	0	0	209007	96	209007	96
Union Territories								
163	Chandigarh M.Corp.	850,000	850,000	100				100

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
164	Pondicherry M	290,000	83,000	29	102500	35	185500	64
CLASS II								
Andhra Pradesh								
1	Anakapalle M	115,000	0	0	25000	22	25000	22
2	Dharmavaram M	100,000	0	0	10000	10	10000	10
3	Gudur MCI	72,000	0	0	38684	54	38684	54
4	Kapra M	120,000	0	0	98332	82	98332	82
5	Kavali MCI	85,000	0	0	31000	36	31000	36
6	Madanapalle M	100,000	0	0	94000	94	94000	94
7	Narasaraopet M	95,000	0	0	n.a.	n.a.	n.a.	n.a.
8	Rajendra Nagar MCI	120,000	0	0	19600	16	19600	16
9	Sangareddy MCI	60,000	0	0	22000	37	22000	37
10	Srikakulam MCI	100,000	0	0	100000	100	100000	100
11	Srikalahasti M	70,000	0	0	70000	100	70000	100
12	Suryapet MCI	89,000	0	0	45680	51	45680	51
Bihar								
13	Buxar M	66,790	0	0	55600	83	55600	83
14	Deoghar M	100,000	0	0	40000	40	40000	40
15	Hajipur M	115,000	0	0	2000	2	2000	2
16	Hazaribagh M	119,054	0	0	n.a.	n.a.	n.a.	n.a.
17	Jehanabad M	57,030	0	0	30000	53	30000	53
18	Madhubani M	65,000	0	0	35000	54	35000	54
19	Mokama M	66,000	0	0	n.a.	n.a.	n.a.	n.a.
Gujarat								
20	Amreli M	85,000	0	0	64000	75	64000	75
21	Ankleswar M	60,000	40,000	67	n.a.	n.a.	n.a.	n.a.
22	Dabhoi M	65,000	7,000	11	32600	50	39600	61
23	Dohad M	78,000	0	0	70000	90	70000	90
24	Gondal M	100,000	0	0	80000	80	80000	80
25	Jetpur M	125,000	0	0	125000	100	125000	100
26	Mahesana M	138,000	100,000	72	20000	14	120000	87
27	Palanpur M	117,000	0	0	100000	85	100000	85
Haryana								
28	Jind MCI	114,000	72,000	63	41900	37	113900	100
29	Kaithal MCI	94,545	51,000	54	13000	14	64000	68

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
30	Rewari MCI	105,000	65,000	62	40000	38	105000	100
31	Thanesar MCI	100,000	65,000	65	21000	21	86000	86
Karnataka								
32	Bagalkot CMC	100,000	0	0	32000	32	32000	32
33	Chikmaglur CMC	100,000	60,000	60	40000	40	100000	100
34	Gokak CMC	68,000	0	0	25000	37	25000	37
35	Hospet CMC	114,150	0	0	n.a.	n.a.	n.a.	n.a.
36	Kolar CMC	112,000	7,500	0	n.a.	n.a.	n.a.	n.a.
37	Rabkavi-Banhatti CMC	72,000	0	0	72000	100	72000	100
38	Ramanagaram CMC	70,000	0	0	40000	57	40000	57
Kerala								
39	Changanessary MC	62,000	0	0	6500	10	6500	10
40	Payyanur M	70,500	0	0	8764	12	8764	12
41	Taliparamba M	52,000	0	0	9000	17	9000	17
42	Thrissur MC	91,000	0	0	54600	60	54600	60
Maharashtra								
43	Amalner MCI	100,000	0	0	76000	76	76000	76
44	Ballarpur MCI	108,900	0	0	73500	67	73500	67
45	Bhandara M	76,000	0	0	45000	59	45000	59
46	Kamptee MCI	95,000	0	0	11800	12	11800	12
47	Manmad MCI	87,000	0	0	50000	57	50000	57
48	Ratnagiri MCI	70,000	0	0	28000	40	28000	40
49	Satara MCI	100,000	0	0	95180	95	95180	95
50	Virar MCI	100,000	0	0	100000	100	100000	100
Madhya Pradesh								
51	Hoshangabad M	100,000	0	0	n.a.	n.a.	n.a.	n.a.
52	Itarsi M	105,000	0	0	n.a.	n.a.	n.a.	n.a.
53	Khargone M	80,000	0	0	n.a.	n.a.	n.a.	n.a.
54	Mandsaur M	123,000	0	0	62000	50	62000	50
55	Nagda M	100,000	0	0	n.a.	n.a.	n.a.	n.a.
56	Neemuch M	99,506	0	0	n.a.	n.a.	n.a.	n.a.
57	Sehore M	100,000	0	0	80000	80	80000	80
58	Shahdol M	75,000	0	0	56000	75	56000	75
59	Vidisha M	125,000	0	0	57000	46	57000	46

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
Orissa								
60	Balangir M	82,600	0	0	n.a.	n.a.	n.a.	n.a.
61	Bhadrak M	93,000	0	0	n.a.	n.a.	n.a.	n.a.
Punjab								
62	Ferozepur MCI	93,006	76,595	82	16400	18	92995	100
63	Kapurthala M	84,765	53,000	63	n.a.	n.a.	n.a.	n.a.
64	Mansa MCI	66,568	33,000	50	31765	48	64765	97
65	Phagwara MCI	108,472	48,800	45	43070	40	91870	85
66	Sangrur MCI	70,060	65,160	93	4900	7	70060	100
Rajasthan								
67	Banswara M	110,000	0	0	n.a.	n.a.	n.a.	n.a.
68	Barmer M	84,000	0	0	60000	71	60000	71
69	Bundi M	80,000	0	0	25,000	31	25000	31
70	Churu M	100,250	0	0	n.a.	n.a.	n.a.	n.a.
71	Hanumangarh M	125,000	0	0	50,000	40	50000	40
72	Sawai Madhopur M	89,200	0	0	44,126	49	44126	49
Tamil Nadu								
73	Ambur M	85,700	0	0	43000	50	43000	50
74	Arakkonam M	88,000	0	0	9750	11	9750	11
75	Attur M	64,000	0	0	56000	88	56000	88
76	Cumbum M	53,600	0	0	33570	63	33570	63
77	Dharmapuri M	66,600	0	0	34000	51	34000	51
78	Gudiyatham M	95,175	0	0	90500	95	90500	95
79	Nagapattinam M	112,200	28,000	25	80000	71	108000	96
80	Pudukkottai M	108,000	0	0	74900	69	74900	69
81	Sivakasi M	70,100	0	0	35000	50	35000	50
82	Srivilliputtur M	73,900	0	0	n.a.	n.a.	n.a.	n.a.
83	Tindivanam M	70,000	0	0	70000	100	70000	100
84	Udhagamandalam M	100,000	51,000	51	3125	3	54125	54
Uttar Pradesh								
85	Auraiya MB	90,000	2,000	2	45820	51	47820	53
86	Balrampur MB	70,000	0	0	18000	26	18000	26
87	Basti MB	110,000	0	0	65000	59	65000	59
88	Bhadohi MB	125,000	25,000	20	75000	60	100000	80
89	Chandpur MB	80,000	0	0	35700	45	35700	45

Sl. No.	City/ town	Population 1999	Population covered by sewerage system		Population covered by low cost sanitation		Total population covered	
			Number	%	Number	%	Number	%
90	Etah MB	135,000	40,000	30	20000	15	60000	44
91	Ghazipur MB	95,565	0	0	38230	40	38230	40
92	Gonda MB	114,000	0	0	48000	42	48000	42
93	Lakhimpur MB	100,000	0	0	70000	70	70000	70
94	Lalitpur MB	100,000	0	0	89230	89	89230	89
95	Mughalsarai MB	159,804	23,970	15	135,834	85	159804	100
96	Nawabganj-Barabanki MB	90,000	0	0	60000	67	60000	67
97	Orai MB	170,000	0	0	150000	88	150000	88
98	Roorkee MB	100,000	60,000	60	34000	34	94000	94
West Bengal								
99	Bishnupur M	67,400	0	0	48610	72	48610	72
100	Chakdaha M	89,730	0	0	58900	66	58900	66
101	Contai M	114,000	0	0	90000	79	90000	79
102	Cooch Behar M	99,400	0	0	60000	60	60000	60
103	Darjeeling M	150,000	30,000	20	78000	52	108000	72
104	Jalpaiguri M	101,088	0	0	29677	29	29677	29
105	Jangipur M	78,191	0	0	35780	46	35780	46
106	Katwa M	67,664	0	0	50000	74	50000	74
107	Raniganj M	121,000	0	0	87000	72	87000	72
Small States								
108	Kohima TC	103,000	0	0	10000	10	10000	10
109	Shimla M.Corp.	111,000	72,000	65	39000	35	111000	100
110	Itanagar NTAC	33,540	0	0	28200	84	28200	84
111	Panaji MCI	57,190	30,000	52	14050	25	44050	77
Union Territories								
112	Port Blair MCI	105,000	0	0	n.a.	n.a.	n.a.	n.a.
113	Daman MCI	35,000	0	0	n.a.	n.a.	n.a.	n.a.
114	Kavarathi	11,107	0	0	n.a.	n.a.	n.a.	n.a.
115	Silvassa	20,000	0	0	20000	100	20000	100

Source: NIUA Survey, 1999. See Appendix - II, Table B - 12

CHAPTER IV

MUNICIPAL SOLID WASTE MANAGEMENT

4.1 BACKGROUND

Generation of solid waste continues to increase in urban India with rapid urbanization, rising incomes, changing consumption patterns and a shift from recycling to a throw-away society. In urban areas the problem of solid waste management (SWM) is very acute due to dense development and congestion. Solid waste management is an obligatory function of urban local bodies (ULBs) in India. Most ULBs are unable to cope with the challenging task of collection, transportation and disposal of solid wastes not only due to rapid urbanization and rising incomes but also due to the non-availability of required open-spaces near urban centres for landfilling. Waste, therefore, often accumulates in open spaces, wasteland, streets, and even stagnant water bodies causing serious health and environmental problems. Accumulation of uncollected wastes pollutes ground water (through leachates) and surface water (due to runoff during rains).

While SWM generally consumes a significant proportion of municipal budgets, revenues from the service are negligible. The ULBs are also often under-staffed and lack adequate number of vehicles to transport waste. Disposal of waste is becoming an even more serious problem in SWM with land availability within accessible distance becoming scarce mainly due to rapid growth of cities and towns. Management of municipal solid waste is a service, which needs efficiency improvements and also substantial financial support in order to bring about significant change in the service.

This chapter presents the status of solid waste management in the country in respect of coverage, generation, collection, transportation, disposal, staffing, privatization efforts, and revenue receipts and expenditure. The chapter also gives the additional investment requirements to improve the service and its coverage.

4.2 COVERAGE BY SOLID WASTE MANAGEMENT

While the municipal governments are obligated to provide this service to the entire population within their jurisdiction, the overall coverage¹¹ by the service in the sampled cities is 92 per cent (Table 4.1). This indicates that local governments have not been able to extend this service to about 8 per cent of the population in the aggregate. There is no major difference in coverage of population by the service between metropolitan cities, sampled Class I cities and Class II towns. Coverage here does not, however, indicate the quality of service provided i.e., the collection efficiency or frequency of cleaning (which have been dealt with in the following paragraphs). Since solid waste management falls in the domain of public goods, non-

¹¹ Coverage only means that the local body provides sweeping and collection services in the area. However, the quality of service, frequency of collection and lifting of waste are not indicated by coverage.

provision of this service or provision of poor quality service can create health risks to not only the population not covered by the service but also for other citizens.

Table - 4.1: Coverage of Population by Solid Waste Management Service - 1999					
<i>(no. of cities/towns)</i>					
% Coverage	Metropolitan cities	Class I cities	Class II towns	Total	%
<25	0	0	0	0	0
25 - 50	1	2	1	4	1.3
50 - 75	2	10	9	21	7.1
75 - 99	3	26	19	48	16.1
100	16	124	82	222	74.5
n.a.	0	2	1	3	1.0
Total cities/towns	22	164	112	298	100
Average (%)	90	95	93	92	

Source: NIUA Survey, 1999. See Appendix - III, Table C - 1 for details

4.3 SOLID WASTE GENERATION

4.3.1 Quantity Generated Per Day

The total quantity of solid waste generated by almost 140.6 million people (1999) in the 298 responding urban centres amounts to over 60,823 MT per day (Table 4.2). In the country's largest cities such as Delhi and Mumbai the daily waste generation is as high as 6,000 metric tonnes (MT) while in some of the other sampled class II cities solid waste generated is as low as 4 MT (Dohad, Sawai Madhopur, Silvassa & Cumbum) and 5 MT (Chandpur in Uttar Pradesh). In over two-thirds (69%) of the sampled urban centres the average daily solid waste generation is less than 100 MT. Overall, the total solid waste generation does not exceed 500 MT in about 92 per cent of the sampled urban centres (Appendix - III, Table C-2). The variations in the quantity of waste generated in cities depends upon the population size of the city, the floating population, the income levels of the population, the economic activities, the cultural habits of people, and so on.

Table - 4.2: Total and Per Capita Waste Generated -1999				
<i>(no. of cities/towns)</i>				
Size class of city/ town	No. of sampled cities/towns	Municipal population 1999 (in million)	Quantity of solid waste generated daily (MT)	Per capita waste generated daily (gms.)
Metropolitan	22	70.30	35157	500
Class I	164	59.94	22587	377
Class II	112	10.36	3079	297
Total	298	140.60	60823	433

Source: NIUA Survey, 1999. See Appendix - III, Table C - 2 for details

4.3.2 Quantity of Domestic and Non-Domestic Waste

The quantity of waste generated by different sources would depend on the nature of activities in the urban centers. Not all cities have been able to provide the quantity of waste generated by domestic and non-domestic sources – only about three-fourths (77%) of the urban centers have provided data on this aspect. The survey results show that, on an average, about two-thirds (31475 MT & 63%) of the waste generated is from domestic source while about one-third of the waste generated is from non-domestic sources (18130 MT & 37%) (Table 4.3).

(no. of cities/towns)							
Size class of city/ town	Responding cities / towns	Data not available	Waste generated by Source (MT per day)		Waste by source from cities responding (MT per day)	% waste generated	
			Domestic	Non-Domestic		Domestic	Non Domestic
Metropolitan	17	5	19645	10449	30094	65	35
Class I	128	36	10309	6812	17121	60	40
Class II	83	29	1521	869	2390	64	36
Total	228	70	31475	18130	49605	63	37

Source: NIUA Survey, 1999. See Appendix - III, Table C – 2 for details

4.3.3 Hospital Waste

Collection of hospital waste is increasingly becoming an important issue and this aspect needs urgent attention. Hospital/ medical waste, by law, must be collected separately from municipal wastes and major hospitals should have their own incinerators to incinerate such waste. The remnants from incineration and the parts that cannot/ should not be incinerated should be landfilled in a separate zone at the landfill site

However, hospital waste is collected separately in only 66 cities and towns in a sample of 298. In three-fourths of the sampled urban centres the hospital waste is

(no. of cities/towns)					
Collection method	Metropolitan cities	Class I cities	Class II towns	Total	%
Combined	6	133	91	230	77
Separate	16	29	21	66	22
n.a.	0	2	0	2	1
Total cities/towns	22	164	112	298	100

n.a. in case of Class I cities are for Halisahar in W. Bengal & Jorhat in Assam
Source: NIUA Survey, 1999. See Appendix - III, Table C – 2 for details

collected along with municipal solid waste (Table 4.4). This poses great health risks to the workers dealing with waste, and more specifically to the rag pickers.

In a majority of the metropolitan cities, 16 out of the responding 22 cities, hospital waste is collect separately though only in 11 of these cities this waste is incinerated (Table 4.5). Overall, incineration of hospital waste is practiced in only 53 per cent of the sampled urban centres where hospital waste is collected separately (see Table - AX-4.1 at the end of this chapter). However, in the absence of proper landfill sites, the remains from incinerators too are landfilled along with other wastes.

<i>(no. of cities/towns)</i>					
Method of treatment	Metropolitan cities	Class I cities	Class II towns	Total	%
Incineration	11	18	6	35	53
None	3	5	11	19	29
n.a.	2	6	4	12	18
Total cities/towns	16	29	21	66	100
<i>Source: NIUA Survey, 1999. See Appendix - III, Table C - 2 for details</i>					

4.3.4 Per Capita Waste Generation

Per capita waste generation is a very sensitive measure, which is affected by the population and the waste generation figures used. In the present study, the per capita waste generation has been calculated using the estimated population of 1999 and the estimated daily waste generation in the urban centers (both as furnished by the local governments). The daily waste generation figure is an average for the year as the waste generated varies considerably between seasons. The daily waste generated is also grossly overstated by many urban centers, as these are estimates provided by the local governments. In the absence of weighbridges, it is not possible for the local governments to estimate the waste generated accurately. These estimated figures of waste generated as well as population projected have affected the per capita waste generation figures in various urban centers.

The daily per capita waste generation in the sampled cities averages 433 grams. In metropolitan cities the average daily per capita waste generated is the highest among the sampled cities, averaging 500 grams, while in the sampled Class I cities it is 377 grams and it is 297 grams in the sampled Class II towns (Table 4.6). While 12 per cent of the of the sampled urban centres have a per capita waste generation of less than 150 grams daily, almost 18 per cent urban centres have a per capita waste generation of over 500 grams daily. Higher per capita waste generation poses a greater burden on local governments to make arrangements for collection, transportation, and disposal of this waste.

Per capita waste generation (gms./per day)	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<150	0	14	22	36	12
150 - 250	0	32	28	60	20
250 - 350	2	37	22	61	20
350 - 500	7	40	26	73	25
>500	13	41	14	68	23
Total cities/towns	22	164	112	298	100
Average (gms)	500	377	297	433	

Source: NIUA Survey, 1999. See Appendix - III, Table C - 1 & 2 for details

4.4 SOLID WASTE COLLECTION

4.4.1 Waste Collection Efficiency

The task of collecting the huge quantities of waste generated in urban areas is a daunting task for local governments. It means organising the staff for collection, arranging transportation and finding ways of disposing the waste collected. On an average, only 88 per cent of the solid waste generated is collected daily. In actual terms, of the 60823 MT of solid waste generated per day in the sampled urban centres, only 53505 MT is collected, leaving 7318 MT uncollected daily.

In the 22 metropolitan cities, despite a collection efficiency of 91 per cent, an estimated 3170 MT of waste is left uncollected daily (Table 4.7). Such huge quantities of uncollected waste can be a potential source of major diseases, in addition to being very unpleasant visually.

Size class of city/town	Sample cities/towns	Quantity of waste generated daily (MT)	Quantity of waste collected daily (MT)	Quantity left uncollected daily (MT)	% solid waste collected daily
Metropolitan	22	35157	31987	3170	91
Class I	164	22587	19204	3383	85
Class II	112	3079	2314	765	75
Total	298	60823	53505	7318	88

Source: NIUA Survey, 1999. See Appendix - III, Table C -2 for details

The present survey indicates that 100 per cent collection of waste has been achieved in only about one-third (32%) of the sampled cities. In 5 per cent of the sampled cities less than 50 per cent of waste generated is collected. The waste collection efficiency is better in metropolitan cities, where 91 per cent of the daily waste generated is collected, than in the Class I cities and Class II towns where 85 per cent and 75 per cent respectively of the daily waste generated is collected (Table 4.8).

Table - 4.8: Waste collection efficiency -1999					
<i>(no. of cities/towns)</i>					
% waste collected to generated	Metropolitan cities	Class I cities	Class II towns	Total	%
<50	0	4	9	13	5
50-75	2	28	27	57	19
75-99	13	78	41	132	44
100	7	54	35	96	32
Total cities/towns	22	164	112	298	100
Average	91	85	75	88	

Source: NIUA Survey, 1999. See Appendix - III, Table C - 2 for details

4.4.2 Collection Frequency

In most cities waste is collected once or twice daily i.e., street sweeping and collection. In 57 per cent of the sampled urban centres waste is collected once a day while in about 37 per cent of the sampled urban centres the collection is twice a day. A small percentage of cities have reported lesser frequency of waste collection such as on alternate days, twice weekly and weekly (Table 4.9).

Table - 4.9: Collection frequency - 1999					
<i>(no. of cities/towns)</i>					
Collection frequency	Metropolitan cities	Class I cities	Class II towns	Total	%
Once daily	17	90	64	171	57
Twice daily	4	64	42	110	37
Others	0	7	5	12	4
n.a.	1	3	1	5	2
Total cities/towns	22	164	112	298	100

Note: Other includes alternate days, twice weekly, and weekly
Source: NIUA Survey, 1999. See Appendix - III, Table C - 2 for details

4.5 SOLID WASTE DISPOSAL

4.5.1 Transportation of Waste

The quantity of waste transported is a function of the number of vehicles of each type, their capacity, and the number of trips they make. For example if a city has 3 trucks with a capacity of 3 tons making two trips a day, the total waste transported would be given as 18 tons. However, the actual waste transported could be 15 tons or any such figure. On the other hand, if the waste is construction waste, then the weight would increase considerably. Also the number of trips is an average for the year. The capacity of the vehicles must also be read with caution. The capacity of each vehicle given by the local government is the designed capacity of the vehicle.

However, the waste that is loaded in each vehicle would vary considerably depending on how the loading is done and whether any compacting takes place after loading. Often the trucks are loaded by head load and there is a lot of air with the material and so the actual load is much less than the designed capacity. Also the domestic waste is more voluminous and so would fill up space much faster than construction waste, so the actual weight transported is just an estimate. In the absence of weighbridges the local governments just give an approximate figure for waste generation and collection. A case in point is Ahmedabad, where after the installation of a weighbridge the actual waste collection and transportation figures fell significantly. This is also the reason why in some cities the figures for waste generation and collection are very high or very low. The transportation vehicles are also often old and may not be able to carry the designed load. Therefore, all the figures of waste generation, collection and transportation must be taken as the best estimates provided by the local governments.

Primary waste collection is generally done by using wheelbarrows and tricycles. The waste collected through street sweepings is heaped at various points and then transferred into dustbins. The waste from the dustbins and intermediate collection centres is transported to the disposal point by waste transportation vehicles. Transportation of waste is generally done by vehicles owned by the local governments or hired from private bodies. These vehicles include trucks, tractor-trolleys, power tillers, dumper placers, compactors etc.

The present survey indicates that in most urban centres only motorised vehicles are used for waste transportation (Table 4.10). However, in some urban centres, particularly those that dump waste anywhere, non-motorised vehicles are also used for waste transportation. These mainly include tri-cycle carts and animal drawn carts. Almost 20 Class I cities and 16 Class II towns in the sample have reported use of non-motorised mode of transport, along with motorized mode, for transporting waste.

No. of vehicles	<i>(no. of cities/towns)</i>				
	Metropolitan cities	Class I cities	Class II towns	Total	%
1-3	0	4	42	46	15
4-5	0	29	44	73	25
6-10	0	50	21	71	24
11-20	0	36	2	38	13
21-50	4	39	0	43	14
>50	17	5	0	22	7
Privatised	0	1	1	2	1
n.a.	1	0	2	3	1
Total cities/towns	22	164	112	298	100

Source: NIUA Survey, 1999. See Appendix - III, Table C - 3 for details

Transportation vehicles need to be repaired and maintained in good order to be able to transport waste efficiently. However, the present survey indicates that, on an average, about 15 per cent of vehicles are out of order at any given point of time. The percentage of vehicles that are usually out of order in metropolitan cities is 10 per cent while it is 15 per cent for the sampled Class I cities and Class II towns.

Workshop for maintenance of vehicles is available with only about 30 per cent of the urban local governments in the sample (Table 4.11). In the urban centres without a workshop, maintenance of vehicles is done in private workshops.

<i>(no. of cities/towns)</i>					
Vehicle Maintenance Workshop	Metropolitan cities	Class I cities	Class II towns	Total	%
Yes	18	51	19	88	30
No	3	112	92	207	69
n.a.	1	1	1	3	1
Total cities/towns	22	164	112	298	100

Source: NIUA Survey, 1999. See Appendix - III, Table C – 3 for details

4.5.2 Method of Waste Disposal

The present survey indicates that by far the most universally used method of waste disposal in the urban areas of the country is crude/ open dumping. In almost three-fourths of the sampled cities the main method of solid waste disposal is crude/ open dumping. In about 12 per cent of the sampled urban centres composting has been reported to be the main method of waste treatment/ disposal while in about 11 per cent of the cities landfill is the main method of waste disposal (Table 4.12). The situation with respect to crude/ open dumping varies across the country. There are cities where waste is dumped anywhere, there are other cities where waste is

<i>(no. of cities/towns)</i>									
	Crude/open dumping		Landfill		Composting		Others		Total No.
	No.	%	No.	%	No.	%	No.	%	
Metropolitan Cities	14	64	8	36	0	0	0	0	22
Class I Cities	125	76	16	10	23	14	0	0	164
Class II Towns	88	78.6	10	8.9	13	11.6	1	0.9	112
Total	227	76.2	34	11.4	36	12.1	1	0.3	298

*Note : Disposal method is assumed to be main method if waste disposal is equal or greater than 50%
 2 cities namely Dewas (Class I) & Kapurthala (Class II) had both Open dumping & Landfill as main method (50% of waste disposed by each method)
 2 Class I cities namely Chittoor & Khandwa had 50% of waste disposed by Composting & remaining 50% by combination of Open Dumping & Landfill method)*

Source: NIUA Survey, 1999. See Appendix - III, Table C – 2 for details

dumped in low-lying areas, and then there are cities where the waste is dumped but at specified sites. Often crudely dumped waste and waste collected in small heaps along street sides are burnt leading to air pollution. Despite having landfill sites, some cities do not make use of them as the sites are far away from the city and transportation costs are high, therefore crude/open dumping is resorted to in such cases (e.g. Jodhpur).

In many urban centres any open site where waste is dumped is called landfill site. The present survey indicates that in 227 sampled cities and towns waste is dumped at specific open sites which are not developed landfill sites - these include 14 metropolitan cities, 125 Class I cities and 88 Class II towns. Overall, while 34 sampled urban centres have indicated having a landfill site at present (8 metropolitan cities, 16 Class I cities and 10 Class II towns), 38 other urban centres have plans for developing landfill sites in the future (4 metropolitan cities, 24 Class I cities and 10 Class II towns). Developing sanitary landfill sites is, thus, a necessity to dispose off waste scientifically and in an environmentally sound manner.

4.6 STAFF POSITION

Solid waste management is a labour intensive service and one of the problems that Urban Local Bodies face in providing this service is shortage of staff. The Report of the Committee on Urban Wastes (1975) had recommended a norm of 2.8 sanitary workers per 1000 population. The present survey indicates that this norm is not met in almost four-fifth (80%) of the sampled urban centres. This could also be partly due to privatisation of the collection and transportation functions in many cities. The average number of sanitary workers per 1000 population in the sampled urban centres is 2.4 i.e., 0.4 short of the norm mentioned above. In the metropolitan cities there are an average of 2.8 sanitary workers per 1000 population whereas this average is 1.9 in Class I cities and 2.1 in Class II towns (Table-4.13). Inadequate number of sanitary workers for the area and population covered affects the collection efficiency and therefore, the quality of service. In order to improve the solid waste management collection efficiency, private contractors and NGOs could be involved, as has been done in many cities.

Sanitary workers per 1000 population	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<2	8	89	61	158	53
2 to <3	11	45	33	89	30
3 to <4	2	19	11	32	11
4 – 8	1	5	3	9	3
n.a.	0	6	4	10	3
Total cities/towns	22	164	112	298	100
Average	2.8	1.9	2.1	2.4	

Source: NIUA Survey, 1999. See Appendix - III, Table C – 8 for details

4.7 PRIVATISATION

Solid waste management is a service in which private sector involvement is being encouraged by the government. Many cities have already privatised sweeping and collection activities. Transportation of waste is another area where privatisation has taken place. Even at the disposal stage, private sector is being involved in setting up composting plants and waste-to-energy plants (Table-4.14). Privatisation has helped local governments to reduce expenditure and improve the coverage of population by the service.

Table – 4.14: Privatisation of Solid Waste Management Activities – 1999					
<i>(no. of cities/towns)</i>					
Activity privatized	Metropolitan cities	Class I cities	Class II towns	Total	%
Primary collection	6	16	8	30	46
Transportation	4	5	2	11	17
Disposal	0	2	0	2	3
Composting	1	4	0	5	8
Others*	1	11	5	17	26
Total cities/towns	12	38	15	65	100
* Combinations of activities Source: NIUA Survey, 1999. See Appendix - III, Table C -9 for details					

The present survey indicates that private sector involvement in solid waste management has been found in 65 of the 298 sampled urban centres (i.e., 22%). Almost 46 per cent of these urban centres are using private sector for primary collection activity i.e., sweeping and collection while in 17 per cent of these urban centres the private sector has been involved for transportation of waste. In the remaining 37 per cent of the sampled urban centres private sector has been involved in disposal, composting and drain cleaning etc. (see Table – AX - 4.2 at the end of this chapter).

Private sector involvement is the maximum in the metropolitan cities where 12 of the 22 responding cities are using private sector for mainly primary collection and transportation activities. The use of private sector in SWM is still not very common in the Class I and Class II urban centres as the present survey shows that privatization has taken place in only 38 Class I cities and 15 Class II towns.

Most local governments that have privatized activities under SWM have not furnished information on cost savings due to the involvement of private sector. While a few local governments have given only the cost before privatization, some others have only given the cost of the activity after privatization. Very few local governments have provided information on cost of the activity before and after privatization. In some of these urban centres cost savings between 22 and 51 per cent have been achieved due to privatization.

4.8 REVENUE RECEIPTS AND EXPENDITURE

4.8.1 Revenue Receipts

Solid waste management is a service that is low on revenue generation. The service either generates no revenue or the revenue generated is not very significant. No direct revenue accrues from this service except in a few urban centers. Revenue from the service mainly comes in the form of tax, which is a certain percentage of the property tax. However, only 42 urban centres in the sample have reported revenue from sanitation tax, sanitation cess or conservancy tax. A small number of cities have reported revenue receipts from sale of compost. Nearly 71% of the sampled cities have not reported any revenue receipts from the service (see Appndix III, Table C-10). The expenditure incurred on the service has to, therefore, be met from the general revenues of the local government.

4.8.2 Revenue Expenditure

Analysis of expenditure on solid waste management is made difficult by the method of keeping accounts by various local governments. While expenditure on salary and wages is relatively easy to obtain, expenses on heads such as consumables and vehicle repairs are often clubbed together with other expenses.

Management of municipal solid waste generally consumes a large share of the total municipal expenditure. The share of this service as a percentage of the total municipal budget is known to be as high as 50 per cent. The present survey indicates that the expenditure on solid waste management forms an average of 18 per cent of the total municipal budget of the responding urban centres.

The share of expenditure on establishment is very high on this service as municipal solid waste management is a labour intensive service. On an average, the expenditure on establishment forms over four-fifths of the total expenditure on the service. More than two-thirds (73%) of the responding urban centres spend over 75 per cent of their solid waste management expenditure on establishment (Table 4.15).

Table – 4.15: Per Cent Share of Establishment Expenditure - 1997-98

% Expenditure on establishment	<i>(no. of cities/towns)</i>				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<25	1	3	0	4	1
25 - 50	0	5	4	9	3
50 - 75	4	18	11	33	11
>75	15	121	80	216	73
bu .n.a.	1	3	3	7	2
n.a.	1	14	14	29	10
Total cities/towns	22	164	112	298	100
Average (%)	81	84	81	82	

bu n.a. breakup not available
Source: NIUA Survey, 1999. See Appendix - III, Table C -11 for details

4.8.3 Per Capita Revenue Receipts

Solid waste management is a service from which user charges are not recovered by the local government. The cost recovery, to whatever extent, is based on tax/ cess. Therefore, it should come as no shock that, on an average, only Rs. 10.1 per capita per annum is recovered from the service (Table 4.16). In almost one-third of the responding urban centres the recovery is less than Rs. 0.25 per capita per annum.

Per capita revenue receipts (Rs./annum)	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<0.25	2	20	7	29	9.8
0.25 to <1	2	10	4	16	5.4
1 to <5	0	8	6	14	4.7
5 to <7.5	1	3	3	7	2.4
7.5 to <10	0	6	0	6	2.0
10 and above	3	9	2	14	4.7
Total responding cities / towns	8	56	22	86	28.9
n.a.	14	108	90	212	71.1
Total cities/towns	22	164	112	298	100.0
Average (Rs. per annum)	12.8	6.6	2.8	10.1	

Source: NIUA Survey, 1999. See Appendix - III, Table C - 10 for details

4.8.4 Per Capita Expenditure

In the sampled cities, the average per capita expenditure on the service is Rs. 121 per annum. The average per capita expenditure in metropolitan cities on the service is Rs. 156 per annum while it is Rs. 87 and Rs. 86 in sampled Class I cities and Class II towns respectively (Table 4.17). Since there are no norms available for per capita expenditure on municipal solid waste management, it is difficult to know whether the

Per capita expenditure (Rs./annum)	(no. of cities/towns)				
	Metropolitan cities	Class I cities	Class II towns	Total	%
<50	5	37	28	70	23
50 to 100	4	80	43	127	43
100 to 200	10	27	21	58	19
200 to 300	1	3	4	8	3
> 300	1	2	2	5	2
n.a.	1	15	14	30	10
Total cities/towns	22	164	112	299	100
Average (Rs. per annum)	156.06	87.27	85.99	121.21	

Source: NIUA Survey, 1999 See Appendix - III, Table C - 11 for details

per capita amount spent by the municipal bodies is sufficient to maintain and improve the service.

4.8.5 Cost Recovery

Solid waste management service, in India, does not generate significant revenues in most urban centers while the expenditure levels are usually very high. The cost recovery in this service is, therefore, very low and averages a low 7 per cent for the sample. The average revenue from solid waste management service is a low Rs. 10.12 per capita per annum while the expenditure on the service averages Rs. 140.63 per capita per annum. Therefore, a deficit of Rs. 130.51 per capita per annum has to be covered by the general revenues of the local governments (Table 4.18).

	Metropolitan cities	Class I cities	Class II towns	Total
Per capita revenue receipts (Rs. / annum)	12.80	6.66	2.96	10.12
Per capita expenditure (Rs. / annum)	189.39	73.12	63.15	140.63
Deficit (Rs./ annum)	176.59	66.46	60.19	130.51
Cost recovery (%)	7	9	5	7
<i>Note : Per capita receipts and per capita expenditure are for cities giving information both for receipts and expenditure.</i>				
<i>Source: NIUA Survey, 1999. See Appendix - III, Table C – 10 & 11 for details</i>				

The cost recovery from solid waste management service needs to be improved in order to provide better quality service to the people. Introduction of user charges for door-to-door collection can improve cost recovery from the service. Involving private sector, NGOs and community-based organizations can reduce the expenditure on the service and help improve the finances of the local government.

4.9 ADDITIONAL INVESTMENT REQUIREMENT

The coverage of population by the SWM service in the present survey is 95 per cent in the sampled urban centres. Covering 100 per cent of the population by the service would require extending the service to the presently uncovered population and covering the population that would be added in the coming years. The present study gives the additional capital investment requirements for covering 100 per cent of the population by the SWM service for the years 2002, 2007, 2012, 2017, and 2022 by the different size class of cities.

4.9.1 Projection Methodology

For projecting the additional capital investment requirements the following were required:

- the total urban population projected till the year 2022 at five year intervals starting 2002 A.D. – for which the Registrar General of India’s population projection has been used;
- the division of projected urban population by size class of cities for different years (Table 4.19);
- the present coverage of population by the service by size class of urban centres;

Table - 4.19: Year and Class Wise Projection of Urban Population*								
Year	Metro	I	II	III	IV	V	VI	Total
1991 (% population)	23.00	33.67	13.33	16.35	9.77	3.43	0.45	100.00
1999	64099850	93836607	37150044	45566633	27228502	9559239	1254128	278695000
2002	69340170	101507979	40187151	49291817	29454498	10340730	1356656	301479000
2007	79113330	115815036	45851334	56239259	33605967	11798205	1547870	343971000
2012	89579940	131137243	51917417	63679653	38052001	13359095	1752651	389478000
2017	101110092	148016382	58599892	71876087	42949808	15078592	1978241	439609094
2022	114164910	167127501	66166011	81156360	48495268	17025463	2233661	496369174

*Note: 1991 The proportion of population in each size class is for the individual cities and towns and not for urban agglomerations and the proportions are assumed to be constant for the projected period i.e., upto 2022.
Source for proportion of population in each size class - Census of India 1991, Series 1 - India, General Population Tables Part II-A (ii) Towns and Urban Agglomerations 1991 with their Population 1901 - 1991, Statement-3, p.32
Source for size class-wise population distribution - Projections based on Census of India’s ‘Population Projections for India and States 1996-2016’, Registrar General, India, New Delhi, 1996. * Population as on 1st July of the given year*

4.9.2 Assumptions Made for Calculating Investment Requirements

The Census of India’s publication (1996) titled ‘Population projection for India and the states 1996-2016’ projects the population till the year 2016. Thereafter, for projecting the population till the year 2022, the annual growth rate of urban population during 2015-2016 (2.46% per annum) has been used as a constant.

The percentage of population living in different size class of towns has been kept constant at 1991 level for projections till the year 2022. Such an assumption was necessitated due to the absence of any projection of population by size class of towns available from the Registrar General’s office.

To calculate the backlog of population not covered by SWM service in 1999, the results of the present survey on coverage have been used for metropolitan cities, Class I cities and Class II towns. However, since the study does not cover the other size classes of towns (barring the capital towns) the coverage figures for Class II towns have been used as proxy for classes III to VI.

The additional population to be covered in different years by size class has been arrived at by subtracting the latter year’s population by the previous one. The backlog population to be covered in 1999 has been calculated by the population not covered till 1999, which has been taken from the present survey (Table 4.20 and 4.21).

Year	Metro	I	II	III	IV	V	VI	Total
1999*	61535856	89144776	34549540	42376968	25322506	8890092	1166339	262986078
1999-2002	5240320	7671373	3037107	3725184	2225997	781491	102528	22784000
2002-2007	9773160	14307056	5664184	6947442	4151468	1457476	191214	42492000
2007-2012	10466610	15322207	6066083	7440395	4446034	1560890	204782	45507000
2012-2017	11530152	16879139	6682475	8196434	4897808	1719497	225590	50131094
2017-2022	13054818	19111119	7566119	9280273	5545460	1946871	255420	56760080
Total	111600916	162435670	63565508	77966696	46589273	16356316	2145872	
* Backlog								

Class	Uncovered population (%)	Per capita waste generation (gms)
Metro	4	499
I	5	379
II	7	296
III	7	296
IV	7	296
V	7	296
VI	7	296
Source: NIUA Survey, 1999		

4.9.3 Projected Additional Investment Requirements

The calculation of additional investment requirements has been done by using the per capita costs given by the Planning Commission (Task Forces on Housing and Urban Development, 1983) (Table 4.22). The per capita cost estimates available are for primary collection, transportation and disposal. For calculating the additional investment requirements the total cost of the service covering all the three stages has been taken. For metropolitan cities the costs given for 'Calcutta Corporation'

	<i>(Rs. at 1998-99 prices)</i>	
	Smaller urban locations	Calcutta Corporation
Primary collection	34.3	49
Transportation :		
Trucks/containers	49	107.8
Workshops	36.75	73.5
Disposal	24.5	24.5
Total	144.55	254.8
Source: Task Forces on Housing and Urban Development, Vol. II – Financing of Urban Development, Planning Commission, Government of India, New Delhi, December 1983, p. 38 (inflated to 1998-99 prices)		

have been used while for other classes of cities and towns the costs given for 'smaller urban locations' has been used. The backlog population and the additional population to be covered by the service has then been multiplied by this cost figure to arrive at the additional investment requirements for covering 100 per cent population by the service.

Municipal solid waste service at present covers 95 per cent of the population, on an average, in the sampled urban centres. The backlog population to be covered by the service was about 263 million in 1999. In order to extend this service to the presently uncovered population, and to the additional population to be added till the end of 2022, an amount of Rs. 3953.79 crores at 1998-99 prices (based on Task Forces per capita cost estimates) will need to be invested during 1999-2022 period. In annual terms an investment of Rs. 171.90 crores will be needed to cover the uncovered and additional population by the service between 1999 and 2022 (Table 4.23).

Regardless of the method of estimation, financing an investment of this magnitude will require resource mobilization from non-governmental sources. Encouraging private sector participation in waste recovery programmes, mobilizing community based organizations and NGOs to take up primary waste collection activities and finding new revenue sources (such as fines) in this sector will help to reduce the financial burden on the government and improve the delivery of this service.

Table – 4.23: Additional Investment using Task Forces Per Capita Cost Estimates								
<i>(Rs. in crores at 1998-99 prices)</i>								
Year	Metro	I	II	III	IV	V	VI	Total
Backlog 1999	65.33	67.82	37.59	46.11	27.55	9.67	1.27	255.34
1999-2002	133.52	110.89	43.90	53.85	32.18	11.30	1.48	387.12
2002-2007	249.02	206.81	81.88	100.43	60.01	21.07	2.76	721.97
2007-2012	266.69	221.48	87.69	107.55	64.27	22.56	2.96	773.20
2012-2017	293.79	243.99	96.60	118.48	70.80	24.86	3.26	851.76
2017-2022	332.64	276.25	109.37	134.15	80.16	28.14	3.69	964.40
Total	1340.99	1127.24	457.02	560.56	334.96	117.60	15.43	3953.79

ANNEX TABLES

Table -AX- 4.1: Treatment of Hospital Waste* - 1999	
City/ town	Treatment
Metropolitan cities	
Ahmedabad M.Corp.	Incineration
Bangalore M.Corp.	Incineration
Bhopal M.Corp.	n.a.
Calcutta M.Corp.	n.a.
Chennai M.Corp.	None
Coimbatore M.Corp.	Incineration
Delhi M.Corp.	Incineration
Greater Mumbai M.Corp.	Incineration
Hyderabad M.Corp.	Incineration
Indore M.Corp.	Incineration
Jaipur M.Corp.	Incineration
Madurai M.Corp.	Incineration
Nagpur M.Corp.	Incineration
Surat M.Corp.	None
Vadodara M.Corp.	Incineration
Visakhapatnam M.Corp.	None
Class I cities	
Agartala MCI	n.a.
Alappuzha MC	Incineration
Balurghat M	None
Bhilwara M	n.a.
Chhapra M	Incineration
Cuddalore M	Incineration
Dewas M.Corp.	Incineration
Dindigul M	Incineration
Gulbarga M.Corp.	n.a.
Guwahati M.Corp.	Incineration
Imphal MCI	None
Jodhpur M.Corp.	Incineration
Kanchipuram M	None
Kollam MC	Incineration
Kozhikode M.Corp.	Incineration
Kumbakonam M	Incineration
Mathura MB	Incineration

City/ town	Treatment
Nagercoil M	Incineration
Nandyal MCI	n.a.
Ongole MCI	n.a.
Pondicherry M	Incineration
Rajkot M.Corp.	None
Ratlam M.Corp.	n.a.
Salem M.Corp.	Incineration
Srinagar M.Corp.	Incineration
Thanjavur M	Incineration
Thiruvananthapuram M.Corp.	Incineration
Tiruchirapalli M.Corp.	None
Vijaywada M.Corp.	Incineration
Class II towns	
Ambur M	n.a.
Ankleswar M	None
Ballarpur MCI	Incineration
Contai M	None
Cooch Behar M	None
Dharmapuri M	Incineration
Ghazipur MB	n.a.
Gokak CMC	None
Jalpaiguri M	None
Katwa M	None
Lalitpur MB	n.a.
Mahesana M	None
Nagapattinam M	Incineration
Panaji MCI	Incineration
Port Blair MCI	Incineration
Pudukkottai M	None
Rajendra Nagar MCI	None
Raniganj M	None
Sawai Madhopur M	n.a.
Thrissur MC	Incineration
Tindivanam M	None
<i>* In urban centres collecting hospital waste separately.</i>	
<i>Source: NIUA Survey, 1999 See Appendix - III, Table C – 5 for details</i>	

Table – AX- 4.2: Details of Privatisation in Solid Waste Management – 1999

Sl. City/Town		Details of privatisation						
No.		Aspect privatised	Specific Area covered	Mode used	Year of privatisation	No. of contractors	Cost (Rs.'000) before privatisation	after privatisation
Metropolitan Cities								
1	Bangalore M.Corp.	Sweeping	n.a.	Contract	1989	120	n.a.	n.a.
2	Calcutta M.Corp.	Transportation	-	n.a.	n.a.	n.a.	n.a.	n.a.
3	Chennai M.Corp.	Collection	3 Zones	BOO	Starting 2000	1	n.a.	n.a.
4	Delhi M.Corp.	Composting	n.a.	Contract	1999	1	n.a.	n.a.
5	Greater Mumbai M.Corp.	Transportation	n.a.	Contract	n.a.	n.a.	n.a.	n.a.
6	Hyderabad M.Corp.	Sweeping	n.a.	n.a.	1998	122	n.a.	n.a.
7	Jaipur M.Corp.	Transportation	n.a.	n.a.	1990	18	n.a.	n.a.
8	Ludhiana M.Corp.	Sweeping & collection	n.a.	CBO	n.a.	114	2827	n.a.
9	Madurai M.Corp.	Transportation	Commercial	Contract	1998	2	n.a.	n.a.
10	Nagpur M.Corp.	Collection	n.a.	Contract	1997	2	n.a.	n.a.
11	Surat M.Corp.	Collection & transportation	n.a.	n.a.	n.a.	2	n.a.	n.a.
12	Visakhapatnam M.Corp.	Sweeping & collection	n.a.	n.a.	1994	5	n.a.	n.a.
Class I Cities								
Andhra Pradesh								
1	Anantapur MCI	Sweeping	n.a.	Contract	1997	1	11500	14500
2	Chittoor M	Sweeping & collection	n.a.	Contract	1999	1	n.a.	n.a.
3	Eluru M	Collection & disposal	n.a.	Contract	1998	2	n.a.	1800
4	Guntur MCI	Collection & disposal	n.a.	Contract	1996	3	n.a.	3864
5	Hindupur M	Sweeping & collection	n.a.	Contract	1996	1	n.a.	100
6	Nandyal MCI	Sweeping	n.a.	NGO	1998	1	n.a.	n.a.
7	Nellore MCI	Sweeping	n.a.	Contract	1998	5	23843	27812
8	Qutubullapur M	Sweeping	n.a.	Contract	1997	5	2000	4200
9	Tenali M	Collection & disposal	n.a.	Contract	1998	1	n.a.	144
10	Tirupati MCI	Sweeping & collection	n.a.	Contract	1997	4	n.a.	n.a.
11	Vijaywada M.Corp.	Disposal & treatment	n.a.	n.a.	n.a.	3	n.a.	n.a.
Bihar								
12	Gaya M.Corp.	Drain cleaning	n.a.	Contract	1999	4	n.a.	740

Sl. No.	City/Town	Details of privatisation						
		Aspect privatised	Specific Area covered	Mode used	Year of privatisation	No. of contractors	Cost (Rs.'000) before privatisation	after privatisation
Gujarat								
13	Bhuj M	Collection & transportation		-	-	-	-	-
14	Jamnagar	Primary collection	n.a.	Contract	1987	6	8000	2200
15	Rajkot M.Corp.	Collection & transportation	n.a.	Contract	1990	9	n.a.	7000
Jammu & Kashmir								
16	Srinagar M.Corp.	Collection	New colonies	Contract	1999	3	n.a.	n.a.
Karnataka								
17	Belgaum M.Corp.	Transportation	n.a.	Contract	1994	2	n.a.	n.a.
18	Bellary CMC	Sweeping & transportation	n.a.	Contract	1998	2	n.a.	n.a.
19	Davangere MCI	Composting	n.a.	Auction	1996	55	n.a.	n.a.
20	Hubli-Dharwad M.Corp.	Vermi-composting	n.a.	Contract	1998	1	n.a.	n.a.
21	Mysore M.Corp.	Sweeping & transportation	n.a.	Contract	1998	7	n.a.	n.a.
22	Shimoga CMC	Disposal	n.a.	Contract	1994	6	n.a.	n.a.
Kerala								
23	Alappuzha MC	Disposal	n.a.	Contract	1999	1	n.a.	n.a.
Madhya Pradesh								
24	Jabalpur M.Corp.	Sweeping	n.a.	Contract	1998	1	1164	770
Maharashtra								
25	Amravati M.Corp.	Sweeping	n.a.	Contract	1985	2	n.a.	700
26	Aurangabad M.Corp.	Composting	Entire city	Contract	1997	1	n.a.	30000
27	Nanded Waghala M.Corp.	Sweeping	Entire city	Contract	1997	1	n.a.	1000
28	Nashik M.Corp.	Transportation	n.a.	Contract	1997	77	n.a.	26500
29	Parbhani MCI	Transportation	n.a.	Contract	1999	2	n.a.	1205
Orissa								
30	Bhubaneswar M.Corp.	Collection	n.a.	Contract	n.a.	n.a.	n.a.	n.a.
Rajasthan								
31	Ajmer MCI	Transportation	Entire city	n.a.	1998	2	n.a.	n.a.
32	Sriganganagar M	Sweeping	Entire city	Contract	1994	3	700	350
Tamil Nadu								
33	Tiruppur M	Secondary collection	Major roads	Contract	1997	1	n.a.	n.a.
West Bengal								
34	Asansol M.Corp.	Primary collection & transportation	n.a.	Contract	n.a.	7	n.a.	n.a.

Sl. No.	City/Town	Details of privatisation						Cost (Rs.'000) before privatisation	Cost (Rs.'000) after privatisation
		Aspect privatised	Specific Area covered	Mode used	Year of privatisation	No. of contractors			
Assam									
35	Guwahati	M.Corp.	Transportation	Entire city	Contract	1988	13	n.a.	n.a.
Tripura									
38	Agartala	MCI	Composting	n.a.	n.a.	1999	n.a.	n.a.	n.a.
Union Territories									
39	Chandigarh	M.Corp.	Sweeping & collection	n.a.	Contract	1996	3	n.a.	2720
40	Pondicherry	M	Sweeping & collection	n.a.	Contract	1997	1	n.a.	n.a.
Class II Towns									
Andhra Pradesh									
1	Kapra	M	Sweeping	n.a.	n.a.	1999	3	4640	2908
2	Madanapalle	M	Sweeping & collection	n.a.	Contract	n.a.	2	n.a.	97
3	Narasaraopet	M	Collection & disposal	n.a.	Contract	1998	1	n.a.	1248
4	Rajendra Nagar	MCI	Sweeping & disposal	n.a.	NGO	1997	1	20	85
5	Srikalahasti	M	Sweeping & disposal	n.a.	Contract	1998	n.a.	n.a.	-
6	Suryapet	MCI	Sweeping & disposal	n.a.	Contract	1997	2	n.a.	n.a.
Karnataka									
7	Bagalkot	CMC	Sweeping	n.a.	Contract	1999	2	n.a.	n.a.
8	Chikmagalur	CMC	Collection & transportation	Entire town	Contract	1997	1	n.a.	n.a.
9	Gokak	CMC	Sweeping & transportation	n.a.	n.a.	1999	1	n.a.	n.a.
10	Rabkavi-Banhatti	CMC	Transportation	n.a.	Auction	n.a.	n.a.	n.a.	n.a.
Maharashtra									
11	Bhandara	M	Nala cleaning	n.a.	n.a.	1999	1	n.a.	n.a.
12	Kamptee	MCI	Sweeping & collection	Commercial	Contract	1999	1	25	18
13	Manmad	MCI	Transportation	n.a.	Contract	1999	1	300	147
14	Virar	MCI	Sweeping & collection	Entire town	Contract	1999	1	4500	3500
Goa									
15	Panaji	MCI	Collection, transportation & disposal	Restaurants	Contract	1995	2	n.a.	n.a.

Source: NIUA Survey, 1999. See Appendix - III, Table C - 9 for details

CHAPTER V

CONCLUSIONS, SUMMARY OF RESULTS AND RECOMMENDATIONS

Water supply, sanitation and solid waste management constitute basic essential services for which the main responsibility lies with the public authorities. Provision of potable water and safe sanitation to all is the ultimate goal of the government. However, achieving this goal and providing services at the desired level have been the main challenge for public authorities concerned with these services. Solid waste management is another essential service, the responsibility for which lies with the local governments. All these basic services have a major impact on the health of the citizens and therefore need to be accorded high priority in planning and implementation. However, in order to understand the magnitude of the problem, an overview of the status of these basic services is necessary.

The present report brings out the status of these three essential services (as in 1999) by looking at the coverage, the service levels, and the investment requirements to achieve 100 per cent coverage at the desired level. The broad conclusions drawn from the study are presented in subsequent paragraphs.

5.1 WATER SUPPLY

5.1.1 Conclusions

Water is essential for survival and is required in adequate quantity to remain healthy. Increasing urbanization, growing water demands, pollution of nearby water sources and depletion of sources due to over exploitation have all contributed to the current crisis of potable water. It is thus time to take stock of the situation and initiate remedial measures to avoid the impending crisis.

Institutional arrangements for providing water supply are complex with multiple agencies being involved in various stages of provision. The general pattern is that the responsibility for carrying out capital works, in most cities, rests with a state level agency and the operation and maintenance function is with the local government. There are many variations to this pattern by states and cities. Multiplicity of agencies has implications for the functioning of the service, as it does not allow the urban local governments to take all decisions regarding the service. This is essential to give autonomy of operations to the urban local governments.

The norms for water need to be made more realistic by basing them on the actual needs. Water requirements change with income levels, economic activities, social habits and technology. Revising norms periodically will make planning for water more realistic. The present survey is an indicator of this, with the norms given by the cities themselves varying considerably from the norms recommended by CPHEEO.

The coverage of population by water supply has improved steadily over the years and in the present survey it has reached 94 per cent (1999). However, it still falls short

of the target of covering 100 per cent of the population by water supply. Coverage by itself is not sufficient to ensure that adequate quantity of water is available to all at the required pressure and for adequate number of hours in a day. Despite full coverage of population by water supply, there are cities/ towns that do not get water daily or get water for only half-an-hour or less per day. Therefore, coverage has to be seen against the quantity of water available, duration of supply and quality of water supplied.

The per capita supply meets the city norms in only one- third of the urban centres. The situation is equally alarming in all size classes of urban centres, the per capita deficiency in relatively smaller urban centres is much worse than large urban centres. To improve the supply, not only are finances required to fund new schemes for water supply, but also efficiency in operations and cost recovery are also required.

Water is supplied only for a limited number of hours daily in almost all the urban centres. A round the clock supply, though desirable, is not possible in many cases due to inadequate water at source and other factors such as limited pumping and treatment capacity.

Unaccounted for water (UFW), which averages 21 per cent in the sampled urban centres, is another major problem that needs to be plugged. The urban local bodies do not have adequate capacity to detect and plug these leakages, be they physical or financial. The estimation of UFW is also very poor in most urban centres, mainly because all connections are not metered in most cities. Almost one-third of the sampled urban centres do not have any metered connections and this makes leakage detection a difficult task. In order to estimate UFW more accurately and reduce losses, leakage detection programmes need to be undertaken in most urban centres. Reducing water losses will effectively increase water availability and will reduce the requirement of funds for future investments.

With cities expanding rapidly, newer sources of water have to be tapped, and these are often further away from the city. Some of the metropolitan cities, which depended on nearby sources of water supply earlier, have to go much further in future to supply water to their population. Delhi, which has its present source at less than 30 km distance, will go as far as 300 to 400 kms in future to provide adequate water to its population.

The demand for water will continue to increase in future due to increasing population and also due to changing non-domestic water requirements. The demand-supply gap in Class I cities is the highest amongst the sampled urban centres and this indicates that an increase in population has not led to a concomitant increase in water supply. To improve the situation, not only are additional finances required but also efficiency of operations needs to improve.

Quality of water supplied also needs improvement. There are still some cities that use surface water but do not have water treatment plants. Laboratory facilities for testing water quality are also inadequate in a large number of urban centres. Water

supplied in urban centres with inadequate testing can result in serious health problems. Monitoring raw water quality is not done at all in a large number of urban centres. This would indicate that the treatment provided to water to make it potable does not have a scientific basis and the treatment may not be adequate.

There is more staff per 1000 connections in metropolitan cities than in other size class of cities. Since norms for staff per 1000 connections are not available for water supply, it is difficult to estimate whether the water utilities/urban local bodies are overstaffed.

Private sector involvement in water supply is not very common yet, with less than one-tenth of the sampled urban centres reporting private sector participation in the service. Wherever private sector has been involved, it has been mainly in operation and maintenance activities. A significant intervention by private sector in water supply has not yet happened though several attempts have been made in this direction. The main advantage of private sector participation in areas such as source development will be that the financial burden on local governments or the existing utilities will reduce considerably. Private sector will also introduce financial discipline, which will help improve the recovery from water supply.

Water rates are still very low in many states and not sufficient to cover the expenditure on the service. Domestic users are heavily subsidized by industrial and commercial users who pay a rate that is, on an average, two to ten times that paid by domestic users. While most urban centres have revised water tariff in early to mid-1990s, the revision in many cases has been marginal and does not reflect the real costs.

Revenue receipts from water supply are unable to meet the expenditure in over two-thirds of the sampled urban centres despite the fact that water supply is amenable to cost recovery. This is an area that needs to be investigated further to accurately pinpoint reasons for losses. Accounting improvements are also necessary in many urban centres to enable accurate assessment of revenues and expenditure on the service.

Additional capital investments in water supply are required to cover the presently uncovered population by water supply and also cover the population that will be added to the urban population between 1999-2022. Annual investment in the range of Rs. 13 to 15 billion (1999- 2002) is not possible to mobilize from the government alone; private sector participation has to be encouraged not only to bring in money but also to cut down costs.

5.1.2 Summary of Results

1. The average coverage of population by public water supply system in the sampled towns is 94 per cent. The coverage is marginally better in metropolitan cities with an average of 98 per cent.
2. In 7 urban centers (4 Class I cities & 2 Class II cities of West Bengal & Kavarathi

U.T.) only stand posts cover the entire population, as there are no individual connections.

3. The per capita supply in the sampled cities is 150 lpcd. This per capita supply is at an acceptable level as per the CPHEEO norms. The average supply in metropolitan cities is 182 lpcd, while in the sampled Class I and Class II urban centres it is 124 lpcd and 83 lpcd respectively.
4. The per capita domestic supply averages 128 lpcd for the sampled urban centres. In metropolitan cities the average domestic supply is 148 lpcd while it is 106 lpcd and 69 lpcd in Class I and Class II urban centres respectively.
5. Unaccounted for water in the sampled urban centers averages 21 per cent. While UFW is 24 per cent in the metropolitan cities, it is 16 per cent in the sampled Class I cities and 11 per cent in the Class II towns.
6. The average quantity of water required to be added to reach the city norms in the sampled urban centres is 4045 mld. In the metropolitan cities the quantity required is 1397 mld while in Class I cities the quantity required is 2209 mld and in Class II towns it is 439 mld.
7. The average percentage of total individual connections that are metered is a low 55 per cent in the sampled urban centers. In 15 per cent of the urban centers all the domestic connections are metered while in 42 per cent of the urban centers none of the domestic connections are metered.
8. Water treatment plants are not available in 30 (out of 195) urban centers using surface water. While all the metropolitan cities using surface water have water treatment plants, the corresponding figure for Class I cities is 96 (out of 109) and 48 (out of 65) for Class II towns.
9. Raw water quality is not monitored at all in 172 sampled urban centers.
10. Average staff per 1000 connections is 10.9 in the sampled urban centers. In metropolitan cities this figure is 14.5 while in Class I cities it is 7.9 and it is 6.8 in Class II towns.
11. Private sector has been involved in the water supply service in only 8 per cent of the sampled cities.
12. The tariff for domestic water supply per kilolitre is largely in the range of Re. 1.00 to Rs. 5.00 per kl. The tariff has been revised in most cities in the 1990s. Water tariff for non-domestic supplies are at least double but go upto 10 times the tariff charged for domestic use. Tariff for domestic water is amongst the lowest in U.P and highest in Kerala.
13. The investment requirements for covering the entire population by water supply by the year 2022 is Rs. 32118 crores at 1998-99 prices (using Task Forces per capita cost estimates) and Rs. 35420 crores (using HUDCO's per capita cost estimates). The per annum investment requirement works out to be Rs.1396 crores during the period 1999-2022 for the former and Rs. 1540 crores for the latter. Using HUDCO's per mld cost estimates, the additional capital investment

requirements vary between Rs. 15825 crores (low estimate) to Rs. 40502 crores (high estimate) for the period 1999-2022 at 1998-99 prices.

5.1.3 Recommendations

1. Problems of intra-city distribution should be taken up immediately by the local authorities to address the problems of water shortage.
2. Steps should be taken to initiate capacity building in urban centres for estimation of UFW. Financial assistance should also be provided to the water supplying agencies to equipping with the instruments for estimating UFW.
3. Metering of connections, both for bulk supply and retail distribution, must be encouraged. Standard meters should be made available, at reasonable cost, to all urban centres for this purpose.
4. Tariff is a major concern in the water sector. Tariff should be increased at certain given intervals, indexed to inflation and power tariff.
5. Getting surface water from distant sources is proving to be very expensive. Ground water depletion can be controlled by undertaking rainwater harvesting in all urban centres. Specific programmes/ schemes should be initiated for aquifer re-charge.
6. In line with the provisions of 74th Constitution Amendment Act, the capacity of local governments should be built to manage water supply systems. The local governments should be given sufficient autonomy to decide on increase in water tariff required to cover at least O&M costs.
7. Improving cost recovery should be linked to giving grants. Financial incentives could be given to urban centres showing improved cost recovery. Technical assistance and guidance should also be provided to local authorities to improve financial performance.
8. Private sector participation in this sector should be encouraged, wherever possible. Unbundling of the service would allow private sector to participate in this service and improve efficiency levels.
9. The additional capital investments required to cover the entire urban population with water supply at the required norms will require huge investments that are not possible for the Government to provide. Therefore, public-private participation must be encouraged. New ways of financing for this sector should also be explored.

5.2 SEWERAGE AND LOW COST SANITATION

5.2.1 Conclusions

The situation with respect to safe sanitation is not very encouraging in the urban areas of the country. Only one-third of the 301 sampled urban centres have sewerage system and the population covered by them is about 45%. Even in urban centres with sewerage system, the coverage of population is only partial (58%).

A significant amount of wastewater generated is not collected in these urban centres. And even where it is collected, a large percentage of wastewater is not treated. In fact, overall close to two-thirds of the wastewater generated is not treated in the sampled urban centres. When this is translated into actual terms, the level of land and water pollution due to discharge of untreated wastewater is huge. Significantly, over half the urban centres, with sewerage system have sewage treatment plants.

Only primary treatment is given to wastewater in a small number of the urban centres while in a larger number waste water is also given secondary treatment.

Recycling of wastewater is not yet very common in the sampled urban centres. Only a small percentage of urban centres recycle wastewater, using it mainly for irrigating agricultural fields.

The main sources of revenue receipts for this service is sewerage/ drainage tax though sewerage benefit tax is also levied in two metropolitan cities, generating substantial revenues on this account. Levying a surcharge on water for managing wastewater is not very common and is used in just a few urban centres. Levying a charge per water closet is common in some of the towns.

Cost recovery from this service is very low in most urban centres.. However, some of the urban centres are able to generate substantial revenues from the service, showing positive balance on the revenue account in this service.

Low cost sanitation covers about one-third of the population in the sampled urban centres. However, a significant percentage of the population is still not covered by safe sanitation and is forced to use open spaces for defecation. Some people still depend on dry latrines, though information on this aspect is not very easy to obtain.

The investment required for providing safe sanitation to all is huge and is difficult for the government alone to finance it. Private sector participation as well as users contribution can ease the financial burden on the government.

5.2.2 Summary of Results

1. Overall, only about one-third of the sampled urban centres (i.e., 100 cities/towns) have a sewerage system.
2. Of the urban centres with a sewerage system, about 38 per cent have a combined system of wastewater collection, i.e., combined with storm water drainage, while 60 per cent centres have a separate system.
3. The coverage of population by sewerage system in the sampled urban centres is partial with an average coverage of 45 per cent.
4. Only 59 per cent of the wastewater generated is collected by the sewerage system in the urban centres having a sewerage system.
5. Low coverage of population by sewerage system is the main reason for the low collection efficiency.

6. In 47 per cent of the sampled urban centres, with sewerage system, the entire wastewater collected is discharged without any treatment.
7. In about 19 per cent of the responding urban centres only primary treatment is provided to wastewater before disposal into land or water body, while 38 per cent of urban centres also provide secondary treatment to wastewater before disposal.
8. The most commonly used wastewater treatment process in the responding urban centres, with sewerage system, is extended aeration.
9. Recycling/ reuse of wastewater is done in only 44 urban centres having a sewerage system.
10. The present survey shows that STPs are available in only 51 of the 100 urban centres with sewerage system.
11. The present survey reveals that charging for wastewater collection and treatment in the sampled urban centres is mainly done in three ways: through taxes, by a surcharge on water, and by a charge per water closet.
12. Amongst the sampled urban centres with sewerage facilities, 36 urban centres have indicated revenues from sewage/drainage tax while 48 have indicated revenues from connection charges in 1997-98.
13. There are 13 urban centres, with sewerage system, where no revenue is generated from the service.
14. The cost recovery from the service is generally low and averages about 27 per cent in non-metropolitan urban centres.
15. The present survey indicates that 34 per cent of the population in the sampled urban centres is covered by septic tanks and low cost sanitation.
16. The additional investment required for covering the entire population by safe sanitation facilities is Rs. 52361 crores for the period 1999-2022 (using Task Forces cost estimates) and Rs. 86103 crores for the same period (using HUDCO's cost estimates).

5.2.3 Recommendations

1. Rehabilitation of sewerage systems must be taken up in all the cities where the sewerage system exists but has become non-functional.
2. Wastewater treatment must be made mandatory for all sizes of urban centres. The smaller urban centres could use less capital-intensive technologies to reduce capital cost as well as maintenance cost of treatment.
3. Pollution of land or water body with untreated wastewater should be made punishable with fine.
4. Recycling/ reuse of wastewater must be encouraged. Technical and financial assistance must be provided for this, if required.

5. All agencies dealing with wastewater must prepare plans for cost recovery from this service. Private sector participation could be encouraged in managing this service to reduce public expenditure.
6. Successful examples of people's participation in contributing to the cost of construction of sewerage system (e.g. Alandur) must be examined and adopted in other urban centres of the country.

5.3 SOLID WASTE MANAGEMENT

5.3.1 Conclusions

The status of solid waste management needs to be improved considerably in urban India. While the coverage by the service, which indicates only the reach of the agency, but not the quality of service delivered, is fairly high at 92 per cent of the total population, the service delivery needs improvement. The waste collection efficiency in smaller cities and towns needs even more improvement as these urban centres lack sufficient staff and waste transportation vehicles. They also lack vehicle maintenance facilities and funds to keep the waste transportation vehicles in good order to lift waste efficiently and regularly.

One of the areas that need immediate and urgent attention is the disposal of waste. With three-fourths of the waste being dumped crudely, the quality of urban environment is deteriorating rapidly. Landfill sites need to be identified and developed on a priority basis and waste treatment facilities (e.g. composting) need to be developed on scientific lines. Decentralisation of waste management, wherever possible, should be resorted to in order to reduce the quantity of waste that needs to be transported and also the land requirement for waste treatment. Waste segregation at source and recycling of waste should be encouraged. Waste reduction and recycling should be promoted at the household and neighbourhood level.

Hospital waste should not be allowed to be mixed with municipal waste, as is happening in most cities and towns today. The provisions of the Bio-Medical Waste (Management and Handling) Rules, 1998 should be implemented and action taken in case of non-compliance.

Privatisation of activities under solid waste management must be encouraged. Although only 65 sampled urban centres have involved private sector in waste management, the cost savings have been encouraging in some cities. These experiences must be studied in detail and replicated wherever possible, particularly in cities/towns where there is shortage of staff and the coverage by the service is not full.

Solid waste management is a service that is expenditure heavy with very meager revenues, if at all there is any revenue from the service. Cost recovery from the service, at present, is dismal with only a fraction of the expenditure on the service being recovered. The per capita per day expenditure on the service is only about Rs. 0.33 paise. Expenditure norms, based on performance norms, should be fixed in order to guide the local governments in improving the quality of service provided.

Since there is no separate account maintained for solid waste management, it is difficult to assess the financial condition of the service and suggest improvements. The revenue generated from the service, through taxes, though not very significant, is deposited in the general revenue account of the local body and the expenditure too is made from the general revenue account. Efficiency and cost savings cannot be instituted or financial discipline brought in unless the accounting system is improved. Improving the accounting should also be taken up on a priority basis by local governments to bring about cost savings and revenue improvements in the service. At the same time, new sources of revenue in solid waste management such as fine for littering, user charges for bulk waste generators and other commercial establishments, user charges for domestic waste collection (door-to-door) and levying of tipping fees should be considered by local governments for improving revenue from this service.

Additional funds required for investment in solid waste management to cover 100 per cent of the population by the service cannot be financed by the government alone. Resource mobilization from private sector and financial institutions must be explored for improving solid waste management in urban areas of the country.

5.3.2 Summary of results

1. The average coverage of population by solid waste management is 92 per cent in the sampled urban centres.
2. The average per capita waste generation in the sample is 433 grams per day. The per capita waste generation is the highest in metropolitan cities with 500 grams per day followed by Class I cities with 377 and class II towns 297 grams waste generation per capita per day.
3. The total waste generated in the 298 responding cities and towns is 60823 MT per day, of which 7318 MT of waste gets left uncollected daily. This gives a waste collection efficiency of 88 percent. The waste collection efficiency reduces with city size. Metropolitan cities collect an average of 91 per cent of the waste generated daily while the collection efficiency is 85 per cent in Class I cities and 75 per cent in Class II towns.
4. Hospital waste is collected separately in only 22 per cent of the urban centres; in 77 per cent hospital waste is still collected along with municipal waste.
5. Even in urban centres where hospital waste is collected separately, no treatment is given to this waste in about 29 per cent of such cities.
6. The most prevalent method of waste disposal is crude/ open dumping. Almost three-fourths of the urban centres resort to this method for waste disposal. Landfill is the main method of waste disposal in 11 per cent of the urban centres (most common in metropolitan cities) while composting is the main method in 12 per cent of the urban centres.

7. The average staff per 1000 population for solid waste management is 2.4, while the norm for the service is 2.8 workers per 1000 population. Metropolitan cities with 2.8 staff per 1000 population are above the sample average while the other urban centres fall short of this average (1.9 in Class I cities and 2.1 in Class II towns).
8. Private sector involvement in solid waste management has been found in only 22 per cent of the urban centres. Largest involvement of private sector is in primary collection followed by transportation.
9. Revenue receipts from solid waste management is negligible in most urban centres and is generated mainly from taxes.
10. Establishment consumes about four-fifth of the total expenditure on the service. This is not abnormal as this is a labour intensive service and there is very little mechanisation at the primary collection stage.
11. The average per capita revenue from the service is Rs. 10.1 per annum, with metropolitan cities generating Rs. 12.8, Class I cities Rs. 6.6 and Class II towns generating low revenue of Rs. 2.8 per capita per annum.
12. The average per capita expenditure on the service is about 12 times the revenue generated from the service. The per capita expenditure on the service is Rs. 121.21 per annum. The per capita expenditure on the service is higher in metropolitan cities than in other urban centres. Metropolitan cities spend an average of Rs. 156.06 per capita per annum, Class I cities spend Rs. 87.27 and Class II towns spend an average of Rs. 85.99 per capita per annum on solid waste management.
13. Cost recovery from solid waste management is a dismal 7 per cent. The average deficit per capita per annum is Rs. 130.51 with the deficit being the highest in metropolitan cities – Rs. 176.59 as compared to Rs. 66.46 in Class I cities and Rs. 60.19 in Class II cities.
14. The additional investment requirement for covering 100 per cent of population by solid waste management during 1999-2022 period is Rs. 3954 crores at 1998-99 prices (based on Task Forces per capita cost estimates). The investment requirement per annum works out to Rs. 172 crores during this period.

5.3.3 Recommendations

1. Three 'R's of solid waste management i.e. reduce, reuse and recycle must be adopted by all urban centres. This will help in reducing the quantum of solid waste that the local governments have to deal with.
2. Efficiency of waste collection must be improved in cities by bringing about the necessary changes in the design of equipment used by sanitary staff, manpower management and planning.

3. Transportation fleet needs to be maintained well and needs to be modernised to improve collection and transportation efficiency.
4. Crude/open dumping of waste must be completely discouraged by engaging in controlled tipping.
5. All urban centres should identify landfill sites that are usable. In order to reduce the quantity of waste that goes to landfill sites, waste treatment such as neighbourhood composting and recycling of waste must be encouraged.
6. Separate collection of hospital waste must be ensured in every city and incinerators must be installed to deal with this waste. Landfill sites should apportion an area for the disposal of hazardous waste from hospitals.
7. Private sector participation must continue to be encouraged in this sector to achieve efficiency of operations and cost reduction. However, monitoring of privatised activities should be improved in order to provide better quality of services to the people.
8. Plans to improve cost recovery from this service must be made by every local government. New sources of revenue generation must be thought of.
9. People's participation must be encouraged to keep cities clean and NGOs must be used to do information, education and communication work in communities.

APPENDIX I

WATER SUPPLY AND WATER TARIFF

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A-1

POPULATION, AREA, SLUM POPULATION, 1999

A-1: Population, Area, Slum Population, 1999

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
METROPOLITAN CITIES								
1	Ahmedabad M.Corp.	2,877	3,500	100	190.84	190.84	1,179	1,435
2	Bangalore M.Corp.	2,660	5,000	100	445.91	482.00#	399	750
3	Bhopal M.Corp.	1,063	1,500	100	284.09	284.09	n.a.	231
4	Calcutta M.Corp.	4,400	6,000	100	187.33	187.33	2,000	2,290
5	Chennai M.Corp.	3,841	4,363	100	174.00	174.00	n.a.	1,500
6	Coimbatore M.Corp	816	971	100	105.60	105.60	n.a.	n.a.
7	Delhi M.Corp.	7,207	12,000	100	1485.00	1485.00	1,300	3000**
8	Greater Mumbai M.Corp.	9,926	11,100	100	437.71	437.71	4,459	5823~
9	Hyderabad M.Corp.	2,965	4,163	100	172.00	172.00	n.a.	601
10	Indore M.Corp.	1,092	1,600	100	137.17	137.17	264	300
11	Jaipur M.Corp.	1,458	2,000	100	200.40	200.40	214	433
12	Kanpur M.Corp.	1,874	2,500	50	106.00	227.67	200	500
13	Kochi M.Corp.	565	680	100	94.88	94.88	52	70
14	Lucknow M.Corp.	1,619	2,500	100	290.00	310.00	120	200
15	Ludhiana M.Corp.	1,043	2,000	60	134.67	165.00	350	700
16	Madurai M.Corp.	941	1,020	100	51.96	51.96	195	310
17	Nagpur M.Corp.	1,625	2,100	100	217.56	217.56	650	890
18	Pune M.Corp.	1,567	2,300	100	146.00	416.00	628	879
19	Surat M.Corp.	1,499	2,300	100	112.28	112.28	450	750
20	Vadodara M.Corp.	1,031	1,400	100	108.26	108.26	185	250
21	Varanasi M.Corp.	929	1,152	70	73.89	73.89	161	265
22	Visakhapatnam M.Corp.	752	1,280	100	78.33	107.00	n.a.	265
<i>Total - Metropolitan Cities</i>		<i>51,749</i>	<i>71,429</i>	<i>98</i>	<i>5,234</i>	<i>5,741</i>		

* Estimated by Water Supplying agencies of respective cities/towns # Area covered by utility ** For entire Delhi not just for M.Corp.
M.Corp's slum population as per 2001 census is 1854,685 ~ Mumbai's slum population has reduced due to slum redevelopment schemes
Source: Respective urban local governments/relevant agencies, NIUA Survey,

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
CLASS I								
Andhra Pradesh								
1	Anantapur MCI	175	250	100	16.00	16.00	55	70
2	Chittoor M	133	149	100	33.57	33.57	41	42
3	Cuddapah MCI	121	166	100	6.84	6.84	25	29
4	Eluru M	213	247	100	14.55	14.55	62	78
5	Guntur MCI	471	557	100	45.79	45.79	n.a.	157
6	Hindupur M	105	140	75	36.18	36.18	n.a.	41
7	Kakinada M	280	325	75	30.51	30.51	62	92
8	Kurnool MCI	237	282	100	15.01	15.01	84	94
9	Machilipatnam M	159	200	100	26.67	26.67	n.a.	13
10	Nandyal MCI	120	150	100	15.42	15.42	30	38
11	Nellore MCI	317	404	100	48.39	48.39	94	119
12	Nizamabad M	241	285	100	30.50	30.50	n.a.	109
13	Ongole MCI	101	180	100	25.89	25.89	24	27
14	Qutubullapur M	107	250	52	46.87	46.87	n.a.	168
15	Rajahmundry M.Corp.	325	380	100	44.50	44.50	52	78
16	Tenali M	144	170	20	15.12	15.12	n.a.	43
17	Tirupati MCI	174	210	100	21.96	24.00	45	54
18	Vijaywada M.Corp.	702	837	100	58.00	58.00	240	300
19	Warangal M.Corp.	448	680	100	68.50	68.50	36	41
Bihar								
20	Bihar Sharif M	201	250	70	19.43	19.43	82	136
21	Chhapra M	137	200	100	8.00	8.00	n.a.	n.a.
22	Gaya M.Corp.	292	400	100	17.50	17.50	42	n.a.
23	Katihar M	135	200	75	12.00	12.00	n.a.	n.a.
24	Munger M	150	210	60	19.00	19.00	n.a.	n.a.
25	Ranchi M.Corp.	599	700	93	177.19	177.19	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
Gujarat								
26	Anand M	110	175	100	21.13	23.14	32	40
27	Bharuch M	133	159	100	18.43	19.93	10	15
28	Bhavnagar M.Corp.	402	550	100	53.40	53.40	48	60
29	Bhuj M	102	118	100	9.45	9.49	15	20
30	Jamnagar M.Corp.	342	500	100	26.40	26.40	90	102
31	Junagadh M	130	165	100	30.00	30.00	n.a.	n.a.
32	Nadiad M	167	300	100	28.48	28.48	25	40
33	Navsari M	126	139	100	8.52	8.55	25	30
34	Porbandar M	117	142	100	12.30	12.30	8	10
35	Rajkot M.Corp.	559	1,000	100	69.00	104.86	90	125
36	Surendranagar M	106	150	100	14.19	36.87	10	n.a.
Haryana								
37	Ambala MCI	119	141	96	16.94	16.94	12	19
38	Faridabad M.Corp.	618	1,150	100	178.00	208.00	130	150
39	Gurgaon MCI	121	175	85	15.33	16.57	31	38
40	Hisar MCI	173	250	70	45.42	45.42	43	52
41	Karnal MCI	176	220	85	22.10	22.10	41	46
42	Rohtak MCI	216	243	89	20.38	28.38	67	103
Jammu & Kashmir								
43	Jammu M.Corp.	716	1,051	84	n.a.	130.36	n.a.	n.a.
Karnataka								
44	Belgaum M.Corp.	326	470	100	141.95	n.a.	100	120
45	Bellary CMC	245	297	100	81.95	81.95	62	95
46	Davangere MCI	266	455	99	31.80	31.80	72	140
47	Gadag-Betigeri CMC	134	148	100	15.36	54.58	7	9
48	Gulbarga M.Corp.	304	450	100	55.00	55.00	48	89
49	Hubli-Dharwar M.Corp.	648	850	100	188.77	188.77	102	270

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
50	Mandya M	120	140	100	17.03	n.a.	n.a.	8
51	Mangalore M.Corp.	273	410	90	74.71	116.77	17	n.a.
52	Mysore M.Corp.	481	1,050	80	64.00	100.00	52	70
53	Shimoga CMC	179	222	100	35.00	50.00	9	42
54	Tumkur M	139	300	60	15.93	45.90	10	23
Kerala								
55	Alappuzha MC	175	200	100	42.00	42.00	42	53
56	Kollam MC	140	160	100	18.45	18.45	34	45
57	Kozhikode M.Corp.	420	493	100	84.23	84.23	71	73
58	Thalaserry M	104	134	100	15.35	15.35	10	11
59	Thiruvananthapuram M.Corp.	524	585	100	78.40	78.40	20	25
Madhya Pradesh								
60	Bhind M	110	175	100	17.18	17.18	3	3
61	Burhanpur M.Corp.	173	210	100	24.00	24.00	n.a.	84
62	Dewas M.Corp.	164	200	100	100.22	100.22	n.a.	n.a.
63	Guna M	100	125	70	45.75	45.75	25	39
64	Gwalior M.Corp.	691	900	94	n.a.	166.83	300	270
65	Jabalpur M.Corp.	742	1,000	100	133.99	133.99	n.a.	n.a.
66	Khandwa M	145	175	100	35.77	35.77	n.a.	n.a.
67	Morena M	105	125	100	12.00	12.00	20	25
68	Murwara (Katni) M.Corp.	163	180	100	107.10	107.10	n.a.	n.a.
69	Ratlam M.Corp.	183	235	100	39.00	39.00	62	70
70	Rewa M.Corp.	129	180	70	54.99	54.99	n.a.	n.a.
71	Satna M.Corp.	157	200	100	62.24	62.24	4	5
72	Shivpuri M	108	140	100	81.10	81.10	23	28
Maharashtra								
73	Amravati M.Corp.	422	500	100	121.00	121.00	100	150
74	Aurangabad M.Corp.	573	868	100	138.00	138.00	170	270

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
75	Bhusawal MCI	145	200	100	13.58	13.58	13	n.a.
76	Chandrapur MCI	226	295	100	45.00	45.00	89	89
77	Dhule MCI	278	330	100	46.46	46.46	35	55
78	Ichalkaranji MCI	215	250	100	29.91	29.91	22	30
79	Jalgaon MCI	242	400	100	65.64	65.64	n.a.	75
80	Kolhapur M.Corp.	406	502	100	66.00	66.00	42	68
81	Nanded Waghala M.Corp.	275	410	100	20.60	46.00	n.a.	71
82	Nashik M.Corp.	657	839	100	259.13	259.13	131	168
83	Parbhani MCI	190	233	100	57.60	57.60	59	125
84	Solapur M.Corp.	604	900	100	180.66	n.a.	130	240
85	Wardha M	103	150	100	9.04	9.04	17	20
86	Yavatmal MCI	109	130	100	10.69	10.69	39	40
Orissa								
87	Bhubaneswar M.Corp.	412	654	100	124.74	n.a.	n.a.	n.a.
88	Cuttack M.Corp.	403	563	100	80.00	80.00	100	143
89	Puri M	125	150	71	16.84	16.84	38	45
90	Rourkela M	140	200	85	52.00	52.00	21	30
91	Sambalpur M	131	157	100	33.46	33.46	73	n.a.
Punjab								
92	Amritsar M.Corp.	709	843	60	133.00	133.00	247	253
93	Bathinda MCI	159	174	40	97.00	99.00	24	28
94	Hoshiarpur MCI	123	145	69	35.00	35.00	n.a.	28
95	Jalandhar M.Corp.	510	738	89	98.00	110.00	200	150
96	Moga MCI	108	148	70	18.50	18.50	14	18
97	Pathankot MCI	124	195	100	22.10	22.10	11	11
98	Patiala M.Corp.	238	328	65	41.00	41.00	80	70
Rajasthan								
99	Ajmer MCI	403	550	80	199.00	220.00	112	150

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
100	Alwar M	205	300	90	58.15	58.15	20	25
101	Beawar M	105	141	100	17.74	17.69	20	21
102	Bhilwara M	184	225	100	69.00	69.00	37	45
103	Bikaner M	416	600	100	175.76	175.76	14	25
104	Jodhpur M.Corp.	666	1,000	94	78.57	78.57	194	281
105	Kota M.Corp.	537	750	100	221.00	221.00	n.a.	n.a.
106	Sriganganagar M	161	225	100	18.00	20.87	9	11
Tamil Nadu								
107	Cuddalore M	145	162	100	27.62	27.62	28	34
108	Dindigul M	182	214	100	14.01	14.01	22	27
109	Erode M	159	174	100	8.44	8.44	37	40
110	Kanchipuram M	145	157	100	11.60	11.60	n.a.	n.a.
111	Kumbakonam M	139	147	100	12.58	12.58	49	52
112	Nagercoil M	190	206	61	24.27	24.27	11	13
113	Rajapalayam M	114	123	100	11.36	11.36	16	17
114	Salem M.Corp.	367	447	100	91.34	91.34	62	125
115	Thanjavur M	202	217	80	36.31	36.31	38	41
116	Tiruchirapalli M.Corp.	669	800	100	n.a.	146.90	167	312
117	Tirunelveli M.Corp.	374	414	100	108.65	108.65	83	94
118	Tirunvannamalai M	109	129	100	13.64	13.64	21	34
119	Tiruppur M	236	295	100	27.19	27.19	n.a.	63
120	Tuticorin M	200	217	100	13.47	13.47	32	35
121	Vellore M	175	176	100	11.65	11.65	n.a.	66
Uttar Pradesh								
122	Agra M.Corp.	892	1,150	75	121.57	121.57	n.a.	n.a.
123	Aligarh M.Corp.	481	600	100	62.00	62.00	n.a.	n.a.
124	Allahabad M.Corp.	793	1,015	75	70.05	70.05	83	106
125	Bareilly M.Corp.	587	750	80	106.43	106.43	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
126	Etawah MB	124	140	100	33.74	33.74	1	3
127	Faizabad MB	124	170	100	16.50	16.50	n.a.	n.a.
128	Firozabad MB	215	250	75	45.00	50.00	n.a.	n.a.
129	Ghaziabad M.Corp.	454	887	100	63.78	200.00	n.a.	n.a.
130	Gorakhpur M.Corp.	506	600	75	119.00	143.00	76	90
131	Haldwani-cum-Kathgodam MB	104	141	100	10.62	10.62	17	n.a.
132	Hapur MB	146	200	65	14.20	14.20	2	2
133	Hardwar MB	147	300	60	11.91	11.91	27	40
134	Jhansi MB	301	507	80	48.00	48.00	120	170
135	Mathura MB	227	400	65	25.23	25.23	n.a.	90
136	Meerut M.Corp.	754	1,250	100	141.94	141.94	n.a.	n.a.
137	Mirzapur MB	169	210	65	30.59	30.59	26	32
138	Moradabad M.Corp.	429	670	100	50.48	50.48	n.a.	n.a.
139	Muzaffarnagar MB	241	325	80	12.00	12.00	43	58
140	Rae Bareli MB	130	175	75	32.69	32.69	15	30
141	Rampur MB	244	317	100	48.00	48.00	n.a.	n.a.
142	Saharanpur MB	375	540	50	25.75	25.75	142	175
143	Sitapur MB	122	150	100	35.00	35.00	n.a.	n.a.
144	Unnao MB	107	121	100	21.50	21.50	10	13
West Bengal								
145	Asansol M.Corp.	262	315	100	25.02	n.a.	264	n.a.
146	Baharampur M	115	143	100	16.67	15.65	32	56
147	Balurghat M	120	132	100	6.50	8.50	40	52
148	Bankura M	115	151	70	18.13	19.06	25	33
149	Barasat M	103	150	38	20.26	34.50	39	65
150	Burdwan M	245	323	70	34.18	34.18	97	110
151	Halisahar M	114	149	100	8.29	8.29	73	48
152	Krishnagar M	121	145	60	15.96	15.96	51	61

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
153	Midnapore M	125	158	n.a.	14.78	14.78	42	59
154	North Barrackpore M	101	118	100	8.42	12.22	18	23
155	Santipur M	110	134	30	25.88	25.88	60	64
156	Silliguri M.Corp.	338	500	100	15.50	41.90	42	157
Small States								
Assam								
157	Guwahati M.Corp.	584	995	44	216.00	216.00	95	105
158	Jorhat MB	112	170	n.a.	9.20	n.a.	n.a.	n.a.
Manipur								
159	Imphal MCI	199	245	100	33.30	n.a.	n.a.	n.a.
Meghalaya								
160	Shillong MB	132	217	100	10.36	10.36	n.a.	n.a.
Mizoram								
161	Aizwal NM	155	244	33	110.00	128.98	n.a.	n.a.
Tripura								
162	Agartala MCI	157	200	100	16.01	16.01	25	27
Union Territories								
163	Chandigarh M.Corp.	504	850	100	114.00	114.00	75	120
164	Pondicherry M	203	290	100	20.00	20.00	41	58
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
CLASS II								
Andhra Pradesh								
1	Anakapalle M	84	115	100	23.28	23.28	21	22
2	Dharmavaram M	79	100	100	40.45	40.45	46	47
3	Gudur MCI	56	72	100	9.10	9.80	19	21
4	Kapra M	88	120	80	43.90	65.00	24	30
5	Kavali MCI	66	85	100	22.95	22.95	25	30
6	Madanapalle M	74	100	90	7.74	14.20	13	16
7	Narasaraopet M	89	95	100	7.65	7.65	41	45
8	Rajendra nagar MCI	85	120	100	58.00	58.00	24	26
9	Sangareddy MCI	50	60	100	13.69	13.69	23	25
10	Srikakulam MCI	89	100	100	14.10	14.10	37	n.a.
11	Srikalahasti M	62	70	86	12.80	12.80	14	21
12	Suryapet MCI	61	89	80	23.54	23.54	43	49
Bihar								
13	Buxar M	56	67	82	9.75	9.75	n.a.	14
14	Deoghar M	76	100	80	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	88	115	100	15.00	15.00	n.a.	n.a.
16	Hazaribagh M	98	119	84	19.00	19.00	n.a.	n.a.
17	Jehanabad M	52	57	89	8.00	8.00	9	11
18	Madhubani M	54	65	69	19.00	19.00	n.a.	n.a.
19	Mokama M	60	66	100	10.00	10.00	n.a.	36
Gujarat								
20	Amreli M	68	85	100	11.44	13.59	n.a.	n.a.
21	Ankleswar M	52	60	100	11.05	11.05	15	16
22	Dabhoi M	51	65	100	23.82	23.82	8	10
23	Dohad M	67	78	100	6.54	7.00	3	7
24	Gondal M	81	100	100	11.00	11.00	15	20

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
25	Jetpur M	74	125	100	6.88	36.00	12	15
26	Mahesana M	88	138	100	12.87	12.87	18	24
27	Palanpur M	81	117	100	23.48	23.48	20	30
Haryana								
28	Jind MCI	85	114	80	15.30	21.00	15	48
29	Kaithal MCI	71	95	80	3.05	5.05	8	26
30	Rewari MCI	75	105	100	12.58	18.43	23	28
31	Thanesar MCI	81	100	72	32.25	32.25	24	39
Karnataka								
32	Bagalkot CMC	77	100	85	48.25	48.25	15	24
33	Chikmaglur CMC	61	100	100	27.50	27.50	8	12
34	Gokak CMC	52	68	100	33.05	33.05	10	14
35	Hospet CMC	96	114	100	20.73	50.92	n.a.	33
36	Kolar CMC	83	112	100	12.50	21.47	17	22
37	Rabkavi-Banhatti CMC	61	72	100	8.49	12.00	n.a.	7
38	Ramanagaram CMC	50	70	100	11.60	17.80	8	20
Kerala								
39	Changanessary MC	52	62	100	13.50	13.50	15	25
40	Payyanur M	64	71	100	54.63	54.63	1	1
41	Taliparamba M	60	52	100	43.36	18.21	n.a.	n.a.
42	Thrissur MC	75	91	100	16.65	16.65	18	21
Madhya Pradesh								
43	Hoshangabad M	71	100	100	24.26	24.26	n.a.	n.a.
44	Itarsi M	77	105	100	14.07	14.07	n.a.	n.a.
45	Khargone M	67	80	100	10.00	10.00	30	35
46	Mandsaur M	96	123	100	10.36	10.36	n.a.	10
47	Nagda M	80	100	89	23.00	23.00	17	19
48	Neemuch M	86	100	100	13.43	13.43	40	45

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
49	Sehore M	71	100	100	18.00	18.00	11	n.a.
50	Shahdol M	56	75	100	19.92	19.92	12	15
51	Vidisha M	93	125	100	5.83	5.83	23	26
Maharashtra								
52	Amalner MCI	76	100	100	9.71	9.71	19	25
53	Ballarpur MCI	84	109	100	8.19	9.07	66	n.a.
54	Bhandara M	72	76	79	16.83	16.83	29	38
55	Kamptee MCI	79	95	100	4.27	4.27	69	75
56	Manmad MCI	61	87	100	23.45	23.45	n.a.	n.a.
57	Ratnagiri MCI	57	70	100	10.49	10.49	9	12
58	Satara MCI	95	100	100	8.16	8.16	21	25
59	Virar MCI	58	100	100	19.54	19.54	12	20
Orissa								
60	Balangir M	70	83	58	n.a.	n.a.	n.a.	n.a.
61	Bhadrak M	76	93	100	80.00	80.00	40	n.a.
Punjab								
62	Ferozpur MCI	79	93	88	11.33	11.33	11	15
63	Kapurthala M	65	85	63	16.00	16.00	8	8
64	Mansa MCI	55	67	50	23.47	23.47	10	11
65	Phagwara MCI	83	108	80	16.00	16.00	10	9
66	Sangrur MCI	56	70	98	10.36	18.00	11	21
Rajasthan								
67	Banswara M	67	110	100	10.01	10.01	n.a.	n.a.
68	Barmer M	69	84	76	10.29	6.25	13	16
69	Bundi M	65	80	100	22.76	30.00	15	18
70	Churu M	82	100	100	35.00	35.00	6	7
71	Hanumangarh M	79	125	100	13.42	13.42	4	5
72	Sawai Madhopur M	72	89	100	11.50	11.50	12	15

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8
Tamil Nadu								
73	Ambur M	76	86	100	13.97	13.97	23	24
74	Arakkonam M	72	88	100	9.06	9.06	14	15
75	Attur M	56	64	100	27.62	27.62	7	9
76	Cumbum M	52	54	72	n.a.	6.58	n.a.	11
77	Dharmapuri M	59	67	100	11.65	11.65	27	30
78	Guduivattam M	83	95	100	4.71	4.71	16	18
79	Nagapattinam M	86	112	100	14.90	14.90	13	16
80	Pudukkottai M	99	108	100	12.95	12.95	35	38
81	Sivakasi M	66	70	100	6.89	6.89	5	5
82	Srivilliputtur M	69	74	100	5.71	5.71	13	13
83	Tindivanam MC	62	70	91	22.33	22.33	26	30
84	Udhagamandalam M	82	100	100	30.67	30.67	n.a.	13
Uttar Pradesh								
85	Auraiya MB	51	90	100	4.00	9.00	n.a.	n.a.
86	Balrampur MB	60	70	21	14.25	42.00	10	13
87	Basti MB	87	110	100	19.57	19.57	n.a.	n.a.
88	Bhadohi MB	64	125	30	10.36	8.00	10	15
89	Chandpur MB	56	80	67	3.60	3.60	15	30
90	Etah MB	78	135	70	13.49	27.00	10	25
91	Ghazipur MB	77	96	75	13.45	13.45	31	36
92	Gonda MB	96	114	80	9.00	9.00	10	12
93	Lakhimpur MB	80	100	100	6.99	9.00	5	15
94	Lalitpur MB	80	100	80	15.00	17.30	30	41
95	Mughalsarai MB	67	160	12	16.00	16.00	15	38
96	Nawabganj-Barabanki MB	66	90	76	10.00	11.00	n.a.	n.a.
97	Orai MB	99	170	70	20.00	20.00	20	35
98	Roorkee MB	80	100	89	n.a.	n.a.	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by water supply 1999	Area (Sq.km.)		Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*	1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8
West Bengal								
99	Bishnupur M	56	67	37	22.02	22.02	14	19
100	Chakdaha M	75	90	39	15.36	15.36	n.a.	40
101	Contai M	53	114	100	14.25	14.25	26	40
102	Cooch Behar M	71	99	100	8.19	8.19	24	25
103	Darjeeling M	73	93	100	10.60	10.60	n.a.	32
104	Jalpaiguri M	69	101	n.a.	10.80	12.98	n.a.	30
105	Jangipur M	56	78	54	7.70	8.20	n.a.	35
106	Katwa M	56	68	40	7.93	7.93	22	27
107	Raniganj M	62	121	53	24.99	24.99	36	45
Small States								
Himachal Pradesh								
108	Shimla M.Corp.	82	111	100	19.55	28.53	-	-
Nagaland								
109	Kohima TC	51	103	100	36.00	36.00	21	38
Union Territories								
110	Port Blair MCI	75	105	89	14.14	16.64	n.a.	10
Others (Smaller than Class II towns)								
Small States								
Arunachal Pradesh								
111	Itanagar CT	17	34	82	11.25	n.a.	5	n.a.
Goa								
112	Panaji MCI	43	57	100	3.70	3.70	2	2
Union Territories								
113	Daman MCI	27	35	100	5.60	5.60	3	4
114	Kavarathi NMCT	8.7	11	100	3.63	3.63	n.a.	n.a.
115	Silvassa	12	20	100	2.65	2.65	n.a.	n.a.

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

A-2

QUANTITY OF WATER SUPPLIED BY USE,
DURATION AND FREQUENCY OF SUPPLY, 1999

A-2 : Quantity of Water Supplied by Use, Duration and Frequency of Supply, 1999

Sl. No.	City/Town	Total quantity of water supplied (mld)	Quantity of water supplied by uses (mld)		Per-capita supply (lpcd)	Installed production capacity (mld)	% utilization of capacity	Daily supply through tankers ('000 ltrs.)	Average hours of supply per day	Number of times supplied per day
			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
Metropolitan Cities										
1	Ahmedabad M.Corp.	486	467	19.0	139	486	100	on demand	2	two times
2	Bangalore M.Corp.	706	606	99.4	141	724	97	Nil	above 12	alternate day
3	Bhopal M.Corp.	270	204	65.7	180	322	84	540	6	two times
4	Calcutta M.Corp.	1035	906	129.4	173	1090	95	700	10	n.a.
5	Chennai M.Corp.	461	418	43.0	106	461	100	Nil	2	once
6	Coimbatore M.Corp.	105	103	2.3	108	232	45	Nil	2	once
7	Delhi M.Corp.	2620	2165	454.9	218	2620	100	12500	4	two times
8	Greater Mumbai M.Corp.	2978	2453	524.7	268	3277	91	Nil	4	once
9	Hyderabad M.Corp.	682	361	321.0	164	744	92	Nil	2	once
10	Indore M.Corp.	238	199	38.7	149	238	100	420	1	once
11	Jaipur M.Corp.	340	332	7.6	170	n.a.	n.a.	on demand	2	two times
12	Kanpur M.Corp.	310	225	85.0	124	350	89	Nil	5	two times
13	Kochi M.Corp.	84	59	25.2	124	190	44	Nil	4	once
14	Lucknow M.Corp.	410	349	61.5	164	455	90	Nil	6	three times
15	Ludhiana M.Corp.	234	200	34.1	117	234	100	Nil	12	three times
16	Madurai M.Corp.	90	67	23.0	88	110	82	Nil	2	once
17	Nagpur M.Corp.	370	211	158.8	176	416	89	100	3	once
18	Pune M.Corp.	650	520	130.0	283	725	90	Nil	8	two times
19	Surat M.Corp.	320	299	21.0	139	476	67	on demand	2	once
20	Vadodara M.Corp.	240	188	52.0	171	298	81	on demand	1	two times
21	Varanasi M.Corp.	220	198	22.0	191	360	61	Nil	8	two times
22	Visakhapatnam M.Corp.	168	68	100.0	131	185	91	500	1	once

Source: Respective urban local government/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Total quantity of water supplied (mld)	Quantity of water supplied by uses (mld)		Per-capita supply (lpcd)	Installed production capacity (mld)	% utilization of capacity	Daily supply through tankers ('000 ltrs.)	Average hours of supply per day	Number of times supplied per day
			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
CLASS I										
Andhra Pradesh										
1	Anantapur MCI	14	11	2.8	56	14	100	1362	2	once
2	Chittoor M	16	16	0.3	106	20	79	64	2	once
3	Cuddapah MCI	17	15	2	101	n.a.	n.a.	90	5	two times
4	Eluru M	24	23	0.3	96	24	100	60	2	two times
5	Guntur MCI	75	66	9	135	75	100	1	1	once
6	Hindupur M	10	10	0.4	71	20	50	59	1	once
7	Kakinada M	21	21	0.7	66	n.a.	n.a.	60	5	two times
8	Kurnool MCI	7	5	2	23	7	100	1.600	2	once
9	Machilipatnam M	21	11	9	103	24	86	300	4	two times
10	Nandyal MCI	10	7	4	67	10	100	500	2	once
11	Nellore MCI	43	33	10	107	45	97	60	5	two times
12	Nizamabad M	15	11	4	53	28	55	3000	2	once
13	Ongole MCI	16	13	3	90	19	86	40	2	once
14	Qutubullapur M	30	13	17	118	n.a.	n.a.	1816	12	once
15	Rajahmundry M.Corp.	33	32	0.7	86	33	100	15	3	two times
16	Tenali M	0.7	0.7	n.a.	4*	2	43	Nil	4	two times
17	Tirupati MCI	29	23	5	136	29	100	180	1	once
18	Vijaywada M.Corp.	146	143	3	174	160	91	120	4	two times
19	Warangal M.Corp.	68	55	13	100	68	100	18	2	once
Bihar										
20	Bihar Sharif M	30	Break-up not available		120	32	94	Nil	4	two times
21	Chhapra M	14	Break-up not available		70	18	78	Nil	4	two times
22	Gaya M.Corp.	36	Break-up not available		91	36	100	on demand	4	two times
23	Katihar M	15	Break-up not available		75	20	75	Nil	3	once
24	Munger M	10	Break-up not available		48	10	100	Nil	4	two times

Sl. No.	City/Town	Total quantity of water supplied (mld)	Quantity of water supplied by uses (mld)		Per-capita supply (lpcd)	Installed production capacity (mld)	% utilization of capacity	Daily supply through tankers ('000 ltrs.)	Average hours of supply per day	Number of times supplied per day
			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
25	Ranchi M.Corp.	91	55	36	130	169	54	Nil	4	two times
Gujarat										
26	Anand M	11	10	1	63	17	65	on demand	4	two times
27	Bharuch M	18	17	1	113	22	82	1	8	two times
28	Bhavnagar M.Corp.	70	Break-up not available		127	72	97	400	1	once
29	Bhuj M	16	14	2	136	16	100	on demand	1	once
30	Jamnagar M.Corp.	85	Break-up not available		170	480	18	on demand	4	two times
31	Junagadh M	12	Break-up not available		75	12	100	Nil	8	once
32	Nadiad M	21	17	4	70	21	100	on demand	4	two times
33	Navsari M	16	15	1	117	n.a.	n.a.	on demand	3	two times
34	Porbandar M	10	8	2	70	n.a.	n.a.	85	1	once
35	Rajkot M.Corp.	107	96	11	107	n.a.	n.a.	15	30 min.	once
36	Surendranagar M	6	Break-up not available		37	20	27	Nil 1/2 hr. in 6 days		weekly
Haryana										
37	Ambala MCI	16	14	2	115	30	54	Nil	above 12	three times
38	Faridabad M.Corp.	184	133	51	160	184	100	425	3	two times
39	Gurgaon MCI	19	16	2	106	19	100	on demand	3	two times
40	Hisar MCI	25	23	2	99	29	86	100	8	two times
41	Karnal MCI	40	34	6	182	40	100	Nil	12	three times
42	Rohtak MCI	32	31	0.8	132	39	82	Nil	10	two times
Jammu & Kashmir										
43	Jammu M.Corp.	58	n.a.	n.a.	55	65	89	1	8	alternate day
Karnataka										
44	Belgaum M.Corp.	36	21	15	77	36	100	Nil	3	once
45	Bellary CMC	31	25	6	103	31	100	Nil	2	once
46	Davangere MCI	32	20	11	69	32	100	on demand	above 12	once
47	Gadag-Betigeri CMC	16	Break-up not available		107	20	79	Nil	10	once

Sl. No.	City/Town	Total quantity of water supplied (mld)	Quantity of water supplied by uses (mld)		Per-capita supply (lpcd)	Installed production capacity (mld)	% utilization of capacity	Daily supply through tankers ('000 ltrs.)	Average hours of supply per day	Number of times supplied per day
			Domestic	Non-domestic						
1	2	3	4	6	7	8	9	10	11	
48	Gulbarga M.Corp.	32	24	7	70	61	52	Nil	8	once
49	Hubli-Dharwar M.Corp.	88	68	19	103	108	81	on demand	2	alternate day
50	Mandya M	13	11	2	92	14	95	Nil	2	once
51	Mangalore M.Corp.	85	56	29	207	91	93	on demand	6	once
52	Mysore M.Corp.	138	103	35	132	138	100	730	6	once
53	Shimoga CMC	34	32	1	152	34	100	Nil	2	once
54	Tumkur M	22	21	0.6	73	44	50	80	1	twice weekly
Kerala										
55	Alappuzha MC	15	Break-up not available		75	18	83	Nil	4	once
56	Kollam MC	18	13	5	113	58	31	Nil	5	two times
57	Kozhikode M.Corp.	72	61	11	146	77	94	Nil	above 12	alternate day
58	Thalaserry M	27	20	7	201	27	100	Nil	12	once
59	Thiruvananthapuram M.Corp.	180	151	29	308	260	69	300	24	once
Madhya Pradesh										
60	Bhind M	19	19	0.05	109	21	90	Nil	6	two times
61	Burhanpur M.Corp.	19	Break-up not available		90	19	100	Nil	1	two times
62	Dewas M.Corp.	9	Break-up not available		45	n.a.	n.a.	260	2	two times
63	Guna M	12	10	2	97	12	100	on demand	8	two times
64	Gwalior M.Corp.	150	124	25	166	159	94	on demand	4	once
65	Jabalpur M.Corp.	109	75	33	109	200	54	5000	2	two times
66	Khandwa M	16	Break-up not available		91	24	68	Nil	1	once
67	Morena M	8	7	1	68	8	100	40	3	two times
68	Murwara (Katni) M.Corp.	13	8	5	71	15	86	8.0	2	two times
69	Ratlam M.Corp.	18	18	0.4	78	27	67	Nil	1	once
70	Rewa M.Corp.	20	Break-up not available		111	27	74	30	3	two times
71	Satna M.Corp.	14	9	5	68	14	100	23	3	two times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
72	Shivpuri M	13	11	2	93	13	100	on demand	2	once
Maharashtra										
73	Amravati M.Corp.	60	45	15	120	95	63	Nil	above 12	once
74	Aurangabad M.Corp.	168	130	38	194	168	100	2	1	once
75	Bhusawal MCI	22	Break-up not available		110	28	79	50	5	two times
76	Chandrapur MCI	30	29	0.6	102	52	58	300	2	two times
77	Dhule MCI	31	29	2	94	71	44	Nil	above 12	once
78	Ichalkaranji MCI	32	26	6	128	54	59	50	2	once
79	Jalgaon MCI	56	Break-up not available		140	56	100	Nil	1	once
80	Kolhapur M.Corp.	85	70	15	169	85	100	on demand	2	once
81	Nanded Waghala M.Corp.	39	35	4	95	98	40	250	3	two times
82	Nashik M.Corp.	158	136	22	188	158	100	255	5	two times
83	Parbhani MCI	15	15	0.01	64	22	69	1000	1	once
84	Solapur M.Corp.	125	111	14	139	216	58	3000	3	once
85	Wardha M	12	12	0	82	12	100	Nil	1	once
86	Yavatmal MCI	13	11	2	100	16	80	Nil	above 12	alternate day
Orissa										
87	Bhubaneswar M.Corp.	150	97	53	229	259	58	250	6	two times
88	Cuttack M.Corp.	146	126	20	259	146	100	Nil	10	four times
89	Puri M	24	16	8	160	24	100	Nil	8	two times
90	Rourkela M	18	18	0.4	90	18	100	200	2	two times
91	Sambalpur M	19	15	4	118	19	100	Nil	6	two times
Punjab										
92	Amritsar M.Corp.	127	89	38	151	180	71	Nil	10	three times
93	Bathinda MCI	17	13	4	98	17	100	Nil	6	two times
94	Hoshiarpur MCI	22	Break-up not available		150	22	100	Nil	12	three times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
95	Jalandhar M.Corp.	175	157	17	237	209	84	Nil	12	three times
96	Moga MCI	20	18	2	135	29	70	Nil	12	three times
97	Pathankot MCI	17	14	3	87	28	60	Nil	12	three times
98	Patiala M.Corp.	60	55	5	183	80	75	Nil	above 12	three times
Rajasthan										
99	Ajmer MCI	52	Break-up not available		95	146	36	Nil	1	once
100	Alwar M	32	27	6	107	32	100	Nil	5	two times
101	Beawar M	11	10	1	80	23	49	Nil	1	alternate day
102	Bhilwara M	14	Break-up not available		62	32	44	72	2	twice weekly
103	Bikaner M	68	46	22	113	68	100	Nil	2	once
104	Jodhpur M.Corp.	176	Break-up not available		176	316	56	Nil	3	once
105	Kota M.Corp.	160	120	40	213	166	97	Nil	12	once
106	Sriganganagar M	22	20	2	98	32	69	on demand	8	three times
Tamil Nadu										
107	Cuddalore M	4	4	0.3	26	5	86	Nil	2	once
108	Dindigul M	12	11	1	56	12	100	Nil	1	once
109	Erode M	22	17	5	127	30	74	Nil	3	twice
110	Kanchipuram M	16	14	3	104	22	76	0	2	once
111	Kumbakonam M	11	9	2	72	11	95	Nil	3	twice
112	Nagercoil M	9	8	1	44	11	86	Nil	8	alternate day
113	Rajapalayam M	9	8	0.5	71	43	20	30	2	alternate day
114	Salem M.Corp.	50	45	5	112	53	95	150	1	once
115	Thanjavur M	24	Break-up not available		111	25	97	on demand	3	once
116	Tiruchirapalli M.Corp.	88	79	9	110	88	100	0	30 min.	twice
117	Tirunelveli M.Corp.	34	32	2	82	34	100	Nil	3	once
118	Tirunvannamalai M	14	Break-up not available		105	18	75	Nil	2	once
119	Tiruppur M	29	Break-up not available		97	49	58	1	2	alternate day

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
120	Tuticorin M	16	Break-up not available		74	18	89	Nil	2	once
121	Vellore M	13	10	3	74	21	62	Nil	3	alternate day
Uttar Pradesh										
122	Agra M.Corp.	250	201	49	217	376	66	16	8	two times
123	Aligarh M.Corp.	47	35	12	78	48	97	39	6	three times
124	Allahabad M.Corp.	210	181	29	207	230	91	on demand	9	three times
125	Bareilly M.Corp.	80	72	8	107	110	73	Nil	8	two times
126	Etawah MB	20	18	1	139	24	81	on demand	10	two times
127	Faizabad MB	22	Break-up not available		127	29	74	on demand	6	three times
128	Firozabad MB	12	Break-up not available		48	15	80	Nil	4	two times
129	Ghaziabad M.Corp.	110	Break-up not available		124	120	92	100	6	two times
130	Gorakhpur M.Corp.	74	58	16	123	82	90	on demand	6	three times
131	Haldwani-cum-Kathgodam MB	19	17	2	132	20	95	60	5	two times
132	Hapur MB	14	Break-up not available		70	14	100	6	4	four times
133	Hardwar MB	39	33	6	130	65	60	Nil	above 12	once
134	Jhansi MB	77	76	1	152	70	110	150	2	two times
135	Mathura MB	27	Break-up not available		67	33	80	60	3	two times
136	Meerut M.Corp.	132	Break-up not available		106	150	88	10	above 12	three times
137	Mirzapur MB	25	24	0.5	119	28	89	Nil	5	two times
138	Moradabad M.Corp.	48	Break-up not available		72	55	87	Nil	8	two times
139	Muzaffarnagar MB	46	36	10	142	48	96	Nil	8	two times
140	Rae Bareli MB	13	11	2	74	15	90	Nil	6	two times
141	Rampur MB	20	Break-up not available		62	20	99	Nil	12	two times
142	Saharanpur MB	49	36	13	91	50	98	10	9	n.a.
143	Sitapur MB	17	Break-up not available		114	22	78	on demand	6	three times
144	Unnao MB	21	21	n.a.	174	24	88	on demand	6	two times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
West Bengal										
145	Asansol M.Corp.	52	50	2	166	54	96	94	12	two times
146	Baharampur M	15	15	0	104	33	46	Nil	8	n.a.
147	Balurghat M	0.9	0.9	0	7*	1	72	26	6	three times
148	Bankura M	11	6	5	72	19	58	17	above 12	two times
149	Barasat M	12	12	0.1	82	16	75	1	6	three times
150	Burdwan M	24	21	2	73	24	96	1	7	three times
151	Halisahar M	20	16	4	134	24	83	10	6	once
152	Krishnagar M	6	6	0	41	9	63	Nil	6	once
153	Midnapore M	15	11	4	95	18	83	1	6	two times
154	North Barrackpore M	13	13	0.9	117	14	100	Nil	8	three times
155	Santipur M	0.9	0.9	0	7*	0.9	100	2	6	three times
156	Siliguri M.Corp.	18	18	0	36	18	100	Nil	5	two times
Small States										
Assam										
157	Guwahati M.Corp.	55	Break-up not available		55	80	69	200	3	two times
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur										
159	Imphal MCI	58	Break-up not available		238	74	79	288	2	once
Meghalaya										
160	Shillong MB	27	24	3	123	55	48	50	3	two times
Mizoram										
161	Aizwal NM	11	11	0	44	12	91	Nil	7	once

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
Tripura										
162	Agartala MCI	22	15	7	109	n.a.	n.a.	60	4	two times
Union Territories										
163	Chandigarh M.Corp.	227	121	106	267	295	77	200	9	two times
164	Pondicherry M	33	29	5	115	33	100	Nil	6	two times
<p><i>* reasons for low lpcd : a) low coverage of population by water supply, b) public water supply agency has been able to provide only a small number of households with domestic connection, c) dependence of most households on stand posts and private sources of supply</i></p> <p><i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i></p>										

Sl. No.	City/Town	Total quantity of water supplied (mld)	Quantity of water supplied by uses (mld)		Per-capita supply (lpcd)	Installed production capacity (mld)	% utilization of capacity	Daily supply through tankers ('000 ltrs.)	Average hours of supply per day	Number of times supplied per day
			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
CLASS II										
Andhra Pradesh										
1	Anakapalle M	4	2	1	32	4	100	Nil	3	two times
2	Dharmavaram M	8	7	1	79	8	100	60	4	once
3	Gudur MCI	7	7	0.5	99	8	88	360	4	two times
4	Kapra M	5	5	0	38	7	63	500	1	once
5	Kavali MCI	5	5	0	58	n.a.	n.a.	Nil	2	two times
6	Madanapalle M	8	7	0.2	77	9	87	68	above 12	once
7	Narasaraopet M	5	Break-up not available		47	5	100	38	4	two times
8	Rajendra nagar MCI	5	3	2	42	6	91	200	3	two times
9	Sangareddy MCI	4	3	0.4	64	4	100	10	2	once
10	Srikakulam MCI	7	7	0.2	68	7	100	0	3	two times
11	Srikalahasti M	7	7	0.2	97	10	71	23	2	once
12	Suryapet MCI	8	6	2	85	8	100	Nil	2	once
Bihar										
13	Buxar M	4	4	0	58	8	49	Nil	10	two times
14	Deogha r M	3	Break-up not available		30	3	100	Nil	2	once
15	Hajipur M	11	Break-up not available		96	14	79	Nil	8	three times
16	Hazaribagh M	7	Break-up not available		61	82	9	Nil	4	two times
17	Jehanabad M	8	Break-up not available		140	n.a.	n.a.	Nil	6	two times
18	Madhubani M	8	Break-up not available		123	12	67	Nil	4	two times
19	Mokama M	2	Break-up not available		30	2	100	Nil	above 12	three times
Gujarat										
20	Amreli M	n.a.	n.a.	n.a.	118	10	100	Nil	1 hr. in 3 days	twice a week
21	Ankleswar M	10	Break-up not available		167	10	100	50	above 12	once
22	Dabhoi M	9	Break-up not available		138	9	100	on demand	2	two times

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			Domestic	Non-domestic						
1	2	3	4	6	7	8	9	10	11	
23	Dohad M	7	7	0.6	96	10	75	on demand	1	once
24	Gondal M	13	11	2	130	7	182	Nil	20 min. in 4 days	once in 4 days
25	Jetpur M	11	Break-up not available		91	n.a.	n.a.	on demand	20 min.	once
26	Mahesana M	15	Break-up not available		107	n.a.	n.a.	on demand	2	two times
27	Palanpur M	4	Break-up not available		34	n.a.	n.a.	on demand	2	two times
Haryana										
28	Jind MCI	16	15	0.9	138	16	100	Nil	12	two times
29	Kaithal MCI	11	10	0.7	114	17	63	Nil	8	two times
30	Rewari MCI	11	11	0	108	11	100	50	1	two times
31	Thanesar MCI	13	12	0.9	132	13	100	Nil	above 12	three times
Karnataka										
32	Bagalkot CMC	12	11	1	122	14	90	Nil	above 12	alternate day
33	Chikmagalur CMC	15	13	3	150	15	100	on demand	2	once
34	Gokak CMC	5	4	0.7	67	5	83	Nil	12	once
35	Hospet CMC	16	12	4	140	16	100	Nil	2	once
36	Kolar CMC	8	7	1	71	9	89	on demand	1	once
37	Rabkavi-Banhatti CMC	5	3	1	63	5	100	Nil	1	alternate day
38	Ramanagaram CMC	5	Break-up not available		64	n.a.	n.a.	Nil	1	once
Kerala										
39	Changanassary MC	4	3	1	65	6	67	Nil	4	once
40	Payyanur M	1.5	1.5	0.01	21	2	100	Nil	6	two times
41	Taliparamba M	0.4	Break-up not available		7*	0.5	80	Nil	6	two times
42	Thrissur MC	18	12	6	198	51	36	Nil	5	once
Madhya Pradesh										
43	Hoshangabad M	8	5	4	81	8	100	450	2	two times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
44	Itarsi M	6	4	1	56	6	100	Nil	1	once
45	Khargone M	13	Break-up not available		163	11	122	420	2	two times
46	Mandsaur M	9	9	0.4	73	14	66	Nil	1	once
47	Nagda M	3	Break-up not available		30	3	100	Nil	5	two times
48	Neemuch M	6	Break-up not available		59	7	87	on demand	3	once
49	Sehore M	5	5	0.3	53	12	44	300	1	once
50	Shahdol M	5	Break-up not available		62	7	64	10	2	once
51	Vidisha M	9	9	0.1	72	9	100	Nil	1	two times
Maharashtra										
52	Amalner MCI	15	Break-up not available		150	16	94	Nil	1	once
53	Ballarpur MCI	7	7	0.4	64	8	92	Nil	3	two times
54	Bhandara M	9	7	2	118	9	100	Nil	4	two times
55	Kamptee MCI	4	3	0.5	38	N. App.	N. App.	Nil	1	once
56	Manmad MCI	7	7	0.5	83	16	46	500	above 12	once
57	Ratnagiri MCI	8	8	0.2	114	17	48	20	1	once
58	Satara MCI	11	9	2	110	12	92	Nil	2	once
59	Virar MCI	9	8	0.8	90	21	43	Nil	2	once
Orissa										
60	Balangir M	7	2	5	87	18	40	Nil	11	once
61	Bhadrak M	3	1.5	2	32	4	75	on demand	3	three times
Punjab										
62	Firozpur MCI	20	15	4	210	21	92	Nil	10	three times
63	Kapurthala M	14	13	1	165	18	76	Nil	above 12	once
64	Mansa MCI	8	8	0	119	11	70	Nil	10	two times
65	Phagwara MCI	15	12	3	136	19	80	Nil	12	three times
66	Sangrur MCI	13	12	0.4	181	14	91	Nil	above 12	three times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
Rajasthan										
67	Banswara M	10	Break-up not available		89	10	100	Nil	3	two times
68	Barmer M	7	6	0.03	77	7	100	200	1	twice weekly
69	Bundi M	8	6	2	100	9	89	Nil	2	once
70	Churu M	8	5	2	77	8	95	Nil	above 12	two times
71	Hanumangarh M	7	6	1	58	8	90	Nil	4	two times
72	Sawai Madhopur M	8	7	1	87	8	100	Nil	5	two times
Tamil Nadu										
73	Ambur M	6	Break-up not available		65	8	75	720	2	once
74	Arakkonam M	4	Break-up not available		45	5	80	Nil	2	once
75	Attur M	3	2	0.6	47	5	60	Nil	1	twice weekly
76	Cumbum M	3	3	0.07	50	n.a.	n.a.	Nil	2	once
77	Dharmapuri M	3	3	0.1	45	3	100	Nil	3	once
78	Guduivattam M	6	Break-up not available		61	8	73	Nil	2	twice weekly
79	Nagapattinam M	8	6	1	70	10	81	Nil	3	once
80	Pudukkottai M	8	8	0.3	73	8	100	Nil	1	once
81	Sivakasi M	5	Break-up not available		74	7	79	Nil	3	alternate day
82	Srivilliputtur M	4	3	0.08	47	4	79	Nil	10	alternate day
83	Tindivanam MC	2	2	0.2	27	1	131	Nil	1	once
84	Udhagamandalam M	4	Break-up not available		40	4	92	400	3	alternate day
Uttar Pradesh										
85	Auraiya MB	5	4	0.2	50	6	75	on demand	3	three times
86	Balrampur MB	3	Break-up not available		40	4	70	on demand	5	two times
87	Basti MB	10	Break-up not available		91	12	83	on demand	6	two times
88	Bhadohi MB	4	4	0	32	4	100	100	6	three times
89	Chandpur MB	3	3	0.2	41	5	60	Nil	10	n.a.
90	Etah MB	4	4	0	30	4	98	Nil	4	four times

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
91	Ghazipur MB	16	14	2	167	16	100	Nil	12	three times
92	Gonda MB	9	Break-up not available		79	9	100	Nil	4	two times
93	Lakhimpur MB	13	Break-up not available		125	19	67	on demand	8	two times
94	Lalitpur MB	9	8	0.09	85	16	53	200	4	two times
95	Mughalsarai MB	4	4	0.3	25	5	89	Nil	11	three times
96	Nawabganj-Barabanki MB	9	Break-up not available		101	12	76	Nil	11	three times
97	Orai MB	8	8	0.3	48	13	64	Nil	9	two times
98	Roorkee MB	19	Break-up not available		188	20	94	Nil	8	three times
West Bengal										
99	Bishnupur M	3	3	0.07	39	4	64	Nil	2	two times
100	Chakdaha M	2	2	0	21	4	54	42	6	three times
101	Contai M	2	2	0	14	2	64	4	2	two times
102	Cooch Behar M	10	7	3	99	10	100	20	7	three times
103	Darjeeling M	6	4	2	65	11	55	Nil	1	two times
104	Jalpaiguri M	5	4	1.0	49	6	81	20	6	two times
105	Jangipur M	3	3	0.4	38	4	75	2	6	three times
106	Katwa M	2	1.5	0	22	2	100	2	3	three times
107	Raniganj M	5	4	1	42	7	75	40	2	two times
Small States										
Himachal Pradesh										
108	Shimla M.Corp.	3	2	0.9	252	33	85	65	above 12	once
Nagaland										
109	Kohima TC	28	20	8	28	3	100	Nil	3	once
Union Territories										
110	Port Blair MCI	15	14	0.9	140	21	69	136	1	once

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			Domestic	Non-domestic						
1		2	3	4	6	7	8	9	10	11
Others (Smaller than Class II towns)										
Small States										
Arunachal Pradesh										
111	Itanagar CT	6	5	0.7	164	6	100	50	2	two times
Goa										
112	Panaji MCI	12	5	6	206	72	16	420	4	once
Union Territories										
113	Daman MCI	8	Break-up not available		229	16	50	60	5	two times
114	Kavarathi NMCT	0.04	0.04	0	3*	0.1	31	0	1	two times
115	Silvassa	1	1.3	0.1	71	1	100	Nil	2	two times
<p>* reasons for low lpcd : a) low coverage of population by water supply, b) public water supply agency has been able to provide only a small number of households with domestic connection, c) dependence of most households on stand posts and private sources of supply</p> <p>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</p>										

A-3

WATER SUPPLIED, ESTIMATED DEMAND AND
SUPPLY DEFICIT USING CPHEEO NORM AND
CITY NORM, 1999

A-3 : Water Supplied, Estimated Demand and Supply Deficit using CPHEEO Norm and City Norm 1999											
Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
Metropolitan Cities											
1	Ahmedabad M.Corp.	S	3500	486	139	150	170	525	595	39	109.0
2	Bangalore M.Corp.	S	5000	706	141	150	140	750	700	45	0
3	Bhopal M.Corp.	S	1500	270	180	150	150	225	225	0	0
4	Calcutta M.Corp.	S	6000	1035	173	150	227	900	1362	0	327
5	Chennai M.Corp.	S	4363	461	106	150	110	654	480	193	19
6	Coimbatore M.Corp	S	971	105	108	150	150	146	146	41	41
7	Delhi M.Corp.	S	12000	2620	218	150	225	1800	2700	0	80
8	Greater Mumbai M.Corp.	S	11100	2978	268	150	240	1665	2664	0	0
9	Hyderabad M.Corp.	S	4163	682	164	150	160	624	666	0	0
10	Indore M.Corp.	S	1600	238	149	150	200	240	320	2	82
11	Jaipur M.Corp.	S	2000	340	170	150	180	300	360	0	20
12	Kanpur M.Corp.	S	2500	310	124	150	200	375	500	65	190
13	Kochi M.Corp.	S	680	84	124	150	150	102	102	18	18
14	Lucknow M.Corp.	S	2500	410	164	150	250	375	625	0	215
15	Ludhiana M.Corp.	S	2000	234	117	150	200	300	400	66	166
16	Madurai M.Corp.	S	1020	90	88	150	110	153	112	63	22
17	Nagpur M.Corp.	S	2100	370	176	150	175	315	368	0	0
18	Pune M.Corp.	S	2300	650	283	150	160	345	368	0	0
19	Surat M.Corp.	S	2300	320	139	150	140	345	322	25	2
20	Vadodara M.Corp.	S	1400	240	171	150	180	210	252	0	12
21	Varanasi M.Corp.	S	1152	220	191	150	270	173	311	0	91
22	Visakhapatnam M.Corp.	S	1280	168	131	150	65	192	83	24	0

S = having sewerage system US = not having sewerage system
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
CLASS I											
Andhra Pradesh											
1	Anantapur MCI	US	250	14	56	70	100	18	25	3	11
2	Chittoor M	US	149	16	106	70	135	10	20	0	4
3	Cuddapah MCI	US	166	17	101	70	140	12	23	0	6
4	Eluru M	S	247	24	96	135	135	33	33	10	10
5	Guntur MCI	S	557	75	135	135	140	75	78	0.27	3
6	Hindupur M	US	140	10	71	70	135	10	19	0	9
7	Kakinada M	US	325	21	66	70	135	23	44	1.4	23
8	Kurnool MCI	US	282	7	23	70	100	20	28	13	22
9	Machilipatnam M	US	200	21	103	70	135	14	27	0	7
10	Nandyal MCI	US	150	10	67	70	140	11	21	0.50	11
11	Nellore MCI	US	404	43	107	70	150	28	61	0	17
12	Nizamabad M	US	285	15	53	70	100	20	29	5	14
13	Ongole MCI	US	180	16	90	70	110	13	20	0	4
14	Qutubullapur M	US	250	30	118	70	180	18	45	0	15
15	Rajahmundry M.Corp.	US	380	33	86	70	140	27	53	0	21
16	Tenali M	US	170	0.68	4	70	79	12	13	11	13
17	Tirupati MCI	US	210	29	136	70	100	15	21	0	0
18	Vijaywada M.Corp.	S	837	146	174	135	135	113	113	0	0
19	Warangal M.Corp.	US	680	68	100	70	140	48	95	0	27
Bihar											
20	Bihar Sharif M	US	250	30	120	70	175	18	44	0	14
21	Chhapra M	US	200	14	70	70	175	14	35	0	21
22	Gaya M.Corp.	US	400	36	91	70	180	28	72	0	36
23	Katihar M	US	200	15	75	70	150	14	30	0	15
24	Munger M	US	210	10	48	70	125	15	26	5	16

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
25	Ranchi M.Corp.	US	700	91	130	70	135	49	95	0	4
Gujarat											
26	Anand M	S	175	11	63	135	100	24	18	13	7
27	Bharuch M	US	159	18	113	70	140	11	22	0	4
28	Bhavnagar M.Corp.	S	550	70	127	135	110	74	61	4	0
29	Bhuj M	S	118	16	136	135	140	16	17	0	0.52
30	Jamnagar M.Corp.	US	500	85	170	70	80	35	40	0	0
31	Junagadh M	US	165	12	75	70	80	12	13	0	0.85
32	Nadiad M	S	300	21	70	135	45	41	14	20	0
33	Navsari M	S	139	16	117	135	140	19	19	2	3
34	Porbandar M	US	142	10	70	70	70	10	10	0	0
35	Rajkot M.Corp.	S	1000	107	107	135	135	135	135	28	28
36	Surendranagar M	US	150	6	37	70	40	11	6	5	0.40
Haryana											
37	Ambala MCI	S	141	16	115	135	180	19	25	3	9
38	Faridabad M.Corp.	S	1150	184	160	135	204	155	235	0	51
39	Gurgaon MCI	S	175	19	106	135	180	24	32	5	13
40	Hisar MCI	S	250	25	99	135	180	34	45	9	20
41	Karnal MCI	US	220	40	182	70	180	15	40	0	0
42	Rohtak MCI	S	243	32	132	135	180	33	44	0.81	12
Jammu & Kashmir											
43	Jammu M.Corp.	US	1051	58	55	70	225	74	236	15	178
Karnataka											
44	Belgaum M.Corp.	S	470	36	77	135	135	63	63	27	27
45	Bellary CMC	S	297	31	103	135	135	40	40	9	9
46	Davangere MCI	S	455	32	69	135	135	61	61	30	30
47	Gadag-Betigeri CMC	US	148	16	107	70	130	10	19	0	3

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1	2	3	4	5	6	7	8	9	10	11	
48	Gulbarga M.Corp.	S	450	32	70	135	135	61	61	29	29
49	Hubli-Dharwar M.Corp.	S	850	88	103	135	135	115	115	27	27
50	Mandya M	US	140	13	92	70	136	10	19	0	6
51	Mangalore M.Corp.	S	410	85	207	135	135	55	55	0	0
52	Mysore M.Corp.	S	1050	138	132	135	135	142	142	3	3
53	Shimoga CMC	S	222	34	152	135	135	30	30	0	0
54	Tumkur M	US	300	22	73	70	100	21	30	0	8
Kerala											
55	Alappuzha MC	US	200	15	75	70	150	14	30	0	15
56	Kollam MC	US	160	18	113	70	150	11	24	0	6
57	Kozhikode M.Corp.	US	493	72	146	70	150	35	74	0	2
58	Thalaserry M	US	134	27	201	70	135	9	18	0	0
59	Thiruvananthapuram M.Corp.	US	585	180	308	70	180	41	105	0	0
Madhya Pradesh											
60	Bhind M	S	175	19	109	135	120	24	21	5	2
61	Burhanpur M.Corp.	US	210	19	90	70	133	15	28	0	9
62	Dewas M.Corp.	US	200	9	45	70	135	14	27	5	18
63	Guna M	US	125	12	97	70	135	9	17	0	5
64	Gwalior M.Corp.	S	900	150	166	135	180	122	162	0	12
65	Jabalpur M.Corp.	US	1000	109	109	70	140	70	140	0	32
66	Khandwa M	US	175	16	91	70	150	12	26	0	10
67	Morena M	S	125	8	68	135	110	17	14	8	5
68	Murwara (Katni) M.Corp.	US	180	13	71	70	140	13	25	0	12
69	Ratlam M.Corp.	US	235	18	78	70	130	16	31	0	12
70	Rewa M.Corp.	US	180	20	111	70	180	13	32	0	12

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
71	Satna M.Corp.	US	200	14	68	70	135	14	27	0.50	14
72	Shivpuri M	S	140	13	93	135	150	19	21	6	8
Maharashtra											
73	Amravati M.Corp.	US	500	60	120	70	150	35	75	0	15
74	Aurangabad M.Corp.	S	868	168	194	135	138	117	120	0	0
75	Bhusawal MCI	US	200	22	110	70	110	14	22	0	0
76	Chandrapur MCI	US	295	30	102	70	135	21	40	0	10
77	Dhule MCI	S	330	31	94	135	100	45	33	14	2
78	Ichalkaranji MCI	S	250	32	128	135	140	34	35	2	3
79	Jalgaon MCI	US	400	56	140	70	140	28	56	0	0
80	Kolhapur M.Corp.	S	502	85	169	135	150	68	75	0	0
81	Nanded Waghala M.Corp.	S	410	39	95	135	140	55	57	16	18
82	Nashik M.Corp.	S	839	158	188	135	180	113	151	0	0
83	Parbhani MCI	US	233	15	64	70	140	16	33	1.3	18
84	Solapur M.Corp.	S	900	125	139	135	150	122	135	0	10
85	Wardha M	US	150	12	82	70	135	11	20	0	8
86	Yavatmal MCI	US	130	13	100	70	100	9	13	0	0
Orissa											
87	Bhubaneswar M.Corp.	S	654	150	229	135	235	88	154	0	4
88	Cuttack M.Corp.	US	563	146	259	70	200	39	113	0	0
89	Puri M	US	150	24	160	70	150	10	22	0	0
90	Rourkela M	US	200	18	90	70	185	14	37	0	19
91	Sambalpur M	US	157	19	118	70	125	11	20	0	1.1
Punjab											
92	Amritsar M.Corp.	S	843	127	151	135	200	114	169	0	42
93	Bathinda MCI	S	174	17	98	135	182	23	32	6	15
94	Hoshiarpur MCI	S	145	22	150	135	200	20	29	0	7

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
95	Jalandhar M.Corp.	S	738	175	237	135	200	100	148	0	0
96	Moga MCI	S	148	20	135	135	200	20	30	0	10
97	Pathankot MCI	S	195	17	87	135	180	26	35	9	18
98	Patiala M.Corp.	S	328	60	183	135	180	44	59	0	0
Rajasthan											
99	Ajmer MCI	S	550	52	95	135	140	74	77	22	25
100	Alwar M	US	300	32	107	70	100	21	30	0	0
101	Beawar M	US	141	11	80	70	120	10	17	0	6
102	Bhilwara M	US	225	14	62	70	100	16	23	2	9
103	Bikaner M	S	600	68	113	135	175	81	105	13	37
104	Jodhpur M.Corp.	S	1000	176	176	135	150	135	150	0	0
105	Kota M.Corp.	US	750	160	213	70	200	53	150	0	0
106	Sriganganagar M	US	225	22	98	70	140	16	32	0	10
Tamil Nadu											
107	Cuddalore M	US	162	4	26	70	70	11	11	7	7
108	Dindigul M	US	214	12	56	70	100	15	21	3	9
109	Erode M	US	174	22	127	70	110	12	19	0	0
110	Kanchipuram M	S	157	16	104	135	91	21	14	5	0
111	Kumbakonam M	S	147	11	72	135	100	20	15	9	4
112	Nagercoil M	US	206	9	44	70	70	14	14	5	5
113	Rajapalayam M	US	123	9	71	70	70	9	9	0	0
114	Salem M.Corp.	US	447	50	112	70	110	31	49	0	0
115	Thanjavur M	US	217	24	111	70	110	15	24	0	0
116	Tiruchirapalli M.Corp.	S	800	88	110	135	110	108	88	20	0
117	Tirunelveli M.Corp.	S	414	34	82	135	70	56	29	22	0
118	Tiruvannamalai M	US	129	14	105	70	100	9	13	0	0
119	Tiruppur M	US	295	29	97	70	110	21	32	0	4
120	Tuticorin M	S	217	16	74	135	70	29	15	13	0

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
121	Vellore M	US	176	13	74	70	120	12	21	0	8
Uttar Pradesh											
122	Agra M.Corp.	US	1150	250	217	70	150	81	173	0	0
123	Aligarh M.Corp.	S	600	47	78	135	97	81	58	35	12
124	Allahabad M.Corp.	S	1015	210	207	135	250	137	254	0	44
125	Bareilly M.Corp.	S	750	80	107	135	225	101	169	21	89
126	Etawah MB	US	140	20	139	70	175	10	25	0	5
127	Faizabad MB	US	170	22	127	70	130	12	22	0	0.50
128	Firozabad MB	US	250	12	48	70	200	18	50	6	38
129	Ghaziabad M.Corp.	S	887	110	124	135	200	120	177	10	67
130	Gorakhpur M.Corp.	S	600	74	123	135	150	81	90	7	16
131	Haldwani-cum-Kathgodam MB	US	141	19	132	70	200	10	28	0	10
132	Hapur MB	S	200	14	70	135	200	27	40	13	26
133	Hardwar MB	S	300	39	130	135	210	41	63	1.5	24
134	Jhansi MB	US	507	77	152	70	160	35	81	0	4
135	Mathura MB	S	400	27	67	135	200	54	80	27	53
136	Meerut M.Corp.	S	1250	132	106	135	200	169	250	37	118
137	Mirzapur MB	S	210	25	119	135	200	28	42	3	17
138	Moradabad M.Corp.	US	670	48	72	70	120	47	80	0	32
139	Muzaffarnagar MB	US	325	46	142	70	200	23	65	0	19
140	Rae Bareli MB	US	175	13	74	70	160	12	28	0	15
141	Rampur MB	US	317	20	62	70	200	22	63	2	44
142	Saharanpur MB	US	540	49	91	70	225	38	122	0	73
143	Sitapur MB	US	150	17	114	70	200	11	30	0	13
144	Unnao MB	S	121	21	174	135	180	16	22	0	0.78
West Bengal											
145	Asansol M.Corp.	S	315	52	166	135	135	42	42	0	0

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1	2	3	4	5	6	7	8	9	10	11	
146	Baharampur M	US	143	15	104	70	100	10	14	0	0
147	Balurghat M	US	132	0.86	7	70	100	9	13	8	12
148	Bankura M	US	151	11	72	70	100	11	15	0	4
149	Barasat M	US	150	12	82	70	114	11	17	0	5
150	Burdwan M	US	323	24	73	70	100	23	32	0	9
151	Halisahar M	US	149	20	134	70	135	10	20	0	0.11
152	Krishnagar M	US	145	6	41	70	90	10	13	4	7
153	Midnapore M	US	158	15	95	70	100	11	16	0	0.80
154	North Barrackpore M	US	118	14	117	70	120	8	14	0	0.34
155	Santipur M	US	134	0.91	7	70	100	9	13	8	12
156	Silliguri M.Corp.	US	500	18	36	70	70	35	35	17	17
Small States											
Assam											
157	Guwahati M.Corp.	US	995	55	55	70	150	70	149	15	94
158	Jorhat MB	US	170	n.a.	n.a.	70	n.a.	12	n.a.	n.a.	n.a.
Manipur											
159	Imphal MCI	US	245	58	238	70	160	17	39	0	0
Meghalaya											
160	Shillong MB	US	217	27	123	70	157	15	34	0	7
Mizoram											
161	Aizwal NM	US	244	11	44	70	135	17	33	6	22
Tripura											
162	Agartala MCI	US	200	22	109	70	110	14	22	0	0.16
Union Territories											
163	Chandigarh M.Corp.	S	850	227	267	135	200	115	170	0	0
164	Pondicherry M	S	290	33	115	135	150	39	44	6	10

S = having sewerage system US = not having sewerage system
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
CLASS II											
Andhra Pradesh											
1	Anakapalle M	US	115	4	32	70	140	8	16	4	12
2	Dharmavaram M	US	100	8	79	70	125	7	13	0	5
3	Gudur MCI	US	72	7	99	70	110	5	8	0	0.81
4	Kapra M	US	120	5	38	70	116	8	14	4	9
5	Kavali MCI	US	85	5	58	70	110	6	9	1.0	4
6	Madanapalle M	US	100	8	77	70	114	7	11	0	4
7	Narasaraopet M	US	95	5	47	70	100	7	10	2	5
8	Rajendra nagar MCI	US	120	5	42	70	36	8	4	3	0
9	Sangareddy MCI	US	60	4	64	70	100	4	6	0.34	2
10	Srikakulam MCI	US	100	7	68	70	100	7	10	0.19	3
11	Srikalahasti M	US	70	7	97	70	110	5	8	0	0.91
12	Suryapet MCI	US	89	8	85	70	140	6	12	0	5
Bihar											
13	Buxar M	US	67	4	58	70	125	5	8	0.78	4
14	Deoghar M	US	100	3	30	70	150	7	15	4	12
15	Hajipur M	US	115	11	96	70	150	8	17	0	6
16	Hazaribagh M	US	119	7	61	70	270	8	32	1.1	25
17	Jehanabad M	US	57	8	140	70	175	4	10	0	2
18	Madhubani M	US	65	8	123	70	175	5	11	0	3
19	Mokama M	US	66	2	30	70	70	5	5	3	3
Gujarat											
20	Amreli M	US	85	10	118	70	90	6	8	0	0
21	Ankleswar M	S	60	10	167	135	190	8	11	0	1.4
22	Dabhoi M	S	65	9	138	135	70	9	5	0	0
23	Dohad M	US	78	7	96	70	65	5	5	0	0

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1	2	3	4	5	6	7	8	9	10	11	
24	Gondal M	US	100	13	130	70	45	7	5	0	0
25	Jetpur M	US	125	11	91	70	100	9	13	0	1.2
26	Mahesana M	S	138	15	107	135	107	19	15	4	0
27	Palanpur M	US	117	4	34	70	140	8	16	4	12
Haryana											
28	Jind MCI	S	114	16	138	135	180	15	21	0	5
29	Kaithal MCI	S	95	11	114	135	180	13	17	2	6
30	Rewari MCI	S	105	11	108	135	135	14	14	3	3
31	Thanesar MCI	S	100	13	132	135	182	14	18	0.28	5
Karnataka											
32	Bagalkot CMC	US	100	12	122	70	135	7	14	0	1.4
33	Chikmagalur CMC	S	100	15	150	135	135	14	14	0	0
34	Gokak CMC	US	68	5	67	70	70	5	5	0.21	0.21
35	Hospet CMC	US	114	16	140	70	70	8	8	0	0
36	Kolar CMC	S	112	8	71	135	80	15	9	7	0.96
37	Rabkavi-Banhatti CMC	US	72	5	63	70	150	5	11	0.50	6
38	Ramanagaram CMC	US	70	5	64	70	80	5	6	0.40	1.1
Kerala											
39	Changanessary MC	US	62	4	65	70	70	4	4	0.34	0.34
40	Payyanur M	US	71	1.5	21	70	60	5	4	3	3
41	Taliparamba M	US	52	0.39	7	70	40	4	2	3	2
42	Thrissur MC	US	91	18	198	70	170	6	15	0	0
Madhya Pradesh											
43	Hoshangabad M	US	100	8	81	70	80	7	8	0	0
44	Itarsi M	US	105	6	56	70	80	7	8	1.5	3
45	Khargone M	US	80	13	163	70	200	6	16	0	3
46	Mandsaur M	US	123	9	73	70	125	9	15	0	6

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1	2	3	4	5	6	7	8	9	10	11	
47	Nagda M	US	100	3	30	70	35	7	4	4	0.48
48	Neemuch M	US	100	6	59	70	100	7	10	1.1	4
49	Sehore M	US	100	5	53	70	100	7	10	2	5
50	Shahdol M	US	75	5	62	70	100	5	8	0.58	3
51	Vidisha M	US	125	9	72	70	120	9	15	0	6
Maharashtra											
52	Amalner MCI	US	100	15	150	70	90	7	9	0	0
53	Ballarpur MCI	US	109	7	64	70	80	8	9	0.62	2
54	Bhandara M	US	76	9	118	70	135	5	10	0	1.3
55	Kamptee MCI	US	95	4	38	70	35	7	3	3	0
56	Manmad MCI	US	87	7	83	70	100	6	9	0	1.5
57	Ratnagiri MCI	US	70	8	114	70	140	5	10	0	2
58	Satara MCI	US	100	11	110	70	120	7	12	0	1.0
59	Virar MCI	US	100	9	90	70	100	7	10	0	1.0
Orissa											
60	Balangir M	US	83	7	87	70	135	6	11	0	4
61	Bhadrak M	US	93	3	32	70	125	7	12	4	9
Punjab											
62	Ferozpur MCI	S	93	20	210	135	170	13	16	0	0
63	Kapurthala M	S	85	14	165	135	140	11	12	0	0
64	Mansa MCI	S	67	8	119	135	180	9	12	1.0	4
65	Phagwara MCI	S	108	15	136	135	160	15	17	0	3
66	Sangrur MCI	S	70	13	181	135	200	9	14	0	1.3
Rajasthan											
67	Banswara M	US	110	10	89	70	80	8	9	0	0
68	Barmer M	US	84	7	77	70	100	6	8	0	2
69	Bundi M	US	80	8	100	70	100	6	8	0	0

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1	2	3	4	5	6	7	8	9	10	11	
70	Churu M	US	100	8	77	70	125	7	13	0	5
71	Hanumangarh M	US	125	7	58	70	150	9	19	2	12
72	Sawai Madhopur M	US	89	8	87	70	100	6	9	0	1.1
Tamil Nadu											
73	Ambur M	US	86	6	65	70	70	6	6	0.41	0.41
74	Arakkonam M	US	88	4	45	70	70	6	6	2	2
75	Attur M	US	64	3	47	70	70	4	4	1.5	1.5
76	Cumbum M	US	54	3	50	70	70	4	4	1.1	1.1
77	Dharmapuri M	US	67	3	45	70	110	5	7	2	4
78	Guduivattam M	US	95	6	61	70	70	7	7	0.86	0.86
79	Nagapattinam M	S	112	8	70	135	100	15	11	7	3
80	Pudukkottai M	US	108	8	73	70	100	8	11	0	3
81	Sivakasi M	US	70	5	74	70	70	5	5	0	0
82	Srivilliputtur M	US	74	4	47	70	70	5	5	2	2
83	Tindivanam MC	US	70	2	27	70	70	5	5	3	3
84	Udhagamandalam M	S	100	4	40	135	70	14	7	10	3
Uttar Pradesh											
85	Auraiya MB	US	90	5	50	70	75	6	7	2	2
86	Balrampur MB	US	70	3	40	70	175	5	12	2	9
87	Basti MB	US	110	10	91	70	150	8	17	0	7
88	Bhadohi MB	US	125	4	32	70	200	9	25	5	21
89	Chandpur MB	US	80	3	41	70	150	6	12	2	9
90	Etah MB	S	135	4	30	135	150	18	20	14	16
91	Ghazipur MB	US	96	16	167	70	200	7	19	0	3
92	Gonda MB	US	114	9	79	70	150	8	17	0	8
93	Lakhimpur MB	US	100	13	125	70	180	7	18	0	6
94	Lalitpur MB	US	100	9	85	70	150	7	15	0	7

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
95	Mughalsarai MB	US	160	4	25	70	200	11	32	7	28
96	Nawabganj-Barabanki MB	US	90	9	101	70	140	6	13	0	3
97	Orai MB	S	170	8	48	135	110	23	19	15	10
98	Roorkee MB	S	100	19	188	135	200	14	20	0	1.2
West Bengal											
99	Bishnupur M	US	67	3	39	70	100	5	7	2	4
100	Chakdaha M	US	90	2	21	70	100	6	9	4	7
101	Contai M	US	114	2	14	70	130	8	15	6	13
102	Cooch Behar M	US	99	10	99	70	90	7	9	0	0
103	Darjeeling M	S	93	6	65	135	120	13	11	7	5
104	Jalpaiguri M	US	101	5	49	70	100	7	10	2	5
105	Jangipur M	US	78	3	38	70	100	5	8	2	5
106	Katwa M	US	68	1.5	22	70	50	5	3	3	2
107	Raniganj M	US	121	5	42	70	100	8	12	3	7
Small States											
Himachal Pradesh											
108	Shimla M.Corp.	S	111	28	252	135	135	15	15	0	0
Nagaland											
109	Kohima TC	US	103	3	28	70	40	7	4	4	1.2
Union Territories											
110	Port Blair MCI	US	105	15	140	70	120	7	13	0	0
Others (Smaller than Class II towns)											
Small States											
Arunachal Pradesh											
111	Itanagar CT	US	34	6	164	70	135	2	5	0	0

Sl. No.	City/Town	S/US	Population ('000) 1999	Water supplied		CPHEEO norm (lpcd)	Norm adopted by city (lpcd)	Demand for water(mld)		Supply Deficit(mld)	
				mld	lpcd			CPHEEO norm	City norm	CPHEEO norm	City norm
1		2	3	4	5	6	7	8	9	10	11
Goa											
112	Panaji MCI	S	57	12	206	135	142	8	8	0	0
Union Territories											
113	Daman MCI	US	35	8	229	70	60	2	2	0	0
114	Kavarathi NMCT	US	11	0.04	3	70	55	0.78	0.61	0.74	0.57
115	Silvassa	US	20	1.4	71	70	60	1.4	1.2	0	0
<p><i>S = having sewerage system US = not having sewerage system</i> <i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i></p>											

A-4

UNACCOUNTED FOR WATER AND NET
QUANTITY OF WATER SUPPLIED, 1999

A-4 : Unaccounted for Water and Net Quantity of Water Supplied, 1999															
Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic	Gross	Domestic
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
Metropolitan Cities															
1	Ahmedabad M.Corp.	486	467.0	139	133	73	15	413	394	118	113	413.1	397.0	118	113
2	Bangalore M.Corp.	706	606	141	121	247	35	459	359	92	72	600	515	120	103
3	Bhopal M.Corp.	270	204	180	136	81	30	189	123	126	82	230	174	153	116
4	Calcutta M.Corp.	1035	906	173	151	150	14	885	756	148	126	880	770	147	128
5	Chennai M.Corp.	461	418	106	96	106	23	355	312	81	72	392	355	90	81
6	Coimbatore M.Corp.	105	103	108	106	24	23	81	78	83	81	89	87	92	90
7	Delhi M.Corp.	2620	2165	218	180	675	26	1945	1490	162	124	2227	1840	186	153
8	Greater Mumbai M.Corp.	2978	2453	268	221	600	20	2378	1853	214	167	2531	2085	228	188
9	Hyderabad M.Corp.	682	361	164	87	246	36	437	116	105	28	580	307	139	74
10	Indore M.Corp.	238	199	149	125	41	17	197	158	123	99	202	169	126	106
11	Jaipur M.Corp.	340	332	170	166	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	289	283	145	141
12	Kanpur M.Corp.	310	225	124	90	93	30	217	132	87	53	264	191	105	77
13	Kochi M.Corp.	84	59	124	86	4	5	80	55	118	81	71	50	105	74
14	Lucknow M.Corp.	410	349	164	139	123	30	287	226	115	90	349	296	139	118
15	Ludhiana M.Corp.	234	200	117	100	56	24	179	144	89	72	199	170	99	85
16	Madurai M.Corp.	90	67	88	66	20	22	70	47	69	46	77	57	75	56
17	Nagpur M.Corp.	370	211	176	101	111	30	259	100	123	48	315	180	150	85
18	Pune M.Corp.	650	520	283	226	195	30	455	325	198	141	553	442	240	192
19	Surat M.Corp.	320	299	139	130	50	16	270	249	117	108	272	254	118	111
20	Vadodara M.Corp.	240	188	171	134	24	10	216	164	155	117	204	160	146	114
21	Varanasi M.Corp.	220	198	191	172	55	25	165	143	143	124	187	168	162	146
22	Visakhapatnam M.Corp.	168	68	131	53	34	20	134	34	105	27	143	58	112	45

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic	Gross	Domestic
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLASS I															
Andhra Pradesh															
1	Anantapur MCI	14	11	56	45	0.50	4	14	11	54	43	12	9.6	48	38
2	Chittoor M	16	16	106	104	4	23	12	12	82	80	14	13	90	89
3	Cuddapah MCI	17	15	101	87	3	20	13	11	81	67	14	12	86	74
4	Eluru M	24	23	96	95	2	10	21	21	87	86	20	20	82	81
5	Guntur MCI	75	66	135	118	19	26	55	46	100	83	64	56	114	101
6	Hindupur M	10	9.6	71	69	0.10	1	9.9	9.5	71	68	8.5	8.2	61	58
7	Kakinada M	21	21	66	63	0.64	3	21	20	64	61	18	17	56	54
8	Kurnool MCI	6.5	4.5	23	16	0.50	8	6.0	4.0	21	14	5.5	3.8	20	14
9	Machilipatnam M	21	11	103	55	0.87	4	20	10	98	51	17	9.4	87	47
10	Nandyal MCI	10	6.5	67	43	0.40	4	9.6	6.1	64	41	8.5	5.5	57	37
11	Nellore MCI	43	33	107	81	2	4	41	31	103	77	37	28	91	69
12	Nizamabad M	15	11	53	40	5	30	11	6.9	37	24	13	9.6	45	34
13	Ongole MCI	16	13	90	74	0.90	6	15	12	85	69	14	11	77	63
14	Qutubullapur M	30	13	118	50	6	20	24	6.6	94	26	25	11	100	43
15	Rajahmundry M.Corp.	33	32	86	84	3	10	29	29	77	76	28	27	73	72
16	Tenali M	0.68	0.65	4	4	0.03	5	0.7	0.6	4	4	0.58	0.55	3	3
17	Tirupati MCI	29	23	136	111	5	18	23	18	112	87	24	20	116	95
18	Vijaywada M.Corp.	146	143	174	170	29	20	117	113	139	136	124	121	148	145
19	Warangal M.Corp.	68	55	100	81	5	7	64	51	94	74	58	47	85	69
Bihar															
20	Bihar Sharif M	30	n.a.	120	n.a.	7	23	23	n.a.	92	n.a.	26	n.a.	102	n.a.
21	Chhapra M	14	n.a.	70	n.a.	2	14	12	n.a.	60	n.a.	12	n.a.	60	n.a.
22	Gaya M.Corp.	36	n.a.	91	n.a.	7	19	29	n.a.	74	n.a.	31	n.a.	77	n.a.

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
23	Katihar M	15	n.a.	75	n.a.	3	20	12	n.a.	60	n.a.	13	n.a.	64	n.a.
24	Munger M	10	n.a.	48	n.a.	2	20	8.0	n.a.	38	n.a.	8.5	n.a.	40	n.a.
25	Ranchi M.Corp.	91	55	130	78	9	10	82	46	117	65	77	46	111	66
Gujarat															
26	Anand M	11	9.9	63	57	1	9	10	8.9	57	51	9.4	8.4	53	48
27	Bharuch M	18	17	113	106	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	15	14	96	90
28	Bhavnagar M.Corp.	70	n.a.	127	n.a.	7	10	63	n.a.	115	n.a.	60	n.a.	108	n.a.
29	Bhuj M	16	14	136	121	1	6	15	13	127	113	14	12	115	103
30	Jamnagar M.Corp.	85	n.a.	170	n.a.	25	29	60	n.a.	120	n.a.	72	n.a.	145	n.a.
31	Junagadh M	12	n.a.	75	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10	n.a.	64	n.a.
32	Nadiad M	21	17	70	57	10	48	11	7.0	37	23	18	14	60	48
33	Navsari M	16	15	117	108	3	20	13	12	94	84	14	13	100	92
34	Porbandar M	10	8.4	70	59	0.10	1	9.9	8.3	70	58	8.5	7.1	60	50
35	Rajkot M.Corp.	107	96	107	96	11	10	96	85	96	85	91	82	91	82
36	Surendranagar M	5.6	n.a.	37	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.8	n.a.	32	n.a.
Haryana															
37	Ambala MCI	16	14	115	103	0.85	5	15	14	109	97	14	12	98	87
38	Faridabad M.Corp.	184	133	160	116	28	15	156	106	136	92	156	113	136	98
39	Gurgaon MCI	19	16	106	93	3	16	16	13	89	76	16	14	90	79
40	Hisar MCI	25	23	99	92	2	8	23	21	91	84	21	20	84	78
41	Karnal MCI	40	34	182	157	4	10	36	30	164	138	34	29	155	133
42	Rohtak MCI	32	31	132	128	5	15	27	26	112	109	27	27	112	109
Jammu & Kashmir															
43	Jammu M.Corp.	58	n.a.	55	n.a.	11	19	47	n.a.	45	n.a.	50	n.a.	47	n.a.

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Karnataka															
44	Belgaum M.Corp.	36	21	77	46	0.45	1	36	21	76	45	31	18	65	39
45	Bellary CMC	31	25	103	83	0.14	0.46	31	24	103	82	26	21	88	70
46	Davangere MCI	32	20	69	45	0	0	32	20	69	45	27	17	59	38
47	Gadag-Betigeri CMC	16	n.a.	107	n.a.	2	14	14	n.a.	92	n.a.	14	n.a.	91	n.a.
48	Gulbarga M.Corp.	32	24	70	54	2	7	29	22	65	49	27	21	60	46
49	Hubli-Dharwar M.Corp.	88	68	103	80	9	10	79	59	93	70	75	58	88	68
50	Mandya M	13	11	92	79	0.68	5	12	10	88	74	11	9.4	79	67
51	Mangalore M.Corp.	85	56	207	137	8	9	77	48	188	117	72	48	176	116
52	Mysore M.Corp.	138	103	132	98	20	14	119	83	113	79	118	88	112	83
53	Shimoga CMC	34	32	152	146	0.90	3	33	32	148	142	29	28	129	124
54	Tumkur M	22	21	73	71	0.01	0.02	22	21	73	71	19	18	62	61
Kerala															
55	Alappuzha MC	15	n.a.	75	n.a.	0.25	2	15	n.a.	74	n.a.	13	n.a.	64	n.a.
56	Kollam MC	18	13	113	79	2	10	16	11	101	68	15	11	96	67
57	Kozhikode M.Corp.	72	61	146	124	6	8	66	55	134	112	61	52	124	105
58	Thalaserry M	27	20	201	148	0.20	1	27	20	200	147	23	17	171	126
59	Thiruvananthapuram M.Corp.	180	151	308	258	59	33	121	92	207	158	153	129	262	220
Madhya Pradesh															
60	Bhind M	19	19	109	108	1	5	18	18	103	103	16	16	92	92
61	Burhanpur M.Corp.	19	n.a.	90	n.a.	0.02	0.11	19	n.a.	90	n.a.	16	n.a.	77	n.a.
62	Dewas M.Corp.	9.0	n.a.	45	n.a.	0.18	2	8.8	n.a.	44	n.a.	7.6	n.a.	38	n.a.
63	Guna M	12	10	97	82	1	10	11	9.1	87	73	10	8.7	82	70
64	Gwalior M.Corp.	150	124	166	138	30	20	120	94	133	105	127	106	141	117

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
65	Jabalpur M.Corp.	109	75	109	75	9	8	99	66	99	66	92	64	92	64
66	Khandwa M	16	n.a.	91	n.a.	0.03	0.16	16	n.a.	91	n.a.	14	n.a.	78	n.a.
67	Morena M	8.5	7.4	68	59	0.50	6	8.0	6.9	64	55	7.2	6.3	58	50
68	Murwara (Katni) M.Corp.	13	8.0	71	44	2	16	11	6.0	60	33	11	6.8	60	38
69	Ratlam M.Corp.	18	18	78	76	0.18	1	18	18	77	75	15	15	66	64
70	Rewa M.Corp.	20	n.a.	111	n.a.	5	23	16	n.a.	86	n.a.	17	n.a.	94	n.a.
71	Satna M.Corp.	14	9.0	68	45	2	11	12	7.5	60	38	11	7.7	57	38
72	Shivpuri M	13	11	93	80	1	10	12	10.0	84	71	11	9.6	79	68
Maharashtra															
73	Amravati M.Corp.	60	45	120	90	22	37	38	23	76	46	51	38	102	77
74	Aurangabad M.Corp.	168	130	194	150	20	12	148	110	171	127	143	110	165	127
75	Bhusawal MCI	22	n.a.	110	n.a.	2	9	20	n.a.	100	n.a.	19	n.a.	94	n.a.
76	Chandrapur MCI	30	29	102	100	4	13	26	25	88	86	26	25	86	85
77	Dhule MCI	31	29	94	89	1	3	30	28	91	86	26	25	80	76
78	Ichalkaranji MCI	32	26	128	105	5	14	28	22	110	87	27	22	109	89
79	Jalgaon MCI	56	n.a.	140	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	48	n.a.	119	n.a.
80	Kolhapur M.Corp.	85	70	169	139	34	40	51	36	102	72	72	60	144	119
81	Nanded Waghala M.Corp.	39	35	95	85	4	10	35	31	85	75	33	30	81	72
82	Nashik M.Corp.	158	136	188	162	14	9	144	122	172	145	134	116	160	138
83	Parbhani MCI	15	15	64	64	2	10	14	13	58	58	13	13	55	55
84	Solapur M.Corp.	125	111	139	123	10	8	115	101	128	112	106	94	118	105
85	Wardha M	12	12	82	82	1	10	11	11	74	74	10	10	70	70
86	Yavatmal MCI	13	11	100	86	1	11	12	9.6	89	74	11	9.5	85	73
Orissa															
87	Bhubaneswar M.Corp.	150	97	229	148	30	20	120	67	184	102	128	82	195	126

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
88	Cuttack M.Corp.	146	126	259	223	44	30	102	82	181	145	124	107	220	190
89	Puri M	24	16	160	109	4	15	20	13	136	85	20	14	136	93
90	Rourkela M	18	18	90	88	2	12	16	16	80	78	15	15	77	75
91	Sambalpur M	19	15	118	94	2	11	17	13	105	82	16	13	100	80
Punjab															
92	Amritsar M.Corp.	127	89	151	105	59	32	68	30	81	35	108	76	128	90
93	Bathinda MCI	17	13	98	74	0.30	2	17	13	96	72	14	11	83	63
94	Hoshiarpur MCI	22	n.a.	150	n.a.	3	15	18	n.a.	127	n.a.	19	n.a.	128	n.a.
95	Jalandhar M.Corp.	175	157	237	213	43	25	131	114	178	154	148	134	201	181
96	Moga MCI	20	18	135	122	0.83	4	19	17	130	116	17	15	115	104
97	Pathankot MCI	17	14	87	70	2	12	15	12	77	60	14	12	74	60
98	Patiala M.Corp.	60	55	183	167	11	18	49	44	149	134	51	47	155	142
Rajasthan															
99	Ajmer MCI	52	n.a.	95	n.a.	5	10	47	n.a.	85	n.a.	44	n.a.	80	n.a.
100	Alwar M	32	27	107	88	2	6	30	25	100	82	27	23	91	75
101	Beawar M	11	10	80	71	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	9.6	8.5	68	60
102	Bhilwara M	14	n.a.	62	n.a.	0.76	5	13	n.a.	59	n.a.	12	n.a.	53	n.a.
103	Bikaner M	68	46	113	77	18	26	51	28	84	47	58	39	96	65
104	Jodhpur M.Corp.	176	n.a.	176	n.a.	40	23	136	n.a.	136	n.a.	150	n.a.	150	n.a.
105	Kota M.Corp.	160	120	213	160	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	136	102	181	136
106	Sriganganagar M	22	20	98	88	1	5	21	19	93	83	19	17	83	75
Tamil Nadu															
107	Cuddalore M	4.3	4.0	26	25	0	0	4.3	4.0	26	25	3.6	3.4	23	21
108	Dindigul M	12	11	56	51	0	0	12	11	56	51	10	9.4	48	44
109	Erode M	22	17	127	96	2	7	21	15	118	87	19	14	108	81

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		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
110	Kanchipuram M	16	14	104	88	0	0	16	14	104	88	14	12	89	75
111	Kumbakonam M	11	9.0	72	62	0.40	4	10	8.6	69	59	9.0	7.7	61	52
112	Nagercoil M	9.0	7.8	44	38	0.30	3	8.7	7.5	42	36	7.7	6.6	37	32
113	Rajapalayam M	8.8	8.3	71	67	0.75	9	8.0	7.5	65	61	7.4	7.0	60	57
114	Salem M.Corp.	50	45	112	101	3	5	48	43	106	96	43	38	95	86
115	Thanjavur M	24	n.a.	111	n.a.	0.70	3	23	n.a.	107	n.a.	20	n.a.	94	n.a.
116	Tiruchirapalli M.Corp.	88	79	110	98	18	20	70	61	88	76	75	67	94	83
117	Tirunelveli M.Corp.	34	32	82	77	1	4	33	31	79	74	29	27	70	65
118	Tiruvannamalai M	14	n.a.	105	n.a.	0.50	4	13	n.a.	101	n.a.	11	n.a.	89	n.a.
119	Tiruppur M	29	n.a.	97	n.a.	0	0	29	n.a.	97	n.a.	24	n.a.	82	n.a.
120	Tuticorin M	16	n.a.	74	n.a.	0	0	16	n.a.	74	n.a.	14	n.a.	63	n.a.
121	Vellore M	13	10	74	59	0	0	13	10	74	59	11	8.8	63	50
Uttar Pradesh															
122	Agra M.Corp.	250	201	217	175	15	6	235	186	204	162	213	171	185	149
123	Aligarh M.Corp.	47	35	78	58	9	20	37	26	62	43	40	30	66	49
124	Allahabad M.Corp.	210	181	207	178	63	30	147	118	145	116	179	154	176	151
125	Bareilly M.Corp.	80	72	107	96	2	3	78	70	104	93	68	61	91	81
126	Etawah MB	20	18	139	131	9	45	11	9.6	77	68	17	16	118	111
127	Faizabad MB	22	n.a.	127	n.a.	3	15	18	n.a.	108	n.a.	18	n.a.	108	n.a.
128	Firozabad MB	12	n.a.	48	n.a.	2	17	10	n.a.	40	n.a.	10	n.a.	41	n.a.
129	Ghaziabad M.Corp.	110	n.a.	124	n.a.	25	23	85	n.a.	96	n.a.	94	n.a.	105	n.a.
130	Gorakhpur M.Corp.	74	58	123	96	14	18	60	44	101	74	63	49	105	82
131	Haldwani-cum-Kathgodam MB	19	17	132	119	4	20	15	13	105	93	16	14	112	101
132	Hapur MB	14	n.a.	70	n.a.	0.42	3	14	n.a.	68	n.a.	12	n.a.	60	n.a.

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		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
133	Hardwar MB	39	33	130	109	8	20	31	25	104	83	33	28	111	93
134	Jhansi MB	77	76	152	150	22	29	55	54	109	106	66	64	129	127
135	Mathura MB	27	n.a.	67	n.a.	5	20	21	n.a.	53	n.a.	23	n.a.	57	n.a.
136	Meerut M.Corp.	132	n.a.	106	n.a.	53	40	79	n.a.	63	n.a.	112	n.a.	90	n.a.
137	Mirzapur MB	25	24	119	117	6	25	19	18	89	87	21	21	101	99
138	Moradabad M.Corp.	48	n.a.	72	n.a.	4	8	44	n.a.	66	n.a.	41	n.a.	61	n.a.
139	Muzaffarnagar MB	46	36	142	111	9	20	37	27	113	82	39	31	120	94
140	Rae Bareli MB	13	11	74	62	4	30	9.1	6.9	52	39	11	9.2	63	52
141	Rampur MB	20	n.a.	62	n.a.	0.98	5	19	n.a.	59	n.a.	17	n.a.	53	n.a.
142	Saharanpur MB	49	36	91	68	7	15	42	29	77	54	42	31	77	57
143	Sitapur MB	17	n.a.	114	n.a.	2	11	15	n.a.	102	n.a.	14	n.a.	97	n.a.
144	Unnao MB	21	21	174	174	3	15	18	18	148	148	18	18	148	148
West Bengal															
145	Asansol M.Corp.	52	50	166	160	10	20	42	40	133	127	45	43	141	136
146	Baharampur M	15	15	104	104	4	25	11	11	78	78	13	13	88	88
147	Balurghat M	0.86	0.86	7	7	0.29	33	0.6	0.6	4	4	0.73	0.73	6	6
148	Bankura M	11	5.6	72	37	2	18	8.9	3.6	59	24	9.3	4.8	61	32
149	Barasat M	12	12	82	81	1	10	11	11	74	73	10	10	69	69
150	Burdwan M	24	21	73	66	6	25	18	15	55	48	20	18	62	56
151	Halisahar M	20	16	134	107	0.50	3	20	16	131	104	17	14	114	91
152	Krishnagar M	6.0	6.0	41	41	1	23	4.6	4.6	32	32	5.1	5.1	35	35
153	Midnapore M	15	11	95	69	2	16	13	8.4	80	53	13	9.2	81	58
154	North Barrackpore M	13	13	113	106	0.50	4	13	12	109	101	11	11	96	90
155	Santipur M	0.91	0.91	7	7	0.22	24	0.7	0.7	5	5	0.77	0.77	6	6
156	Silliguri M.Corp.	18	18	36	36	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	15	15	31	31

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic	Gross	Domestic
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
Small States															
Assam															
157	Guwahati M.Corp.	55	n.a.	55	n.a.	7	13	48	n.a.	48	n.a.	47	n.a.	47	n.a.
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur															
159	Imphal MCI	58	n.a.	238	n.a.	15	25	44	n.a.	179	n.a.	50	n.a.	203	n.a.
Meghalaya															
160	Shillong MB	27	24	123	109	3	10	24	21	110	97	23	20	104	93
Mizoram															
161	Aizwal NM	11	11	44	44	1	10	9.7	9.7	40	40	9.2	9.2	38	38
Tripura															
162	Agartala MCI	22	15	109	n.a.	4	20	17	11	87	54	19	n.a.	93	n.a.
Union Territories															
163	Chandigarh M.Corp.	227	121	267	142	15	7	212	106	249	124	193	103	227	121
164	Pondicherry M	33	29	115	99	9	14	24	20	84	68	28	25	98	85
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>															

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		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic	Gross	Domestic
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLASS II															
Andhra Pradesh															
1	Anakapalle M	3.6	2.4	32	21	0.50	14	3.1	1.9	27	17	3.1	2.0	27	18
2	Dharmavaram M	7.9	6.7	79	67	0.40	5	7.5	6.3	75	63	6.7	5.7	67	57
3	Gudur MCI	7.1	6.6	99	92	0.18	3	6.9	6.5	96	90	6.0	5.7	84	78
4	Kapra M	4.6	4.6	38	38	0.91	20	3.6	3.6	30	30	3.9	3.9	32	32
5	Kavali MCI	5.0	5.0	58	58	0	0	5.0	5.0	58	58	4.2	4.2	50	50
6	Madanapalle M	7.7	7.5	77	75	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.5	6.3	65	63
7	Narasaraopet M	4.5	n.a.	47	n.a.	0.45	10	4.1	n.a.	43	n.a.	3.8	n.a.	40	n.a.
8	Rajendra nagar MCI	5.1	3.3	42	28	0.51	10	4.6	2.8	38	23	4.3	2.8	36	23
9	Sangareddy MCI	3.9	3.5	64	58	0.30	8	3.6	3.2	59	53	3.3	3.0	55	49
10	Srikakulam MCI	6.8	6.6	68	66	0.30	4	6.5	6.3	65	63	5.8	5.6	58	56
11	Srikalahasti M	6.8	6.6	97	94	0.23	3	6.6	6.4	94	91	5.8	5.6	83	80
12	Suryapet MCI	7.6	5.5	85	62	0.50	7	7.1	5.0	79	57	6.4	4.7	72	53
Bihar															
13	Buxar M	3.9	3.9	58	58	0	0	3.9	3.9	58	58	3.3	3.3	50	50
14	Deoghar M	3.0	n.a.	30	n.a.	0.50	17	2.5	n.a.	25	n.a.	2.6	n.a.	26	n.a.
15	Hajipur M	11	n.a.	96	n.a.	1	10	9.9	n.a.	86	n.a.	9.4	n.a.	81	n.a.
16	Hazaribagh M	7.3	n.a.	61	n.a.	0.11	2	7.2	n.a.	60	n.a.	6.2	n.a.	52	n.a.
17	Jehanabad M	8.0	n.a.	140	n.a.	2	25	6.0	n.a.	105	n.a.	6.8	n.a.	119	n.a.
18	Madhubani M	8.0	n.a.	123	n.a.	2	25	6.0	n.a.	92	n.a.	6.8	n.a.	105	n.a.
19	Mokama M	2.0	n.a.	30	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.7	n.a.	25	n.a.
Gujarat															
20	Amreli M	10	n.a.	118	n.a.	1	10	9.0	n.a.	106	n.a.	8.5	n.a.	100	n.a.
21	Ankleswar M	10	n.a.	167	n.a.	1	10	9.0	n.a.	150	n.a.	8.5	n.a.	142	n.a.

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		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic	Gross	Domestic
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
22	Dabhoi M	9.0	n.a.	138	n.a.	1	11	8.0	n.a.	123	n.a.	7.7	n.a.	118	n.a.
23	Dohad M	7.5	6.8	96	87	0.45	6	7.0	6.4	90	82	6.3	5.8	81	74
24	Gondal M	13	11	130	111	0.20	2	13	11	128	109	11	9.4	111	94
25	Jetpur M	11	n.a.	91	n.a.	0.50	4	11	n.a.	87	n.a.	9.6	n.a.	77	n.a.
26	Mahesana M	15	n.a.	107	n.a.	0	0	15	n.a.	107	n.a.	13	n.a.	91	n.a.
27	Palanpur M	4.0	n.a.	34	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.4	n.a.	29	n.a.
Haryana															
28	Jind MCI	16	15	138	130	0.50	3	15	14	134	126	13	13	117	111
29	Kaithal MCI	11	10	114	106	2	19	8.8	8.0	93	85	9.1	8.5	97	90
30	Rewari MCI	11	11	108	108	2	18	9.3	9.3	89	89	9.6	9.6	92	92
31	Thanesar MCI	13	12	132	123	2	15	11	10	112	103	11	10	112	104
Karnataka															
32	Bagalkot CMC	12	11	122	109	0	0	12	11	122	109	10	9.3	103	93
33	Chikmagalur CMC	15	13	150	125	0	0	15	13	150	125	13	11	128	106
34	Gokak CMC	4.6	3.9	67	57	0.02	0.44	4.5	3.8	67	57	3.9	3.3	57	48
35	Hospet CMC	16	12	140	108	0.48	3	16	12	136	104	14	11	119	92
36	Kolar CMC	8.0	6.9	71	62	0.80	10	7.2	6.1	64	54	6.8	5.9	61	52
37	Rabkavi-Banhatti CMC	4.5	3.2	63	44	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3.9	2.7	54	37
38	Ramanagaram CMC	4.5	n.a.	64	n.a.	0.67	15	3.8	n.a.	55	n.a.	3.8	n.a.	55	n.a.
Kerala															
39	Changanessary MC	4.0	2.6	65	42	0.32	8	3.7	2.3	59	37	3.4	2.2	55	36
40	Payyanur M	1.5	1.5	21	21	0.15	10	1.3	1.3	19	19	1.3	1.3	18	18
41	Taliparamba M	0.38	n.a.	7	n.a.	0.06	15	0	n.a.	6	n.a.	0.32	n.a.	6	n.a.
42	Thrissur MC	18	12	198	131	0.18	1	18	12	196	129	15	10	168	112
Madhya Pradesh															
43	Hoshangabad M	8.1	4.6	81	46	2	20	6.5	3.0	65	30	6.9	3.9	69	39

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		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
44	Itarsi M	5.9	4.4	56	42	2	31	4.1	2.6	39	25	5.0	3.8	47	36
45	Khargone M	13	n.a.	163	n.a.	0.24	2	13	n.a.	160	n.a.	11	n.a.	138	n.a.
46	Mandsaur M	9.0	8.6	73	70	1	14	7.7	7.3	63	59	7.7	7.3	62	59
47	Nagda M	3.0	n.a.	30	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.6	n.a.	26	n.a.
48	Neemuch M	5.9	n.a.	59	n.a.	0.91	15	5.0	n.a.	50	n.a.	5.0	n.a.	50	n.a.
49	Sehore M	5.3	5.0	53	50	0.02	0.38	5.3	4.9	53	49	4.5	4.2	45	42
50	Shahdol M	4.7	n.a.	62	n.a.	0.05	1	4.6	n.a.	62	n.a.	4.0	n.a.	53	n.a.
51	Vidisha M	9.0	8.9	72	71	0.05	1	9.0	8.8	72	71	7.7	7.6	61	60
Maharashtra															
52	Amalner MCI	15	n.a.	150	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13	n.a.	128	n.a.
53	Ballarpur MCI	7.0	6.6	64	61	0.10	1	6.9	6.5	63	60	6.0	5.6	55	51
54	Bhandara M	9.0	7.4	118	98	0.50	6	8.5	6.9	112	91	7.7	6.3	101	83
55	Kamptee MCI	3.6	3.1	38	32	0.10	3	3.5	3.0	37	31	3.1	2.6	32	28
56	Manmad MCI	7.2	6.7	83	77	1	17	6.0	5.5	69	63	6.1	5.7	70	66
57	Ratnagiri MCI	8.0	7.8	114	111	0.72	9	7.3	7.1	104	101	6.8	6.6	97	95
58	Satara MCI	11	8.6	110	86	1	10	9.9	7.5	99	75	9.4	7.3	94	73
59	Virar MCI	9.0	8.2	90	82	0	0	9.0	8.2	90	82	7.7	7.0	77	70
Orissa															
60	Balangir M	7.2	2.4	87	29	0.20	3	7.0	2.2	85	27	6.1	2.1	74	25
61	Bhadrak M	3.0	1.5	32	16	0	0	3.0	1.5	32	16	2.6	1.3	27	14
Punjab															
62	Firozpur MCI	20	15	210	166	1	5	19	14	199	154	17	13	179	141
63	Kapurthala M	14	13	165	151	3	19	11	10	133	119	12	11	140	128
64	Mansa MCI	8.0	8.0	119	119	0.40	5	7.6	7.6	113	113	6.8	6.8	102	102
65	Phagwara MCI	15	12	136	112	2	15	13	10.0	116	92	13	10	116	96

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
66	Sangrur MCI	13	12	181	175	2	12	11	11	160	154	11	10	154	149
Rajasthan															
67	Banswara M	9.8	n.a.	89	n.a.	2	18	8.0	n.a.	73	n.a.	8.3	n.a.	76	n.a.
68	Barmer M	6.5	6.5	77	77	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5.5	5.5	66	65
69	Bundi M	8.0	5.8	100	73	0.80	10	7.2	5.0	90	63	6.8	4.9	85	62
70	Churu M	7.7	5.4	77	54	1	16	6.5	4.1	64	41	6.5	4.6	65	46
71	Hanumangarh M	7.2	5.9	58	48	0.12	2	7.1	5.8	57	47	6.1	5.1	49	40
72	Sawai Madhopur M	7.8	6.7	87	76	0.20	3	7.6	6.5	85	73	6.6	5.7	74	64
Tamil Nadu															
73	Ambur M	5.6	n.a.	65	n.a.	0.51	9	5.1	n.a.	59	n.a.	4.8	n.a.	55	n.a.
74	Arakkonam M	4.0	n.a.	45	n.a.	0	0	4.0	n.a.	45	n.a.	3.4	n.a.	39	n.a.
75	Attur M	3.0	2.4	47	38	0.28	9	2.7	2.1	42	34	2.5	2.1	40	32
76	Cumbum M	2.7	2.6	50	49	0.10	4	2.6	2.5	49	47	2.3	2.2	43	42
77	Dharmapuri M	3.0	2.9	45	43	0.15	5	2.9	2.7	43	41	2.6	2.5	38	37
78	Guduivattam M	5.8	n.a.	61	n.a.	0	0	5.8	n.a.	61	n.a.	4.9	n.a.	52	n.a.
79	Nagapattinam M	7.8	6.4	70	57	0	0	7.8	6.4	70	57	6.6	5.4	59	48
80	Pudukkottai M	7.9	7.6	73	70	0.10	1	7.8	7.5	72	69	6.7	6.5	62	60
81	Sivakasi M	5.2	n.a.	74	n.a.	0.10	2	5.1	n.a.	73	n.a.	4.4	n.a.	63	n.a.
82	Srivilliputtur M	3.5	3.4	47	46	0.10	3	3.4	3.3	46	45	3.0	2.9	40	39
83	Tindivanam MC	1.9	1.7	27	24	0	0	1.9	1.7	27	24	1.6	1.4	23	21
84	Udhagamandalam M	4.0	n.a.	40	n.a.	0	0	4.0	n.a.	40	n.a.	3.4	n.a.	34	n.a.
Uttar Pradesh															
85	Auraiya MB	4.5	4.3	50	48	1	22	3.5	3.3	39	37	3.8	3.7	43	41
86	Balrampur MB	2.8	n.a.	40	n.a.	0.13	5	2.7	n.a.	38	n.a.	2.4	n.a.	34	n.a.
87	Basti MB	10	n.a.	91	n.a.	2	20	8.0	n.a.	73	n.a.	8.5	n.a.	77	n.a.

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Dome- stic	Gross	Dome- stic			Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic	Gross	Dome- stic
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
88	Bhadohi MB	4.0	4.0	32	32	0.50	13	3.5	3.5	28	28	3.4	3.4	27	27
89	Chandpur MB	3.2	3.1	41	38	0.29	9	3.0	2.8	37	35	2.8	2.6	34	32
90	Etah MB	4.0	4.0	30	30	2	50	2.0	2.0	15	15	3.4	3.4	25	25
91	Ghazipur MB	16	14	167	142	2	14	14	11	145	120	14	12	142	121
92	Gonda MB	9.0	n.a.	79	n.a.	3	28	6.5	n.a.	57	n.a.	7.7	n.a.	67	n.a.
93	Lakhimpur MB	13	n.a.	125	n.a.	0.50	4	12	n.a.	120	n.a.	11	n.a.	106	n.a.
94	Lalitpur MB	8.5	8.4	85	84	2	18	7.0	6.9	70	69	7.2	7.2	72	72
95	Mughalsarai MB	4.0	3.7	25	23	0.60	15	3.4	3.1	21	19	3.4	3.1	21	20
96	Nawabganj- Barabanki MB	9.1	n.a.	101	n.a.	0.91	10	8.2	n.a.	91	n.a.	7.8	n.a.	86	n.a.
97	Orai MB	8.2	8.0	48	47	2	28	6.0	5.7	35	34	7.0	6.8	41	40
98	Roorkee MB	19	n.a.	188	n.a.	5	26	14	n.a.	140	n.a.	16	n.a.	160	n.a.
West Bengal															
99	Bishnupur M	2.6	2.5	39	38	0.80	30	1.8	1.7	27	26	2.2	2.2	33	32
100	Chakdaha M	1.9	1.9	21	21	0.25	13	1.7	1.7	18	18	1.6	1.6	18	18
101	Contai M	1.6	1.6	14	14	0.73	46	0.8	0.8	7	7	1.3	1.3	12	12
102	Cooch Behar M	9.9	7.2	99	73	0.04	0.41	9.8	7.2	99	72	8.4	6.1	84	62
103	Darjeeling M	6.0	3.9	65	42	2	31	4.2	2.1	45	22	5.1	3.3	55	36
104	Jalpaiguri M	4.9	3.9	49	39	1	30	3.5	2.5	34	24	4.2	3.3	41	33
105	Jangipur M	3.0	2.6	38	33	0.75	25	2.3	1.9	29	24	2.6	2.2	33	28
106	Katwa M	1.5	1.5	22	22	0.37	25	1.1	1.1	17	17	1.3	1.3	19	19
107	Raniganj M	5.1	3.6	42	30	2	30	3.6	2.1	30	17	4.3	3.0	36	25
Small States															
Himachal Pradesh															
109	Shimla M.Corp.	28	20	252	177	3	11	25	17	225	150	24	17	214	150

Sl. No.	City/Town	Quantity supplied				Unaccounted for Water		Quantity supplied minus UFW				Quantity supplied minus 15% UFW			
		mld		lpcd		mld	%	mld		lpcd		mld		lpcd	
		Gross	Domestic	Gross	Domestic			Gross	Domestic	Gross	Domestic	Gross	Domestic		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nagaland															
108	Kohima TC	2.9	2.0	28	19	0.58	20	2.3	1.4	23	14	2.5	1.7	24	17
Union Territories															
110	Port Blair MCI	15	14	140	132	0.70	5	14	13	134	125	13	12	119	112
Others (Smaller than Class II towns)															
Small States															
Arunachal Pradesh															
111	Itanagar CT	5.5	4.8	164	143	1	25	4.1	3.4	123	102	4.7	4.1	139	122
Goa															
112	Panaji MCI	12	5.4	206	94	1	8	11	4.4	189	76	10	4.6	175	80
Union Territories															
113	Daman MCI	8.0	n.a.	229	n.a.	0.40	5	7.6	n.a.	217	n.a.	6.8	n.a.	194	n.a.
114	Kavarathi NMCT	0.04	0.04	3	3	0	3	0.04	0.04	3	3	0.03	0.03	3	3
115	Silvassa	1.4	1.3	71	65	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.2	1.1	61	55
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>															

A-5

WATER SUPPLY CONNECTIONS -
METERED AND UNMETERED
AND NUMBER OF STANDPOSTS, 1999

A-5 : Water Supply Connections - Metered and Unmetered and Number of Standposts, 1999

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
Metropolitan Cities										
1	Ahmedabad M.Corp.	Break-up not available		241767	n.a.	n.a.	n.a.	n.a.	n.a.	
2	Bangalore M.Corp.	254267	19590	273857	254267	19590	100	100	100	7164
3	Bhopal M.Corp.	123000	5200	128200	0	5200	0	100	4	3500
4	Calcutta M.Corp.	203000	16005	219005	0	0	0	0	0	11800
5	Chennai M.Corp.	258841	52155	310996	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Coimbatore M.Corp.	72050	1816	73866	71843	1816	100	100	100	n.a.
7	Delhi M.Corp.	1255000	95000	1350000	958000	91000	76	96	78	n.a.
8	Greater Mumbai M.Corp.	248988	33461	282449	168988	33461	68	100	72	n.a.
9	Hyderabad M.Corp.	241699	11915	253614	n.a.	n.a.	n.a.	n.a.	n.a.	4812
10	Indore M.Corp.	116214	1627	117841	0	1627	0	100	1	7270
11	Jaipur M.Corp.	105665	17895	123560	100154	17895	95	100	96	1170
12	Kanpur M.Corp.	115073	3250	118323	107008	3250	93	100	93	3586
13	Kochi M.Corp.	89150	5857	95007	89150	5857	100	100	100	1053
14	Lucknow M.Corp.	180000	11023	191023	110000	7523	61	68	62	4600
15	Ludhiana M.Corp.	107050	16950	124000	0	0	0	0	0	640
16	Madurai M.Corp.	67188	2618	69806	32152	2618	48	100	50	4287
17	Nagpur M.Corp.	175751	12438	188189	89068	12309	51	99	54	5450
18	Pune M.Corp.	66466	13410	79876	66466	13410	100	100	100	n.a.
19	Surat M.Corp.	175401	1584	176985	5222	1346	3	85	4	38
20	Vadodara M.Corp.	138050	6898	144948	6354	6898	5	100	9	1362
21	Varanasi M.Corp.	70567	2190	72757	43467	1405	62	64	62	1402
22	Visakhapatnam M.Corp.	30371	886	31257	0	886	0	100	3	5426

n.a. = not available ; n.app. = not applicable

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
25	Ranchi M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Gujarat										
26	Anand M	Break-up not available		19,241	0	0	0	0	0	130
27	Bharuch M	19500	300	19800	0	0	0	0	0	150
28	Bhavnagar M.Corp.	60402	1518	61920	24	94	0.04	6	0.19	237
29	Bhuj M	Break-up not available		23,747	0	0	0	0	0	0
30	Jamnagar M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	900
31	Junagadh M	n.a.	n.a.	n.a.	n.a.	0	n.a.	n.a.	n.a.	n.a.
32	Nadiad M	22192	0	22,192	0	0	0	n.app.	0	660
33	Navsari M	28000	703	28703	0	0	0	0	0	350
34	Porbandar M	11900	54	11954	0	0	0	0	0	300
35	Rajkot M.Corp.	Break-up not available		114,032	0	0	0	0	0	1121
36	Surendranagar M	578	7	585	0	0	0	0	0	150
Haryana										
37	Ambala MCI	14787	295	15082	7420	0	50	0	49	980
38	Faridabad M.Corp.	Break-up not available		54,826	Break-up not available		n.a.	n.a.	43	120
39	Gurgaon MCI	15339	489	15828	15250	489	99	100	99	200
40	Hisar MCI	14220	172	14392	0	0	0	0	0	173
41	Karnal MCI	17691	300	17991	0	300	0	100	2	200
42	Rohtak MCI	28723	2518	31241	28619	2518	100	100	100	310
Jammu & Kashmir										
43	Jammu M.Corp.	66130	1020	67150	0	0	0	0	0	1300
Karnataka										
44	Belgaum M.Corp.	26281	1226	27507	0	0	0	0	0	290
45	Bellary CMC	22482	900	23382	0	0	0	0	0	685
46	Davangere MCI	17981	6184	24165	0	0	0	0	0	4158
47	Gadag-Betigeri CMC	10349	545	10894	0	0	0	0	0	n.a.

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
48	Gulbarga M.Corp.	9253	83	9336	0	0	0	0	0	237
49	Hubli-Dharwar M.Corp.	53888	2845	56733	53698	2845	100	100	100	300
50	Mandya M	7730	309	8039	0	0	0	0	0	n.a.
51	Mangalore M.Corp.	31222	3178	34400	30976	3178	99	100	99	680
52	Mysore M.Corp.	n.a.	1102	n.a.	n.a.	1102	n.a.	100	n.a.	2600
53	Shimoga CMC	19000	700	19700	11000	700	58	100	59	7
54	Tumkur M	14947	430	15377	0	0	0	0	0	1100
Kerala										
55	Alappuzha MC	19516	1080	20596	19516	1080	100	100	100	81
56	Kollam MC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	825
57	Kozhikode M.Corp.	17762	7376	25138	17762	7376	100	100	100	812
58	Thalaserry M	4762	691	5453	4762	691	100	100	100	557
59	Thiruvananthapuram M.Corp.	107000	12000	119000	107000	12000	100	100	100	2000
Madhya Pradesh										
60	Bhind M	14570	20	14590	0	0	0	0	0	130
61	Burhanpur M.Corp.	13246	400	13646	0	0	0	0	0	3160
62	Dewas M.Corp.	12436	36	12472	0	0	0	0	0	n.a.
63	Guna M	8067	115	8182	0	115	0	100	1	478
64	Gwalior M.Corp.	70231	1632	71863	0	0	0	0	0	970
65	Jabalpur M.Corp.	41964	521	42485	25000	0	60	0	59	1600
66	Khandwa M	10459	368	10827	0	0	0	0	0	458
67	Morena M	8750	n.a.	8,750	0	n.a.	0	n.a.	0	65
68	Murwara (Katni) M.Corp.	8179	395	8574	3725	0	46	0	43	90
69	Ratlam M.Corp.	27057	571	27628	15	0	0.06	0	0.05	2088
70	Rewa M.Corp.	13252	136	13388	12350	136	93	100	93	110
71	Satna M.Corp.	11651	294	11945	11651	294	100	100	100	367

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1	2	3	4	5	6	8	9	10	11	
72	Shivpuri M	12309	263	12572	0	263	0	100	2	428
Maharashtra										
73	Amravati M.Corp.	37759	1078	38837	35159	1078	93	100	93	1165
74	Aurangabad M.Corp.	70490	517	71007	0	63	0	12	0.09	1100
75	Bhusawal MCI	14393	533	14926	0	0	0	0	0	53
76	Chandrapur MCI	16405	257	16662	0	0	0	0	0	480
77	Dhule MCI	23374	246	23620	0	0	0	0	0	3261
78	Ichalkaranji MCI	22000	1930	23930	0	29	0	2	0.12	800
79	Jalgaon MCI	31470	655	32125	30892	620	98	95	98	n.a.
80	Kolhapur M.Corp.	49962	9070	59032	49962	9070	100	100	100	1677
81	Nanded Waghala M.Corp.	19913	286	20199	22	31	0.11	11	0.26	1105
82	Nashik M.Corp.	78939	3342	82281	52232	3342	66	100	68	725
83	Parbhani MCI	14437	667	15104	0	0	0	0	0	1000
84	Solapur M.Corp.	43802	3668	47470	0	3668	0	100	8	1803
85	Wardha M	11620	0	11620	0	0	0	n.app.	0	1175
86	Yavatmal MCI	12104	710	12814	12104	710	100	100	100	226
Orissa										
87	Bhubaneswar M.Corp.	39623	1121	40744	868	465	2	41	3	177
88	Cuttack M.Corp.	18417	2984	21401	0	0	0	0	0	1146
89	Puri M	6011	170	6181	0	0	0	0	0	1017
90	Rourkela M	8997	309	9306	50	2	1	0.6	0.56	215
91	Sambalpur M	5050	300	5350	3521	267	70	89	71	514
Punjab										
92	Amritsar M.Corp.	86308	10928	97236	83136	10928	96	100	97	736
93	Bathinda MCI	12210	2530	14740	12210	2530	100	100	100	350
94	Hoshiarpur MCI	16319	532	16851	13139	506	81	95	81	542
95	Jalandhar M.Corp.	70507	4323	74830	65329	4323	93	100	93	58

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
96	Moga MCI	15482	1545	17027	15437	1545	100	100	100	12
97	Pathankot MCI	18600	483	19083	17429	483	94	100	94	130
98	Patiala M.Corp.	37747	1560	39307	37747	1560	100	100	100	250
Rajasthan										
99	Ajmer MCI	58233	3133	61366	58024	3133	100	100	100	719
100	Alwar M	31910	2458	34368	23896	2458	75	100	77	35
101	Beawar M	15977	429	16406	1201	429	8	100	10	284
102	Bhilwara M	20681	3449	24130	20309	3401	98	99	98	202
103	Bikaner M	64539	4900	69439	41747	4900	65	100	67	482
104	Jodhpur M.Corp.	90685	6384	97069	85600	6384	94	100	95	2410
105	Kota M.Corp.	66213	4388	70601	66213	4388	100	100	100	580
106	Sriganganagar M	21706	2004	23710	21004	2004	97	100	97	1600
Tamil Nadu										
107	Cuddalore M	6798	202	7000	6798	202	100	100	100	284
108	Dindigul M	14938	542	15480	14938	542	100	100	100	478
109	Erode M	15082	1525	16607	9238	1525	61	100	65	476
110	Kanchipuram M	14349	419	14768	8923	419	62	100	63	497
111	Kumbakonam M	9238	167	9405	3515	167	38	100	39	477
112	Nagercoil M	18697	461	19158	18697	461	100	100	100	644
113	Rajapalayam M	13007	436	13443	0	436	0	100	3	250
114	Salem M.Corp.	47481	487	47968	47481	487	100	100	100	1213
115	Thanjavur M	16183	670	16853	16183	670	100	100	100	1307
116	Tiruchirapalli M.Corp.	43600	1004	44604	29467	1004	68	100	68	n.a.
117	Tirunelveli M.Corp.	8530	223	8753	3193	223	37	100	39	352
118	Tirunvannamalai M	9670	187	9857	4420	187	46	100	47	595
119	Tiruppur M	34902	3910	38812	29992	3910	86	100	87	543
120	Tuticorin M	24995	1082	26077	24995	1082	100	100	100	n.a.

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
121	Vellore M	14002	1888	15890	0	0	0	0	0	-
Uttar Pradesh										
122	Agra M.Corp.	108800	2900	111700	105800	2900	97	100	97	3138
123	Aligarh M.Corp.	30750	3300	34050	30750	3300	100	100	100	2700
124	Allahabad M.Corp.	87000	1215	88215	39000	1215	45	100	46	4555
125	Bareilly M.Corp.	46625	2172	48797	46625	2150	100	99	100	600
126	Etawah MB	14430	884	15314	14380	300	100	34	96	300
127	Faizabad MB	11965	1410	13375	11965	1410	100	100	100	300
128	Firozabad MB	17300	2125	19425	17300	2125	100	100	100	242
129	Ghaziabad M.Corp.	8482	0	8,482	5537	0	65	n.a.	65	575
130	Gorakhpur M.Corp.	15856	344	16200	15000	274	95	80	94	445
131	Haldwani-cum-Kathgodam MB	12201	2144	14345	12107	2144	99	100	99	388
132	Hapur MB	8014	5141	13155	4574	2715	57	53	55	285
133	Hardwar MB	16230	6070	22300	0	0	0	0	0	980
134	Jhansi MB	27487	553	28040	27077	553	99	100	99	750
135	Mathura MB	15302	1000	16302	9517	0	62	0	58	1000
136	Meerut M.Corp.	70314	4598	74912	1914	4598	3	100	9	710
137	Mirzapur MB	16100	365	16465	6500	350	40	96	42	450
138	Moradabad M.Corp.	31000	1000	32000	0	0	0	0	0	1006
139	Muzaffarnagar MB	26860	650	27510	0	0	0	0	0	342
140	Rae Bareli MB	4231	542	4773	4231	542	100	100	100	185
141	Rampur MB	13995	302	14297	11995	302	86	100	86	508
142	Saharanpur MB	28200	2530	30730	28200	2530	100	100	100	1395
143	Sitapur MB	7000	400	7400	6350	400	91	100	91	200
144	Unnao MB	4700	350	5050	4700	350	100	100	100	251
West Bengal										
145	Asansol M.Corp.	10634	11	10645	0	0	0	0	0	6357

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
146	Baharampur M	Break-up not available		9,693	0	0	n.a.	n.a.	0	600
147	Balurghat M	6500	0	6500	0	0	0	n.app.	0	214
148	Bankura M	785	1300	2085	0	0	0	0	0	3000
149	Barasat M	9693	8	9701	0	0	0	0	0	30
150	Burdwan M	36000	215	36215	0	0	0	0	0	2090
151	Halisahar M	502	0	502	0	0	0	n.app.	0	7500
152	Krishnagar M	7300	0	7300	0	0	0	n.app.	0	675
153	Midnapore M	4880	130	5010	0	0	0	0	0	1315
154	North Barrackpore M	11665	140	11805	0	0	0	0	0	688
155	Santipur M	0	0	0	0	0	n.app.	n.app.	n.app.	250
156	Silliguri M.Corp.	0	0	0	0	0	n.app.	n.app.	n.app.	500
Small States										
Assam										
157	Guwahati M.Corp.	Break-up not available		40,000	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur										
159	Imphal MCI	10214	165	10379	0	0	0	0	0	130
Meghalaya										
160	Shillong MB	8331	186	8517	0	1	0	0.5	0.01	500
Mizoram										
161	Aizwal NM	10540	0	10540	0	0	0	n.app.	0	495
Tripura										
162	Agartala MCI	22682	1240	23922	0	0	0	0	0	986
Union Territories										
163	Chandigarh M.Corp.	105648	38140	143788	82184	38140	78	100	84	281
164	Pondicherry M	42817	4468	47285	42817	4468	100	100	100	1597
<i>n.a. = not available ; n.app. = not applicable</i>										
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>										

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
CLASS II										
Andhra Pradesh										
1	Anakapalle M	1969	31	2000	0	31	0	100	2	305
2	Dharmavaram M	4024	303	4327	6	23	0.15	8	0.67	208
3	Gudur MCI	3805	181	3986	0	181	0	100	5	n.a.
4	Kapra M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	232
5	Kavali MCI	940	0	940	0	0	0	n.app.	0	n.a.
6	Madanapalle M	5778	53	5831	0	53	0	100	0.91	509
7	Narasaraopet M	2977	137	3114	0	117	0	85	4	384
8	Rajendra nagar MCI	3400	28	3428	0	28	0	100	0.82	600
9	Sangareddy MCI	4400	50	4450	0	50	0	100	1	161
10	Srikakulam MCI	4086	114	4200	51	114	1	100	4	350
11	Srikalahasti M	3695	86	3781	0	86	0	100	2	514
12	Suryapet MCI	4624	263	4887	0	0	0	0	0	613
Bihar										
13	Buxar M	3385	0	3385	0	0	0	n.app.	0	125
14	Deoghar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	670	0	670	0	0	0	n.app.	0	96
16	Hazaribagh M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	Jehanabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	79
18	Madhubani M	13328	63	13391	1203	63	9	100	9	54
19	Mokama M	n.a.	33	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Gujarat										
20	Amreli M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	35
21	Ankleswar M	Break-up not available		9,327	n.a.	n.a.	n.a.	n.a.	n.a.	45
22	Dabhoi M	Break-up not available		12,011	Break-up not available		n.a.	n.a.	0.09	45
23	Dohad M	14953	1662	16615	0	0	0	0	0	70

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
24	Gondal M	8915	322	9237	0	0	0	0	0	50
25	Jetpur M	Break-up not available		10,443	n.a.	n.a.	n.a.	n.a.	n.a.	500
26	Mahesana M	15287	640	15927	15	0	0.10	0	0.09	315
27	Palanpur M	11694	671	12365	0	0	0	0	0	400
Haryana										
28	Jind MCI	10197	216	10413	28	0	0.27	0	0.27	67
29	Kaithal MCI	7975	140	8115	0	0	0	0	0	140
30	Rewari MCI	12787	0	12787	0	0	0	n.app.	0	425
31	Thanesar MCI	8827	296	9123	0	0	0	0	0	173
Karnataka										
32	Bagalkot CMC	6100	0	6100	0	0	0	n.app.	0	263
33	Chikmagalur CMC	7189	304	7493	0	0	0	0	0	n.a.
34	Gokak CMC	5027	272	5299	0	0	0	0	0	22
35	Hospet CMC	5735	280	6015	0	0	0	0	0	382
36	Kolar CMC	8125	2100	10225	0	0	0	0	0	300
37	Rabkavi-Banhatti CMC	3245	213	3458	0	2	0	0.9	0.06	175
38	Ramanagaram CMC	5171	394	5565	0	0	0	0	0	400
Kerala										
39	Changanessary MC	5949	610	6559	5949	610	100	100	100	332
40	Payyanur M	2	7	9	2	7	100	100	100	67
41	Taliparamba M	177	92	269	177	92	100	100	100	107
42	Thrissur MC	9949	4970	14919	9949	4970	100	100	100	1500
Madhya Pradesh										
43	Hoshangabad M	6000	1030	7030	0	0	0	0	0	700
44	Itarsi M	4950	93	5043	0	0	0	0	0	334
45	Khargone M	4426	100	4526	0	0	0	0	0	900
46	Mandsaur M	11120	622	11742	0	0	0	0	0	600

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
47	Nagda M	3700	0	3700	0	0	0	n.app.	0	255
48	Neemuch M	6823	94	6917	16	0	0.23	0	0.23	1150
49	Sehore M	6205	200	6405	0	0	0	0	0	725
50	Shahdol M	3685	51	3736	0	0	0	0	0	315
51	Vidisha M	8189	55	8244	0	0	0	0	0	434
Maharashtra										
52	Amalner MCI	7775	245	8020	0	0	0	0	0	250
53	Ballarpur MCI	7905	47	7952	7905	47	100	100	100	336
54	Bhandara M	5638	237	5875	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
55	Kamptee MCI	7249	217	7466	0	0	0	0	0	240
56	Manmad MCI	6324	115	6439	0	1	0	0.9	0.02	n.a.
57	Ratnagiri MCI	7177	185	7362	7177	185	100	100	100	n.a.
58	Satara MCI	9000	510	9510	0	0	0	0	0	n.a.
59	Virar MCI	3534	73	3607	0	0	0	0	0	22
Orissa										
60	Balangir M	1864	73	1937	0	0	0	0	0	160
61	Bhadrak M	552	49	601	0	0	0	0	0	102
Punjab										
62	Ferozpur MCI	10592	0	10,592	1607	0	15	n.app.	15	n.a.
63	Kapurthala M	12357	551	12908	12247	551	99	100	99	150
64	Mansa MCI	5000	0	5000	0	0	0	n.app.	0	110
65	Phagwara MCI	13305	761	14066	13305	761	100	100	100	172
66	Sangrur MCI	10880	1265	12145	9020	1265	83	100	85	52
Rajasthan										
67	Banswara M	9249	580	9829	7060	529	76	91	77	n.a.
68	Barmer M	10850	295	11145	7114	295	66	100	66	140
69	Bundi M	10038	562	10600	8818	562	88	100	88	166

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
70	Churu M	12783	12	12795	5997	12	47	100	47	n.a.
71	Hanumangarh M	14695	351	15046	7439	181	51	52	51	102
72	Sawai Madhopur M	8914	394	9308	7635	394	86	100	86	71
Tamil Nadu										
73	Ambur M	6818	250	7068	6818	250	100	100	100	612
74	Arakkonam M	5248	52	5300	4287	52	82	100	82	146
75	Attur M	5236	108	5344	5236	108	100	100	100	159
76	Cumbum M	4345	98	4443	2964	98	68	100	69	140
77	Dharmapuri M	5762	157	5919	5762	157	100	100	100	34
78	Guduivattam M	5497	71	5568	0	0	0	0	0	347
79	Nagapattinam M	4385	176	4561	4385	176	100	100	100	452
80	Pudukkottai M	8788	106	8894	8788	106	100	100	100	620
81	Sivakasi M	6618	420	7038	4486	420	68	100	70	132
82	Srivilliputtur M	5877	98	5975	2717	98	46	100	47	187
83	Tindivanam MC	2911	74	2985	2534	74	87	100	87	92
84	Udhagamandalam M	565	6	571	565	6	100	100	100	279
Uttar Pradesh										
85	Auraiya MB	5543	308	5851	5543	308	100	100	100	52
86	Balrampur MB	2527	244	2771	1430	138	57	57	57	125
87	Basti MB	8300	500	8800	3300	500	40	100	43	110
88	Bhadohi MB	5020	0	5020	4070	0	81	n.app.	81	114
89	Chandpur MB	4063	26	4089	1588	11	39	42	39	31
90	Etah MB	6050	0	6050	6050	0	100	n.app.	100	170
91	Ghazipur MB	8482	0	8482	5537	0	65	n.app.	65	323
92	Gonda MB	6701	209	6910	0	0	0	0	0	204
93	Lakhimpur MB	10000	0	10000	4500	0	45	n.app.	45	350
94	Lalitpur MB	15653	94	15747	8653	94	55	100	56	18

Sl. No.	City/Town	No. of water supply connections			No. of connections metered		%Connections metered			No. of stand posts
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	
1		2	3	4	5	6	8	9	10	11
95	Mughalsarai MB	2177	65	2242	922	60	42	92	44	110
96	Nawabganj-Barabanki MB	7381	963	8344	7381	963	100	100	100	102
97	Orai MB	7108	250	7358	6845	214	96	86	96	132
98	Roorkee MB	9605	1440	11045	9605	1440	100	100	100	250
West Bengal										
99	Bishnupur M	2345	53	2398	0	0	0	0	0	727
100	Chakdaha M	0	0	0	0	0	n.app.	n.app.	n.app.	472
101	Contai M	0	0	0	0	0	n.app.	n.app.	n.app.	n.a.
102	Cooch Behar M	6067	1025	7092	0	0	0	0	0	169
103	Darjeeling M	4500	623	5123	0	0	0	0	0	500
104	Jalpaiguri M	2937	35	2972	0	0	0	0	0	560
105	Jangipur M	235	12	247	0	0	0	0	0	100
106	Katwa M	100	0	100	0	0	0	n.app.	0	287
107	Raniganj M	2365	885	3250	0	0	0	0	0	537
Small States										
Nagaland										
109	Kohima TC	4882	350	5232	0	0	0	0	0	n.a.
Himachal Pradesh										
108	Shimla M.Corp.	9878	6251	16129	9878	6251	100	100	100	200
Union Territories										
110	Port Blair MCI	17854	290	18144	0	0	0	0	0	357
Others (Smaller than Class II towns)										
Small States										
Arunachal Pradesh										
111	Itanagar CT	4210	210	4420	0	0	0	0	0	31

Sl. No.	City/Town	No. of water supply connections			No. of connections%		Connections Metered		No. of	
		Domestic	Non-domestic	Total	Domestic	Non-domestic	Domestic	Non-domestic	Total	stand posts
1		2	3	4	5	6	8	9	10	11
Goa										
112	Panaji MCI	6382	420	6802	6357	420	100	100	100	25
Union Territories										
113	Daman MCI	8500	25	8525	8500	25	100	100	100	225
114	Kavarathi NMCT	0	0	0	0	0	n.app.	n.app.	n.app.	142
115	Silvassa	1465	6	1471	0	0	0	0	0	21
<i>n.a. = not available ; n.app. = not applicable</i>										
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>										

A-6

DETAILS OF HEADWORKS, 1999

A-6 : Details of Headworks, 1999

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
METROPOLITAN CITIES								
1	Ahmedabad M.Corp.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.
2	Bangalore M.Corp.	3	Gravity	18.0	Gravity	28.0	500.0	98.0
3	Bhopal M.Corp.	2	129.0	16.0				
4	Calcutta M.Corp.	1	15.2	3.0	18.0	3.0		
5	Chennai M.Corp.	3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Coimbatore M.Corp	2	Gravity	36.0	Gravity	95.0	-	-
7	Delhi M.Corp.	2	10.0	46.0	10.0	46.0		
8	Greater Mumbai M.Corp.	6	37.0	240.0	-	-	-	-
9	Hyderabad M.Corp.	4	n.a.	9.0	n.a.	28.4	n.a.	6.0
10	Indore M.Corp.	3	48.0	3.5	Gravity	3.0	12.0	11.0
11	Jaipur M.Corp.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	Kanpur M.Corp.	1	30.0	15.0	-	-	-	-
13	Kochi M.Corp.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	Lucknow M.Corp.	1	34.0	1.8				
15	Ludhiana M.Corp.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.
16	Madurai M.Corp.	3	Gravity	16.0	Gravity	16.0	Gravity	16.0
17	Nagpur M.Corp.	3	36.0	3.0	36.0	3.0	36.0	3.0
18	Pune M.Corp.	1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	Surat M.Corp.	3	35.0	0.5	35.0	-	21.0	0.3
20	Vadodara M.Corp.	2	Gravity	7.0	10.0	0.5		
21	Varanasi M.Corp.	1	50.0	1.5	-	-	-	-
22	Visakhapatnam M.Corp.	7	30.0	18.0	-	-	-	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
25	Ranchi M.Corp.	3	100.0	380.6	-	-	-	-
Gujarat								
26	Anand M	1	3.0	n.a.	-	-	-	-
27	Bharuch M	1	n.a.	17.0	-	-	-	-
28	Bhavnagar M.Corp.	4	100.0	46.0	18.0	3.0	-	-
29	Bhuj M	16	n.a.	16.0	n.a.	n.a.	n.a.	n.a.
30	Jamnagar M.Corp.	5	n.a.	35.0	-	-	-	-
31	Junagadh M	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
32	Nadiad M	2	Gravity	4.5	-	-	-	-
33	Navsari M	28	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
34	Porbandar M	2	40.0	9.0	36.0	n.a.		
35	Rajkot M.Corp.	4	Gravity	5.0	15.0	7.8	20.0	65.0
36	Surendranagar M	1	n.a.	3.5	-	-	-	-
Haryana								
37	Ambala MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
38	Faridabad M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	Gurgaon MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
40	Hisar MCI	1	Gravity	8.0	-	-	-	-
41	Karnal MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	Rohtak MCI	2	5.0	4.0	5.0	2.0	-	-
Jammu & Kashmir								
43	Jammu M.Corp.	2	200.0	0.5	120.0	0.5	-	-
Karnataka								
44	Belgaum M.Corp.	1	Gravity	22.0	-	-	-	-
45	Bellary CMC	2	1400.0	18.0	Gravity	16.0	-	-
46	Davangere MCI	2	n.a.	14.0	n.a.	77.0	-	-
47	Gadag-Betigeri CMC	1	130.0	12.1	-	-	-	-

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
48	Gulbarga M.Corp.	3	105.0	26.0	100.0	18.0	Gravity	8.7
49	Hubli-Dharwar M.Corp.	2	n.a.	30.0	n.a.	18.0	-	-
50	Mandya M	2	103.0	12.7	Gravity	1.3	-	-
51	Mangalore M.Corp.	2	109.0	17.5	47.2	16.7	-	-
52	Mysore M.Corp.	1	30.0	9.5	-	-	-	-
53	Shimoga CMC	2	6.0	10.0	10.0	50.0	-	-
54	Tumkur M	2	30.0	0.8	12.0	0.2	-	-
Kerala								
55	Alappuzha MC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
56	Kollam MC	1	Gravity	26.0	-	-	-	-
57	Kozhikode M.Corp.	3	Gravity	14.0	Gravity	8.0	Gravity	1.5
58	Thalaserry M	1	63.6	2.8	-	-	-	-
59	Thiruvananthapuram M.Corp.	3	80.0	16.0	35.0	0.6	105.0	2.1
Madhya Pradesh								
60	Bhind M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
61	Burhanpur M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
62	Dewas M.Corp.	1	20.0	30.0	-	-	-	-
63	Guna M	1	30.0	0.3	-	-	-	-
64	Gwalior M.Corp.	1	6.0	15.6	-	-	-	-
65	Jabalpur M.Corp.	3	40.0	0.7	n.a.	6.0	n.a.	21.0
66	Khandwa M	2	25.0	0.5	15.0	0.4	-	-
67	Morena M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
68	Murwara (Katni) M.Corp.	1	0.5	2.5	-	-	-	-
69	Ratlam M.Corp.	1	15.0	3.0	-	-	-	-
70	Rewa M.Corp.	2	20.0	0.5	25.0	0.4	-	-
71	Satna M.Corp.	1	50.0	14.0	-	-	-	-
72	Shivpuri M	1	34.0	8.0	-	-	-	-

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
97	Pathankot MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
98	Patiala M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Rajasthan								
99	Ajmer MCI	2	n.a.	170.0			-	-
100	Alwar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
101	Beawar M	3	n.a.	55.0	100.0	6.0	n.a.	15.0
102	Bhilwara M	1	30.0	13.0	-	-	-	-
103	Bikaner M	1	7.0	n.a.	-	-	-	-
104	Jodhpur M.Corp.	1	182.5	209.2	-	-	-	-
105	Kota M.Corp.	1	50.0	2.9	-	-	-	-
106	Sriganganagar M	1	12.0	2.8	-	-	-	-
Tamil Nadu								
107	Cuddalore M	2	14.5	7.0	26.5	7.0	-	-
108	Dindigul M	2	60.0	8.0	70.0	21.0	-	-
109	Erode M	1	n.a.	13.6	-	-	-	-
110	Kanchipuram M	2	n.a.	38.0	n.a.	4.0	-	-
111	Kumbakonam M	1	4.0	12.0	-	-	-	-
112	Nagercoil M	1	4.0	18.5	-	-	-	-
113	Rajapalayam M	1	12.0	3.0	-	-	-	-
114	Salem M.Corp.	1	n.a.	21.0	-	-	-	-
115	Thanjavur M	2	43.3	5.0	13.0	15.0	-	-
116	Tiruchirapalli M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
117	Tirunelveli M.Corp.	4	60.0	0.8	-	-	-	-
118	Tiruvannamalai M	2	18.0	0.6	18.0	0.6	-	-
119	Tiruppur M	1	n.a.	54.0	-	-	-	-
120	Tuticorin M	1	n.a.	3.5	-	-	-	-
121	Vellore M	3	40.0	2.0	60.0	8.0	75.0	1.5

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
Uttar Pradesh								
122	Agra M.Corp.	2	17.0	3.0	31.0	3.0	-	-
123	Aligarh M.Corp.	40	24.0	10.0	-	-	-	-
124	Allahabad M.Corp.	1	40.0	5.0	-	-	-	-
125	Bareilly M.Corp.	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
126	Etawah MB	7	60.0	17.5	n.a.	n.a.	n.a.	n.a.
127	Faizabad MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
128	Firozabad MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
129	Ghaziabad M.Corp.	116	-	-	-	-	-	-
130	Gorakhpur M.Corp.	60	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
131	Haldwani-cum-Kathgodam MB	1	120.0	2.5	-	-	-	-
132	Hapur MB	14	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
133	Hardwar MB	33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
134	Jhansi MB	7	40.0	12.0	-	-	-	-
135	Mathura MB	54	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
136	Meerut M.Corp.	50	n.a.	32.0	n.a.	n.a.	n.a.	n.a.
137	Mirzapur MB	28	n.a.	15.0	-	-	-	-
138	Moradabad M.Corp.	19	20.0	88.0	n.a.	n.a.	n.a.	n.a.
139	Muzaffarnagar MB	21	n.a.	105.0	n.a.	n.a.	n.a.	n.a.
140	Rae Bareli MB	20	n.a.	1.5	n.a.	n.a.	n.a.	n.a.
141	Rampur MB	12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
142	Saharanpur MB	26	n.a.	1.0	n.a.	n.a.	n.a.	n.a.
143	Sitapur MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
144	Unnao MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
West Bengal								
145	Asansol M.Corp.	1	15.0	0.4	-	-	-	-

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
146	Baharampur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
147	Balurghat M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
148	Bankura M	5	360.0	6.0	380.0	6.0	300.0	8.0
149	Barasat M	15	35.0	n.app.	-	-	-	-
150	Burdwan M	25	30.0	n.app.	-	-	-	-
151	Halisahar M	19	400.0	10.0	-	-	-	-
152	Krishnagar M	1	10.0	0.6	-	-	-	-
153	Midnapore M	14	60.0	5.0	-	-	-	-
154	North Barrackpore M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
155	Santipur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
156	Silliguri M.Corp.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.	n.app.
Small States								
Assam								
157	Guwahati M.Corp.	2	60.0	1.0	100.0	2.0	300.0	1.5
158	Jorhat MB	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Manipur								
159	Imphal MCI	1	280.0	30.5	-	-	-	-
Meghalaya								
160	Shillong MB	1	3.0	2.5	-	-	-	-
Mizoram								
161	Aizwal NM	1	50.0	0.3	-	-	-	-
Tripura								
162	Agartala MCI	1	13.9	0.8	-	-	-	-
Union Territories								
163	Chandigarh M.Corp.	1	100.0	82.5	-	-	-	-
164	Pondicherry M	2	12.5	8.0	29.0	8.0	-	-
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
CLASS II								
Andhra Pradesh								
1	Anakapalle M	1	Gravity	3.9	-	-	-	-
2	Dharmavaram M	1	57.0	15.0	-	2.5	-	6.0
3	Gudur MCI	3	18.0	2.0	-	-	-	-
4	Kapra M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Kavali MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Madanapalle M	1	100.0	2.5	-	-	-	-
7	Narasaraopet M	1	Gravity	1.5	-	-	-	-
8	Rajendra nagar MCI	2	12.0	0.3	12.0	0.3	-	-
9	Sangareddy MCI	1	Gravity	0.5	-	-	-	-
10	Srikakulam MCI	1	20.0	3.0	-	-	-	-
11	Srikalahasti M	1	12.0	7.0	-	-	-	-
12	Suryapet MCI	1	34.0	15.9	-	-	-	-
Bihar								
13	Buxar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	Deoghar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	Hazaribagh M	2	79.3	8.0	n.a.	8.0	-	-
17	Jehanabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Madhubani M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	Mokama M	1	110.0	n.a.	-	-	-	-
Gujarat								
20	Amreli M	1	n.a.	43.0	-	-	-	-
21	Ankleswar M	7	n.a.	n.a.	-	-	-	-
22	Dabhoi M	1	16.0	7.0	n.a.	n.a.	n.a.	n.a.

Sl. No.	City/Town	No. of headworks (for surface water source)	Headwork 1		Headwork 2		Headwork 3	
			Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)	Total raw water pumping head (m)	Raw water conveying main (km)
1		2	3	4	5	6	7	8
Others (Smaller than Class II towns)								
Small States								
Arunachal Pradesh								
111	Itanagar CT	1	Gravity	28.0	-	-	-	-
Goa								
112	Panaji MCI	1	150.0	33.0	-	-	-	-
Union Territories								
113	Daman MCI	1	n.a.	60.0	-	-	-	-
114	Kavarathi NMCT	3	15.0	0.0	n.a.	5.0	20.0	n.a.
115	Silvassa	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

A-7

SOURCE OF WATER, 1999

A-7 : Source of Water, 1999													
Sl. No.	City/Town	Present source of water supply					Future source of water supply					Distance to surface water (km)	
		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
Metropolitan Cities													
1	Ahmedabad M.Corp.	145	345.0	490.0	30	70	980.0	100.0	1080.0	91	9	n.a.	4
2	Bangalore M.Corp.	706	-	706	100	-	770	-	770	100	-	18 to 98	98
3	Bhopal M.Corp.	250	20	270	93	7	355	-	355	100	-	2 to 38	38
4	Calcutta M.Corp.	899	136	1035	87	13	-	-	-	-	-	0.02	-
5	Chennai M.Corp.	440	21	461	95	5	233	-	233	100	-	n.a.	400
6	Coimbatore M.Corp	105	-	105	100	-	-	-	-	-	-	36 to 95	-
7	Delhi M.Corp.	2320	300	2620	89	11	3650	-	3650	100	-	26	320 to 400
8	Greater Mumbai M.Corp.	2978	-	2978	100	-	2589	-	2589	100	-	29 to 119	135 to 150
9	Hyderabad M.Corp.	682	-	682	100	-	1230	-	1230	100	-	15 to 18	60 to 100
10	Indore M.Corp.	204	34	238	86	14	920	-	920	100	-	4 to 70	70
11	Jaipur M.Corp.	42	298	340	12	88	360	-	360	100	-	25	120
12	Kanpur M.Corp.	310	-	310	100	-	228	14	242	94	6	5 to 10	1.5
13	Kochi M.Corp.	84	-	84	100	-	-	-	-	-	-	20	-
14	Lucknow M.Corp.	240	170	410	59	41	-	-	-	-	-	1.8	1.8
15	Ludhiana M.Corp.	-	234	234	-	100	-	149	149	-	100	-	-
16	Madurai M.Corp.	90	-	90	100	-	-	-	-	-	-	5.5 to 27	-
17	Nagpur M.Corp.	370	-	370	100	-	1550	-	1550	100	-	5 to 46	40 to 50
18	Pune M.Corp.	650	-	650	100	-	-	-	-	-	-	11.36 to 30	-
19	Surat M.Corp.	320	-	320	100	-	270	-	270	100	-	0.50	0
20	Vadodara M.Corp.	230	7.0	237	97	3	240	-	240	100	-	22 to 24	25 to 45
21	Varanasi M.Corp.	220	-	220	100	-	-	-	-	-	-	1.5	-
22	Visakhapatnam M.Corp.	168	-	168	100	-	140	-	140	100	-	15 to 73	60 to 150

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Present source of water supply					Future source of water supply					Distance to surface water (km)		
		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source	
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source			
1	2	3	4	5	6	7	8	9	10	11	12	13		
CLASS I														
Andhra Pradesh														
1	Anantapur MCI	14	-	14	100	-	-	-	-	-	-	0.5-3	0	
2	Chittoor M	7.0	8.9	16	44	56	9.0	-	9.0	100	-	9-10	9	
3	Cuddapah MCI	15	1.8	17	89	11	-	-	-	-	-	3 to 14	-	
4	Eluru M	11	13	24	46	54	-	-	-	-	-	0.5	-	
5	Guntur MCI	75	-	75	100	-	-	-	-	-	-	12 to 20	-	
6	Hindupur M	-	10	10	-	100	10	-	10	100	-	-	11	
7	Kakinada M	21	-	21	100	-	-	-	-	-	-	11 to 14	-	
8	Kurnool MCI	6.5	-	6.5	100	-	-	-	-	-	-	3.5	-	
9	Machilipatnam M	21	-	21	100	-	-	-	-	-	-	0.10	-	
10	Nandyal MCI	10	-	10	100	-	-	-	-	-	-	3	-	
11	Nellore MCI	43	-	43	100	-	51	-	51	100	-	.2	0.5 to 1.5	
12	Nizamabad M	12	2.7	15	82	18	-	-	-	-	-	14	-	
13	Ongole MCI	16	-	16	100	-	-	-	-	-	-	2.20 to 16	-	
14	Qutubullapur M	24	6.0	30	80	20	35	-	35	100	-	19	19	
15	Rajahmundry M.Corp.	33	-	33	100	-	-	-	-	-	-	.05	-	
16	Tenali M	-	0.7	0.7	-	100	-	-	-	-	-	-	-	
17	Tirupati MCI	18	11	29	62	38	-	-	-	-	-	-	-	
18	Vijaywada M.Corp.	87	59	146	59	41	36	46	82	44	56	0.20	0.2 to 7.5	
19	Warangal M.Corp.	59	9.1	68	87	13	-	-	-	-	-	8 to 15	-	
Bihar														
20	Bihar Sharif M	-	30	30	-	100	-	-	-	-	-	-	-	
21	Chhapra M	-	14	14	-	100	-	-	-	-	-	-	-	
22	Gaya M.Corp.	-	36	36	-	100	-	-	-	-	-	-	-	
23	Katihar M	-	15	15	-	100	-	-	-	-	-	-	-	
24	Munger M	-	10	10	-	100	-	-	-	-	-	-	-	

Sl. No.	City/Town	Present source of water supply					Future source of water supply					Distance to surface water (km)	
		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
25	Ranchi M.Corp.	91	-	91	100	-	46	36	82	56	44	88 to 292	6
Gujarat													
26	Anand M	-	11	11	-	100	-	-	-	-	-	-	-
27	Bharuch M	16	2.0	18	89	11	-	-	-	-	-	2 to 17	-
28	Bhavnagar M.Corp.	70	-	70	100	-	-	-	-	-	-	3 to 46	-
29	Bhuj M	-	16	16	-	100	5.0	-	5.0	100	-	0.00	16
30	Jamnagar M.Corp.	85	-	85	100	-	-	-	-	-	-	15 to 65	-
31	Junagadh M	-	12	12	-	100	-	-	-	-	-	0.00	-
32	Nadiad M	10	11	21	48	52	17	-	17	100	-	4.5	5.5
33	Navsari M	0	16	16	0	100	30	-	30	100	-	0.00	0
34	Porbandar M	10	-	10	100	-	-	-	-	-	-	32 to 35	-
35	Rajkot M.Corp.	107	-	107	100	-	40	-	40	100	-	5 to 62	60
36	Surendranagar M	5.6	-	5.6	100	-	-	-	-	-	-	3.5	35
Haryana													
37	Ambala MCI	10	6.2	16	62	38	-	-	-	-	-	-	-
38	Faridabad M.Corp.	-	184	184	-	100	-	45	45	-	100	0.00	-
39	Gurgaon MCI	-	19	19	-	100	16	-	16	100	-	0.00	2
40	Hisar MCI	25	-	25	100	-	-	-	-	-	-	.03 to 8	-
41	Karnal MCI	-	40	40	-	100	-	-	-	-	-	-	-
42	Rohtak MCI	32	-	32	100	-	-	-	-	-	-	2 to 4	-
Jammu & Kashmir													
43	Jammu M.Corp.	41	17	58	70	30	72	5.4	77	93	7	0.5	0.7
Karnataka													
44	Belgaum M.Corp.	36	-	36	100	-	2.0	-	2.0	-	-	22.00	48
45	Bellary CMC	31	-	31	100	-	-	-	-	-	-	16 to 18	-
46	Davangere MCI	27	4.5	32	86	14	4.5	-	4.5	100	-	14 to 77	14
47	Gadag-Betigeri CMC	14	2.3	16	86	14	-	-	-	-	-	52 to 265	-

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		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
72	Shivpuri M	6.0	7.0	13	46	54	35	-	35	100	-	.25 to 8	45
Maharashtra													
73	Amravati M.Corp.	60	-	60	100	-	156	-	156	100	-	55	55
74	Aurangabad M.Corp.	168	-	168	100	-	-	-	-	-	-	6 to 45	-
75	Bhusawal MCI	22	-	22	100	-	18	-	18	100	-	-	-
76	Chandrapur MCI	30	-	30	100	-	64	-	64	100	-	2 to 17.2	11
77	Dhule MCI	31	-	31	100	-	-	-	-	-	-	5 to 40	-
78	Ichalkaranji MCI	32	-	32	100	-	54	-	54	100	-	3.5	18
79	Jalgaon MCI	56	-	56	100	-	130	-	130	100	-	140	18
80	Kolhapur M.Corp.	85	-	85	100	-	76	-	76	100	-	1 to 3	3
81	Nanded Waghala M.Corp.	37	2.0	39	95	5	133	-	133	100	-	4 to 14	4
82	Nashik M.Corp.	158	-	158	100	-	747	-	747	100	-	3 to 3.25	3 to 11
83	Parbhani MCI	15	-	15	100	-	15	-	15	100	-	17	60
84	Solapur M.Corp.	125	-	125	100	-	80	-	80	100	-	8 to 103	103
85	Wardha M	12	-	12	100	-	-	-	-	-	-	9	-
86	Yavatmal MCI	13	-	13	100	-	13	-	13	100	-	5	20
Orissa													
87	Bhubaneswar M.Corp.	114	37	150	76	24	-	-	-	-	-	1 to 14	-
88	Cuttack M.Corp.	-	146	146	-	100	-	-	-	-	-	-	-
89	Puri M	-	24	24	-	100	-	5.5	5.5	-	100	-	-
90	Rourkela M	18	-	18	100	-	-	-	-	-	-	.1	-
91	Sambalpur M	17	1.1	19	94	6	40	-	40	100	-	1.2 to 12	12
Punjab													
92	Amritsar M.Corp.	-	127	127	-	100	-	40	40	-	100	-	-
93	Bathinda MCI	17	-	17	100	-	-	-	-	-	-	.2	-
94	Hoshiarpur MCI	-	22	22	-	100	-	-	-	-	-	-	-
95	Jalandhar M.Corp.	-	175	175	-	100	-	-	-	-	-	-	-

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1	2	3	4	5	6	7	8	9	10	11	12	13	
96	Moga MCI	-	20	20	-	100	-	0.9	0.9	-	100	-	-
97	Pathankot MCI	-	17	17	-	100	-	-	-	-	-	-	-
98	Patiala M.Corp.	-	60	60	-	100	-	-	-	-	-	-	-
Rajasthan													
99	Ajmer MCI	46	6.0	52	88	12	-	-	-	-	-	3 to 140	-
100	Alwar M	-	32	32	-	100	-	26	26	-	100	-	-
101	Beawar M	11	-	11	100	-	13	-	13	100	-	55	55
102	Bhilwara M	12	2.0	14	86	14	40	-	40	100	-	13	60
103	Bikaner M	33	35	68	49	51	60	-	60	100	-	1.2 to 13	13
104	Jodhpur M.Corp.	158	18	176	90	10	140	-	140	100	-	209.18	209
105	Kota M.Corp.	160	-	160	100	-	208	-	208	100	-	1	1
106	Sriganganagar M	20	2.0	22	91	9	-	-	-	-	-	-	-
Tamil Nadu													
107	Cuddalore M	3.5	0.8	4.3	82	18	-	-	-	-	-	5	-
108	Dindigul M	12	-	12	100	-	-	-	-	-	-	8.21	-
109	Erode M	22	-	22	100	-	-	-	-	-	-	13.6	-
110	Kanchipuram M	16	-	16	100	-	-	-	-	-	-	32	-
111	Kumbakonam M	11	-	11	100	-	-	-	-	-	-	12	-
112	Nagercoil M	9.0	-	9.0	100	-	-	-	-	-	-	18.5	-
113	Rajapalayam M	8.8	-	8.8	100	-	1.3	-	1.3	100	-	13	13
114	Salem M.Corp.	50	-	50	100	-	-	-	-	-	-	21	-
115	Thanjavur M	24	-	24	100	-	-	-	-	-	-	5 to 15	-
116	Tiruchirapalli M.Corp.	-	88	88	-	100	20	-	20	100	-	-	11
117	Tirunelveli M.Corp.	34	-	34	100	-	7.7	-	7.7	100	-	2 to 14	-
118	Tirunvannamalai M	14	-	14	100	-	-	-	-	-	-	.6 2	-
119	Tiruppur M	29	-	29	100	-	49	-	49	100	-	55	-
120	Tuticorin M	16	-	16	100	-	6.0	-	6.0	100	-	3.5	3.5

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1	2	3	4	5	6	7	8	9	10	11	12	13	
121	Vellore M	13	-	13	100	-	10	-	10	100	-	1.5 to 8	10
Uttar Pradesh													
122	Agra M.Corp.	250	-	250	100	-	-	-	-	-	-	1	-
123	Aligarh M.Corp.	-	47	47	-	100	-	12	12	-	100	-	-
124	Allahabad M.Corp.	90	120	210	43	57	-	-	-	-	-	5	-
125	Bareilly M.Corp.	-	80	80	-	100	-	55	55	-	100	-	-
126	Etawah MB	-	20	20	-	100	-	-	-	-	-	-	-
127	Faizabad MB	-	22	22	-	100	-	-	-	-	-	-	-
128	Firozabad MB	-	12	12	-	100	-	-	-	-	-	-	-
129	Ghaziabad M.Corp.	-	110	110	-	100	-	4.0	4.0	-	100	-	-
130	Gorakhpur M.Corp.	-	74	74	-	100	-	-	-	-	-	-	-
131	Haldwani-cum-Kathgodam MB	19	-	19	100	-	-	-	-	-	-	1-1.5	-
132	Hapur MB	-	14	14	-	100	-	-	-	-	-	-	-
133	Hardwar MB	-	39	39	-	100	-	-	-	-	-	-	-
134	Jhansi MB	68	9.2	77	88	12	-	-	-	-	-	.5-55	-
135	Mathura MB	-	27	27	-	100	101	-	101	100	-	-	-
136	Meerut M.Corp.	-	132	132	-	100	-	-	-	-	-	-	-
137	Mirzapur MB	8.0	17	25	32	68	-	-	-	-	-	15	-
138	Moradabad M.Corp.	48	-	48	100	-	-	-	-	-	-	-	-
139	Muzaffarnagar MB	-	46	46	-	100	-	-	-	-	-	-	-
140	Rae Bareli MB	-	13	13	-	100	-	-	-	-	-	-	-
141	Rampur MB	-	20	20	-	100	-	2.8	2.8	-	100	-	-
142	Saharanpur MB	-	49	49	-	100	-	7.2	7.2	-	100	-	-
143	Sitapur MB	-	17	17	-	100	-	-	-	-	-	-	-
144	Unnao MB	-	21	21	-	100	-	-	-	-	-	-	-
West Bengal													
145	Asansol M.Corp.	52	-	52	100	-	60	-	60	100	-	.35	.5

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		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
146	Baharampur M	7.3	7.6	15	49	51	-	675	675	-	100	.37	-
147	Balurghat M	-	0.9	0.9	-	100	-	-	-	-	-	-	-
148	Bankura M	-	11	11	-	100	-	3.8	3.8	-	100	-	-
149	Barasat M	-	12	12	-	100	-	-	-	-	-	-	-
150	Burdwan M	-	24	24	-	100	-	7.2	7.2	-	100	-	-
151	Halisahar M	-	20	20	-	100	0.3	-	0.3	100	-	.12 to .17	-
152	Krishnagar M	0.8	5.2	6.0	13	87	-	5.9	5.9	-	100	.61	-
153	Midnapore M	-	15	15	-	100	-	-	-	-	-	-	-
154	North Barrackpore M	-	14	14	-	100	-	2.9	2.9	-	100	-	-
155	Santipur M	-	0.9	0.9	-	100	-	-	-	-	-	-	-
156	Silliguri M.Corp.	18	-	18	100	-	60	-	60	100	-	10	10
Small States													
Assam													
157	Guwahati M.Corp.	50	5.0	55	91	9	276	-	276	100	-	2.7	2.5
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-
Manipur													
159	Imphal MCI	47	12	58	80	20	-	-	-	-	-	2.8	-
Meghalaya													
160	Shillong MB	27	-	27	100	-	-	-	-	-	-	7-26	-
Mizoram													
161	Aizwal NM	11	-	11	100	-	37	-	37	100	-	7.5	8
Tripura													
162	Agartala MCI	14	8.2	22	63	38	18	-	18	100	-	-	-
Union Territories													
163	Chandigarh M.Corp.	182	45	227	80	20	-	-	-	-	-	27.5	-
164	Pondicherry M	-	33	33	-	100	-	-	-	-	-	8.00	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

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		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source			
1	2	3	4	5	6	7	8	9	10	11	12	13		
CLASS II														
Andhra Pradesh														
1	Anakapalle M	3.6	-	3.6	100	-	3.0	-	3.0	100	-	1	1	
2	Dharmavaram M	-	7.9	7.9	-	100	-	0.6	0.6	-	100	2.5-15	14-15	
3	Gudur MCI	-	7.1	7.1	-	100	-	-	-	-	-	-	-	
4	Kapra M	4.6	-	4.6	100	-	4.2	-	4.2	100	-	n.a	n.a	
5	Kavali MCI	-	5.0	5.0	-	100	-	-	-	-	-	n.a.	-	
6	Madanapalle M	2.3	5.5	7.7	29	71	12	-	12	100	-	2	3-30	
7	Narasaraopet M	4.5	-	4.5	100	-	7.0	-	7.0	100	-	1.5	15	
8	Rajendra nagar MCI	-	5.1	5.1	-	100	3.0	-	3.0	100	-	0.30	3	
9	Sangareddy MCI	2.7	1.1	3.9	70	30	6.8	-	6.8	100	-	0.50 to 2	0.5	
10	Srikakulam MCI	4.8	2.0	6.8	70	30	8.0	-	8.0	100	-	3	12	
11	Srikalahasti M	6.8	-	6.8	100	-	4.1	-	4.1	100	-	7	7	
12	Suryapet MCI	4.5	3.0	7.6	60	40	17	-	17	100	-	16	18	
Bihar														
13	Buxar M	-	3.9	3.9	-	100	-	0.3	0.3	-	100	-	-	
14	Deoghar M	-	3.0	3.0	-	100	-	-	-	-	-	-	-	
15	Hajipur M	-	11	11	-	100	-	-	-	-	-	-	-	
16	Hazaribagh M	7.3	-	7.3	100	-	-	-	-	-	-	-	-	
17	Jehanabad M	8.0	-	8.0	100	-	-	-	-	-	-	-	-	
18	Madhubani M	-	8.0	8.0	-	100	-	-	-	-	-	-	-	
19	Mokama M	-	2.0	2.0	-	100	-	-	-	-	-	-	-	
Gujarat														
20	Amreli M	10	-	10	100	-	18	-	18	100	-	43	43	
21	Ankleswar M	10	-	10	100	-	10	-	10	100	-	-	2	
22	Dabhoi M	-	9.0	9.0	-	100	1.9	-	1.9	100	-	-	0	

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1	2	3	4	5	6	7	8	9	10	11	12	13	
23	Dohad M	7.5	-	7.5	100	-	1.7	-	1.7	100	-	12	-
24	Gondal M	13	-	13	100	-	4.0	-	4.0	100	-	3 to 7	10
25	Jetpur M	11	-	11	100	-	-	-	-	-	-	18	-
26	Mahesana M	-	15	15	-	100	-	-	-	-	-	-	-
27	Palanpur M	-	4.0	4.0	-	100	-	-	-	-	-	-	-
Haryana													
28	Jind MCI	-	16	16	-	100	-	-	-	-	-	-	-
29	Kaithal MCI	-	11	11	-	100	102	-	102	100	-	-	0
30	Rewari MCI	6.8	4.5	11	60	40	-	-	-	-	-	3-12	-
31	Thanesar MCI	-	13	13	-	100	-	-	-	-	-	-	-
Karnataka													
32	Bagalkot CMC	9.0	3.2	12	74	26	-	-	-	-	-	5	-
33	Chikmagalur CMC	6.0	9.0	15	40	60	-	-	-	-	-	2 to 20	-
34	Gokak CMC	4.6	-	4.6	100	-	-	-	-	-	-	.10	-
35	Hospet CMC	16	-	16	100	-	45	-	45	100	-	2	5
36	Kolar CMC	4.0	4.0	8.0	50	50	0.1	0.1	0.2	50	50	1	.10
37	Rabkavi-Banhatti CMC	4.5	-	4.5	100	-	14	-	14	100	-	3	3.6
38	Ramanagaram CMC	3.2	1.3	4.5	71	29	15	-	15	100	-	2.5	90
Kerala													
39	Changanessary MC	4.0	-	4.0	100	-	-	-	-	-	-	8 to 18	-
40	Payyanur M	-	1.5	1.5	-	100	-	-	-	-	-	n.a.	-
41	Taliparamba M	-	0.4	0.4	-	100	-	-	-	-	-	n.a.	0
42	Thrissur MC	18	-	18	100	-	-	-	-	-	-	22	-
Madhya Pradesh													
43	Hoshangabad M	-	8.1	8.1	-	100	-	-	-	-	-	n.a.	-
44	Itarsi M	-	5.9	5.9	-	100	-	-	-	-	-	n.a.	-

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1	2	3	4	5	6	7	8	9	10	11	12	13	
45	Khargone M	12	1.0	13	92	8	-	-	-	-	-	5	-
46	Mandsaur M	9.0	-	9.0	100	-	991	-	991	100	-	n.a.	1.5
47	Nagda M	2.3	0.8	3.0	75	25	16	-	16	100	-	.75 to 1.75	.75
48	Neemuch M	5.0	0.9	5.9	85	15	-	-	-	-	-	15	-
49	Sehore M	5.3	-	5.3	100	-	7.5	-	7.5	100	-	18	4 to 24
50	Shahdol M	4.7	-	4.7	100	-	8.8	-	8.8	100	-	1.5	7
51	Vidisha M	9.0	-	9.0	100	-	9.0	-	9.0	100	-	-	2
Maharashtra													
52	Amalner MCI	10	5.0	15	67	33	-	-	-	-	-	1 to 17	-
53	Ballarpur MCI	6.9	0.1	7.0	99	1	30	0.2	30	100	0	2.9 to 3	2
54	Bhandara M	9.0	-	9.0	100	-	18	-	18	100	-	1.28	6
55	Kamptee MCI	n.a.	-	n. app.	n.a.	-	10	-	10	100	-	7	7
56	Manmad MCI	7.2	-	7.2	100	-	20	-	20	100	-	4 to 16	10
57	Ratnagiri MCI	8.0	-	8.0	100	-	-	-	-	-	-	2 to 15	-
58	Satara MCI	11	-	11	100	-	-	-	-	-	-	5.5-27	11-27
59	Virar MCI	9.0	-	9.0	100	-	20	-	20	100	-	1.5 to 35	70
Orissa													
60	Balangir M	7.2	-	7.2	100	-	-	-	-	-	-	13 to 48	-
61	Bhadrak M	-	3.0	3.0	-	100	-	-	-	-	-	n.a.	-
Punjab													
62	Firozpur MCI	-	20	20	-	100	-	-	-	-	-	-	-
63	Kapurthala M	-	14	14	-	100	-	-	-	-	-	-	-
64	Mansa MCI	8.0	-	8.0	100	-	-	-	-	-	-	-	0
65	Phagwara MCI	-	15	15	-	100	-	-	-	-	-	-	-
66	Sangrur MCI	-	13	13	-	100	-	-	-	-	-	-	-

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1	2	3	4	5	6	7	8	9	10	11	12	13		
Rajasthan														
67	Banswara M	1.8	8.0	9.8	18	82	-	18	18	-	100		-	
68	Barmer M	-	6.5	6.5	-	100	53	21	74	72	28	-	32-207	
69	Bundi M	-	8.0	8.0	-	100	-	2.7	2.7	-	100		-	
70	Churu M	-	7.7	7.7	-	100	-	-	-	-	-		-	
71	Hanumangarh M	7.2	-	7.2	100	-	-	-	-	-	-	.7	-	
72	Sawai Madhopur M	0.2	7.6	7.8	3	97	-	-	-	-	-	10 to 19	-	
Tamil Nadu														
73	Ambur M	5.6	-	5.6	100	-	-	-	-	-	-	2 to 9	-	
74	Arakkonam M	3.0	1.0	4.0	75	25	-	-	-	-	-	5 to 16	-	
75	Attur M	3.0	-	3.0	100	-	-	-	-	-	-	17 to 57	-	
76	Cumbum M	2.7	-	2.7	100	-	-	-	-	-	-	18.00	-	
77	Dharmapuri M	3.0	-	3.0	100	-	10	-	10	100	-	2 to 41	55	
78	Guduivattam M	5.8	-	5.8	100	-	1.0	-	1.0	100	-	2 to 10	2	
79	Nagapattinam M	7.8	-	7.8	100	-	-	-	-	-	-	26	-	
80	Pudukkottai M	7.9	-	7.9	100	-	-	-	-	-	-	8 to 26	-	
81	Sivakasi M	5.2	-	5.2	100	-	-	-	-	-	-	2.2	-	
82	Srivilliputtur M	-	3.5	3.5	-	100	-	0.5	0.5	-	100		-	
83	Tindivanam MC	1.9	-	1.9	100	-	-	-	-	-	-	21 to 24	-	
84	Udhagamandalam M	4.0	-	4.0	100	-	-	-	-	-	-	1.2 to 22.5	-	
Uttar Pradesh														
85	Auraiya MB	-	4.5	4.5	-	100	-	-	-	-	-		-	
86	Balrampur MB	-	2.8	2.8	-	100	-	-	-	-	-		-	
87	Basti MB	-	10	10	-	100	-	-	-	-	-		-	
88	Bhadohi MB	-	4.0	4.0	-	100	-	-	-	-	-		-	
89	Chandpur MB	-	3.2	3.2	-	100	-	3.6	3.6	-	100		-	

Sl. No.	City/Town	Present source of water supply					Future source of water supply					Distance to surface water (km)	
		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
90	Etah MB	-	4.0	4.0	-	100	-	-	-	-	-	-	-
91	Ghazipur MB	-	16	16	-	100	-	-	-	-	-	-	-
92	Gonda MB	-	9.0	9.0	-	100	-	-	-	-	-	-	-
93	Lakhimpur MB	-	13	13	-	100	-	9.3	9.3	-	100	-	-
94	Lalitpur MB	8.5	-	8.5	100	-	15	-	15	100	-	3	3
95	Mughalsarai MB	-	4.0	4.0	-	100	-	-	-	-	-	-	-
96	Nawabganj-Barabanki MB	-	9.1	9.1	-	100	-	-	-	-	-	-	-
97	Orai MB	-	8.2	8.2	-	100	-	-	-	-	-	-	-
98	Roorkee MB	-	19	19	-	100	-	-	-	-	-	-	-
West Bengal													
99	Bishnupur M	-	2.6	2.6	-	100	-	4.4	4.4	-	100	-	-
100	Chakdaha M	-	1.9	1.9	-	100	-	-	-	-	-	-	-
101	Contai M	-	1.6	1.6	-	100	-	-	-	-	-	-	-
102	Cooch Behar M	-	9.9	9.9	-	100	-	-	-	-	-	-	-
103	Darjeeling M	6.3	0	6.3	100	0	3.5	-	3.5	100	-	2-25	10
104	Jalpaiguri M	-	4.9	4.9	-	100	-	6.4	6.4	-	100	-	-
105	Jangipur M	3.0	-	3.0	100	-	5.0	-	5.0	100	-	.1	.1
106	Katwa M	-	1.5	1.5	-	100	-	2.2	2.2	-	100	-	-
107	Raniganj M	5.1	-	5.1	100	-	-	-	-	-	-	5	5
Small States													
Nagaland													
108	Kohima TC	2.9	-	2.9	100	-	-	-	-	-	-	12	-
Himachal Pradesh													
109	Shimla M.Corp.	28	-	28	100	-	-	-	-	-	-	16 to 52	-
Union Territories													
110	Port Balir MCI	n.a.	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-	-	-

Sl. No.	City/Town	Present source of water supply				Future source of water supply					Distance to surface water (km)		
		Quantity (mld) obtained from			% water obtained		Quantity (mld) to be obtained from			% water to be obtained		Present source	Future source
		Surface source	Ground source	Total	Surface source	Ground source	Surface source	Ground source	Total	Surface source	Ground source		
1	2	3	4	5	6	7	8	9	10	11	12	13	
Others (Smaller than Class II towns)													
Small States													
Arunachal Pradesh													
111	Itanagar CT	5.5	-	5.5	100	-	-	-	-	-	-	2	-
Goa													
112	Panaji MCI	12	-	12	100	-	-	-	-	-	-	33	-
Union Territories													
113	Daman MCI	8.0	-	8.0	100	-	-	-	-	-	-	40	-
114	Kavarathi NMCT	-	-	0	-	-	0.4	0.2	0.6	67	33	19.5	1 to 3
115	Silvassa	-	1.4	1.4	-	100	-	1.7	1.7	-	100	-	-
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>													

A-8

LENGTH OF DISTRIBUTION NETWORK AND
WATER STORAGE CAPACITY, 1999

A-8 : Length of Distribution Network and Water Storage Capacity, 1999

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
Metropolitan Cities						
1	Ahmedabad M.Corp.	2351	12	91	423	87
2	Bangalore M.Corp.	n.a.	n.a.	95	653	93
3	Bhopal M.Corp.	2800	11	42	n.a.	n.a.
4	Calcutta M.Corp.	4110	22	9	291	28
5	Chennai M.Corp.	1795	10	n.a.	n.a.	n.a.
6	Coimbatore M.Corp.	557	5	27	28	27
7	Delhi M.Corp.	7906	5	67	730	28
8	Greater Mumbai M.Corp.	4000	9	26	808	27
9	Hyderabad M.Corp.	1936	11	122	n.a.	n.a.
10	Indore M.Corp.	1200	9	22	60	25
11	Jaipur M.Corp.	3000	15	90	122	36
12	Kanpur M.Corp.	1315	25	33	39	13
13	Kochi M.Corp.	750	8	17	42	50
14	Lucknow M.Corp.	1800	8	38	178	43
15	Ludhiana M.Corp.	840	12	46	102	44
16	Madurai M.Corp.	423	8	27	n.a.	n.a.
17	Nagpur M.Corp.	1000	5	28	125	34
18	Pune M.Corp.	2000	5	35	212	33
19	Surat M.Corp.	1814	16	24	n.a.	n.a.
20	Vadodara M.Corp.	375	3	18	126	52
21	Varanasi M.Corp.	516	10	24	80	36
22	Visakhapatnam M.Corp.	845	8	44	44	26

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
CLASS I						
Andhra Pradesh						
1	Anantapur MCI	161	10	8	2.3	17
2	Chittoor M	25	1	1	1.1	7
3	Cuddapah MCI	13	2	8	16.8	100
4	Eluru M	18	1	8	16.5	70
5	Guntur MCI	83	2	21	74.9	100
6	Hindupur M	24	1	46	4.8	48
7	Kakinada M	80	3	8	8.5	40
8	Kurnool MCI	n.a.	n.a.	11	3.2	49
9	Machilipatnam M	47	2	5	4.5	22
10	Nandyal MCI	n.a.	n.a.	3	1.6	16
11	Nellore MCI	n.a.	n.a.	19	15.2	35
12	Nizamabad M	n.a.	n.a.	8	n.a.	n.a.
13	Ongole MCI	57	2	5	5.2	32
14	Qutubullapur M	91	3	1	0.9	3
15	Rajahmundry M.Corp.	280	6	12	32.7	100
16	Tenali M	6	2	1	0.7	100
17	Tirupati MCI	22	1	n.a.	n.a.	n.a.
18	Vijaywada M.Corp.	350	6	29	23.2	16
19	Warangal M.Corp.	220	3	16	4.8	7
Bihar						
20	Bihar Sharif M	130	10	6	11.0	37
21	Chhapra M	63	8	6	0.8	6
22	Gaya M.Corp.	110	6	7	13.0	36
23	Katihar M	79	7	3	3.8	25
24	Munger M	105	9	4	55.0	550

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
25	Ranchi M.Corp.	381	2	7	n.a.	n.a.
Gujarat						
26	Anand M	110	5	8	8.6	78
27	Bharuch M	93	5	5	6.0	33
28	Bhavnagar M.Corp.	500	9	9	30.0	43
29	Bhuj M	70	7	6	5.0	31
30	Jamnagar M.Corp.	n.a.	n.a.	4	218.0	256
31	Junagadh M	80	3	-	n.a.	n.a.
32	Nadiad M	85	3	7	9.6	46
33	Navsari M	n.a.	n.a.	8	11.0	67
34	Porbandar M	144	12	7	5.0	50
35	Rajkot M.Corp.	700	7	21	65.0	61
36	Surendranagar M	350	9	2	n.a.	n.a.
Haryana						
37	Ambala MCI	177	14	11	11.6	72
38	Faridabad M.Corp.	858	4	13	25.2	14
39	Gurgaon MCI	106	8	11	6.8	37
40	Hisar MCI	220	7	11	10.7	43
41	Karnal MCI	134	10	8	6.7	17
42	Rohtak MCI	125	7	6	8.0	25
Jammu & Kashmir						
43	Jammu M.Corp.	231	2	26	n.a.	n.a.
Karnataka						
44	Belgaum M.Corp.	220	n.a.	n.a.	8.0	22
45	Bellary CMC	320	4	14	15.5	51
46	Davangere MCI	200	0	1	n.a.	n.a.
47	Gadag-Betigeri CMC	123	2	2	1.4	9

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
48	Gulbarga M.Corp.	n.a.	n.a.	13	18.0	57
49	Hubli-Dharwar M.Corp.	500	3	16	34.4	39
50	Mandya M	120	n.a.	5	12.9	100
51	Mangalore M.Corp.	215	2	16	34.0	40
52	Mysore M.Corp.	300	4	28	n.a.	n.a.
53	Shimoga CMC	200	4	21	11.3	33
54	Tumkur M	157	6	32	20.8	94
Kerala						
55	Alappuzha MC	450	-	12	8.8	59
56	Kollam MC	28	1	6	10.7	59
57	Kozhikode M.Corp.	247	3	4	10.8	15
58	Thalaserry M	54	4	3	3.6	14
59	Thiruvananthapuram M.Corp.	170	2	7	45.0	25
Madhya Pradesh						
60	Bhind M	150	9	8	3.3	17
61	Burhanpur M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.
62	Dewas M.Corp.	n.a.	n.a.	2	4.5	50
63	Guna M	71	2	4	2.8	23
64	Gwalior M.Corp.	708	4	14	97.0	65
65	Jabalpur M.Corp.	110	1	12	12.5	11
66	Khandwa M	n.a.	n.a.	8	50.0	313
67	Morena M	61	5	6	2.5	30
68	Murwara (Katni) M.Corp.	n.a.	n.a.	10	2.4	19
69	Ratlam M.Corp.	177	5	4	14.6	80
70	Rewa M.Corp.	151	4	7	106.7	534
71	Satna M.Corp.	165	3	6	7.7	57
72	Shivpuri M	212	3	7	3.1	24

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
Maharashtra						
73	Amravati M.Corp.	380	3	7	17.6	29
74	Aurangabad M.Corp.	500	4	19	48.0	29
75	Bhusawal MCI	80	8	4	4.6	21
76	Chandrapur MCI	116	3	5	9.7	32
77	Dhule MCI	45	-	13	19.1	62
78	Ichalkaranji MCI	69	2	5	32.0	100
79	Jalgaon MCI	140	2	12	18.0	32
80	Kolhapur M.Corp.	300	5	14	28.1	33
81	Nanded Waghala M.Corp.	425	9	7	108.5	278
82	Nashik M.Corp.	600	2	51	67.2	43
83	Parbhani MCI	300	5	5	13.7	91
84	Solapur M.Corp.	208	n.a.	21	75.0	60
85	Wardha M	125	14	7	12.3	100
86	Yavatmal MCI	187	-	3	6.1	47
Orissa						
87	Bhubaneswar M.Corp.	578	2	105	48.1	32
88	Cuttack M.Corp.	266	n.a.	16	4.9	3
89	Puri M	250	23	4	3.2	13
90	Rourkela M	96	n.a.	9	10.0	56
91	Sambalpur M	36	1	15	36.0	195
Punjab						
92	Amritsar M.Corp.	750	9	28	22.3	18
93	Bathinda MCI	195	n.a.	2	4.5	27
94	Hoshiarpur MCI	149	6	7	4.5	21
95	Jalandhar M.Corp.	573	5	22	18.1	10
96	Moga MCI	90	7	7	3.1	15

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
97	Pathankot MCI	172	8	6	5.5	32
98	Patiala M.Corp.	280	14	14	12.2	20
Rajasthan						
99	Ajmer MCI	355	2	31	30.0	58
100	Alwar M	250	4	33	14.0	44
101	Beawar M	110	6	14	4.1	36
102	Bhilwara M	450	7	7	4.7	34
103	Bikaner M	1160	7	36	26.4	39
104	Jodhpur M.Corp.	1200	16	23	50.8	29
105	Kota M.Corp.	350	2	30	39.6	25
106	Sriganganagar M	227	-	-	94.3	428
Tamil Nadu						
107	Cuddalore M	74	3	4	2.7	63
108	Dindigul M	43	3	8	10.2	85
109	Erode M	164	19	7	10.5	48
110	Kanchipuram M	120	10	8	10.6	65
111	Kumbakonam M	101	8	2	9.0	85
112	Nagercoil M	14	1	3	2.4	27
113	Rajapalayam M	44	4	3	3.0	34
114	Salem M.Corp.	274	3	18	16.5	33
115	Thanjavur M	240	7	13	9.2	38
116	Tiruchirapalli M.Corp.	350	2	9	0.5	1
117	Tirunelveli M.Corp.	228	2	22	17.0	50
118	Tiruvannamalai M	72	5	8	6.6	49
119	Tiruppur M	315	12	11	10.8	38
120	Tuticorin M	118	9	3	4.3	27
121	Vellore M	25	2	5	7.4	57

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
Uttar Pradesh						
122	Agra M.Corp.	187	3	6	30.0	12
123	Aligarh M.Corp.	370	6	15	n.a.	n.a.
124	Allahabad M.Corp.	1050	20	16	152.0	72
125	Bareilly M.Corp.	492	6	18	18.8	24
126	Etawah MB	160	5	9	6.8	35
127	Faizabad MB	100	6	5	0.6	3
128	Firozabad MB	81	2	6	4.6	38
129	Ghaziabad M.Corp.	650	3	31	42.6	39
130	Gorakhpur M.Corp.	570	5	12	9.2	12
131	Haldwani-cum-Kathgodam MB	34	3	7	3.9	21
132	Hapur MB	100	10	5	3.7	26
133	Hardwar MB	132	18	7	9.9	25
134	Jhansi MB	200	8	7	15.0	19
135	Mathura MB	120	n.a.	17	6.1	23
136	Meerut M.Corp.	532	4	21	34.0	26
137	Mirzapur MB	250	13	7	8.3	33
138	Moradabad M.Corp.	89	2	9	11.3	24
139	Muzaffarnagar MB	345	36	4	4.2	9
140	Rae Bareli MB	180	7	11	8.7	67
141	Rampur MB	63	2	6	2.2	11
142	Saharanpur MB	1395	n.a.	8	7.1	15
143	Sitapur MB	120	5	6	6.6	39
144	Unnao MB	71	3	6	1.9	9
West Bengal						
145	Asansol M.Corp.	2740	n.a.	10	15.0	29
146	Baharampur M	348	22	3	15.0	101

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
147	Balurghat M	30	4	2	0.9	105
148	Bankura M	400	32	7	2.0	18
149	Barasat M	130	12	3	0.8	7
150	Burdwan M	225	9	6	1.1	5
151	Halisahar M	135	16	5	2.1	10
152	Krishnagar M	100	10	4	1.1	18
153	Midnapore M	320	17	4	1.4	9
154	North Barrackpore M	110	9	4	1.1	8
155	Santipur M	43	5	2	0.9	99
156	Silliguri M.Corp.	60	1	3	1.5	8
Small States						
Assam						
157	Guwahati M.Corp.	425	5	28	17.0	31
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur						
159	Imphal MCI	363	3	2	30.2	52
Meghalaya						
160	Shillong MB	172	17	9	11.0	41
Mizoram						
161	Aizwal NM	1128	26	16	10.8	100
Tripura						
162	Agartala MCI	175	11	13	5.0	23
Union Territories						
163	Chandigarh M.Corp.	n.a.	n.a.	33	159.0	70
164	Pondicherry M	54	3	8	0.9	3
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>						

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
CLASS II						
Andhra Pradesh						
1	Anakapalle M	14	1	2	1.4	39
2	Dharmavaram M	n.a.	n.a.	5	0.4	5
3	Gudur MCI	21	2	6	3.9	55
4	Kapra M	112	2	5	7.3	159
5	Kavali MCI	n.a.	n.a.	2	0.9	18
6	Madanapalle M	132	15	5	4.0	52
7	Narasaraopet M	50	7	4	3.8	84
8	Rajendra nagar MCI	36	1	5	2.3	45
9	Sangareddy MCI	14	1	2	2.0	52
10	Srikakulam MCI	34	2	3	2.9	43
11	Srikalahasti M	22	2	7	9.0	132
12	Suryapet MCI	56	3	2	2.3	30
Bihar						
13	Buxar M	54	6	n.a.	0.7	17
14	Deoghar M	46	n.a.	1	1.5	50
15	Hajipur M	8	1	1	0.2	2
16	Hazaribagh M	72	4	4	18.2	250
17	Jehanabad M	76	11	4	5.0	63
18	Madhubani M	113	9	6	11.1	139
19	Mokama M	n.a.	n.a.	2	n.a.	n.a.
Gujarat						
20	Amreli M	n.a.	n.a.	3	4.0	40
21	Ankleswar M	19	2	-	n.a.	n.a.
22	Dabhoi M	18	1	5	5.0	56
23	Dohad M	70	10	3	1.5	20
24	Gondal M	67	6	7	4.0	31

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1	2	3	4	5	6	
25	Jetpur M	75	2	3	6.9	61
26	Mahesana M	107	8	3	7.5	51
27	Palanpur M	n.a.	n.a.	6	4.6	115
Haryana						
28	Jind MCI	102	6	5	1.2	8
29	Kaithal MCI	67	13	3	0.4	4
30	Rewari MCI	200	11	1	0.5	4
31	Thanesar MCI	40	1	3	1.5	11
Karnataka						
32	Bagalkot CMC	80	2	1	2.3	19
33	Chikmagalur CMC	28	1	14	1.4	9
34	Gokak CMC	20	1	1	0.1	3
35	Hospet CMC	80	2	2	1.8	11
36	Kolar CMC	40	2	13	3.0	38
37	Rabkavi-Banhatti CMC	48	4	1	2.3	50
38	Ramanagaram CMC	17	1	7	6.8	150
Kerala						
39	Changanessary MC	125	9.3	2	3.9	98
40	Payyanur M	17	0.3	1	0.1	7
41	Taliparamba M	24	1	2	0.5	125
42	Thrissur MC	12	1	4	34.1	189
Madhya Pradesh						
43	Hoshangabad M	19	1	6	34.6	427
44	Itarsi M	n.a.	n.a.	4	20.0	341
45	Khargone M	33	3	3	6.0	46
46	Mandsaur M	32	3	6	4.5	50
47	Nagda M	n.a.	n.a.	3	n.a.	n.a.

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
48	Neemuch M	88	7	7	5.0	85
49	Sehore M	60	3	2	2.3	42
50	Shahdol M	45	2	3	2.0	43
51	Vidisha M	36	6	4	2.5	28
Maharashtra						
52	Amalner MCI	13	1	2	3.1	21
53	Ballarpur MCI	50	6	2	1.7	24
54	Bhandara M	20	2	1	2.7	30
55	Kamptee MCI	8	2	2	2.4	67
56	Manmad MCI	70	3	6	4.1	57
57	Ratnagiri MCI	18	2	6	77.6	970
58	Satara MCI	111	14	0	9.0	82
59	Virar MCI	35	2	4	2.0	22
Orissa						
60	Balangir M	21	n.a.	6	6.2	85
61	Bhadrak M	22	0	0	n.a.	n.a.
Punjab						
62	Ferozpur MCI	70	8	6	3.6	19
63	Kapurthala M	101	6	4	1.8	13
64	Mansa MCI	31	3	2	0.9	11
65	Phagwara MCI	87	7	6	3.0	20
66	Sangrur MCI	71	4	2	0.7	5
Rajasthan						
67	Banswara M	n.a.	n.a.	14	n.a.	n.a.
68	Barmer M	210	44	6	4.0	62
69	Bundi M	90	3	20	7.2	90
70	Churu M	124	4	6	3.5	45
71	Hanumangarh M	119	9	4	13.5	188

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1	2	3	4	5	6	
72	Sawai Madhopur M	12	1	9	4.2	54
Tamil Nadu						
73	Ambur M	75	5	1	1.8	32
74	Arakkonam M	65	7	3	1.2	29
75	Attur M	46	2	3	0.3	10
76	Cumbum M	44	n.a.	4	1.6	59
77	Dharmapuri M	41	4	2	2.3	77
78	Guduivattam M	45	10	3	1.8	32
79	Nagapattinam M	100	7	5	3.6	46
80	Pudukkottai M	66	5	4	7.4	94
81	Sivakasi M	70	10	5	3.0	58
82	Srivilliputtur M	38	7	2	2.2	64
83	Tindivanam MC	25	1	2	0.1	8
84	Udhagamandalam M	n.a.	n.a.	n.a.	n.a.	n.a.
Uttar Pradesh						
85	Auraiya MB	15	2	4	3.1	69
86	Balrampur MB	45	5	3	3.1	110
87	Basti MB	60	3	3	0.1	1
88	Bhadohi MB	47	16	2	1.0	25
89	Chandpur MB	21	9	1	0.3	10
90	Etah MB	120	6	2	1.7	41
91	Ghazipur MB	128	13	6	7.0	44
92	Gonda MB	92	15	4	5.0	56
93	Lakhimpur MB	30	3	4	2.3	19
94	Lalitpur MB	146	11	3	4.2	49
95	Mughalsarai MB	32	16	2	0.3	6
96	Nawabganj-Barabanki MB	70	9	3	2.7	29
97	Orai MB	75	5	4	1.4	17
98	Roorkee MB	80	n.a.	5	5.8	31

Sl. No.	City/Town	Length of Distribution Network (km.)	Length per sq.km.	No. of storage reservoirs	Storage capacity (million litres)	% of storage capacity to water supplied
1		2	3	4	5	6
West Bengal						
99	Bishnupur M	12	2	2	0.9	35
100	Chakdaha M	52	9	3	1.4	72
101	Contai M	42	3	1	0.6	39
102	Cooch Behar M	102	12	3	1.0	10
103	Darjeeling M	207	20	3	n.a.	n.a.
104	Jalpaiguri M	104	8	6	2.8	57
105	Jangipur M	14	4	1	1.0	33
106	Katwa M	1	0	1	0.7	45
107	Raniganj M	30	n.a.	4	1.4	27
Small States						
Nagaland						
108	Kohima TC	n.a.	n.a.	26	3.6	123
Himachal Pradesh						
109	Shimla M.Corp.	105	4	33	23.2	83
Union Territories						
110	Port Blair MCI	80	6	36	10.7	72
Others (Smaller than Class II towns)						
Small States						
Arunachal Pradesh						
111	Itanagar CT	250	n.a.	n.a.	n.a.	n.a.
Goa						
112	Panaji MCI	2	1	8	10.0	85
Union Territories						
113	Daman MCI	50	9	10	1.4	18
114	Kavarathi NMCT	20	5	0	n.a.	n.a.
115	Silvassa	11	4	1	0.4	25
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>						

A-9

WATER TREATMENT, 1999

A-9 : Water Treatment, 1999											
Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							Treatment plant	Distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
Metropolitan Cities											
1	Ahmedabad M.Corp.	Chlorine	Corporation	Yes	-	daily	Nil	daily	1	77	77
2	Bangalore M.Corp.	Chlorine	Municipality	No	No	yearly	Nil	Nil	4	724	706
3	Bhopal M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	11	n.a.	236
4	Calcutta M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	2	1090	1035
5	Chennai M.Corp.	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	4	620	440
6	Coimbatore M.Corp.	Chlorine	PHED	Yes	-	Nil	Nil	daily	2	226	105
7	Delhi M.Corp.	Alum & Chlorine	DJB	Yes	-	daily	daily	daily	4	2320	2320
8	Greater Mumbai M.Corp.	Alum & Chlorine	Corporation	No	No	daily	daily	daily	4	3197	2978
9	Hyderabad M.Corp.	n.a.	HWS & SB	Yes	-	daily	daily	daily	6	752	678
10	Indore M.Corp.	A+C+BP+Others	Corporation	Yes	-	daily	daily	daily	3	238	238
11	Jaipur M.Corp.	Alum & Chlorine	PHED	Yes	-	Nil	daily	daily	2	73	83
12	Kanpur M.Corp.	Alum & Chlorine	Jal Sansthan	Yes	-	daily	daily	daily	2	280	190
13	Kochi M.Corp.	Alum & Chlorine	KWA	Yes	-	daily	daily	daily	3	190	190
14	Lucknow M.Corp.	Alum, Chlorine & B.P.	Jal Sansthan	Yes	-	Nil	daily	daily	2	280	240
15	Ludhiana M.Corp.	Chlorine	Corporation	Yes	-	Nil	Nil	daily	0	-	-
16	Madurai M.Corp.	Chlorine	Kings Institute, Guindy, Chennai	No	No	daily	daily	daily	1	72	65
17	Nagpur M.Corp.	Alum & Chlorine	Corporation	No	Yes	Nil	weekly	daily	3	430	370
18	Pune M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	3	725	650
19	Surat M.Corp.	Alum & Chlorine	Corporation	Yes	-	hourly	hourly	twice daily	4	188	188
20	Vadodara M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	1	228	228
21	Varanasi M.Corp.	Alum, Chlorine & B.P.	Jal Sansthan	Yes	-	daily	daily	daily	26	250	110
22	Visakhapatnam M.Corp.	Alum & Chlorine	Corporation	No	Yes	Nil	daily	daily	4	150	150

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
CLASS I											
Andhra Pradesh											
1	Anantapur MCI	n.a.	Municipality	No	Yes	daily	daily	daily	2	10	10
2	Chittoor M	Chlorine	Municipality	No	No	nil	Nil	Nil	0	0	0
3	Cuddapah MCI	Nil	Council	No	No	Nil	Nil	Nil	0	0	0
4	Eluru M	Alum & Chlorine	Municipality	No	No	Nil	twice a week	twice a week	1	11	11
5	Guntur MCI	Alum, Chlorine & B.P.	Corporation	Yes	-	Nil	daily	daily	3	66	54
6	Hindupur M	Bleaching Powder	Municipality	No	No	twice weekly	Nil	Nil	0	0	0
7	Kakinada M	Alum & Chlorine	Municipality	No	No	Nil	monthly	monthly	2	17	19
8	Kurnool MCI	n.a.	Corporation	Yes	-	daily	daily	daily	3	7	7
9	Machilipatnam M	Alum, Chlorine & B.P.	Municipality	Yes	-	monthly	monthly	monthly	3	24	21
10	Nandyal MCI	Alum & Chlorine	Municipality	No	No	daily	daily	daily	1	5	5
11	Nellore MCI	Alum & Chlorine	Municipality	Yes	-	Nil	Nil	daily	0	0	0
12	Nizamabad M	Alum & Chlorine	Municipality	No	No	daily	Nil	Nil	3	n.a.	n.a.
13	Ongole MCI	Alum & Chlorine	Municipality	Yes	-	Nil	daily	weekly	2	19	16
14	Qutubullapur M	Alum & Chlorine	HWS & SB	Yes	-	Nil	daily	daily	0	0	0
15	Rajahmundry M.Corp.	Alum & Chlorine	Corporation	No	No	Nil	every 3 months	every 3 months	3	33	33
16	Tenali M	Alum & Chlorine	Municipality	Yes	-	Nil	fort-nightly	fort-nightly	1	n.a.	n.a.
17	Tirupati MCI	Alum & Chlorine	Council	No	Yes	n.a.	n.a.	n.a.	2	16	13
18	Vijaywada M.Corp.	Alum, Chlorine & B.P.	Corporation	Yes	-	Nil	fort-nightly	fort-nightly	3	100	87
19	Warangal M.Corp.	Rapid gravity filters	Corporation	No	Yes	daily	daily	alternate day	3	68	55

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
Bihar											
20	Bihar Sharif M	Chlorine	PHED	Yes	-	Nil	Nil	daily	0	0	0
21	Chhapra M	Alum & B.P.	Council	Yes	-	n.a.	n.a.	n.a.	0	0	0
22	Gaya M.Corp.	Chlorine	PHED	No	Yes	Nil	Nil	monthly	0	0	0
23	Katihar M	Chlorine	PHED	Yes	-	Nil	Nil	daily	0	0	0
24	Munger M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
25	Ranchi M.Corp.	Chlorine	PHED	No	Yes	daily	daily	daily	7	n.a.	0
Gujarat											
26	Anand M	Chlorine	Municipality	No	Yes	weekly	Nil	Nil	0	0	0
27	Bharuch M	Alum & Chlorine	Municipality	Yes	-	daily	daily	Nil	1	22	18
28	Bhavnagar M.Corp.	Chlorine	Corporation	Yes	-	daily	daily	weekly	2	58	50
29	Bhuj M	Chlorine	Municipality	No	Yes	monthly	Nil	Nil	0	0	0
30	Jamnagar M.Corp.	Alum	Corporation	Yes	-	daily	daily	weekly	3	85	85
31	Junagadh M	Bleaching Powder	Municipality	No	No	Nil	Nil	Nil	1	3	4
32	Nadiad M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
33	Navsari M	Chlorine	Municipality	No	No	Nil	Nil	monthly	0	0	0
34	Porbandar M	Chlorine	GWSSB	Yes	-	monthly	daily	monthly	1	30	10
35	Rajkot M.Corp.	Chlorine	Corporation	Yes	-	daily	daily	alternate day	3	93	107
36	Surendranagar M	Alum & Chlorine	GWSSB	No	No	every 6 months	monthly	Nil	2	18	6
Haryana											
37	Ambala MCI	Alum & Chlorine	PHD	Yes	-	daily	daily	daily	2	24	16
38	Faridabad M.Corp.	Chlorine	Corporation	No	No	Nil	Nil	Nil	0	0	0
39	Gurgaon MCI	Chlorine	PHED	Yes	-	Nil	daily	weekly	0	0	0

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
40	Hisar MCI	Alum & Chlorine	PHD	Yes	-	every 6 months	daily	alternate day	3	29	25
41	Karnal MCI	Chlorine	PWD, PHD	Yes	-	Nil	Nil	daily	0	0	0
42	Rohtak MCI	Chlorine	PWD, PHD	Yes	-	every 6 months	daily	daily	2	39	32
Jammu & Kashmir											
43	Jammu M.Corp.	Chlorine	PHED	Yes	-	0	daily	bi-monthly	3	63	38
Karnataka											
44	Belgaum M.Corp.	Alum & Chlorine	Corporation	Yes	-	Nil	daily	Nil	4	32	29
45	Bellary CMC	Alum & Chlorine	Municipality	Yes	-	twice daily	daily	fortnightly	3	n.a.	10
46	Davangere MCI	Alum & Chlorine	Council	No	Yes	Nil	daily	weekly	1	27	27
47	Gadag-Betigeri CMC	Alum & Chlorine	KWSS & DB	No	No	Nil	Nil	Nil	1	16	16
48	Gulbarga M.Corp.	Alum & Chlorine	KWSS & DB	No	Yes	Nil	weekly	daily	2	45	25
49	Hubli-Dharwar M.Corp.	Alum & Chlorine	KWSS & DB	Yes	-	Nil	daily	Nil	2	n.a.	n.a.
50	Mandya M	Alum & Chlorine	KWSS & DB	No	Yes	Nil	daily	daily	2	14	13
51	Mangalore M.Corp.	Alum & Chlorine	Corporation	No	Yes	daily	daily	daily	2	78	78
52	Mysore M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	3	138	136
53	Shimoga CMC	Alum & Chlorine	Council	Yes	-	weekly	weekly	Nil	1	34	34
54	Tumkur M	Alum & Chlorine	Municipality	No	No	Nil	daily	daily	2	33	12
Kerala											
55	Alappuzha MC	Bleaching Powder	KWA	No	No	Nil	Nil	Nil	9	15	15
56	Kollam MC	Alum, Chlorine & B.P.	KWA	Yes	-	Nil	daily	daily	2	18	18
57	Kozhikode M.Corp.	Chlorine	KWA	Yes	-	Nil	daily	weekly	4	72	72
58	Thalaserry M	Alum & Chlorine	KWA	Yes	-	Nil	daily	daily	1	27	27
59	Thiruvananthapuram M.Corp.	n.a.	KWA	Yes	-	daily	daily	weekly	4	260	180

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
Madhya Pradesh											
60	Bhind M	Bleaching Powder	PHE	Yes	-	Nil	Nil	weekly	0	0	0
61	Burhanpur M.Corp.	Bleaching Powder	Corporation	No	No	Nil	Nil	Nil	0	0	0
62	Dewas M.Corp.	Alum & Chlorine	Corporation	No	No	Nil	every 3 months	every 3 months	1	n.a.	n.a.
63	Guna M	Chlorine	PHE	Yes	-	daily	daily	daily	1	12	12
64	Gwalior M.Corp.	Chlorine	Corporation	Yes	-	weekly	daily	monthly	2	145	136
65	Jabalpur M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	3	200	90
66	Khandwa M	Alum & Chlorine	Corporation	No	Yes	daily	daily	daily	1	24	16
67	Morena M	Bleaching Powder	Municipality	No	No	Nil	Nil	monthly	0	0	0
68	Murwara (Katni) M.Corp.	Alum & Chlorine	Corporation	No	No	Irregular	Irregular	Irregular	1	9	7
69	Ratlam M.Corp.	Alum & Chlorine	PHE	Yes	-	Nil	daily	weekly	2	27	18
70	Rewa M.Corp.	Alum, Chlorine & B.P.	PHE	Yes	-	Nil	daily	daily	2	27	20
71	Satna M.Corp.	Alum & Chlorine	PHE	Yes	-	weekly	daily	daily	1	14	14
72	Shivpuri M	Alum & Chlorine	Municipality	Yes	-	0	daily	daily	3	5	6
Maharashtra											
73	Amravati M.Corp.	Alum & Chlorine	MJP	Yes	-	monthly	weekly	daily	1	95	60
74	Aurangabad M.Corp.	Alum, Chlorine & B.P.	Corporation	Yes	-	monthly	twice weekly	daily	2	168	138
75	Bhusawal MCI	Alum, Chlorine & B.P.	Council	Yes	-	Nil	daily	daily	2	22	22
76	Chandrapur MCI	Chlorine & B.P.	KWA	Yes	-	n.a.	n.a.	n.a.	2	52	30
77	Dhule MCI	Chlorine	Council	Yes	-	every 3 months	daily	daily	3	71	31
78	Ichalkaranji MCI	Alum & Chlorine	Council	Yes	-	daily	daily	daily	1	54	32
79	Jalgaon MCI	Alum & Chlorine	Council	Yes	-	Nil	daily	Nil	1	30	26

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
80	Kolhapur M.Corp.	Chlorine, BP & Others	Corporation	No	Yes	weekly	weekly	daily	3	85	85
81	Nanded Waghala M.Corp.	Alum & Chlorine	Corporation	No	No	monthly	weekly	daily	3	98	37
82	Nashik M.Corp.	Alum & Chlorine	Corporation	No	Yes	daily	daily	daily	3	158	158
83	Parbhani MCI	Alum & Chlorine	Council	No	No	Nil	daily	daily	1	22	15
84	Solapur M.Corp.	Alum & Chlorine	Corporation	Yes	-	daily	daily	daily	3	216	125
85	Wardha M	Alum & B.P.	Municipality	Yes	-	Nil	daily	daily	2	31	31
86	Yavatmal MCI	Alum & Chlorine	MJP	Yes	-	monthly	daily	daily	1	16	13
Orissa											
87	Bhubaneswar M.Corp.	Chlorine	PHED	Yes	-	daily	daily	daily	5	222	150
88	Cuttack M.Corp.	Chlorine	PHED	Yes	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
89	Puri M	Chlorine	PHED	Yes	-	monthly	Nil	monthly	0	0	0
90	Rourkela M	n.a.	n.a.	No	Yes	n.a.	n.a.	n.a.	2	18	18
91	Sambalpur M	Chlorine	PHED	No	Yes	daily	daily	daily	3	19	19
Punjab											
92	Amritsar M.Corp.	Chlorine	Corporation	Yes	-	Nil	Nil	Nil	0	0	0
93	Bathinda MCI	Alum & Chlorine	PHED	Yes	-	Nil	Nil	twice weekly	1	18	17
94	Hoshiarpur MCI	Chlorine	Council	No	No	Nil	Nil	Nil	0	0	0
95	Jalandhar M.Corp.	Chlorine	Corporation	No	Yes	Nil	Nil	every 3 months	0	0	0
96	Moga MCI	Chlorine	Council	No	No	Nil	Nil	Nil	0	0	0
97	Pathankot MCI	Chlorine	Council	No	No	Nil	Nil	daily	0	0	0
98	Patiala M.Corp.	Chlorine	Corporation	Yes	-	Nil	Nil	monthly	0	0	0
Rajasthan											
99	Ajmer MCI	Chlorine	PHED	Yes	-	Nil	daily	daily	2	136	52

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
100	Alwar M	Chlorine	PHED	Yes	-	Nil	Nil	daily	0	0	0
101	Beawar M	Alum & Chlorine	Corporation	Yes	-	Nil	daily	Nil	0	0	0
102	Bhilwara M	Chlorine	PHED	Yes	-	daily	daily	daily	2	13	5
103	Bikaner M	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	1	33	33
104	Jodhpur M.Corp.	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	6	141	141
105	Kota M.Corp.	Chlorine	PHED	Yes	-	daily	daily	daily	5	166	160
106	Sriganganagar M	Chlorine	PHED	Yes	No	daily	daily	daily	3	22	22
Tamil Nadu											
107	Cuddalore M	Nil	Council	No	No	Nil	Nil	Nil	0	0	0
108	Dindigul M	Bleaching Powder	Municipality	No	No	daily	Nil	twice weekly	n.a.	n.a.	n.a.
109	Erode M	Chlorine	Municipality	No	No	Nil	daily	daily	1	22	22
110	Kanchipuram M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
111	Kumbakonam M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	Nil	weekly	0	0	0
112	Nagercoil M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	daily	daily	2	9	9
113	Rajapalayam M	Chlorine	Municipality	No	No	monthly	monthly	monthly	1	8	8
114	Salem M.Corp.	Chlorine	PHED	No	No	Nil	daily	daily	2	50	50
115	Thanjavur M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	daily	daily	0	0	0
116	Tiruchirapalli M.Corp.	Alum, Chlorine & B.P.	Corporation	No	Yes	Nil	Nil	daily	0	0	0
117	Tirunelveli M.Corp.	Chlorine	P. H. Preventive Medicine, Chennai	Yes	-	Nil	weekly	daily	1	4	4
118	Tiruvannamalai M	Alum & Chlorine	Municipality	Yes	-	every 4 months	every 4 months	every 4 months	2	18	14

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
119	Tiruppur M	Alum	Municipality	No	No	daily	daily	daily	2	49	29
120	Tuticorin M	Alum & Chlorine	TWAD Board	No	No	Nil	Nil	weekly	0	0	0
121	Vellore M	Chlorine	Municipality	Yes	-	Nil	Nil	daily	0	0	0
Uttar Pradesh											
122	Agra M.Corp.	Alum & Chlorine	Jal Sansthan	Yes	-	twice daily	four times a day	twice daily	2	394	250
123	Aligarh M.Corp.	Chlorine	Corporation	No	Yes	Nil	Nil	twice daily	0	0	0
124	Allahabad M.Corp.	Alum, Chlorine & B.P.	Jal Sansthan	Yes	-	Nil	daily	daily	3	135	80
125	Bareilly M.Corp.	Chlorine	PHED	Yes	-	daily	Nil	daily	0	0	0
126	Etawah MB	Chlorine	Municipality	No	No	Nil	Nil	twice daily	0	0	0
127	Faizabad MB	Chlorine	Municipality	No	No	Nil	Nil	twice daily	0	0	0
128	Firozabad MB	Chlorine	Municipality	Yes	-	Nil	weekly	daily	0	0	0
129	Ghaziabad M.Corp.	Chlorine	Corporation	Yes	-	Nil	Nil	daily	0	0	0
130	Gorakhpur M.Corp.	Chlorine	Corporation	No	No	Nil	Nil	Nil	0	0	0
131	Haldwani-cum-Kathgodam	MB	Chlorine Kumaun Jal Sansthan	No	No	daily	daily	daily	4	20	19
132	Hapur MB	Chlorine	Municipality	No	No	Nil	Nil	Nil	0	0	0
133	Hardwar MB	Chlorine	Municipality	No	No	Nil	every 3 months	daily	0	0	0
134	Jhansi MB	Alum & Chlorine	Jal Sansthan	No	No	daily	daily	daily	5	n.a.	43
135	Mathura MB	Chlorine	Municipality	No	Yes	Nil	Nil	Nil	0	0	0
136	Meerut M.Corp.	Chlorine	Corporation	No	No	Nil	Nil	Nil	0	0	0
137	Mirzapur MB	Alum & Chlorine	Municipality	Yes	-	daily	daily	daily	1	25	25

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
138	Moradabad M.Corp.	Chlorine	Corporation	No	No	Nil	daily	daily	14	55	48
139	Muzaffarnagar MB	Chlorine	Municipality	No	No	Nil	daily	daily	0	0	0
140	Rae Bareli MB	Bleaching Powder	Municipality	No	No	Nil	n.a.	daily	0	0	0
141	Rampur MB	Chlorine & B.P.	Municipality	No	No	Nil	Nil	Nil	0	0	0
142	Saharanpur MB	Chlorine	Municipality	No	No	Nil	daily	daily	0	0	0
143	Sitapur MB	Chlorine	PHED	No	No	Nil	Nil	daily	0	0	0
144	Unnao MB	Chlorine	Municipality	No	No	Nil	Nil	twice daily	0	0	0
West Bengal											
145	Asansol M.Corp.	Alum & Chlorine	Corporation	No	Yes	monthly	monthly	monthly	4	54	52
146	Baharampur M	Chlorine	Housing & Urban Dev. Deptt.	Yes	-	Nil	Nil	Nil	1	33	15
147	Balurghat M	Alum & Chlorine	BWSSB	Yes	-	Nil	daily	daily	0	0	0
148	Bankura M	Chlorine	PHED	Yes	-	weekly	Nil	Nil	0	0	0
149	Barasat M	Chlorine	PHED	No	No	Nil	Nil	daily	0	0	0
150	Burdwan M	Alum & Others	Municipality	No	No	Nil	twice daily	fort-nightly	1	4	3
151	Halisahar M	Nil	N.App.	No	No	Nil	Nil	Nil	0	0	0
152	Krishnagar M	Alum & Chlorine	Municipality	No	No	Nil	monthly	monthly	1	6	6
153	Midnapore M	Chlorine	Municipality	No	No	Nil	Nil	Nil	0	0	0
154	North Barrackpore M	Chlorine	CMC	No	No	Nil	Nil	Nil	0	0	0
155	Santipur M	Chlorine	PHED	No	No	Nil	Nil	Nil	0	0	0
156	Silliguri M.Corp.	Alum & Chlorine	PHED	Yes	-	weekly	daily	weekly	1	55	10

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1		2	3	4	5	6	7	8	9	10	11
Small States											
Assam											
157	Guwahati M.Corp.	Alum & B.P.	Public Analyst, Govt. of Assam	No	Yes	every 6 months	monthly	monthly	3	72	50
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur											
159	Imphal MCI	Lime	PHED	No	Yes	monthly	monthly	monthly	14	74	58
Meghalaya											
160	Shillong MB	Alum & Chlorine	PHED	Yes	-	monthly	daily	monthly	2	35	35
Mizoram											
161	Aizwal NM	n.a.	PHED	No	No	daily	daily	daily	1	12	12
Tripura											
162	Agartala MCI	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	1	14	14
Union Territories											
163	Chandigarh M.Corp.	Chlorine & B.P.	Municipality	No	No	Nil	Nil	daily	6	295	227
164	Pondicherry M	Chlorine	PWD	No	No	Nil	Nil	daily	0	0	0
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>											

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
CLASS II											
Andhra Pradesh											
1	Anakapalle M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
2	Dharmavaram M	Chlorine	Municipality	No	Yes	Nil	Nil	Nil	0	0	0
3	Gudur MCI	Alum & Chlorine	Council	No	No	Nil	Nil	Nil	0	0	0
4	Kapra M	n.a.	HWS & SB	No	No	daily	Nil	daily	0	0	0
5	Kavali MCI	Alum & Chlorine	Municipality	No	No	daily	Nil	daily	0	0	0
6	Madanapalle M	Chlorine	Municipality	Yes	-	daily	Nil	daily	0	0	0
7	Narasaraopet M	Alum, Chlorine & B.P.	Municipality	Yes	-	daily	daily	daily	1	5	5
8	Rajendra nagar MCI	Alum & Chlorine	PHD	Yes	-	daily	daily	daily	1	2	2
9	Sangareddy MCI	Nil	Council	No	No	Nil	Nil	twice daily	0	0	0
10	Srikakulam MCI	Chlorine	Municipality	No	No	fortnightly	daily	daily	0	0	0
11	Srikalahasti M	Nil	Municipality	No	No	Nil	Nil	Nil	0	0	0
12	Suryapet MCI	Alum & Chlorine	Council	No	Yes	monthly	daily	daily	2	5	5
Bihar											
13	Buxar M	Nil	PHED	No	No	Nil	Nil	Nil	0	0	0
14	Deoghar M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
15	Hajipur M	Chlorine	PHED	Yes	-	monthly	Nil	monthly	0	0	0
16	Hazaribagh M	Chlorine	PHED	Yes	-	every 6 months	every 6 months	every 6 months	2	7	7
17	Jehanabad M	Chlorine	Municipality	No	No	Nil	Nil	daily	2	n.a.	n.a.
18	Madhubani M	Chlorine	Municipality	Yes	-	Nil	Nil	weekly	0	0	0
19	Mokama M	n.a.	PHED	No	No	Nil	Nil	Nil	0	0	0
Gujarat											
20	Amreli M	Alum & Chlorine	Municipality	No	No	Nil	daily	weekly	1	12	9

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
21	Ankleswar M	Chlorine	Municipality	No	No	Nil	Nil	weekly	0	0	0
22	Dabhoi M	Chlorine	Baroda M.Corp.	Yes	-	n.a.	n.a.	n.a.	0	0	0
23	Dohad M	Alum & Chlorine	Municipality	No	Yes	Nil	daily	daily	1	10	7
24	Gondal M	Bleaching Powder	Municipality	No	Yes	Nil	daily	daily	3	4	4
25	Jetpur M	Alum & Chlorine	Municipality	No	Yes	Nil	daily	daily	1	19	11
26	Mahesana M	Chlorine	Municipality	No	No	Nil	Nil	weekly	0	0	0
27	Palanpur M	Chlorine	Municipality	No	No	every 6 months	Nil	Nil	0	0	0
Haryana											
28	Jind MCI	Chlorine	PHD	Yes	-	Nil	daily	daily	0	0	0
29	Kaithal MCI	Chlorine	PHD	No	Yes	Nil	Nil	daily	0	0	0
30	Rewari MCI	Alum & B.P.	PHD	Yes	-	monthly	daily	twice weekly	5	14	14
31	Thanesar MCI	Chlorine	PHED	No	Yes	Nil	monthly	monthly	0	0	0
Karnataka											
32	Bagalkot CMC	Alum & Chlorine	Municipality	No	No	every 3 months	every 3 months	every 6 months	1	n.a.	n.a.
33	Chikmagalur CMC	Chlorine	Municipality	No	No	Nil	Nil	Nil	1	n.a.	6
34	Gokak CMC	Alum & Chlorine	Council	Yes	-	Nil	daily	daily	2	5	4
35	Hospet CMC	Chlorine & B.P.	Council	Yes	-	Nil	alternate day	Nil	1	16	16
36	Kolar CMC	Alum & Chlorine	Council	No	No	daily	daily	daily	1	n.a.	4
37	Rabkavi-Banhatti CMC	Alum & Chlorine	Council	No	No	daily	daily	weekly	1	7	4
38	Ramanagaram CMC	Alum & B.P.	Council	No	No	monthly	monthly	monthly	2	n.a.	5
Kerala											
39	Changanessary MC	Alum & Chlorine	CMWSSB	Yes	-	daily	daily	daily	2	24	4

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
40	Payyanur M	Bleaching Powder	KWA	Yes	-	Nil	Nil	every 2 months	0	0	0
41	Taliparamba M	Chlorine & B.P.	KWA	Yes	-	Nil	Nil	every 3 months	0	0	0
42	Thrissur MC	Alum & Chlorine	KWA	Yes	-	Nil	daily	daily	2	51	18
Madhya Pradesh											
43	Hoshangabad M	Nil	Municipality	No	No	Nil	Nil	Nil	0	0	0
44	Itarsi M	Nil	Municipality	No	No	Nil	Nil	on demand	0	0	0
45	Khargone M	Alum & Chlorine	Municipality	No	No	Nil	Nil	Nil	1	11	6
46	Mandsaur M	Alum & Chlorine	Municipality	Yes	-	daily	daily	daily	1	14	8
47	Nagda M	Alum & Chlorine	Municipality	No	No	Nil	monthly	Nil	1	0	0
48	Neemuch M	Chlorine	Municipality	No	Yes	daily	daily	daily	1	7	6
49	Sehore M	Alum & Chlorine	Municipality	Yes	-	monthly	daily	daily	1	8	5
50	Shahdol M	Chlorine	Municipality	Yes	-	Nil	monthly	fort-nightly	1	7	5
51	Vidisha M	Bleaching Powder	Municipality	No	Yes	twice daily	daily	daily	1	9	9
Maharashtra											
52	Amalner MCI	Alum & Chlorine	Council	Yes	-	daily	daily	weekly	1	11	10
53	Ballarpur MCI	Chlorine	Municipality	No	No	Nil	Nil	daily	1	7	7
54	Bhandara M	Alum & Chlorine	Municipality	Yes	-	Nil	daily	daily	1	9	9
55	Kamptee MCI	Alum & Chlorine	Corporation	No	No	Nil	Nil	Nil	0	0	0
56	Manmad MCI	Alum & Chlorine	Council	Yes	-	daily	daily	Twice a week	2	16	7
57	Ratnagiri MCI	Alum	Council	Yes	-	Nil	Nil	daily	2	17	8
58	Satara MCI			No	No	0	0	0	1	12	5

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
59	Virar MCI	Alum & Chlorine	Council	Yes	-	daily	daily	daily	2	22	9
Orissa											
60	Balangir M	Alum & Chlorine	MJP	Yes	-	daily	daily	daily	1	18	7
61	Bhadrak M	Chlorine	PHED	No	Yes	Nil	Nil	Nil	0	0	0
Punjab											
62	Firozpur MCI	Chlorine	PWS & SB	Yes	-	Nil	Nil	daily	0	0	0
63	Kapurthala M	Chlorine	Council	No	No	Nil	Nil	Nil	0	0	0
64	Mansa MCI	Alum & B.P.	PWS & SB	Yes	-	daily	daily	daily	1	11	8
65	Phagwara MCI	Chlorine	Council	No	No	Nil	Nil	Nil	0	0	0
66	Sangrur MCI	Chlorine	PWS & SB	No	No	Nil	Nil	alternate day	0	0	0
Rajasthan											
67	Banswara M	Nil	N.App.	No	No	Nil	Nil	Nil	2	5	5
68	Barmer M	Chlorine	Municipality	Yes	-	Nil	Nil	daily	0	0	0
69	Bundi M	Chlorine	PHED	Yes	-	Nil	daily	daily	0	0	0
70	Churu M	Alum & Chlorine	TWAD Board & Kings Institute, Guindy, Chennai	Yes	-	Nil	daily	daily	0	0	0
71	Hanumangarh M	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	2	12	12
72	Sawai Madhopur M	Chlorine	PHED	Yes	-	daily	daily	daily	1	8	8
Tamil Nadu											
73	Ambur M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
74	Arakkonam M	Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
75	Attur M	Alum & Chlorine	Municipality	No	No	Nil	Nil	daily	0	0	0
76	Cumbum M	Chlorine	PHED	No	No	Nil	Nil	Nil	0	0	0

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
77	Dharmapuri M	Chlorine	Water Analyst, Coimbatore	Yes	-	every 6 months	every 6 months	every 6 months	1	3	3
78	Guduivattam M	Alum & Chlorine	Municipality	No	No	daily	Nil	daily	0	0	0
79	Nagapattinam M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	Nil	weekly	0	0	0
80	Pudukkottai M	Bleaching Powder	TWAD Board	No	No	daily	Nil	daily	0	0	0
81	Sivakasi M	Chlorine	Municipality	No	No	Nil	daily	daily	1	7	5
82	Srivilliputtur M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	daily	daily	0	0	0
83	Tindivanam MC	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	Nil	twice weekly	0	0	0
84	Udhagamandalam M	Alum & Chlorine	Water Analyst, Coimbatore	No	No	Nil	daily	daily	1	5	4
Uttar Pradesh											
85	Auraiya MB	Chlorine	Municipality	No	No	Nil	Nil	twice daily	0	0	0
86	Balrampur MB	Chlorine	PHED	Yes	-	Nil	Nil	daily	0	0	0
87	Basti MB	Alum & Chlorine	PWS & SB	No	No	Nil	daily	weekly	0	0	0
88	Bhadohi MB	Chlorine	Municipality	No	No	Nil	daily	daily	0	0	0
89	Chandpur MB	Alum & Chlorine	Council	Yes	-	daily	daily	daily	0	0	0
90	Etah MB	Chlorine	Jal Sansthan	No	No	Nil	daily	daily	2	n.a.	n.a.
91	Ghazipur MB	Bleaching Powder	Municipality	Yes	-	Nil	daily	daily	0	0	0
92	Gonda MB	Bleaching Powder	Municipality	Yes	-	Nil	Nil	daily	0	0	0
93	Lakhimpur MB	Chlorine	Municipality	No	No	Nil	Nil	Nil	0	0	0
94	Lalitpur MB	Alum & Chlorine	Jal Sansthan	No	No	every 4 months	daily	daily	2	16	9
95	Mughalsarai MB	Bleaching Powder	Municipality	No	No	Nil	monthly	monthly	0	0	0

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1	2	3	4	5	6	7	8	9	10	11	
96	Nawabganj-Barabanki MB	Chlorine	Municipality	No	No	Nil	Nil	twice daily	0	0	0
97	Orai MB	Chlorine	Jal Sansthan	No	No	Nil	Nil	twice daily	0	0	0
98	Roorkee MB	Chlorine	Municipality	No	No	Nil	Nil	monthly	0	0	0
West Bengal											
99	Bishnupur M	Chlorine	PHED	No	No	Nil	Nil	Nil	0	0	0
100	Chakdaha M	Alum & Chlorine	PHED	Yes	-	daily	daily	daily	0	0	0
101	Contai M	Chlorine	PHED	No	No	Nil	Nil	yearly	0	0	0
102	Cooch Behar M	Chlorine	Kings Institute, Guindy, Chennai	No	No	Nil	Nil	daily	0	0	0
103	Darjeeling M	Chlorine & Others	Municipality	No	No	Nil	Nil	Nil	1	9	5
104	Jalpaiguri M	Chlorine	Municipality	No	Yes	Nil	Nil	daily	4	6	5
105	Jangipur M	Alum & Chlorine	PHED	No	No	Nil	monthly	monthly	1	4	3
106	Katwa M	Chlorine	PHED	No	No	Nil	Nil	Nil	0	0	0
107	Raniganj M	Alum & Chlorine	PHED	No	No	Nil	daily	Nil	1	7	5
Small States											
Himachal Pradesh											
109	Shimla M.Corp.	Alum & Chlorine	PHD	Yes	-	daily	daily	daily	7	43	30
Nagaland											
108	Kohima TC	Alum & Chlorine	n.a.	No	Yes	Nil	Nil	Nil	1	29	29
Union Territories											
110	Port Blair MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Others (Smaller than Class II towns)											
Small States											
Arunachal Pradesh											
111	Itanagar CT	Alum & Chlorine	PHED	No	Yes	Nil	Nil	Nil	0	0	0

Sl. No.	City/Town	Type of treatment provided	Water quality monitoring agency	Laboratory facilities adequate	If no, any future plans	Periodicity of monitoring raw water	Periodicity of monitoring at		Water treatment plants		
							treatment plant	distribution network	No.	Installed capacity (mld)	Present production (mld)
1		2	3	4	5	6	7	8	9	10	11
Goa											
112	Panaji MCI	Alum, Chlorine & Others	PWD	Yes	-	daily	daily	daily	3	72	72
Union Territories											
113	Daman MCI	Alum & Chlorine	PWD	Yes	-	fort-nightly	daily	monthly	1	16	8
114	Kavarathi NMCT	Chlorine	LPWD	Yes	-	daily	Nil	daily	0	0	0
115	Silvassa	Rapid sand aeration	PWD	No	Yes	monthly	Nil	Nil	0	0	0
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>											

A-10

INSTITUTIONAL ARRANGEMENTS FOR WATER
SUPPLY, 1999

A-10 : Institutional Arrangements for Water Supply, 1999

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
Metropolitan Cities				
1	Ahmedabad M.Corp.	Corporation	Corporation	Corporation
2	Bangalore M.Corp.	BWSSB	BWSSB	BWSSB
3	Bhopal M.Corp.	Corporation	Corporation	Corporation
4	Calcutta M.Corp.	CMC, CMDA & CMWSA	CMC & CMWSA	CMC & CMWSA
5	Chennai M.Corp.	CMWSSB	CMWSSB	CMWSSB
6	Coimbatore M.Corp	TWAD Board	Corporation	Corporation
7	Delhi M.Corp.	DJB	DJB	DJB
8	Greater Mumbai M.Corp.	Corporation	Corporation	Corporation
9	Hyderabad M.Corp.	HMWS & SB	HMWS & SB	HMWS & SB
10	Indore M.Corp.	Corporation	Corporation	Corporation
11	Jaipur M.Corp.	PHED	PHED	PHED
12	Kanpur M.Corp.	Jal Nigam	Jal Sansthan	Jal Sansthan
13	Kochi M.Corp.	KWA	KWA	KWA
14	Lucknow M.Corp.	Jal Nigam	Jal Sansthan	Jal Sansthan
15	Ludhiana M.Corp.	PWS & SB	Corporation	Corporation
16	Madurai M.Corp.	TWAD Board	Corporation	Corporation
17	Nagpur M.Corp.	Corporation	Corporation	Corporation
18	Pune M.Corp.	Corporation	Corporation	Corporation
19	Surat M.Corp.	Corporation	Corporation	Corporation
20	Vadodara M.Corp.	Corporation	Corporation	Corporation
21	Varanasi M.Corp.	Jal Nigam	Jal Sansthan	Jal Sansthan
22	Visakhapatnam M.Corp.	PHED & Corporation	Corporation	Corporation

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
CLASS I				
Andhra Pradesh				
1	Anantapur MCI	PHED	Council	Council
2	Chittoor M	PHED	Municipality	Municipality
3	Cuddapah MCI	PHED	Council	Council
4	Eluru M	PHED	Municipality	Municipality
5	Guntur MCI	PHED	Corporation	Corporation
6	Hindupur M	PHED	Municipality	Municipality
7	Kakinada M	PHED	Municipality	Municipality
8	Kurnool MCI	PHED	Municipality	Municipality
9	Machilipatnam M	PHED	Municipality	Municipality
10	Nandyal MCI	PHED	Municipality	Municipality
11	Nellore MCI	PHED	Municipality	Municipality
12	Nizamabad M	Council	Council	Council
13	Ongole MCI	PHED	Municipality	Municipality
14	Qutubullapur M	HMWS & SB	HMWS & SB	HMWS & SB
15	Rajahmundry M.Corp.	PHED	Corporation	Corporation
16	Tenali M	PHED	Municipality	Municipality
17	Tirupati MCI	PHED	Council	Council
18	Vijaywada M.Corp.	PHED & Corporation	Corporation	Corporation
19	Warangal M.Corp.	PHED	Corporation	Corporation
Bihar				
20	Bihar Sharif M	Municipality	Municipality	Municipality
21	Chhapra M	PHED	PHED	Municipality
22	Gaya M.Corp.	Corporation	Corporation	Corporation
23	Katihar M	Municipality	Municipality	Municipality
24	Munger M	Municipality	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
25	Ranchi M.Corp.	PHED	PHED	Corporation
Gujarat				
26	Anand M	nagarpalika	nagarpalika	nagarpalika
27	Bharuch M	nagarpalika	nagarpalika	nagarpalika
28	Bhavnagar M.Corp.	Corporation	Corporation	Corporation
29	Bhuj M	nagarpalika	nagarpalika	nagarpalika
30	Jamnagar M.Corp.	Corporation	Corporation	Corporation
31	Junagadh M	nagarpalika	nagarpalika	nagarpalika
32	Nadiad M	nagarpalika	nagarpalika	nagarpalika
33	Navsari M	nagarpalika	nagarpalika	nagarpalika
34	Porbandar M	GWSSB	nagarpalika	nagarpalika
35	Rajkot M.Corp.	Corporation	Corporation	Corporation
36	Surendranagar M	GWSSB	nagarpalika	nagarpalika
Haryana				
37	Ambala MCI	PHD	PHD	PHD
38	Faridabad M.Corp.	Corporation	Corporation	Corporation
39	Gurgaon MCI	PHD	PHD	PHD
40	Hisar MCI	PHD	PHD	PHD
41	Karnal MCI	PWD (PHD)	PWD (PHD)	PWD (PHD)
42	Rohtak MCI	PWD (PHD)	PWD (PHD)	PWD (PHD)
Jammu & Kashmir				
43	Jammu M.Corp.	PHED	PHED	PHED
Karnataka				
44	Belgaum M.Corp.	KUWSDB	Corporation	Corporation
45	Bellary CMC	KUWSDB	Municipality	Municipality
46	Davangere MCI	KUWSDB	Council	Council
47	Gadag-Betigeri CMC	KUWSDB	Council	Council

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
48	Gulbarga M.Corp.	KUWSDB	Corporation	Corporation
49	Hubli-Dharwar M.Corp.	KUWSDB	Corporation	Corporation
50	Mandya M	KUWSDB	KUWSDB & CMC	CMC
51	Mangalore M.Corp.	KUWSDB	Corporation	Corporation
52	Mysore M.Corp.	KUWSDB	Corporation	Corporation
53	Shimoga CMC	KUWSDB	Municipality	Municipality
54	Tumkur M	KUWSDB	Municipality	Municipality
Kerala				
55	Alappuzha MC	KWA	KWA	KWA
56	Kollam MC	KWA	KWA	KWA
57	Kozhikode M.Corp.	KWA	KWA	KWA
58	Thalaserry M	KWA	KWA	KWA
59	Thiruvananthapuram M.Corp.	KWA	KWA	KWA
Madhya Pradesh				
60	Bhind M	Municipality & PHED	Municipality & PHED	Municipality
61	Burhanpur M.Corp.	n.a.	Municipality	Municipality
62	Dewas M.Corp.	Corporation	Corporation	Corporation
63	Guna M	PHED	Municipality	Municipality
64	Gwalior M.Corp.	Corporation	Corporation	Corporation
65	Jabalpur M.Corp.	Corporation	Corporation	Corporation
66	Khandwa M	Corporation	Corporation	Corporation
67	Morena M	Municipality	Municipality	Municipality
68	Murwara (Katni) M.Corp.	PHED & Corporation	Corporation	Corporation
69	Ratlam M.Corp.	PHED	Corporation	Corporation
70	Rewa M.Corp.	PHED	PHED	PHED
71	Satna M.Corp.	PHED	PHED	PHED
72	Shivpuri M	PHED	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
Maharashtra				
73	Amravati M.Corp.	MJP	MJP	MJP
74	Aurangabad M.Corp.	MJP	Corporation	Corporation
75	Bhusawal MCI	MJP	Council	Council
76	Chandrapur MCI	MJP	Council	Council
77	Dhule MCI	Council	Council	Council
78	Ichalkaranji MCI	MJP	Council	Council
79	Jalgaon MCI	MJP	Council	Council
80	Kolhapur M.Corp.	Corporation	Corporation	Corporation
81	Nanded Waghala M.Corp.	MJP	Corporation	Corporation
82	Nashik M.Corp.	Corporation	Corporation	Corporation
83	Parbhani MCI	MJP	Council	Council
84	Solapur M.Corp.	MJP & Corporation	Corporation	Corporation
85	Wardha M	Municipality	Municipality	Municipality
86	Yavatmal MCI	MJP	MJP	MJP
Orissa				
87	Bhubaneswar M.Corp.	PHED	PHED	PHED
88	Cuttack M.Corp.	PHED	PHED	PHED
89	Puri M	PHED	PHED	PHED
90	Rourkela M	PHED	PHED	PHED
91	Sambalpur M	PHED	PHED	PHED
Punjab				
92	Amritsar M.Corp.	PWS & SB	Corporation	Corporation
93	Bathinda MCI	PWS & SB	PWS & SB	Council
94	Hoshiarpur MCI	PWS & SB	Council	Council
95	Jalandhar M.Corp.	PWS & SB	Corporation	Corporation
96	Moga MCI	PWS & SB	Council	Council

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
97	Pathankot MCI	PWS & SB	Council	Council
98	Patiala M.Corp.	PWS & SB	Corporation	Corporation
Rajasthan				
99	Ajmer MCI	PHED	PHED	PHED
100	Alwar M	PHED	PHED	PHED
101	Beawar M	PHED	PHED	PHED
102	Bhilwara M	PHED	PHED	PHED
103	Bikaner M	PHED	PHED	PHED
104	Jodhpur M.Corp.	PHED	PHED	PHED
105	Kota M.Corp.	PHED	PHED	PHED
106	Sriganganagar M	PHED	PHED	PHED
Tamil Nadu				
107	Cuddalore M	TWAD Board	Municipality	Municipality
108	Dindigul M	TWAD Board	Municipality	Municipality
109	Erode M	TWAD Board	Municipality	Municipality
110	Kanchipuram M	TWAD Board	Municipality	Municipality
111	Kumbakonam M	TWAD Board	Municipality	Municipality
112	Nagercoil M	TWAD Board	Municipality	Municipality
113	Rajapalayam M	TWAD Board	Municipality	Municipality
114	Salem M.Corp.	Corporation	Corporation	Corporation
115	Thanjavur M	TWAD Board	Municipality	Municipality
116	Tiruchirapalli M.Corp.	TWAD Board	Corporation	Corporation
117	Tirunelveli M.Corp.	TWAD Board	Corporation	Corporation
118	Tiruvannamalai M	TWAD Board	Municipality	Municipality
119	Tiruppur M	TWAD Board	Municipality	Municipality
120	Tuticorin M	TWAD Board	Municipality	Municipality
121	Vellore M	TWAD Board	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
Uttar Pradesh				
122	Agra M.Corp.	Jal Nigam	Jal Sansthan	Jal Sansthan
123	Aligarh M.Corp.	Jal Nigam	Corporation	Corporation
124	Allahabad M.Corp.	Jal Nigam	Jal Sansthan	Jal Sansthan
125	Bareilly M.Corp.	Jal Nigam	Corporation	Corporation
126	Etawah MB	Municipality	Municipality	Municipality
127	Faizabad MB	Jal Nigam	Municipality	Municipality
128	Firozabad MB	Municipality	Municipality	Municipality
129	Ghaziabad M.Corp.	Jal Nigam	Corporation	Corporation
130	Gorakhpur M.Corp.	Jal Nigam	Corporation	Corporation
131	Haldwani-cum-Kathgodam MB	Jal Nigam	Kumaun Jal Sansthan	Kumaun Jal Sansthan
132	Hapur MB	Municipality	Municipality	Municipality
133	Hardwar MB	Jal Nigam	Municipality	Municipality
134	Jhansi MB	Jal Nigam	Jal Sansthan	Jal Sansthan
135	Mathura MB	Jal Nigam	Municipality	Municipality
136	Meerut M.Corp.	Corporation	Corporation	Corporation
137	Mirzapur MB	Jal Nigam	Municipality	Municipality
138	Moradabad M.Corp.	Jal Nigam	Corporation	Corporation
139	Muzaffarnagar MB	Jal Nigam	Municipality	Municipality
140	Rae Bareli MB	Jal Nigam	Municipality	Municipality
141	Rampur MB	Municipality	Municipality	Municipality
142	Saharanpur MB	Jal Nigam	Municipality	Municipality
143	Sitapur MB	Jal Nigam	Municipality	Municipality
144	Unnao MB	Jal Nigam	Municipality	Municipality
West Bengal				
145	Asansol M.Corp.	PHED	PHED & Corporation	Corporation
146	Baharampur M	Municipality	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
147	Balurghat M	PHED	PHED	Municipality
148	Bankura M	PHED	Municipality	Municipality
149	Barasat M	Municipality & CMWSA	Municipality & CMWSA	Municipality & CMWSA
150	Burdwan M	Municipality	Municipality	Municipality
151	Halisahar M	Municipality	Municipality	Municipality
152	Krishnagar M	PHED	Municipality	Municipality
153	Midnapore M	PHED	Municipality	Municipality
154	North Barrackpore M	Municipality	Municipality	Municipality
155	Santipur M	PHED	PHED	Municipality
156	Silliguri M.Corp.	PHED	PHED	Corporation
Small States				
Assam				
157	Guwahati M.Corp.	Corporation	Corporation	Corporation
158	Jorhat MB	n.a.	n.a.	n.a.
Manipur				
159	Imphal MCI	PHED	PHED	PHED
Meghalaya				
160	Shillong MB	PHED	PHED	Municipality
Mizoram				
161	Aizwal NM	PHED	PHED	PHED
Tripura				
162	Agartala MCI	PHED	PHED	Council
Union Territories				
163	Chandigarh M.Corp.	Corporation	Corporation	Corporation
164	Pondicherry M	PWD	PWD	PWD

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
CLASS II				
Andhra Pradesh				
1	Anakapalle M	PHED	Municipality	Municipality
2	Dharmavaram M	PHED	Municipality	Municipality
3	Gudur MCI	PHED	Council	Council
4	Kapra M	HMWS & SB	HMWS & SB	HMWS & SB
5	Kavali MCI	PHED	Municipality	Municipality
6	Madanapalle M	PHED	Municipality	Municipality
7	Narasaraopet M	PHED	Municipality	Municipality
8	Rajendra nagar MCI	PHED	PHED & Municipality	Municipality
9	Sangareddy MCI	PHED	Municipality	Municipality
10	Srikakulam MCI	PHED	Municipality	Municipality
11	Srikalahasti M	Municipality	Municipality	Municipality
12	Suryapet MCI	PHED	Council	Council
Bihar				
13	Buxar M	Bihar Jal Parishad	PHED	Municipality
14	Deoghar M	Municipality	Municipality	Municipality
15	Hajipur M	PHED	PHED	Municipality
16	Hazaribagh M	PHED	Municipality	Municipality
17	Jehanabad M	Municipality	Municipality	Municipality
18	Madhubani M	Municipality	Municipality	Municipality
19	Mokama M	PHED	PHED	Municipality
Gujarat				
20	Amreli M	nagarpalika	nagarpalika	nagarpalika
21	Ankleswar M	nagarpalika	nagarpalika	nagarpalika
22	Dabhoi M	nagarpalika	nagarpalika	nagarpalika
23	Dohad M	nagarpalika	nagarpalika	nagarpalika
24	Gondal M	nagarpalika	nagarpalika	nagarpalika

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
25	Jetpur M	nagarpalika	nagarpalika	nagarpalika
26	Mahesana M	nagarpalika	nagarpalika	nagarpalika
27	Palanpur M	nagarpalika	nagarpalika	nagarpalika
Haryana				
28	Jind MCI	PHD	PHD	PHD
29	Kaithal MCI	PHD	PHD	PHD
30	Rewari MCI	PHD	PHD	PHD
31	Thanesar MCI	PHD	PHD	PHD
Karnataka				
32	Bagalkot CMC	KUWSDB & PWD	Municipality	Municipality
33	Chikmagalur CMC	PWD & Council	Council	Council
34	Gokak CMC	KUWSDB	Council	Council
35	Hospet CMC	KUWSDB	Council	Council
36	Kolar CMC	KUWSDB	Council	Council
37	Rabkavi-Banhatti CMC	KUWSDB	Council	Council
38	Ramanagaram CMC	KUWSDB	Council	Council
Kerala				
39	Changanessary MC	KWA	KWA	KWA
40	Payyanur M	KWA	KWA	KWA
41	Taliparamba M	KWA	KWA	KWA
42	Thrissur MC	KWA	Council	Council
Madhya Pradesh				
43	Hoshangabad M	Municipality	Municipality	Municipality
44	Itarsi M	Municipality	Municipality	Municipality
45	Khargone M	Municipality	Municipality	Municipality
46	Mandsaur M	Municipality	Municipality	Municipality
47	Nagda M	Municipality	Municipality	Municipality
48	Neemuch M	Municipality	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
49	Sehore M	Municipality	Municipality	Municipality
50	Shahdol M	Municipality	Municipality	Municipality
51	Vidisha M	Municipality	Municipality	Municipality
Maharashtra				
52	Amalner MCI	n.a.	n.a.	n.a.
53	Ballarpur MCI	Water Supply Board	Water Supply Board	MJP
54	Bhandara M	MJP	Corporation	Corporation
55	Kamptee MCI	NMC	NMC	Council
56	Manmad MCI	MJP	Council	Council
57	Ratnagiri MCI	MJP	Council	Council
58	Satara MCI	MJP & Council	MJP & Council	Council
59	Virar MCI	MJP	Private Contractor	Council
Orissa				
60	Balangir M	H & UD Deptt.	RWS & S Deptt.	PHED
61	Bhadrak M	RWS & S Deptt.	RWS & S Deptt.	RWS & S Deptt.
Punjab				
62	Ferozpur MCI	PWS & SB	Council	Council
63	Kapurthala M	PWS & SB	Committee	Committee
64	Mansa MCI	PWS & SB	PWS & SB	Council
65	Phagwara MCI	PWS & SB	Council	Council
66	Sangrur MCI	PWS & SB	Council	Council
Rajasthan				
67	Banswara M	PHED	PHED	PHED
68	Barmer M	PHED	PHED	PHED
69	Bundi M	PHED	PHED	PHED
70	Churu M	PHED	PHED	PHED
71	Hanumangarh M	PHED	PHED	PHED
72	Sawai Madhopur M	PHED	PHED	PHED

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
Tamil Nadu				
73	Ambur M	TWAD Board	Municipality	Municipality
74	Arakkonam M	TWAD Board	Municipality	Municipality
75	Attur M	TWAD Board	TWAD Board	Municipality
76	Cumbum M	TWAD Board	TWAD Board & Municipality	Municipality
77	Dharmapuri M	TWAD Board	Municipality	Municipality
78	Guduivattam M	TWAD Board	Municipality	Municipality
79	Nagapattinam M	TWAD Board	TWAD Board & Municipality	Municipality
80	Pudukkottai M	TWAD Board	Municipality	Municipality
81	Sivakasi M	TWAD Board	Municipality	Municipality
82	Srivilliputtur M	TWAD Board	Municipality	Municipality
83	Tindivanam MC	M Council	M Council	M Council
84	Udhagamandalam M	TWAD Board	Municipality	Municipality
Uttar Pradesh				
85	Auraiya MB	Municipality	Municipality	Municipality
86	Balrampur MB	Jal Nigam	Municipality	Municipality
87	Basti MB	Jal Nigam	Municipality	Municipality
88	Bhadohi MB	Jal Nigam	Municipality	Municipality
89	Chandpur MB	Municipality	Municipality	Municipality
90	Etah MB	Jal Nigam	Jal Sansthan	Jal Sansthan
91	Ghazipur MB	Jal Nigam	Municipality	Municipality
92	Gonda MB	Jal Nigam	Municipality	Municipality
93	Lakhimpur MB	Jal Nigam	Municipality	Municipality
94	Lalitpur MB	Jal Nigam	Jal Sansthan	Jal Sansthan
95	Mughalsarai MB	Jal Nigam	Municipality	Municipality
96	Nawabganj-Barabanki MB	Municipality	Municipality	Municipality
97	Orai MB	Jal Nigam	Jal Sansthan	Jal Sansthan
98	Roorkee MB	Jal Nigam	Municipality	Municipality

Sl. No.	City/Town	Institutional Arrangements for Water supply 1999		
		Capital works	Operation & Maintenance	Collection of revenue
1		2	3	4
West Bengal				
99	Bishnupur M	PHED	PHED & Corporation	Municipality
100	Chakdaha M	PHED	PHED	N.App.
101	Contai M	PHED	PHED	Municipality
102	Cooch Behar M	PHED	P	Municipality
103	Darjeeling M	Municipality	Municipality	Municipality
104	Jalpaiguri M	PHED	PHED & Corporation	Municipality
105	Jangipur M	PHED	PHED	Municipality
106	Katwa M	PHED	Municipality	Municipality
107	Raniganj M	PHED & Municipality	PHED & Municipality	Municipality
Small States				
Himachal Pradesh				
108	Shimla M.Corp.	PHD & Irrigation Deptt.	PHD, Irrigation Deptt. & Corporation	Corporation
Nagaland				
109	Kohima TC	PHED	PHED	PHED
Union Territories				
110	Port Blair MCI	APWD	APWD & Council	Council
Others (Smaller than Class II towns)				
Small States				
Arunachal Pradesh				
111	Itanagar CT	PHED	PHED	PHED
Goa				
112	Panaji MCI	PWD	PWD	PWD
Union Territories				
113	Daman MCI	PWD	PWD	PWD
114	Kavarathi NMCT	LPWD	LPWD	n.app.
115	Silvassa	PWD	PWD	PWD
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>				

A-11

STAFF POSITION, 1999

A-11 : Staff Position, 1999								
Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
Metropolitan Cities								
1	Ahmedabad M.Corp.	270	n.a.	1080	1350	0.4	5.6	0.6
2	Bangalore M.Corp.	Break-up not available			3096	0.6	11.3	n.a.#
3	Bhopal M.Corp.	6	42	422	470	0.3	3.7	0.2
4	Calcutta M.Corp.	5	292	4070	4367	0.7	18.6	1.0
5	Chennai M.Corp.	30	1325	4603	5958	1.4	19.2	3.3
6	Coimbatore M.Corp.	0	22	181	203	0.2	2.7	0.4
7	Delhi M.Corp.	147	3610	18974	22731	1.9	16.8	2.9
8	Greater Mumbai M.Corp.	833	727	6738	8298	0.7	29.4	2.1
9	Hyderabad M.Corp.	Break-up not available			5460	1.3	21.5	2.8
10	Indore M.Corp.	381	328	171	880	1.5	20.6	2.0
11	Jaipur M.Corp.	88	n.a.	2645	2733	1.4	22.1	0.9
12	Kanpur M.Corp.	27	123	2175	2325	0.9	19.6	1.8
13	Kochi M.Corp.	4	28	94	126	0.2	1.3	0.2
14	Lucknow M.Corp.	41	72	2487	2600	1.0	13.6	1.4
15	Ludhiana M.Corp.	5	33	487	525	0.3	4.2	0.6
16	Madurai M.Corp.	0	9	70	79	0.1	1.1	0.2
17	Nagpur M.Corp.	0	157	591	748	0.4	4.0	0.7
18	Pune M.Corp.	5	1671	110	1786	0.8	22.4	0.9
19	Surat M.Corp.	8	66	530	604	0.3	3.4	0.3
20	Vadodara M.Corp.	4	34	757	795	0.6	5.5	2.1
21	Varanasi M.Corp.	15	316	419	750	0.7	10.3	1.5
22	Visakhapatnam M.Corp.	4	25	495	524	0.4	16.8	0.6
# data of pipe length not available								
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.								

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
CLASS I								
Andhra Pradesh								
1	Anantapur MCI	1	8	61	70	0.3	5.7	0.4
2	Chittoor M	2	18	34	54	0.4	12.6	2.1
3	Cuddapah MCI	3	30	34	67	0.4	8.1	5.2
4	Eluru M	2	18	80	100	0.4	10.1	5.6
5	Guntur MCI	1	5	40	46	0.1	1.7	0.6
6	Hindupur M	3	2	68	73	0.5	18.2	3.0
7	Kakinada M	2	11	88	101	0.3	8.9	1.3
8	Kurnool MCI	4	15	250	269	1.0	19.6	n.a.#
9	Machilipatnam M	1	8	5	14	0.1	1.5	0.3
10	Nandyal MCI	3	10	58	71	0.5	10.7	n.a.#
11	Nellore MCI	0	18	32	50	0.1	3.2	n.a.#
12	Nizamabad M	12	44	69	125	0.4	11.4	n.a.#
13	Ongole MCI	0	15	43	58	0.3	5.5	1.0
14	Qutubullapur M	9	5	70	84	0.3	10.1	0.9
15	Rajahmundry M.Corp.	2	2	75	79	0.2	4.6	0.3
16	Tenali M	1	2	5	8	0.0	26.8	1.3
17	Tirupati MCI	1	7	33	41	0.2	20.8	1.9
18	Vijaywada M.Corp.	4	8	316	328	0.4	8.8	0.9
19	Warangal M.Corp.	4	8	200	212	0.3	6.5	1.0
Bihar								
20	Bihar Sharif M	4	13	58	75	0.3	n.a.*	0.6
21	Chhapra M	1	3	64	68	0.3	n.a.*	1.1
22	Gaya M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.*	n.a.
23	Katihar M	7	21	87	115	0.6	n.a.*	1.5
24	Munger M	4	14	210	228	1.1	n.a.*	2.2
25	Ranchi M.Corp.	1	0	21	22	0.0	n.a.*	0.1

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
Gujarat								
26	Anand M	4	n.a.	34	38	0.2	2.0	0.3
27	Bharuch M	2	2	16	20	0.1	1.0	0.2
28	Bhavnagar M.Corp.	2	15	78	95	0.2	1.5	0.2
29	Bhuj M	1	55	60	116	1.0	4.9	1.7
30	Jamnagar M.Corp.	4	10	300	314	0.6	n.a.*	n.a.#
31	Junagadh M	1	6	133	140	0.8	n.a.*	1.8
32	Nadiad M	5	n.a.	150	155	0.5	7.0	1.8
33	Navsari M	13	7	80	100	0.7	3.5	n.a.#
34	Porbandar M	2	16	47	65	0.5	5.4	0.5
35	Rajkot M.Corp.	Break-up not available			355	0.4	3.1	0.5
36	Surendranagar M	1	1	15	17	0.1	29.1	0.05
Haryana								
37	Ambala MCI	2	2	117	121	0.9	8.0	0.7
38	Faridabad M.Corp.	5	66	675	746	0.6	13.6	0.9
39	Gurgaon MCI	4	85	122	211	1.2	13.3	2.0
40	Hisar MCI	5	12	70	87	0.3	6.0	0.4
41	Karnal MCI	4	24	148	176	0.8	9.8	1.3
42	Rohtak MCI	7	19	56	82	0.3	2.6	0.7
Jammu & Kashmir								
43	Jammu M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Karnataka								
44	Belgaum M.Corp.	4	2	163	169	0.4	6.1	0.8
45	Bellary CMC	0	5	78	83	0.3	3.5	0.3
46	Davangere MCI	0	3	90	93	0.2	3.8	0.8
47	Gadag-Betigeri CMC	11	1	133	145	1.0	13.3	1.2
48	Gulbarga M.Corp.	1	4	151	156	0.3	16.7	n.a.#
49	Hubli-Dharwar M.Corp.	6	31	90	127	0.1	2.2	0.3

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
50	Mandya M	1	2	6	9	0.1	1.1	0.1
51	Mangalore M.Corp.	13	8	97	118	0.3	3.4	0.5
52	Mysore M.Corp.	20	9	388	417	0.4	n.a.*	1.4
53	Shimoga CMC	0	2	91	93	0.4	4.7	0.5
54	Tumkur M	2	3	93	98	0.3	6.4	0.6
Kerala								
55	Alappuzha MC	0	6	70	76	0.4	3.7	0.2
56	Kollam MC	0	15	30	45	0.3	n.a.*	1.6
57	Kozhikode M.Corp.	0	5	120	125	0.3	5.0	0.5
58	Thalaserry M	6	15	56	77	0.6	14.1	1.4
59	Thiruvananthapuram M.Corp.	17	42	213	272	0.5	2.3	1.6
Madhya Pradesh								
60	Bhind M	144	3	22	169	1.0	11.6	1.1
61	Burhanpur M.Corp.	2	7	120	129	0.6	9.5	n.a.#
62	Dewas M.Corp.	1	1	n.a.	2	n.a.	n.a.	n.a.#
63	Guna M	30	50	50	130	1.0	15.9	1.8
64	Gwalior M.Corp.	245	48	1511	1804	2.0	25.1	2.5
65	Jabalpur M.Corp.	26	279	565	870	0.9	20.5	7.9
66	Khandwa M	2	8	202	212	1.2	19.6	n.a.#
67	Morena M	2	3	75	80	0.6	9.1	1.3
68	Murwara (Katni) M.Corp.	4	30	97	131	0.7	15.3	n.a.#
69	Ratlam M.Corp.	6	7	59	72	0.3	2.6	0.4
70	Rewa M.Corp.	1	3	295	299	1.7	22.3	2.0
71	Satna M.Corp.	1	8	229	238	1.2	19.9	1.4
72	Shivpuri M	30	70	168	268	1.9	21.3	1.3
Maharashtra								
73	Amravati M.Corp.	4	12	246	262	0.5	6.7	0.7
74	Aurangabad M.Corp.	3	25	390	418	0.5	5.9	0.8

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
75	Bhusawal MCI	1	7	44	52	0.3	3.5	0.7
76	Chandrapur MCI	1	28	83	112	0.4	6.7	1.0
77	Dhule MCI	1	3	104	108	0.3	4.6	2.4
78	Ichalkaranji MCI	4	4	94	102	0.4	4.3	1.5
79	Jalgaon MCI	5	181	370	556	1.4	17.3	4.0
80	Kolhapur M.Corp.	36	14	365	415	0.8	7.0	1.4
81	Nanded Waghala M.Corp.	12	45	160	217	0.5	10.7	0.5
82	Nashik M.Corp.	1	39	521	561	0.7	6.8	0.9
83	Parbhani MCI	3	2	157	162	0.7	10.7	0.5
84	Solapur M.Corp.	7	27	516	550	0.6	11.8	2.7
85	Wardha M	3	7	32	42	0.3	3.6	0.3
86	Yavatmal MCI	4	5	84	93	0.7	7.3	0.5
Orissa								
87	Bhubaneswar M.Corp.	0	56	1618	1674	2.7	43.5	3.1
88	Cuttack M.Corp.	0	23	569	592	1.1	27.7	2.2
89	Puri M	6	n.a.	211	217	1.4	35.1	0.9
90	Rourkela M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
91	Sambalpur M	1	5	189	195	1.2	36.4	5.4
Punjab								
92	Amritsar M.Corp.	71	165	23	259	0.3	2.7	0.3
93	Bathinda MCI	0	4	58	62	0.4	4.2	0.3
94	Hoshiarpur MCI	0	2	94	96	0.7	5.7	0.6
95	Jalandhar M.Corp.	57	35	148	240	0.3	3.2	0.4
96	Moga MCI	1	3	20	24	0.2	1.4	0.3
97	Pathankot MCI	1	4	48	53	0.3	2.8	0.3
98	Patiala M.Corp.	20	85	50	155	0.5	3.9	0.6
Rajasthan								
99	Ajmer MCI	38	673	104	815	1.5	13.3	2.3

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
100	Alwar M	6	584	31	621	2.1	18.1	2.5
101	Beawar M	7	235	28	270	1.9	16.5	2.5
102	Bhilwara M	17	6	169	192	0.9	8.0	0.4
103	Bikaner M	30	543	76	649	1.1	9.3	0.6
104	Jodhpur M.Corp.	81	924	260	1265	1.3	13.0	1.1
105	Kota M.Corp.	7	442	57	506	0.7	7.2	1.4
106	Sriganganagar M	27	83	18	128	0.6	5.4	0.6
Tamil Nadu								
107	Cuddalore M	0	4	6	10	0.1	1.4	0.1
108	Dindigul M	0	5	69	74	0.3	4.8	1.7
109	Erode M	0	8	26	34	0.2	2.0	0.2
110	Kanchipuram M	1	3	26	30	0.2	2.0	0.3
111	Kumbakonam M	0	7	27	34	0.2	3.6	0.3
112	Nagercoil M	0	6	18	24	0.1	1.3	1.7
113	Rajapalayam M	1	2	52	55	0.4	4.1	1.3
114	Salem M.Corp.	0	18	106	124	0.3	2.6	0.5
115	Thanjavur M	1	4	75	80	0.4	4.7	0.3
116	Tiruchirapalli M.Corp.	0	26	33	59	0.1	1.3	0.2
117	Tirunelveli M.Corp.	1	31	30	62	0.1	7.1	0.3
118	Tiruvannamalai M	0	15	51	66	0.5	6.7	0.9
119	Tiruppur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
120	Tuticorin M	1	9	55	65	0.3	2.5	0.6
121	Vellore M	n.a.	160		160	0.9	10.1	6.4
Uttar Pradesh								
122	Agra M.Corp.	3	37	701	741	0.6	6.6	4.0
123	Aligarh M.Corp.	6	10	150	166	0.3	4.8	0.4
124	Allahabad M.Corp.	22	40	827	889	0.9	10.1	0.8
125	Bareilly M.Corp.	7	123	187	317	0.4	6.5	0.6

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
126	Etawah MB	2	2	140	144	1.0	9.4	0.9
127	Faizabad MB	2	102	3	107	0.6	8.0	1.1
128	Firozabad MB	4	50	26	80	0.3	4.1	1.0
129	Ghaziabad M.Corp.	8	17	218	243	0.3	n.a.*	0.4
130	Gorakhpur M.Corp.	1	56	103	160	0.3	9.9	0.3
131	Haldwani-cum-Kathgodam MB	24	47	18	89	0.6	6.2	2.6
132	Hapur MB	2	6	60	68	0.3	5.2	0.7
133	Hardwar MB	1	2	174	177	0.6	7.9	1.3
134	Jhansi MB	10	7	156	173	0.3	6.2	0.9
135	Mathura MB	1	3	89	93	0.8	19.5	2.7
136	Meerut M.Corp.	12	120	24	156	0.1	2.1	0.3
137	Mirzapur MB	1	2	54	57	0.5	6.0	0.4
138	Moradabad M.Corp.	3	37	67	107	0.2	3.3	1.2
139	Muzaffarnagar MB	2	3	73	78	0.2	2.8	0.2
140	Rae Bareli MB	1	60	18	79	0.5	16.6	0.4
141	Rampur MB	3	n.a.	49	52	0.2	3.6	0.8
142	Saharanpur MB	2	4	163	169	0.3	5.5	0.1
143	Sitapur MB	4	0	66	70	0.5	9.5	0.6
144	Unnao MB	2	2	58	62	0.5	12.3	0.9
West Bengal								
145	Asansol M.Corp.	2	5	35	42	0.2	4.6	0.02
146	Baharampur M	1	0	44	45	0.3	4.6	0.1
147	Balurghat M	3	9	12	24	0.2	3.7	0.8
148	Bankura M	9	18	50	77	0.5	36.9	0.2
149	Barasat M	0	1	13	14	0.1	1.4	0.1
150	Burdwan M	6	2	91	99	0.3	2.7	0.4
151	Halisahar M	1	2	13	16	0.1	31.9	0.1
152	Krishnagar M	1	5	75	81	0.6	11.1	0.8

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
153	Midnapore M	2	6	47	55	0.3	11.0	0.2
154	North Barrackpore M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
155	Santipur M	0	2	8	10	0.1	n.a.*	0.2
156	Siliguri M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.*	n.a.
Small States								
Assam								
157	Guwahati M.Corp.	2	11	302	315	0.3	7.9	0.7
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur								
159	Imphal MCI	4	54	408	466	1.9	44.9	1.3
Meghalaya								
160	Shillong MB	5	4	61	70	0.3	8.2	0.4
Mizoram								
161	Aizwal NM	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Tripura								
162	Agartala MCI	3	29	65	97	0.5	4.1	0.6
Union Territories								
163	Chandigarh M.Corp.	184	0	680	864	1.0	6.0	n.a.#
164	Pondicherry M	0	11	598	609	2.1	12.9	11.3
<p>* Data of Total Domestic Connections not available (or only partial data available) ; # data of pipe length not available High figures of Managerial, Technical, O&M Staff in many cases could be inclusive of the staff for sewerage and drainage Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</p>								

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
CLASS II								
Andhra Pradesh								
1	Anakapalle M	2	2	22	26	0.2	13.0	1.9
2	Dharmavaram M	2	6	46	54	0.5	12.5	n.a.#
3	Gudur MCI	1	3	8	12	0.2	3.0	0.6
4	Kapra M	7	5	11	23	0.2	n.a.*	0.2
5	Kavali MCI	1	10	85	96	1.1	n.r.	n.a.#
6	Madanapalle M	1	3	125	129	1.3	22.1	1.0
7	Narasaraopet M	1	1	23	25	0.3	8.0	0.5
8	Rajendra nagar MCI	1	9	26	36	0.3	10.5	1.0
9	Sangareddy MCI	2	2	29	33	0.6	7.4	2.4
10	Srikakulam MCI	3	4	20	27	0.3	6.4	0.8
11	Srikalahasti M	1	3	38	42	0.6	11.1	1.9
12	Suryapet MCI	4	2	81	87	2.6	46.9	4.1
Bihar								
13	Buxar M	1	3	213	217	3.2	n.a.*	4.1
14	Deoghar M	2	9	13	24	0.4	n.a.*	0.8
15	Hajipur M	1	0	27	28	0.2	41.8	3.5
16	Hazaribagh M	6	47	39	92	0.8	n.a.*	1.3
17	Jehanabad M	5	19	63	87	1.5	n.a.*	1.1
18	Madhubani M	9	22	158	189	2.9	14.1	1.7
19	Mokama M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.*	n.a.
Gujarat								
20	Amreli M	1	5	83	89	1.0	n.a.*	n.a.#
21	Ankleswar M	2	2	50	54	0.9	5.8	2.8
22	Dabhoi M	2	2	15	19	0.3	1.6	1.1
23	Dohad M	1	24	66	91	1.2	5.5	1.3

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
24	Gondal M	1	2	58	61	0.6	6.6	0.9
25	Jetpur M	1	3	23	27	0.2	2.6	0.4
26	Mahesana M	1	0	22	23	0.2	1.4	0.2
27	Palanpur M	2	38	21	61	0.5	4.9	n.a.#
Haryana								
28	Jind MCI	5	9	36	50	0.4	4.8	0.5
29	Kaithal MCI	3	15	50	68	0.7	8.4	1.0
30	Rewari MCI	3	3	124	130	1.2	10.2	0.7
31	Thanesar MCI	3	63	40	106	1.1	11.6	2.7
Karnataka								
32	Bagalkot CMC	3	4	27	34	0.3	5.6	0.4
33	Chikmagalur CMC	0	2	28	30	0.3	4.0	1.1
34	Gokak CMC	0	2	32	34	0.5	6.4	1.7
35	Hospet CMC	0	2	24	26	0.2	4.3	0.3
36	Kolar CMC	3	3	53	59	0.5	5.8	1.5
37	Rabkavi-Banhatti CMC	1	3	15	19	0.3	5.5	0.4
38	Ramanagaram CMC	1	2	32	35	0.5	6.3	2.1
Kerala								
39	Changanessary MC	0	3	14	17	0.3	2.6	0.1
40	Payyanur M	3	1	21	25	0.4	n.r.	1.4
41	Taliparamba M	1	4	54	59	1.1	n.r.	2.5
42	Thrissur MC	0	5	67	72	0.8	4.8	6.0
Madhya Pradesh								
43	Hoshangabad M	7	16	85	108	1.1	15.4	5.7
44	Itarsi M	7	3	72	82	0.8	16.3	n.a.#
45	Khargone M	1	3	78	82	1.0	18.1	2.5
46	Mandsaur M	1	8	83	92	0.7	7.8	2.9

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
47	Nagda M	1	2	39	42	0.4	11.4	n.a.#
48	Neemuch M	1	3	126	130	1.3	18.8	1.5
49	Sehore M	13	5	142	160	1.6	25.0	2.7
50	Shahdol M	3	3	38	44	0.6	11.8	1.0
51	Vidisha M	3	3	69	75	0.6	9.1	2.1
Maharashtra								
52	Amalner MCI	2	17	57	76	0.6	7.4	4.5
53	Ballarpur MCI	0	30	44	74	0.7	9.3	1.5
54	Bhandara M	1	0	31	32	0.4	5.4	1.6
55	Kamptee MCI	0	1	17	18	0.2	2.4	2.4
56	Manmad MCI	1	2	33	36	0.4	5.6	0.5
57	Ratnagiri MCI	15	2	54	71	1.0	9.6	3.9
58	Satara MCI	2	13	3	18	0.2	1.9	n.a.#
59	Virar MCI	0	1	45	46	0.5	12.8	1.3
Orissa								
60	Balangir M	6	7	114	127	1.5	n.r.	6.2
61	Bhadrak M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Punjab								
62	Ferozpur MCI	4	3	33	40	0.4	3.8	0.6
63	Kapurthala M	1	2	21	24	0.3	1.9	0.2
64	Mansa MCI	3	2	25	30	0.5	6.0	1.0
65	Phagwara MCI	1	2	21	24	0.2	1.7	0.3
66	Sangrur MCI	1	3	35	39	0.7	3.8	0.7
Rajasthan								
67	Banswara M	8	128	5	141	1.3	14.3	n.a.#
68	Barmer M	6	0	78	84	1.0	7.5	0.4
69	Bundi M	6	121	27	154	1.9	14.5	1.7

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
70	Churu M	6	276	4	286	2.9	22.4	2.3
71	Hanumangarh M	1	69	2	72	0.6	4.8	0.6
72	Sawai Madhopur M	13	0	175	188	2.1	20.2	16.3
Tamil Nadu								
73	Ambur M	2	7	4	13	0.2	1.8	0.2
74	Arakkonam M	0	2	12	14	0.2	2.6	0.2
75	Attur M	3	4	33	40	0.6	7.5	0.9
76	Cumbum M	2	2	8	12	0.2	2.7	0.3
77	Dharmapuri M	0	9	43	52	0.8	8.8	1.3
78	Guduivattam M	0	0	17	17	0.2	3.1	0.4
79	Nagapattinam M	0	0	17	17	0.2	3.7	0.2
80	Pudukkottai M	0	7	22	29	0.3	3.3	0.4
81	Sivakasi M	0	5	43	48	0.7	6.8	0.7
82	Srivilliputtur M	0	5	23	28	0.4	4.7	0.7
83	Tindivanam MC	0	3	21	24	0.3	8.0	1.0
84	Udhagamandalam M	1	4	40	45	0.5	n.r.	n.a.#
Uttar Pradesh								
85	Auraiya MB	1	1	17	19	0.2	3.2	1.3
86	Balrampur MB	1	8	12	21	0.3	7.6	0.5
87	Basti MB	1	6	30	37	0.3	4.2	0.6
88	Bhadohi MB	1	1	15	17	0.2	4.6	0.5
89	Chandpur MB	1	10	4	15	0.2	3.7	0.7
90	Etah MB	2	1	37	40	0.3	6.6	0.3
91	Ghazipur MB	1	1	47	49	0.5	5.8	0.4
92	Gonda MB	2	10	26	38	0.3	5.5	0.4
93	Lakhimpur MB	1	11	21	33	0.3	3.3	1.1
94	Lalitpur MB	2	2	45	49	0.5	3.1	0.3

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
95	Mughalsarai MB	1	1	7	9	0.1	4.0	0.3
96	Nawabganj-Barabanki MB	2	40	17	59	0.7	7.1	0.8
97	Orai MB	1	3	69	73	0.4	9.9	1.0
98	Roorkee MB	0	1	32	33	0.5	4.9	0.7
West Bengal								
99	Bishnupur M	5	1	21	27	0.4	11.3	2.2
100	Chakdaha M	2	0	3	5	0.1	n.a.*	0.1
101	Contai M	1	1	15	17	0.1	n.a.*	0.4
102	Cooch Behar M	1	5	35	41	0.4	5.8	0.4
103	Darjeeling M	4	8	25	37	0.7	12.5	0.3
104	Jalpaiguri M	2	7	49	58	0.6	19.5	0.6
105	Jangipur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
106	Katwa M	1	5	0	6	0.1	n.r.	12.0
107	Raniganj M	2	18	39	59	0.5	18.2	2.0
Small States								
Himachal Pradesh								
108	Shimla M.Corp.	1	8	157	166	2.0	13.9	2.1
Nagaland								
109	Kohima TC	0	8	225	233	2.3	44.5	n.a.#
Union Territories								
110	Port Blair MCI	0	5	265	270	2.6	14.9	3.4
Others (Smaller than Class II towns)								
Small States								
Arunachal Pradesh								
111	Itanagar CT	22	Not available for the town alone		n.a.	n.a.	n.a.	

Sl. No.	City/Town	Managerial staff	Technical staff	Operation and maintenance staff	Total staff	Staff per 1000 population	Staff per 1000 connections	Staff per km. of pipeline
1		2	3	4	5	6	7	8
Goa								
112	Panaji MCI	4	Not available for the town alone		n.a	n.a.	n.a.	n.a.
Union Territories								
113	Daman MCI	5	2	43	50	1.4	5.9	1.0
114	Kavarathi NMCT	1	2	4	7	0.6	n.a.*	0.4
115	Silvassa	10	9	19	38	1.9	25.8	3.5
<p>* data of Total Domestic Connections not available (or only partial data available) ; # data of pipe length not available ; n.r. = data not reliable High figures of Managerial, Technical, O&M Staff in many cases could be inclusive of the staff for sewerage and drainage Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</p>								

A-12

DETAILS OF PRIVATISATION IN WATER
SUPPLY, 1999

A-12 : Details of Privatisation in Water Supply, 1999

Sl. No.	City/Town	Activity	Specific aspects/areas	Privatisation mode	No. of contractors	Year privatised	Cost before privatisation (Rs.)	Cost after privatisation (Rs.)
1		2	3	4	5	6	7	8
Metropolitan cities								
1	Jaipur M.Corp.	O & M	Pipe lines	Contract	1	n.a.	n.a.	n.a.
		O & M	Pipe lines	Contract	1	n.a.	n.a.	n.a.
2	Ludhiana M.Corp.	O & M	Tubewells	Contract	10	1995	750,000	200,000
3	Nagpur M.Corp.	O & M	Pump station	n.a.	1	1994	n.a.	74,500
		O & M	Treatment plant	n.a.	1	1994	n.a.	105,000
		O & M	Pump station	n.a.	1	1994	n.a.	75,000
4	Visakhapatnam M.Corp.	O & M	Pump station, Treatment plant & Pipe lines	Contract	n.a.	1995	n.a.	n.a.
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>								

Sl. No.	City/Town	Activity	Specific aspects/areas	Privatisation mode	No. of contractors	Year privatised	Cost before privatisation (Rs.)	Cost after privatisation (Rs.)
1	2	3	4	5	6	7	8	
CLASS I								
Gujarat								
1	Rajkot M.Corp.	O & M	Pump station	Contract	2	1998	n.a.	n.a.
Karnataka								
2	Gulbarga M.Corp.	O & M	Head Pump	Contract	4	1996	n.a.	n.a.
Maharashtra								
3	Amravati M.Corp.	O & M	Pipe lines	Contract	7	1998	n.a.	2,000,000
		Billing	Entire city	Contract	1	1998	n.a.	n.a.
4	Nashik M.Corp.	O & M	Pump station	Contract	1	1992	2,800,000	1,955,000
Rajasthan								
5	Jodhpur M.Corp.	Billing	Entire city	Contract	1	1992	n.a.	360,000
		Revenue collection	Entire city	Contract	1	1992	n.a.	900,000
6	Kota M.Corp.	O & M	Pipe lines	Contract	1	1996	n.a.	162,000
		Billing	Entire city	Contract	1	1994	n.a.	1,420,000
		Revenue collection	Entire city	Contract	1	1994	n.a.	140,000
Uttar Pradesh								
7	Agra M.Corp.	O & M	Treatment plant	Contract	1	1997	n.a.	1,182,000
		O & M	Pump station	Contract	1	1997	n.a.	150,000
8	Allahabad M.Corp.	O & M	Tube-wells	Contract	18	1989	180,000	270,012
9	Bareilly M.Corp.	O & M	Tube-wells	Contract	1	1998	75,000	40,000

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Activity	Specific aspects/areas	Privatisation mode	No. of contractors	Year privatised	Cost before privatisation (Rs.)	Cost after privatisation (Rs.)
1	2	3	4	5	6	7	8	
CLASS II								
Andhra Pradesh								
1	Qutubullapur M	O & M	Pipe line & Bore wells	Contract	1	1994	n.a.	n.a.
Gujarat								
2	Mahesana M	O & M	Pump station	Contract	1	1992	n.a.	n.a.
Karnataka								
3	Hospet CMC	Water Distribution	n.a.	n.a.	3	1996	n.a.	n.a.
Maharashtra								
4	Bhandara M	O & M	Treatment plant	Contract	1	1999	n.a.	613,332
5	Bhusawal M.CI.	O & M	Pipe lines	Contract	1	1998	600,000	n.a.
6	Virar MCI	O & M	Head work	Contract	1	1997	n.a.	3,000,000
		O & M	Treatment plant	Contract	1	1998	n.a.	360,000
Rajasthan								
7	Ajmer MCI	O & M	Pipe lines	Contract	2	1996	n.a.	n.a.
		O & M	Pump station	Contract	2	1996	n.a.	n.a.
8	Barmer M	Revenue collection	Entire city	Contract	1	1996	n.a.	53,889
		Billing	Entire city	Contract	1	1996	n.a.	89,544
9	Bhilwara M	Billing	Entire city	Contract	1	n.a.	n.a.	n.a.
10	Bundi M	Billing	Entire city	Contract	1	1994	150,000	50,000
11	Sriganganagar M	Billing	Entire city	Contract	1	1995	n.a.	100,000
		O & M	Pipe lines	Contract	1	1996	n.a.	300,000
		O & M	Pump station	Contract	2	1995	n.a.	200,000
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>								

A-13

REVENUE RECEIPTS FROM WATER SUPPLY
1997-98

A-13 : Revenue Receipts from Water Supply, 1997 - 98

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.	
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	
Metropolitan Cities															
1	Ahmedabad M.Corp.	219	81	0	0	0	0	46	17	0.4	0.2	4	1.5	270	
2	Bangalore M.Corp.	0	0	0	0	14,329	93	0	0	0	0	1,055	7	15,384	
3	Bhopal M.Corp.	0	0	0	0	499	100	0	0	0	0	0	0	499	
4	Calcutta M.Corp.	Break-up not available												947	
5	Chennai M.Corp.	2,118	13	0	0	10,198	63	0	0	0	0	3,943	24	16,258	
6	Coimbatore M.Corp.	435	38	0	0	710	62	0	0	0	0	0	0	1,145	
7	Delhi M.Corp.	0	0	77	1	3,342	44	164	2	3,965	53	0	0	7,547	
8	Greater Mumbai M.Corp.	5,037	14	0	0	30,476	86	0	0	0	0	0	0	35,513	
9	Hyderabad M.Corp.	9,438.24						89	848	8	0	0	338	3	10,623
10	Indore M.Corp.	239	31	0	0	526	67	13	1.7	0	0	2	0.3	780	
11	Jaipur M.Corp.	Break-up not available												1,405	
12	Kanpur M.Corp.	481	44	597.79						55		11	1	1,090	
13	Kochi M.Corp.	0	0	0	0	725	86	0	0	118	14	0	0	844	
14	Lucknow M.Corp.	891	77	0	0	269	23	0	0	0	0	0	0	1,159	
15	Ludhiana M.Corp.	0	0	0	0	335	100	0	0	0	0	0	0	335	
16	Madurai M.Corp.	0	0	0	0	233	91	23	9	0	0	0	0	257	
17	Nagpur M.Corp.	232	21	0	0	325	29	0	0	13	1.2	538	49	1,108	
18	Pune M.Corp.	0	0	0	0	2,162	100	0	0	0	0	0	0	2,162	
19	Surat M.Corp.	264	41	0	0	149	23	39	6	0	0	184	29	635	
20	Vadodara M.Corp.	0	0	0	0	933	94	24	2	0	0	30	3	987	
21	Varanasi M.Corp.	423	78	0	0	78	14	1	0.2	0	0	39	7	540	
22	Visakhapatnam M.Corp.	140	5	0	0	190	7	423	15	2,121	74	0	0	2,875	

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
CLASS I														
Andhra Pradesh														
1	Anantapur MCI	46	35	44	33	0.7	0.5	6	5	35	27	0	0	131
2	Chittoor M	16	55	0	0	0	0	2	5	12	40	0	0	30
3	Cuddapah MCI	0	0	0	0	13	36	23	64	0	0	0	0	36
4	Eluru M	35	40	0	0	39	45	10	11	0	0	3	3	87
5	Guntur MCI	34	10	0	0	230	67	79	23	0	0	0	0	343
6	Hindupur M	20	100	0	0	0	0	0	0	0	0	0	0	20
7	Kakinada M	45	31	0	0	71	49	28	19	0	0	0	0	144
8	Kurnool MCI	48	100	0	0	0	0	0	0	0	0	0	0	48
9	Machilipatnam M	0	0	0	0	0	0	4	100	0	0	0	0	4
10	Nandyal MCI	24	88	0	0	3	12	0	0	0	0	0	0	27
11	Nellore MCI	0	0	0	0	89	79.8	23	20	0	0	0	0	112
12	Nizamabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	Ongole MCI	Break-up not available												69
14	Qutubullapur M	0	0	0	0	4	9	20	45	20	45	0	0	44
15	Rajahmundry M.Corp.	74	43	0	0	76	44	22	13	0	0	0	0	171
16	Tenali M	3	48	0	0	1	16	2	36	0	0	0	0	7
17	Tirupati MCI	11	10	0	0	11	10	88	80	0	0	0	0	110
18	Vijaywada M.Corp.	64	13	0	0	50	10	146	30	0	0	220	46	480
19	Warangal M.Corp.	148	28	0	0	310	58	80	15	0	0	0	0	538
Bihar														
20	Bihar Sharif M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	Chhapra M	2	100	0	0	0	0	0	0	0	0	0	0	2
22	Gaya M.Corp.	25	71	0	0	0	0	0	0	10	29	0	0	35
23	Katihar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	Munger M	Break-up not available												9

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
25	Ranchi M.Corp.	Break-up not available												2
Gujarat														
26	Anand M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
27	Bharuch M	0	0	0	0	44	100	0	0	0	0	0	0	44
28	Bhavnagar M.Corp.	0	0	0	0	255	100	0	0	0	0	0	0	255
29	Bhuj M	0	0	0	0	85	98	2	2	0	0	0	0	87
30	Jamnagar M.Corp.	0	0	0	0	489	97	2	0.3	0	0	12	2	503
31	Junagadh M	0	0	0	0	13	95	0.6	5	0	0	0	0	13
32	Nadiad M	0	0	0	0	46	83	10	17	0	0	0	0	56
33	Navsari M	33	95	0	0	0	0	2	5	0	0	0	0	34
34	Porbandar M	0	0	0	0	12	90	0.4	3	0	0	0.9	7	13
35	Rajkot M.Corp.	0	0	0	0	258	98	0.4	0.1	0	0	6	2	264
36	Surendranagar M	9	88	0	0	0	0	0.1	1	0	0	1	11	11
Haryana														
37	Ambala MCI	0	0	0	0	52	93	4	7	0	0	0	0	56
38	Faridabad M.Corp.	0	0	0	0	357	100	0	0	0	0	0	0	357
39	Gurgaon MCI	0	0	0	0	53	94	3	6	0	0	0	0	56
40	Hisar MCI	0	0	0	0	58	99	0.6	1	0	0	0	0	58
41	Karnal MCI	0	0	0	0	75	98	2	2	0	0	0	0	77
42	Rohtak MCI	0	0	0	0	62	89	7	11	0	0	0	0	69
Jammu & Kashmir														
43	Jammu M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Karnataka														
44	Belgaum M.Corp.	0	0	0	0	132	55	13	6	60	25	35	14	241
45	Bellary CMC	32	22	3	2	100	71	0	0	0	0	6	4	141
46	Davangere MCI	0	0	1	3	40	97	0	0	0	0	0	0	41
47	Gadag-Betigeri CMC	0	0	2	5	38	94	0.5	1.2	0	0	0	0	40

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
48	Gulbarga M.Corp.	2	2	15	23	43	65	6	10	0	0	0	0	66
49	Hubli-Dharwar M.Corp.	0	0	0	0	269	93	16	6	2	0.8	2	0.6	289
50	Mandya M	5	36	2	16	0	0	1	10	5	37	0.2	1.1	14
51	Mangalore M.Corp.	0	0	56	5	787	66	355	30	0	0	0.8	0.07	1,199
52	Mysore M.Corp.	0	0	0.4	0.1	411	79	110	21	0	0	0.1	0.03	521
53	Shimoga CMC	0	0	6	28	16	72	0	0	0	0	0	0	22
54	Tumkur M	12	43	0	0	5	19	10	37	0	0	0	0	28
Kerala														
55	Alappuzha MC	0	0	0	0	33	92	3	7	0	0	0.4	1	36
56	Kollam MC	0	0	0	0	58	100	0	0	0	0	0	0	58
57	Kozhikode M.Corp.	0	0	0	0	44	100	0	0	0	0	0	0	44
58	Thalaserry M	0	0	0	0	19	90	2	10	0	0	0	0	21
59	Thiruvananthapuram M.Corp.	0	0	0	0	948	100	3	0.3	0	0	0	0	951
Madhya Pradesh														
60	Bhind M	25	99.7	0	0	0	0	0.1	0.3	0	0	0	0	25
61	Burhanpur M.Corp.	20	93	0	0	0	0	1	7	0	0	0	0	21
62	Dewas M.Corp.	44	95	0	0	0	0	0.9	1.9	0	0	2	3	46
63	Guna M	42	95	0	0	0	0	0.3	0.6	0	0	2	4	44
64	Gwalior M.Corp.	Break-up not available												300
65	Jabalpur M.Corp.	365	82	0	0	0	0	0	0	0	0	81	18	447
66	Khandwa M	37	91	0	0	0	0	0	0	0	0	3	9	40
67	Morena M	17	100	0	0	0	0	0	0	0	0	0	0	17
68	Murwara (Katni) M.Corp.	31	84	0	0	0	0	0	0	0	0	6	16	37
69	Ratlam M.Corp.	96	49	0	0	0	0	0.2	0.1	0	0	99	51	195
70	Rewa M.Corp.	Break-up not available												20
71	Satna M.Corp.	Break-up not available												13
72	Shivpuri M	0	0	0	0	42	49	2	1.8	0	0	43	50	87

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
Maharashtra														
73	Amravati M.Corp.	0	0	0	0	723	99.7	2	0.3	0	0	0	0	725
74	Aurangabad M.Corp.	358	89	14	4	23	6	0.4	0.1	1	0.3	5	1.2	402
75	Bhusawal MCI	67	100	0	0	0	0	0.1	0.2	0	0	0	0	67
76	Chandrapur MCI	54	100	0	0	0	0	0	0	0	0	0	0	54
77	Dhule MCI	66	97	0	0	2	3	0.1	0.2	0	0	0	0	68
78	Ichalkaranji MCI	85	99	0	0	0	0	0.3	0.3	0.6	0.7	0	0	86
79	Jalgaon MCI	28	75	0	0	0	0	9	25	0	0	0	0	38
80	Kolhapur M.Corp.	81	9	499	55	0	0	42	5	0	0	288	32	911
81	Nanded Waghala M.Corp.	73	97	0	0	0	0	0.2	0.3	2	2.7	0	0	75
82	Nashik M.Corp.	61	7	0	0	657	77	4	0.5	0.9	0.1	132	15	855
83	Parbhani MCI	43	89	0	0	0	0	2	3	1.0	2.0	3	6	48
84	Solapur M.Corp.	750	90	0	0	0	0	36	4	0	0	51	6	836
85	Wardha M	28	97	0	0	0	0	0.9	3	0	0	0	0	29
86	Yavatmal MCI	0	0	0	0	183	100	0	0	0	0	0	0	183
Orissa														
87	Bhubaneswar M.Corp.	333	98	0	0	8	2	0	0	0	0	0	0	341
88	Cuttack M.Corp.	0	0	0	0	68	82	15	18	0	0	0	0	83
89	Puri M	29	87	0	0	0.3	0.8	4	13	0	0	0	0	34
90	Rourkela M	0	0	0	0	38	93	3	7	0	0	0	0	41
91	Sambalpur M	22	100	0	0	0	0	0	0	0	0	0	0	22
Punjab														
92	Amritsar M.Corp.	0	0	0	0	493	100	0	0	0	0	0	0	493
93	Bathinda MCI	0	0	0	0	47	100	0	0	0	0	0	0	47
94	Hoshiarpur MCI	0	0	0	0	63	100	0	0	0	0	0	0	63
95	Jalandhar M.Corp.	0	0	0	0	280	70	0.2	0.1	0	0	119	30	399
96	Moga MCI	0	0	0	0	59	98	1	1.8	0	0	0	0	60

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14
97	Pathankot MCI	0	0	40	94	0	0	0.9	2	2	4	0	0	42
98	Patiala M.Corp.	0	0	0	0	154	100	0	0	0	0	0	0	154
Rajasthan														
99	Ajmer MCI	0	0	0	0	353	92	16	4	0	0	14	4	384
100	Alwar M	0	0	0	0	127	96	0	0	0	0	5	4	132
101	Beawar M	0	0	0	0	0	0	0	0	0	0	38	100	38
102	Bhilwara M	Break-up not available												103
103	Bikaner M	0	0	0	0	469	100	0	0	0	0	0	0	469
104	Jodhpur M.Corp.	Break-up not available												915
105	Kota M.Corp.	0	0	0	0	557	99	5	0.8	0	0	0	0	562
106	Sriganganagar M	0	0	0	0	122	99	0.9	0.7	0	0	0	0	123
Tamil Nadu														
107	Cuddalore M	52	87	0	0	8	13	0	0	0	0	0.1	0.1	60
108	Dindigul M	100	61	0	0	54	33	0	0	0	0	10	6	163
109	Erode M	107	66	0	0	37	22	14	9	0	0	6	3	163
110	Kanchipuram M	80	51	0	0	50	32	25	16	0	0	1	0.6	156
111	Kumbakonam M	53	75	0	0	16	23	0	0	0	0	2	2	71
112	Nagercoil M	66	49	0	0	62	46	0	0	0	0	7	6	135
113	Rajapalayam M	41	56	0	0	24	33	0	0	0	0	8	11	72
114	Salem M.Corp.	208	52	0	0	171	43	21	5	0	0	0	0	400
115	Thanjavur M	91	67	0	0	41	30	0	0	0	0	3	2	135
116	Tiruchirapalli M.Corp.	182	42	0	0	210	49	30	7	0	0	8	1.9	430
117	Tirunelveli M.Corp.	104	56	0	0	27	15	50	27	0	0	4	2	186
118	Tirunannamalai M	37	59.6	0	0	10	16	14	22	0	0	1	2	62
119	Tiruppur M	262	56	0	0	188	40	17	4	0	0	0	0	468
120	Tuticorin M	87	48	0	0	90	50	0	0	0	0	4	2	180
121	Vellore M	57	58	0	0	33	33	8	8	0	0	0	0	98

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
Uttar Pradesh														
122	Agra M.Corp.	155	17	728	79	0	0	0	0	0	0	37	4	920
123	Aligarh M.Corp.	42	34	0	0	80	66	0	0	0	0	0	0	122
124	Allahabad M.Corp.	92	16	473.57				84	0	0	0	0	0	565
125	Bareilly M.Corp.	98	80	0	0	20	17	4	3	0	0	0	0	123
126	Etawah MB	17	96	0	0	0.3	2	0	0	0	0	0.4	2	17
127	Faizabad MB	19	38	0	0	6	12	0	0	0	0	24	50	49
128	Firozabad MB	13	93	0	0	0.7	5	0.01	0.05	0	0	0.2	1.2	14
129	Ghaziabad M.Corp.	224	89	0	0	19	8	0	0	0	0	8	3	251
130	Gorakhpur M.Corp.	105	99.8	0	0	0	0	0	0	0.2	0.2	0	0	106
131	Haldwani-cum-Kathgodam MB	44	47	0	0	41	44	0	0	0	0	8	9	94
132	Hapur MB	19	85	0	0	3	12	0.6	2	0	0	0.2	0.7	22
133	Hardwar MB	43	91	0	0	4	9	0	0	0	0	0	0	48
134	Jhansi MB	9	9	81	85	0	0	0	0	0.9	0.9	5	5	95
135	Mathura MB	45	98	0	0	0.4	0.8	0.4	0.9	0	0	0	0	46
136	Meerut M.Corp.	0	0	0	0	103	91	11	9	0	0	0	0	113
137	Mirzapur MB	14	80	2	10	0	0	0.01	0.03	0	0	2	10	17
138	Moradabad M.Corp.	0	0	0	0	18	88	2	12	0	0	0	0	21
139	Muzaffarnagar MB	54	62	0	0	22	26	1	1.6	0	0	10	11	87
140	Rae Bareli MB	17	97	0	0	0	0	0	0	0.3	2	0.3	1.7	17
141	Rampur MB	10	65	0	0	6	35	0	0	0	0	0.02	0.1	16
142	Saharanpur MB	76	96	0.04	0.1	2	2	2	2	0	0	0	0	80
143	Sitapur MB	8	95	0.4	5	0	0	0	0	0	0	0.04	0.5	8
144	Unnao MB	8	97	0	0	0	0	0	0	0	0	0.3	3	9
West Bengal														
145	Asansol M.Corp.	0	0	0	0	0	0	15	90	0	0	2	10	17
146	Baharampur M	0	0	0	0	0	0	4	100	0	0	0	0	4

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
147	Balurghat M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
148	Bankura M	0	0	0	0	0	0	3	80	0.7	20	0	0	3
149	Barasat M	0	0	0	0	0	0	6	95	0.3	5	0	0	7
150	Burdwan M	0	0	0	0	0.3	6	5	94	0	0	0	0	5
151	Halisahar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
152	Krishnagar M	0	0	0	0	0	0	3	76	0.5	15	0.3	9	4
153	Midnapore M	0	0	0	0	0	0	18	99	0.2	0.8	0	0	18
154	North Barrackpore M	0	0	0	0	0	0	2	76	0	0	0.7	24	3
155	Santipur M	0	0	0	0	0	0	0	0	0.2	100	0	0	0.2
156	Silliguri M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Small States														
Assam														
157	Guwahati M.Corp.	25	59.8	0	0	0	0	10	25	6	15	0	0	41
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur														
159	Imphal MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Meghalaya														
160	Shillong MB	20	64	0	0	5	17	2	8	3	11	0	0	31
Mizoram														
161	Aizwal NM	74	94	0	0	0	0	4	6	0	0	0	0	78
Tripura														
162	Agartala MCI	20	86	0	0	0	0	1	6	2	8	0	0	23
Union Territories														
163	Chandigarh M.Corp.	0	0	0	0	1,322	70	79	4	0	0	484	26	1,885
164	Pondicherry M	0	0	0	0	123	100	0	0	0	0	0	0	123

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
CLASS II														
Andhra Pradesh														
1	Anakapalle M	4	14	0	0	22	73	4	13	0	0	0	0	30
2	Dharmavaram M	16	40	0.4	1	0.7	2	23	57	0	0	0	0	40
3	Gudur MCI	17	28	0	0	0	0	3	5	40	67	0	0	60
4	Kapra M	5	11	0	0	15	30	2	5	0	0	28	54	51
5	Kavali MCI	2	53	0	0	0	0	2	47	0	0	0	0	5
6	Madanapalle M	18	49	0	0	0	0	0.8	2	0	0	19	49	38
7	Narasaraopet M	3	7	0	0	20	52	15	40	0	0	0	0	37
8	Rajendra nagar MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	Sangareddy MCI	13	87	0	0	1	8	0.9	6	0	0	0	0	15
10	Srikakulam MCI	16	47	11	31	0	0	8	22	0	0	0	0	34
11	Srikalahasti M	break-up not available											16	
12	Suryapet MCI	15	27	0	0	19	35	3	5	0	0	18	33	54
Bihar														
13	Buxar M	1	12	0	0	0	0	10	88	0	0	0	0	11
14	Deoghar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	break-up not available											2	
16	Hazaribagh M	break-up not available											13	
17	Jehanabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Madhubani M	2	91	0	0	0	0	0.2	9	0	0	0	0	2
19	Mokama M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Gujarat														
20	Amreli M	0	0	0	0	19	87	3	13	0	0	0	0	22
21	Ankleswar M	17	94	0	0	0	0	1.0	6	0	0	0	0	18
22	Dabhoi M	14	91	0	0	1	8	0.1	0.6	0.1	0.5	0.01	0.1	16

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
23	Dohad M	6	30	0	0	14	70	0	0	0	0	0	0	19
24	Gondal M	0	0	0	0	8	21	0	0	30	79	0	0	38
25	Jetpur M	0	0	0	0	16	100	0	0	0	0	0	0	16
26	Mahesana M	0	0	0	0	24	97	0.6	3	0	0	0	0	24
27	Palanpur M	0	0	0	0	12	99	0.1	0.7	0	0	0	0	12
Haryana														
28	Jind MCI	0	0	0	0	43	97	1	3	0	0	0	0	44
29	Kaithal MCI	0	0	0	0	25	96	1	4	0	0	0	0	26
30	Rewari MCI	0	0	0	0	36	90	4	10	0	0	0	0	40
31	Thanesar MCI	0	0	0	0	42	96	2	4	0	0	0	0	43
Karnataka														
32	Bagalkot CMC	1	44	0	0	0	0	2	56	0	0	0	0	3
33	Chikmagalur CMC	0	0	0	0	21	43	27	55	0	0	0.7	1.3	49
34	Gokak CMC	29	90	0	0	1	4	2	6	0	0	0	0	32
35	Hospet CMC	0	0	0	0	1	11	11	89	0	0	0	0	12
36	Kolar CMC	44	76	0	0	7	13	6	11	0	0	0	0	58
37	Rabkavi-Banhatti CMC	0.9	12	6	86	0.2	2	0	0	0	0	0.01	0.1	7
38	Ramanagaram CMC	0	0	0	0	3	33	7	67	0	0	0	0	10
Kerala														
39	Changanessary MC	0	0	0	0	33	97	1.0	3	0	0	0	0	34
40	Payyanur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	Taliparamba M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	Thrissur MC	0	0	0	0	5	89	0.6	11	0	0	0	0	6
Madhya Pradesh														
43	Hoshangabad M	break-up not available												16
44	Itarsi M	8	90	0	0	0.2	3	0	0	0	0	0.6	7	9

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
45	Khargone M	14	92	0	0	1	8	0.03	0.2	0	0	0	0	16
46	Mandsaur M	28	100	0	0	0	0	0	0	0	0	0	0	28
47	Nagda M	13	100	0	0	0	0	0	0	0	0	0	0	13
48	Neemuch M	23	96	0.5	2	0	0	0.5	2	0	0	0	0	24
49	Sehore M	break-up not available												4
50	Shahdol M	13	73	0	0	2	10	3	17	0	0	0	0	18
51	Vidisha M	20	95	0	0	0	0	0	0	0.3	1.5	0.8	4	21
Maharashtra														
52	Amalner MCI	240	89	0	0	0	0	25	9	0	0	4	1.5	269
53	Ballarpur MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
54	Bhandara M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
55	Kamptee MCI	17	90	0	0	0	0	0.8	4	0	0	1	6	19
56	Manmad MCI	0	0	0	0	12	99	0.2	1	0	0	0	0	12
57	Ratnagiri MCI	0	0	0	0	38	98	0	0	0.9	2	0	0	39
58	Satara MCI	33	100	0	0	0	0	0	0	0	0	0	0	33
59	Virar MCI	0	0	0	0	36	30	0	0	82	70	0	0	118
Orissa														
60	Balangir M	3	44	0	0	0	0	4	56	0	0	0	0	8
61	Bhadrak M	3	93	0.2	7	0	0	0	0	0	0	0	0	4
Punjab														
62	Firozpur MCI	0.5	1	0.9	2	2	3	20	43	24	51	0	0	47
63	Kapurthala M	break-up not available												62
64	Mansa MCI	0	0	0	0	14	100	0	0	0	0	0	0	14
65	Phagwara MCI	0	0	0	0	46	99.6	0.2	0.4	0	0	0	0	46
66	Sangrur MCI	0	0	0	0	29	98	0.3	0.9	0.2	0.6	0	0	29

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
Rajasthan														
67	Banswara M	0	0	0	0	50	100	0	0	0	0	0	0	50
68	Barmer M	0	0	0	0	64	99	0.4	0.7	0	0	0	0	65
69	Bundi M	break-up not available												46
70	Churu M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
71	Hanumangarh M	0	0	0	0	40	100	0	0	0	0	0	0	40
72	Sawai Madhopur M	0	0	0	0	30	98	0	0	0	0	0.5	1.7	31
Tamil Nadu														
73	Ambur M	20	54	0	0	16	45	0.3	0.9	0	0	0	0	36
74	Arakkonam M	15	43	0	0	12	33	3	8	0	0	6	16	35
75	Attur M	16	38	0	0	24	56	0	0	0	0	2	5	43
76	Cambam M	9	41	0	0	12	54	0	0	0	0	0.9	4	22
77	Dharmapuri M	17	44	0	0	20	52	2	4	0	0	0	0	39
78	Guduvattam M	12	52	0	0	11	48	0	0	0	0	0.1	0.5	24
79	Nagapattinam M	24	65	0	0	9	26	0	0	0	0	3	8	36
80	Pudukkottai M	48	46	0	0	50	48	0	0	0	0	6	6	104
81	Sivakasi M	48	44	0	0	23	21	0	0	0	0	39	35	110
82	Srivilliputtur M	4	22	0	0	13	78	0	0	0	0	0	0	16
83	Tindivanam MC	14	65	0	0	5	25	0.8	4	0	0	1	6	21
84	Udhagamandalam M	100	73	0	0	33	24	0	0	0	0	4	3	138
Uttar Pradesh														
85	Auraiya MB	7	87	0	0	1	12	0.1	1	0	0	0	0	9
86	Balrampur MB	break-up not available												1
87	Basti MB	6	77	0	0	2	21	0.1	1	0	0	0.1	0.9	8
88	Bhadohi MB	7	83	0	0	0	0	0	0	0	0	2	17	9
89	Chandpur MB	7	76	0	0	2	21	0.2	2	0	0	0	0	10

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total Rs.
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
90	Etah MB	5	70	1	20	0.7	10	0	0	0	0	0	0	7
91	Ghazipur MB	10	94	0.6	6	0.03	0.3	0	0	0	0	0	0	10
92	Gonda MB	13	82	0	0	0	0	3	18	0	0	0	0	16
93	Lakhimpur MB	18	84	0	0	3	15	0	0	0	0	0.2	0.9	21
94	Lalitpur MB	9	23	0	0	29	72	0	0	0	0	2	5	40
95	Mughalsarai MB	4	86	0	0	0.5	11	0.1	2	0	0	0.02	0.5	5
96	Nawabganj-Barabanki MB	5	56	0	0	4	44	0	0	0	0	0	0	9
97	Orai MB	2	8	0	0	24	89	0.6	2	0	0	0	0	27
98	Roorkee MB#	18	85	0	0	0	0	3	15	0	0	0	0	21
West Bengal														
99	Bishnupur M	0	0	0	0	0	0	1	100	0	0	0	0	1
100	Chakdaha M	0	0	0	0	0	0	0	0	0.4	100	0	0	0.4
101	Contai M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
102	Cooch Behar M	0	0	0	0	0	0	0	0	4	100	0	0	4
103	Darjeeling M	break-up not available												4
104	Jalpaiguri M	0	0	0	0	0	0	8	81	2	19	0	0	9
105	Jangipur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
106	Katwa M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
107	Raniganj M	break-up not available												2
Small States														
Himachal Pradesh														
108	Shimla M.Corp.	0	0	4	2	137	91	10	7	0	0	0	0	151
Nagaland														
109	Kohima TC	5	100	0	0	0	0	0	0	0	0	0	0	5
Union Territories														
110	Port Blair MCI	0	0	0	0	39	37	0	0	66	63	0	0	105

Sl. No.	City/Town	Water Tax		Water Cess		Water Charges		Connection Charges		Bulk supply Charges		Others		Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14
Others (Smaller than Class II towns)														
Small States														
Arunachal Pradesh														
111	Itanagar CT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Goa														
112	Panaji MCI	Break-up not available												479
Union Territories														
113	Daman MCI	0	0	0	0	9	90	1	10	0	0	0	0	10
114	Kavarathi NMCT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.04
115	Silvassa	0	0	0	0	1	100	0	0	0	0	0	0	1
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>														

A-14

REVENUE EXPENDITURE ON WATER SUPPLY,
1997-98

A-14 : Revenue Expenditure on Water Supply, 1997-98

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%					
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
METROPOLITAN CITIES																
1	Ahmedabad M.Corp.	831	21	2715	69	55	1	177	4	169	4	0	0	0	0	3947
2	Bangalore M.Corp.	2455	16	7154	48	2367 (16)				0	0	0	2933	0	20	14909
3	Bhopal M.Corp.	133	9	1069	75	29	2	18	1	179	13	0	0	0	0	1427
4	Calcutta M.Corp.	2651	35	2297	30	592	8	1993	26	0	0	0	0	0	0	7534
5	Chennai M.Corp.#	3961	33	1286	11	190	2	675	6	1316	11	0	2970	1459	37	11858
6	Coimbatore M.Corp	314	77			90.6 (22.3)				0	0	0	2	0	0.6	407
7	Delhi M.Corp.	9419	20	9172	20	1146	2	1150	2	1439	3	10880	13622	0	52	46829
8	Greater Mumbai M.Corp.	8715	33	8712	33	281	1	1263	5	0	0	2608	958	3738	28	26275
9	Hyderabad M.Corp.#	3095	31	3789	38	125	1	1204	12	693	7	0	0	1145	11	10052
10	Indore M.Corp.	540	19	1500	54	85	3	640	23	8	0.3	0	0	0	0	2773
11	Jaipur M.Corp.	1203	33	1963	53	27	0.7	493 (13)				0	0	0	0	3686
12	Kanpur M.Corp.	655	71	143	15	55	6	64	7	9	1	0	0	0	0	926
13	Kochi M.Corp.	363	57	150	24	3	0.4	119	19	0	0	0	0	0	0	635
14	Lucknow M.Corp.	1134	54	800	38	103	5	82	4	0	0	0	0	0	0	2118
15	Ludhiana M.Corp.	319	26	491	39	75.2 (6.0)				365	29	0	0	0	0	1250
16	Madurai M.Corp.	33	16			175.1 (84.1)				0	0	0	0	0	0	208
17	Nagpur M.Corp.	295	9	1973	59	45	1	96	3	295	9	661	0	0	20	3365
18	Pune M.Corp.	685	23	2092	71	148.2 (5.1)				0	0	0	0	3	0.1	2928
19	Surat M.Corp.	323	19	1165	69	48	3	109	6	32	2	0	0	0	0	1676
20	Vadodara M.Corp.#	480	23	1327	65	222.3 (10.9)				0	0	4	15	0	1	2048
21	Varanasi M.Corp.	419	54	263	34	73	9	24	3	0	0	0	0	0	0	779
22	Visakhapatnam M.Corp.	252	24	621	59	37	3	140	13	0	0	0	0	0	0	1050
<p># Expenditure figures include both water supply and sewerage Figures within brackets/paranthesis are the per centages for the combined items of expenditure Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</p>																

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CLASS I																
Andhra Pradesh																
1	Anantapur MCI	42	46	15	16	25	27	10	11	0	0	0	0	0	0	92
2	Chittoor M	19	15	84	66	12	9	12	10	0	0	0	0	0	0	127
3	Cuddapah MCI	43	29	82	56	9	6	12	8	0	0	0	0	0	0	148
4	Eluru M	49	52	13	14	14.9 (16.0)				15	16	0	0	2	2	93
5	Guntur MCI	100	17	200	34	3	0.5	50	9	233	40	0	0	0	0	586
6	Hindupur M	23	27	60	69	4.0 (4.6)				0	0	0	0	0	0	87
7	Kakinada M	51	32	43	27	9	6	24	15	25	16	6		0	4	159
8	Kurnool MCI	58	77	7	10	9	12	1	2	0	0	0	0	0	0	75
9	Machilipatnam M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	Nandyal MCI	25	33	42	56	2	3	6	8	0	0	0	0	0	0	74
11	Nellore MCI	25	24	57.1 (52.9)				25	24	0	0	0	0	0	0	108
12	Nizamabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	Ongole MCI	18	23	25	32	13	17	16	20	6	7	0	0	0	0	78
14	Qutubullapur M	102	49	18	9	24	12	27	13	37	18	0	0	0	0	207
15	Rajahmundry M.Corp.	41	20	152.3 (75.0)				8	4	0	0	2	0	0	0.8	203
16	Tenali M	0.6	11	2	28	1.2	21	2.2	40	0	0	0	0	0	0	6
17	Tirupati MCI	60	39	53	34	5	3	38	24	0	0	0	0	0	0	156
18	Vijaywada M.Corp.	120	22	400.0 (73.6)				13	2	11	2	0	0	0	0	544
19	Warangal M.Corp.	122	33	200	54	36	10	15	4	0	0	0	0	0	0	373
Bihar																
20	Bihar Sharif M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	Chhapra M	break-up not available														59
22	Gaya M.Corp.	break-up not available														19
23	Katihar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	Munger M	break-up not available														15
25	Ranchi M.Corp.	break-up not available														44

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%					
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Gujarat																
26	Anand M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
27	Bharuch M	24	17	81	59	32.0 (23.3)				0	0	0	0	0	0	137
28	Bhavnagar M.Corp.	138	9	594	41	35	2	606	42	0	0	0	84	0	6	1456
29	Bhuj M	37	20	146.9 (79.2)						1	0.8	0	0	0	0	186
30	Jamnagar M.Corp.	59.1	15	310.9	80	0.3	0.1	18.7	5	2	0.5	0	0	0	0	391
31	Junagadh M	54.3	61	0.9	1	21.5 (24.1)				12.3	14	0	0	0	0	89
32	Nadiad M	29	45	17	27	6.2	10	11	18	0.3	0.5	0	0	0	0	63.5
33	Navsari M	39	23	131.2 (76.9)						0	0	0	0	0	0	171
34	Porbandar M	7	16	39.0 (84.2)						0	0	0	0	0	0	46
35	Rajkot M.Corp.	195	34	184	32	189.9 (32.2)				2	0.3	0	0	0	0	571
36	Surendranagar M	29.4	54	25.2 (46.0)						0.2	0.3	0	0	0	0	54.8
Haryana																
37	Ambala MCI	56	36	80	52	15	10	3	2	0	0	0	0	0	0	154
38	Faridabad M.Corp.	527	33	1062	66	13	0.8	7	0.5	0	0	9	0	0	0.6	1618
39	Gurgaon MCI	93	37	99	39	3	1	7	3	16	7	0	33	0	13	251
40	Hisar MCI	45	21	138	66	8	4	6	3	14	7	0	0	0	0	210
41	Karnal MCI	117	43	122	44	12	4	7	3	17	6	0	0	0	0	274
42	Rohtak MCI	36	21	99	57	19	11	8	5	10	6	0	0	0	0	172
Jammu & Kashmir																
43	Jammu M.Corp.break-up not available															225
Karnataka																
44	Belgaum M.Corp.	64	44	2	1	63.4 (43.7)				17	11	0	0	0	0	145
45	Bellary CMC	46.4	44	58.0 (55.4)						0.2	0.2	0	0	0	0	104.6
46	Davangere MCI	50.4	44	0.1	0.04	10	8	39	34	15	13	0	0	0	0	114.5
47	Gadag-Betigeri CMC	47	67	5	8	17.2 (24.7)				0	0	0	0	0	0	70
48	Gulbarga M.Corp.	49	32	3	2	72.6 (47.4)				29	19	0	0	0	0	153
49	Hubli-Dharwar M.Corp.	132	45	150.6 (51.1)						12	4	0	0	0	0	295
50	Mandya M	12	45	14.1 (55.1)						0	0	0	0	0	0	26

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
51	Mangalore M.Corp.	80	13	402.0 (67.8)				112		19	0	0	0	0	593	
52	Mysore M.Corp.	173	30	211	37	11	2	98	17	76	13	8	0	0	1	578
53	Shimoga CMC	15	14	15	15	7	7	62	61	3	3	0	0	0	0	102
54	Tumkur M	72	21	109	32	114	33	47	14	0	0	0	0	0	0	341
Kerala																
55	Alappuzha MC	120	71	33	19	16.6 (9.9)				0	0	0	0	0	0	169
56	Kollam MC	35	45	27	35	15.2 (19.8)		0		0	0	0	0	0	77	
57	Kozhikode M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
58	Thalaserry M	42	50	22	26	8	10	12	14	0	0	0	0	0	0	84
59	Thiruvananthapuram M.Corp.	331	62	70	13	7	1	122	23	0	0	0	0	0	0	530
Madhya Pradesh																
60	Bhind M	52	78	14.2 (21.5)						0	0	0	0	0	0	66
61	Burhanpur M.Corp.	26	68	9	24	2.8 (7.5)				0	0	0	0	0	0	38
62	Dewas M.Corp.	69	46	8	6	28	18	12	8	33	22	0	0	0	0	150
63	Guna M	39	30	35	27	19	14	38	29	0	0	0	0	0	0	130
64	Gwalior M.Corp.	608	52	288	25	265.0 (22.8)				0	0	0	0	0	0	1161
65	Jabalpur M.Corp.	264	45	35	6	7.3 (1.3)				280	48	0	0	0	0	586
66	Khandwa M	58	45	24	19	42.2 (33.2)				3	2	0	0	0	0	127
67	Morena M	17	62	7	25	3.5 (12.8)				0	0	0	0	0	0	28
68	Murwara (Katni) M.Corp.	51	53	28	29	5	5	8	8	5	5	0	0	0	0	97
69	Ratlam M.Corp.	42	47	35	39	2	2	9	10	2	2	0	0	0	0	89
70	Rewa M.Corp.	83	41	18	9	33.1 (16.5)				66	33	0	0	0	0	200
71	Satna M.Corp.	12	20	44	72	4.8 (7.9)				0	0	0	0	0	0	60
72	Shivpuri M	56	39	41	29	26	18	20	14	0	0	0	0	0	0	143
Maharashtra																
73	Amravati M.Corp.	141	14	439	45	43	4	57	6	0.5	0.1	0	300	0	31	980.5
74	Aurangabad M.Corp.	112.43	13	615.6	74	3.18	0.4	103.2	12	0.01	0.001	0.18	0	0	0.02	834.6
75	Bhusawal MCI	36	19	110	59	20.3 (10.8)				3	1	0	8	10	10	187

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
76	Chandrapur MCI	6	3	142	87	16.2 (9.8)				0	0	0	0	0	0	164
77	Dhule MCI	9	2	300	58	150.9 (29.3)		0		0	56	0	0	11	516	
78	Ichalkaranji MCI	90	31	150	52	18	6	27	9	0	0	0	0	5	2	289
79	Jalgaon MCI	80	16	142	29	266.9 (54.6)		0		0	0	0	0	0	489	
80	Kolhapur M.Corp.	202	24	525	62	29	3	48	6	48	6	0	0	0	0	852
81	Nanded Waghala M.Corp.	41.4	13	189	59	37.8	12	25.1	8	27.4	9	0	0	0.3	0.1	321
82	Nashik M.Corp.	359	18	959	49	81	4	105	5	438	23	0	0	0	0	1941
83	Parbhani MCI	20	23	3(3)				4	5	3	4	51	4	0	64	85
84	Solapur M.Corp.	159	13	707	57	4	0.3	196	16	44	4	133	0	0	11	1241
85	Wardha M	16	30	13	25	7.3 (13.6)				17	32	0	0	0	0	54
86	Yavatmal MCI	56	24	117	50	13.7 (5.9)				47	20	0	0	0	0	234
Orissa																
87	Bhubaneswar M.Corp.	315	24	607	46	89	7	298	23	0	0	0	0	0	0	1309
88	Cuttack M.Corp.	286	43	275	42	43	7	55	8	0	0	0	0	0	0	659
89	Puri M	59	43	56	40	2	2	20	15	0	0	0	0	0	0	137
90	Rourkela M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
91	Sambalpur M	47	32	70	47	12	8	20	13	0	0	0	0	0	0	149
Punjab																
92	Amritsar M.Corp.	220	31	370	52	88.6 (12.6)				0	0	0	26	0	4	704
93	Bathinda MCI	50	42	48	40	12	10	9	7	0	0	0	0	0	0	120
94	Hoshiarpur MCI	50	39	65.7 (51.1)						0	0	13	0	0	10	128
95	Jalandhar M.Corp.	253	31	305	38	7	0.9	73	9	151	19	8	13	0	3	810
96	Moga MCI	28	30	40	43	5	6	16	17	0	0	0	4	0	4	93
97	Pathankot MCI	53	37	69	48	2	2	20	14	0	0	0	0	0	0	144
98	Patiala M.Corp.	83	41	85	42	36 (18)				0	0	0	0	0	0	204
Rajasthan																
99	Ajmer MCI	382	26	1011	68	10	0.7	69	5	7	0.5	0	0	0	0	1479
100	Alwar M	316	50	261	41	3	0.4	53	8	0	0	0	0	0	0	633
101	Beawar M	83	27	194	63	15	5	16 (5)				0	0	0	0	306

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
102	Bhilwara M	89	35	129	50	6	2	15	6	13	5	0	0	5	2	257
103	Bikaner M	324	29	623	56			53.8	(4.8)	63	6	34	0	12	4	1110
104	Jodhpur M.Corp.	787	18	2389	54			39	(0.9)	0	0	1174	0	0	27	4389
105	Kota M.Corp.	348	80	8	2	30	7	47	11	0	0	0	0	0	0	433
106	Sriganganagar M	88	32	144	52			36.5	(13.3)	7	2	0	0	0	0	275
Tamil Nadu																
107	Cuddalore M	11	28			29.0		(72.1)		0	0	0	0	0	0	40
108	Dindigul M	48	36			85.5		(64.1)		0	0	0	0	0	0	133
109	Erode M	38	24			82.4		(51.3)		0	0	0	40	0	25	161
110	Kanchipuram M	26	26			60.0		(59.3)		0	0	0	15	0	15	101
111	Kumbakonam M	12	42			15.6		(54.9)		0	0	0	0.8	0	3	28.4
112	Nagercoil M	20	23			59.6		(70.1)		0	0	0	0	5	6	85
113	Rajapalayam M	8	14			43.2		(72.9)		0	0	0	8	0	13	59
114	Salem M.Corp.	125	34	201	55	13	4	4	1	24	7	0	0	0	0	368
115	Thanjavur M	37	41			47.3		(52.7)		0	0	0	6	0	7	90
116	Tiruchirapalli M.Corp.	54	10			104.8		(19.4)		286	53	94	0	0	17	539
117	Tirunelveli M.Corp.	67	38			110.9		(62.2)		0	0	0	0	0	0	178
118	Tirunvannamalai M	17	31			36.8		(68.7)		0	0	0	0	0	0	54
119	Tiruppur M	31	17			149.4		(82.8)		0	0	0	0	0	0	181
120	Tuticorin M	58	27			151.0		(71.1)		3	1	0	0	0	0	212
121	Vellore M	32	31	51	49	20.7		(19.9)		0	0	0	0	0	0	104
Uttar Pradesh																
122	Agra M.Corp.	532	53	97	10	198	20	44	4	137	14	0	0	0	0	1008
123	Aligarh M.Corp.	72	67	5.6	52	9.5		(27.4)		0.7	0.6	0	0	0	0	107.8
124	Allahabad M.Corp.	456	71	73	11	31	5	84	13	0	0	0	0	0	0	645
125	Bareilly M.Corp.	120	25	150	31	70.0		(14.4)		0	0	0	0	145	30	485
126	Etawah MB			52.0		(100)				0	0	0	0	0	0	52
127	Faizabad MB	27	12	20088		1.0		(0.4)		0	0	0	0	0	0	228
128	Firozabad MB			26.3		(100)				0	0	0	0	0	0	26

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
156	Silliguri M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Small States																
Assam																
157	Guwahati M.Corp.	156	29	300	56	36	7	43	8	0	0	0	0	0	0	535
158	Jorhat MB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur																
159	Imphal MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Meghalaya																
160	Shillong MB	Not available for the town separately														
Mizoram																
161	Aizwal NM	Not available for the town separately														
Tripura																
162	Agartala MC	Not available for the town separately														
Union Territories																
163	Chandigarh M.Corp.	1050	37	1639	57	53	2	118	4	0	0	0	0	0	0	2859
164	Pondicherry M	152	76	47.1 (23.7)						0	0	0	0	0	0	199
<p># Expenditure figures include both water supply and sewerage ;</p> <p>Figures within brackets/paranthesis are the per centages for the combined items of expenditure</p> <p>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</p>																

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total	
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
CLASS II																	
Andhra Pradesh																	
1	Anakapalle M	5	30	7	42	4	21	1	7	0	0	0	0	0	0	17	
2	Dharmavaram M	21	36	35.8	61	0.39	0.7	1.6	3	0	0	0.01	0	0	0.02	58.8	
3	Gudur MCI	41	50	41.3 (50.0)						0	0	0	0	0	0	0	83
4	Kapra M	0.4	0.6	16.7	25	0.3	0.4	17.9	27	30.7	47	0	0	0	0	66	
5	Kavali MCI	7	40	10.6 (60.4)						0	0	0	0	0	0	0	18
6	Madanapalle M	30	26	45	38	39.0 (33.2)				0	0	3	0	0	3	117	
7	Narasaraopet M	9	13	45	61	19.1 (26.1)				0	0	0	0	0	0	73	
8	Rajendra nagar MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
9	Sangareddy MCI	13	31	3	7	17	39	3	6	8	18	0	0	0	0	44	
10	Srikakulam MCI	1237		20.4 (63.0)						0	0	0	0	0	0	32	
11	Srikalahasti M	22	50	22.3 (50.5)						0	0	0	0	0	0	44	
12	Suryapet MCI	30	64	3	6	4	8	8	16	2	3	1	0	0	3	47	
Bihar																	
13	Buxar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
14	Deoghar M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
15	Hajipur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
16	Hazaribagh M	98	58	55	32	13	8	3	2	0	0	0	0	0	0	169	
17	Jehanabad M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
18	Madhubani M	24	65	11 (31)				2	4	0	0	0	0	0	0	37	
19	Mokama M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
Gujarat																	
20	Amreli M	22	13	41.1 (24.7)						103	62	0	0	0	0	166	
21	Ankleswar M	12	23	31	57	11.4 (20.9)				0	0	0	0	0	0	55	
22	Dabhoi M	10.5	14	22.9	30	11.5 (14.9)				0.05	0.1	32.25		0	42	77.2	
23	Dohad M	8	25	7	21	15.1 (46.3)				3	8	0	0	0	0	33	
24	Gondal M	28	74	1.8	5	0.6	1	0.02	0.04	0.88	2	0	6.7	0	17	38	
25	Jetpur M	14	20	3550		14.4 (20.7)				0	0	2	4	0	9	70	

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
26	Mahesana M	13	11	81	73	17.2 (15.6)				0	0	0	0	0	0	111
27	Palanpur M	37	42	47	53	4.7 (5.3)				0	0	0	0	0	0	89
Haryana																
28	Jind MCI	33	39	40	46	2	3	5	5	6	7	0	0	0	0	86
29	Kaithal MCI	27	37	35	49	4	6	2	3	3	5	0	0	0	0	71
30	Rewari MCI	40	24	103	62	7	4	3	2	13	8	0	0	0	0	166
31	Thanesar MCI	38	34	62	56	3	3	1	1	8	7	0	0	0	0	112
Karnataka																
32	Bagalkot CMC	8	21	10	27	1	4	15	42	3	7	0	0	0	0	37
33	Chikmagalur CMC	11	38			16.0 (55.0)				2	7	0	0	0	0	29
34	Gokak CMC	5	27	0.2	1	2.8	14	11	57	0	0	0	0	0	0	19
35	Hospet CMC	11.3	71			3.9 (24.1)				0	0	0	0.8	0	5	16
36	Kolar CMC	69	81			16.3 (19.1)				0	0	0	0	0	0	86
37	Rabkavi-Banhatti CMC	7	17	5	13	21.4 (54.4)				6	15	0	0	0	0	39
38	Ramanagaram CMC	7	34	3	18	9.2 (47.8)				0	0	0	0	0	0	19
Kerala																
39	Changanessary MC	46	99			0.3 (0.7)				0	0	0	0	0	0	46.3
40	Payyanur M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	Taliparamba M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	Thrissur MC	85	84	5	5	11 (11)				0	0	0	0	0	0	101
Madhya Pradesh																
43	Hoshangabad M	6	22			7.8 (27.0)				15	51	0	0	0	0	29
44	Itarsi M	7	37			2.4 (12.2)				10	51	0	0	0	0	20
45	Khargone M	5	16			26.8 (84.3)				0	0	0	0	0	0	32
46	Mandsaur M	19	34	18	32	18.4 (32.7)				0	0	0.3	0.7	0	2	56.4
47	Nagda M	5.8	37	4.4	28	5.11 (33)				0	0	0.05	0.14	0	1	15.5
48	Neemuch M	30	38	28	35	1	1	20	26	0	0	0	0	0	0	79
49	Sehore M	9.2	60	0.5	3	5.7 (37)				0	0	0	0	0	0	15.4
50	Shahdol M	12	51			7.0 (30.2)				0	0	0	4	0	19	23

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
51	Vidisha M	41	50	18	22			22.0 (27.3)		0	0	0	0	0	0	81
Maharashtra																
52	Amalner MCI	37	22	96	59			15.0 (9.2)		0	0	15	0	0	9	163
53	Ballarpur MCI	22	25	42	46	3	4	23	25	0	0	0	0	0	0	90
54	Bhandara M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
55	Kamptee MCI	18	89			2.2 (10.7)				0	0	0	0	0	0	20
56	Manmad MCI	24	3	5	0.6	10.0 (1.2)				10	1	33	782	0	94	864
57	Ratnagiri MCI	40	37			60.6 (56.5)				0	0	7	0	0	6	107
58	Satara MCI	26	17	1	0.7	81	54	38	25	5	3	0	0	0	0	151
59	Virar MCI	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Orissa																
60	Balangir M	24	45	17	32	7	12	6	10	0	0	0	0	0	0	54
61	Bhadrak M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Punjab																
62	Firozpur MCI	21.7	35	37	60	0.2	0.3	3.4	5	0	0	0	0	0	0	62.3
63	Kapurthala M	22	28	38	50	9 (11)				0	0	8	0	0	11	77
64	Mansa MCI	12	35	15	44	3.2	9	0.5	1	3.3	10	0	0	0	0	34
65	Phagwara MCI	24.8	29	38	44	0.3	0.4	6.6	8	17	20	0	0	0	0	86.7
66	Sangrur MCI	13	23	31	55	0.9	1	11	19	1.1	2	0	0	0	0	57
Rajasthan																
67	Banswara M	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.
68	Barmer M	54.6	23	174	72	0.8	0.3	6.8	3	0	0	1.8	0	2	2	240
69	Bundi M	62.8	33	110	58	0.8 (0.4)				15.9	8	0	0	0	0	189.5
70	Churu M	96	45	100	47	2.7	1	1.8	0.8	5	2	8	0.5	2	5	216
71	Hanumangarh M	4	21	5	25	4	20	7	34	0	0	0	0	0	0	19
72	Sawai Madhopur M	31	20	77	49	1	0.8	14	9	28	18	4	0	0	2	156
Tamil Nadu																
73	Ambur M	11	32	15	47	7.0 (21.2)				0	0	0	0	0	0	33
74	Arakkonam M	9	20			37.0 (80.0)				0	0	0	0	0	0	46

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
75	Attur M	10	52	8.1 (43.2)						0	0	0	0.9	0	5	19
76	Cambam M	9.8	54	0.1	0.6	6	33	2.1	12	0	0	0	0	0	0	18
77	Dharmapuri M	13	43	3	11	13.5 (46.0)				0	0	0	0	0	0	29
78	Guduivattam M	20	65	11.0 (35.0)						0	0	0	0	0	0	31
79	Nagapattinam M	8	34	16.1 (66.1)						0	0	0	0	0	0	24
80	Pudukkottai M	39	39	60.7 (60.7)						0	0	0	0	0	0	100
81	Sivakasi M	17	10	78.2 (46.4)						0	0	0	73	0	43	168
82	Srivilliputtur M	13	60	8.6 (39.9)						0	0	0	0	0	0	22
83	Tindivanam MC	5	27	14.1 (72.8)						0	0	0	0	0	0	19
84	Udhagamandalam M	96	76	26.4 (20.9)						0	0	0	4	0	3	127
Uttar Pradesh																
85	Auraiya MB	6.6	80	0.3 (3)				1.4	17	0	0	0	0	0	0	8.3
86	Balrampur MB			5.3 (100)						0	0	0	0	0	0	5
87	Basti MB			34.0 (100)						0	0	0	0	0	0	34
88	Bhadohi MB	11	85	2.0 (14.9)						0	0	0	0	0	0	13
89	Chandpur MB	4.5	83	0.5	9	0.2	3	0.3	5	0	0	0	0	0	0	5.5
90	Etah MB	12	71	3.5	21	0.6	4	0.9	5	0	0	0	0	0	0	17
91	Ghazipur MB	17	73	6.4 (27.4)						0	0	0	0	0	0	23
92	Gonda MB			17.9 (100)						0	0	0	0	0	0	18
93	Lakhimpur MB	15	67	3 (12)				4	20	0	0	0	0	0	0	22
94	Lalitpur MB	16	33	20	41	0.1	0.2	12	25	0.4	0.7	0	0	0	0	48.5
95	Mughalsarai MB	4	10	37.5 (90.0)						0	0	0	0	0	0	42
96	Nawabganj- Barabanki MB	21.2	92	1 (4)				0.8	3	0	0	0	0	0	0	23
97	Orai MB	32	51	5	8	3	4	23	37	0	0	0	0	0	0	63
98	Roorkee MB			28.9 (100)						0	0	0	0	0	0	29
West Bengal																
99	Bishnupur M	8	46	1	8	1	7	3	17	0	0	0	1	3	22	17
100	Chakdaha M	2.3	17	0.6	4	11.1 (79.1)				0	0	0	0	0	0	14

Sl. No.	City/Town	Salary and wages		Electricity		Consumables		Repairs & replacements		Others		Interest	Debit Servicing	Depreciation	Sub Total	Total
		Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	%	Rs.	Rs.	Rs.	Rs.	Rs.
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
101	Contai M	12	59	1	5	1.3 (5.9)				0	0	0	0	7	31	21
102	Cooch Behar M	29	89	2	8	1.0 (3.1)				0	0	0	n.a.	0	n.a.	32
103	Darjeeling M	26	36			21.6 (30.1)				25	34	0	0	0	0	72
104	Jalpaiguri M	30	75	3	9	2	4	5	13	0	0	0	0	0	0	39
105	Jangipur M	8	88			1.0 (11.8)				0	0	0	0	0	0	9
106	Katwa M	4	54	2	20	1.9 (26.1)				0	0	0	0	0	0	7
107	Raniganj M	19	38	21.7	43	0.9	2	0.6	1	0.5	1	2.9	2.7	1.7	14	50
Small States																
Himachal Pradesh																
108	Shimla M.Corp.	94	61	12	8	46.5 (30.4)				0	0	0	0	0	0	153
Nagaland																
109	Kohima TC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Union Territories																
110	Port Blair MCI	78	26	185 (62)				35	12	0	0	0	0	0	0	298
Others (Smaller than Class II towns)																
Small States																
Arunachal Pradesh																
111	Itanagar CT	Not available for the town separately														
Goa																
112	Panaji MCI	Not available for the town separately														
Union Territories																
113	Daman MCI	12	32	10	26	8	21	8	21	0	0	0	0	0	0	38
114	Kavarathi NMCT	5	26	13.6 (74.0)						0	0	0	0	0	0	18
115	Silvassa	20	80	3	122.0 (8.2)					0	0	0	0	0	0	24
<p># Expenditure figures include both water supply and sewerage</p> <p>Figures within brackets/paranthesis are the per centages for the combined items of expenditure</p> <p>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</p>																

A-15

COST RECOVERY AND
REVENUE - EXPENDITURE GAP, 1997-98

A-15 : Cost Recovery and Revenue - Expenditure Gap, 1997-98

Sl. No.	City/Town	Water supplied (mld)	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Cost Recovery (% Receipts to Expenditure)	Receipts-Expenditure Gap (Rs. in lakhs)	Revenue/kl (in Rs.)	Expenditure/kl (in Rs.)	Rev-Exp. Gap/kl
1		2	3	4	5	6	7	8	9
Metropolitan Cities									
1	Ahmedabad M.Corp.	486	270	3947	6.8	-3677	0.2	2.2	-2.0
2	Bangalore M.Corp.	706	15384	14909	103	475	6.0	5.8	0.2
3	Bhopal M.Corp.	270	499	1427	35	-928	0.5	1.4	-0.9
4	Calcutta M.Corp.	1,035	947	7534	13	-6586	0.3	2.0	-1.7
5	Chennai M.Corp.	461	16258	11858	137	4400	9.6	7.0	2.6
6	Coimbatore M.Corp	105	1145	407	282	738	3.0	1.1	1.9
7	Delhi M.Corp.	2,620	7547	46829	16	-39282	0.8	4.9	-4.1
8	Greater Mumbai M.Corp.	2,978	35513	26275	135	9238	3.2	2.4	0.8
9	Hyderabad M.Corp.	682	10623	10052	106	572	4.2	4.0	0.2
10	Indore M.Corp.	238	780	2773	28	-1993	0.9	3.2	-2.3
11	Jaipur M.Corp.	340	1405	3686	38	-2280	1.1	2.9	-1.8
12	Kanpur M.Corp.	310	1090	926	118	164	0.9	0.8	0.1
13	Kochi M.Corp.	84	844	635	133	208	2.8	2.1	0.7
14	Lucknow M.Corp.	410	1159	2118	55	-959	0.8	1.4	-0.6
15	Ludhiana M.Corp.	234	335	1250	27	-915	0.4	1.5	-1.1
16	Madurai M.Corp.	90	257	208	123	49	0.7	0.6	0.1
17	Nagpur M.Corp.	370	1108	3365	33	-2257	0.8	2.5	-1.7
18	Pune M.Corp.	650	2162	2928	74	-766	0.9	1.2	-0.3
19	Surat M.Corp.	320	635	1676	38	-1041	0.5	1.4	-0.9
20	Vadodara M.Corp.	237	987	2048	48	-1061	1.1	2.3	-1.2
21	Varanasi M.Corp.	220	540	779	69	-239	0.7	1.0	-0.3
22	Visakhapatnam M.Corp.	168	2875	1050	274	1825	4.7	1.7	3.0
Total - Metropolitan Cities		10,315	102365	146,679	70	-44314	2.7	3.9	0.8

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No.	City/Town	Water supplied (mld)	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Cost Recovery (% Receipts to Expenditure)	Receipts-Expenditure Gap (Rs. in lakhs)	Revenue/kl (in Rs.)	Expenditure/kl (in Rs.)	Rev-Exp. Gap/kl
1		2	3	4	5	6	7	8	9
24	Munger M	10	8.6	14.6	59	-6.0	0.2	0.4	-0.2
25	Ranchi M.Corp.	91	2	44	4.0	-42	0.01	0.13	-0.12
Gujarat									
26	Anand M	11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
27	Bharuch M	18	44	137	32	-93	0.7	2.1	-1.4
28	Bhavnagar M.Corp.	70	255	1456	17	-1202	1.0	5.7	-4.7
29	Bhuj M	16	87	186	47	-99	1.5	3.2	-1.7
30	Jamnagar M.Corp.	85	503	391	129	112	1.6	1.2	0.4
31	Junagadh M	12	13	89	15	-76	0.3	2.0	-1.7
32	Nadiad M	21	56.1	63.5	88	-7.4	0.7	0.8	-0.1
33	Navsari M	16	34	171	20	-136	0.6	2.9	-2.3
34	Porbandar M	10	13	46	28	-33	0.4	1.3	-0.9
35	Rajkot M.Corp.	107	264	571	46	-307	0.7	1.5	-0.8
36	Surendranagar M	5.6	11	55	20	-44	0.5	2.7	-2.2
Haryana									
37	Ambala MCI	16	56	154	36	-98	0.9	2.6	-1.7
38	Faridabad M.Corp.	184	357	1618	22	-1261	0.5	2.4	-1.9
39	Gurgaon MCI	19	56	251	23	-194	0.8	3.7	-2.9
40	Hisar MCI	25	58	210	28	-152	0.6	2.3	-1.7
41	Karnal MCI	40	77	274	28	-197	0.5	1.9	-1.4
42	Rohtak MCI	32	69	172	40	-103	0.6	1.5	-0.9
Jammu & Kashmir									
43	Jammu M.Corp.	58	n.a.	225	n.a.	n.a.	n.a.	1.1	n.a.
Karnataka									
44	Belgaum M.Corp.	36	241	145	166	95	1.8	1.1	0.7
45	Bellary CMC	31	141	105	134	36	1.2	0.9	0.3

Sl. No.	City/Town	Water supplied (mld)	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Cost Recovery (% Receipts to Expenditure)	Receipts-Expenditure Gap (Rs. in lakhs)	Revenue/kl (in Rs.)	Expenditure/kl (in Rs.)	Rev-Exp. Gap/kl
1	2	3	4	5	6	7	8	9	
46	Davangere MCI	32	41	114	36	-74	0.4	1.0	-0.6
47	Gadag-Betigeri CMC	16	40	70	58	-29	0.7	1.2	-0.5
48	Gulbarga M.Corp.	32	66	153	43	-87	0.6	1.3	-0.7
49	Hubli-Dharwar M.Corp.	88	289.1	294.6	98	-5.6	0.90	0.92	-0.02
50	Mandya M	13	14	26	53	-12	0.3	0.5	-0.2
51	Mangalore M.Corp.	85	1199	593	202	605	3.9	1.9	2.0
52	Mysore M.Corp.	138	521	578	90	-57	1.0	1.1	-0.1
53	Shimoga CMC	34	22	102	21	-80	0.2	0.8	-0.6
54	Tumkur M	22	28	341	8.1	-313	0.3	4.2	-3.9
Kerala									
55	Alappuzha MC	15	36	169	22	-132	0.7	3.1	-2.4
56	Kollam MC	18	58	77	75	-19	0.9	1.2	-0.3
57	Kozhikode M.Corp.	72	44	n.a.	n.a.	n.a.	0.2	n.a.	n.a.
58	Thalaserry M	27	21	84	24	-64	0.2	0.8	-0.6
59	Thiruvananthapuram M.Corp.	180	951	530	179	421	1.4	0.8	0.6
Madhya Pradesh									
60	Bhind M	19	25	66	38	-41	0.4	1.0	-0.6
61	Burhanpur M.Corp.	19	21	38	56	-17	0.3	0.5	-0.2
62	Dewas M.Corp.	9.0	46	150	31	-104	1.4	4.6	-3.2
63	Guna M	12	44	130	34	-86	1.0	2.9	-1.9
64	Gwalior M.Corp.	150	300	1161	26	-861	0.5	2.1	-1.6
65	Jabalpur M.Corp.	109	447	586	76	-140	1.1	1.5	-0.4
66	Khandwa M	16	40	127	32	-87	0.7	2.2	-1.5
67	Morena M	8.5	17	28	60	-11	0.5	0.9	-0.4
68	Murwara (Katni) M.Corp.	13	37	97	39	-60	0.8	2.1	-1.3
69	Ratlam M.Corp.	18	195	89	218	105	2.9	1.3	1.6

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1	2	3	4	5	6	7	8	9	
70	Rewa M.Corp.	20	20	200	9.9	-181	0.3	2.7	-2.4
71	Satna M.Corp.	14	13	60	21	-48	0.3	1.2	-0.9
72	Shivpuri M	13	87	143	61	-56	1.8	3.0	-1.2
Maharashtra									
73	Amravati M.Corp.	60	725	980	74	-256	3.3	4.5	-1.2
74	Aurangabad M.Corp.	168	402	835	48	-433	0.7	1.4	-0.7
75	Bhusawal MCI	22	67	187	36	-119	0.8	2.3	-1.5
76	Chandrapur MCI	30	54	164	33	-110	0.5	1.5	-1.0
77	Dhule MCI	31	68	516	13	-448	0.6	4.6	-4.0
78	Ichalkaranji MCI	32	86	289	30	-203	0.7	2.4	-1.7
79	Jalgaon MCI	56	38	489	7.8	-451	0.2	2.4	-2.2
80	Kolhapur M.Corp.	85	911	852	107	59	2.9	2.7	0.2
81	Nanded Waghala M.Corp.	39	75	321	23	-246	0.5	2.2	-1.7
82	Nashik M.Corp.	158	855	1941	44	-1086	1.5	3.4	-1.9
83	Parbhani MCI	15	48	85	56	-37	0.9	1.6	-0.7
84	Solapur M.Corp.	125	836	1241	67	-405	1.8	2.7	-0.9
85	Wardha M	12	29	54	54	-25	0.7	1.2	-0.5
86	Yavatmal MCI	13	183	234	78	-51	3.9	4.9	-1.0
Orissa									
87	Bhubaneswar M.Corp.	150	341	1309	26	-968	0.6	2.4	-1.8
88	Cuttack M.Corp.	102	83	659	13	-576	0.2	1.7	-1.5
89	Puri M	24	34	137	24	-104	0.4	1.6	-1.2
90	Rourkela M	16	41	n.a.	n.a.	n.a.	0.7	n.a.	n.a.
91	Sambalpur M	19	22	149	15	-127	0.3	2.2	-1.9
Punjab									
92	Amritsar M.Corp.	127	493	704	70	-211	1.1	1.5	-0.4

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1	2	3	4	5	6	7	8	9	
93	Bathinda MCI	17	47	120	39	-73	0.8	1.9	-1.1
94	Hoshiarpur MCI	22	63	128	49	-65	0.8	1.6	-0.8
95	Jalandhar M.Corp.	175	399	810	49	-411	0.6	1.3	-0.6
96	Moga MCI	20	60	93	65	-33	0.8	1.3	-0.4
97	Pathankot MCI	17	42	144	29	-102	0.7	2.3	-1.6
98	Patiala M.Corp.	60	154	204	75	-50	0.7	0.9	-0.2
Rajasthan									
99	Ajmer MCI	52	384	1479	26	-1096	2.0	7.8	-5.8
100	Alwar M	32	132	633	21	-501	1.1	5.4	-4.3
101	Beawar M	11	38	306	13	-268	0.9	7.4	-6.5
102	Bhilwara M	14	103	257	40	-154	2.0	5.0	-3.0
103	Bikaner M	68	469	1110	42	-641	1.9	4.5	-2.6
104	Jodhpur M.Corp.	176	915	4389	21	-3474	1.4	6.8	-5.4
105	Kota M.Corp.	160	562	433	130	129	0.9	0.7	0.2
106	Sriganganagar M	22	123	275	45	-152	1.5	3.4	-1.9
Tamil Nadu									
107	Cuddalore M	4.3	60	40	150	20	3.9	2.6	1.3
108	Dindigul M	12	163	133	122	30	3.7	3.0	0.7
109	Erode M	22	163.3	160.8	102	2.6	2.03	2.00	0.03
110	Kanchipuram M	16	156	101	154	55	2.6	1.7	0.9
111	Kumbakonam M	11	71	28	251	43	1.8	0.7	1.1
112	Nagercoil M	9.0	135	85	158	50	4.1	2.6	1.5
113	Rajapalayam M	8.8	72	59	122	13	2.3	1.9	0.4
114	Salem M.Corp.	50	400	368	109	32	2.2	2.0	0.2
115	Thanjavur M	24	135	90	150	45	1.5	1.0	0.5
116	Tiruchirapalli M.Corp.	88	430	539	80	-109	1.3	1.6	-0.3

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1	2	3	4	5	6	7	8	9	
117	Tirunelveli M.Corp.	34	185.9	178.2	104	7.8	1.5	1.4	0.1
118	Tiruvannamalai M	14	62	54	115	8.0	1.3	1.1	0.2
119	Tiruppur M	29	468	181	259	287	4.5	1.7	2.8
120	Tuticorin M	16	180	212	85	-32	3.1	3.6	-0.5
121	Vellore M	13	98.2	103.8	95	-5.6	2.1	2.2	-0.1
Uttar Pradesh									
122	Agra M.Corp.	250	920	1008	91	-88	1.0	1.1	-0.1
123	Aligarh M.Corp.	47	122	108	113	14	0.7	0.6	0.1
124	Allahabad M.Corp.	210	565	645	88	-79	0.7	0.8	-0.1
125	Bareilly M.Corp.	80	123	485	25	-362	0.4	1.6	-1.2
126	Etawah MB	20	17	52	34	-35	0.2	0.7	-0.5
127	Faizabad MB	22	49	228	21	-179	0.6	2.9	-2.3
128	Firozabad MB	12	14	26	52	-13	0.3	0.6	-0.3
129	Ghaziabad M.Corp.	110	251	287	87	-36	0.6	0.7	-0.1
130	Gorakhpur M.Corp.	74	106	178	60	-72	0.4	0.7	-0.3
131	Haldwani-cum-Kathgodam MB	19	94	82	115	12	1.4	1.2	0.2
132	Hapur MB	14	22.5	29.3	77	-6.9	0.4	0.5	-0.1
133	Hardwar MB	39	48	74	64	-26	0.3	0.5	-0.2
134	Jhansi MB	77	95	197	48	-101	0.3	0.7	-0.4
135	Mathura MB#	27	46	97	48	-50	0.5	1.0	-0.5
136	Meerut M.Corp.	132	113	201	56	-88	0.2	0.4	-0.2
137	Mirzapur MB	25	17	46	38	-29	0.2	0.5	-0.3
138	Moradabad M.Corp.	48	21	50	41	-29	0.1	0.3	-0.2

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1		2	3	4	5	6	7	8	9
Manipur									
159	Imphal MCI	58	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Meghalaya									
160	Shillong MB	27	31	n.a.	n.a.	n.a.	0.3	n.a.	n.a.
Mizoram									
161	Aizwal NM	11	78	n.a.	n.a.	n.a.	2.0	n.a.	n.a.
Tripura									
162	Agartala MCI	22	23	n.a.	n.a.	n.a.	0.3	n.a.	n.a.
Union Territories									
163	Chandigarh M.Corp.	227	1885	2859	66	-974	2.3	3.5	-1.2
164	Pondicherry M	33	123	199	62	-76	1.0	1.6	-0.6
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>									

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1	2	3	4	5	6	7	8	9	
CLASS II									
Andhra Pradesh									
1	Anakapalle M	3.6	30	17	176	13	2.3	1.3	1.0
2	Dharmavaram M	7.9	40	59	68	-19	1.4	2.0	-0.6
3	Gudur MCI	7.1	60	83	73	-23	2.3	3.2	-0.9
4	Kapra M	4.6	51	66	77	-15	3.1	4.0	-0.9
5	Kavali MCI	5.0	5	18	26	-13	0.3	1.0	-0.7
6	Madanapalle M	7.7	38	117	32	-80	1.3	4.1	-2.8
7	Narasaraopet M	4.5	37	73	51	-36	2.3	4.5	-2.2
8	Rajendra nagar MCI	5.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	Sangareddy MCI	3.9	15	44	35	-29	1.1	3.1	-2.0
10	Srikakulam MCI	6.8	34.2	32.4	106	1.8	1.4	1.3	0.1
11	Srikalahasti M	6.8	16	44	36	-28	0.6	1.7	-1.1
12	Suryapet MCI	7.6	54.3	46.9	116	7.4	1.9	1.7	0.2
Bihar									
13	Buxar M	3.9	11	n.a.	n.a.	n.a.	0.8	n.a.	n.a.
14	Deoghar M	3.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	11	2	n.a.	n.a.	n.a.	0.04	n.a.	n.a.
16	Hazaribagh M	7.3	13	169	7.5	-156	0.5	6.4	-5.9
17	Jehanabad M	8.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	Madhubani M	8.0	2	37	5.2	-35	0.07	1.26	-1.19
19	Mokama M	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Gujarat									
20	Amreli M	10	22	166	13	-144	0.6	4.6	-4.0
21	Ankleswar M	10	18	55	33	-37	0.5	1.5	-1.0

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1		2	3	4	5	6	7	8	9
22	Dabhoi M	9.0	16	77	21	-61	0.5	2.3	-1.8
23	Dohad M	7.5	19	33	60	-13	0.7	1.2	-0.5
24	Gondal M	13	38.1	38.3	99	-0.2	0.802	0.806	-0.004
25	Jetpur M	11	16	70	23	-54	0.4	1.7	-1.3
26	Mahesana M	15	24	111	22	-86	0.4	2.0	-1.6
27	Palanpur M	4.0	12	89	13	-77	0.8	6.1	-5.3
Haryana									
28	Jind MCI	16	44	86	52	-42	0.8	1.5	-0.7
29	Kaithal MCI	11	26	71	37	-45	0.7	1.8	-1.1
30	Rewari MCI	11	40	166	24	-126	1.0	4.0	-3.0
31	Thanesar MCI	13	43	112	39	-68	0.9	2.3	-1.4
Karnataka									
32	Bagalkot CMC	12	3	37	7.6	-34	0.06	0.82	-0.76
33	Chikmagalur CMC	15	49	29	167	20	0.9	0.5	0.4
34	Gokak CMC	4.6	32	19	168	13	1.9	1.1	0.8
35	Hospet CMC	16	12.3	16.0	76	-3.8	0.2	0.3	-0.1
36	Kolar CMC	8.0	58	86	67	-28	1.9	2.9	-1.0
37	Rabkavi-Banhatti CMC	4.5	7	39	19	-32	0.4	2.3	-1.9
38	Ramanagaram CMC	4.5	10	19	54	-9.0	0.6	1.1	-0.5
Kerala									
39	Changanessary MC	4.0	34	46	73	-13	2.3	3.2	-0.9
40	Payyanur M	1.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	Taliparamba M	0.39	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
42	Thrissur MC	18	6	101	6.0	-95	0.1	1.5	-1.4

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1	2	3	4	5	6	7	8	9	
Madhya Pradesh									
43	Hoshangabad M	8.1	16	29	56	-13	0.5	1.0	-0.4
44	Itarsi M	5.9	9	20	44	-11	0.4	0.9	-0.5
45	Khargone M	13	16	32	49	-16	0.3	0.7	-0.3
46	Mandsaur M	9.0	28	56	50	-28	0.8	1.7	-0.9
47	Nagda M	3.0	13.1	15.6	84	-2.5	1.2	1.4	-0.2
48	Neemuch M	5.9	24	79	30	-56	1.1	3.7	-2.6
49	Sehore M	5.3	4	15	28	-11	0.2	0.8	-0.6
50	Shahdol M	4.7	17.6	23.3	76	-5.7	1.0	1.3	-0.3
51	Vidisha M	9.0	21	81	26	-60	0.6	2.5	-1.8
Maharashtra									
52	Amalner MCI	15	269	163	166	107	4.9	3.0	1.9
53	Ballarpur MCI	7.0	n.a.	90	n.a.	n.a.	n.a.	3.5	n.a.
54	Bhandara M	9.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
55	Kamptee MCI	3.6	19.0	20.3	93	-1.3	1.4	1.5	-0.1
56	Manmad MCI	7.2	12	864	1.4	-851	0.5	32.9	-32.4
57	Ratnagiri MCI	8.0	39	107	37	-68	1.3	3.6	-2.3
58	Satara MCI	11	33	151	22	-118	0.8	3.7	-2.9
59	Virar MCI	9.0	118	n.a.	n.a.	n.a.	3.6	n.a.	n.a.
Orissa									
60	Balangir M	7.2	8	54	15	-46	0.3	2.0	-1.7
61	Bhadrak M	3.0	4	n.a.	n.a.	n.a.	0.3	n.a.	n.a.
Punjab									
62	Firozpur MCI	20	47	62	75	-16	0.7	0.9	-0.2
63	Kapurthala M	14	62	77	81	-15	1.2	1.5	-0.3

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1	2	3	4	5	6	7	8	9	
64	Mansa MCI	8.0	14	34	41	-20	0.5	1.2	-0.7
65	Phagwara MCI	15	46	87	53	-41	0.8	1.6	-0.8
66	Sangrur MCI	13	29	57	51	-28	0.6	1.2	-0.6
Rajasthan									
67	Banswara M	9.8	50	n.a.	n.a.	n.a.	1.4	n.a.	n.a.
68	Barmer M	6.5	65	240	27	-176	2.7	10.1	-7.4
69	Bundi M	8.0	46	189	24	-144	1.6	6.5	-4.9
70	Churu M	7.7	n.a.	216	n.a.	n.a.	n.a.	7.7	n.a.
71	Hanumangarh M	7.2	40	19	207	21	1.5	0.7	0.8
72	Sawai Madhopur M	7.8	31	156	20	-125	1.1	5.5	-4.4
Tamil Nadu									
73	Ambur M	5.6	36.2	33.1	109	3.1	1.8	1.6	0.2
74	Arakkonam M	4.0	35	46	75	-11	2.4	3.2	-0.8
75	Attur M	3.0	43	19	229	24	3.9	1.7	2.2
76	Cambam M	2.7	21.8	17.9	122	3.9	2.2	1.8	0.4
77	Dharmapuri M	3.0	39.3	29.4	133	9.9	3.6	2.7	0.9
78	Guduivattam M	5.8	23.7	31.4	75	-7.8	1.1	1.5	-0.4
79	Nagapattinam M	7.8	36	24	148	12	1.3	0.9	0.4
80	Pudukkottai M	7.9	104	100	104	4.0	3.6	3.5	0.1
81	Sivakasi M	5.2	110	168	65	-59	5.8	8.9	-3.1
82	Srivilliputtur M	3.5	16.3	21.6	75	-5.3	1.3	1.7	-0.4
83	Tindivanam MC	1.9	21.0	19.4	108	1.6	3.0	2.8	0.2
84	Udhagamandalam M	4.0	138	127	109	11	9.4	8.7	0.7
Uttar Pradesh									
85	Auraiya MB	4.5	8.6	8.3	105	0.3	0.52	0.50	0.02

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1	2	3	4	5	6	7	8	9	
86	Balrampur MB	2.8	1	5.3	19	-4.3	0.1	0.5	-0.4
87	Basti MB	10	8	34	22	-26	0.2	0.9	-0.7
88	Bhadohi MB	4.0	8.9	13.1	68	-4.2	0.6	0.9	-0.3
89	Chandpur MB	3.2	9.6	5.4	177	4.2	0.8	0.5	0.3
90	Etah MB	4.0	7	17	38	-10	0.45	1.16	-0.71
91	Ghazipur MB	16	10	23	44	-13	0.2	0.4	-0.2
92	Gonda MB	9.0	16.1	17.9	90	-1.8	0.49	0.54	-0.05
93	Lakhimpur MB	13	21	22	95	-1.0	0.46	0.48	-0.02
94	Lalitpur MB	8.5	39.7	48.8	81	-9.1	1.3	1.6	-0.3
95	Mughalsarai MB	4.0	5	42	11	-37	0.3	2.8	-2.5
96	Nawabganj-Barabanki MB	9.1	9	23	39	-14	0.3	0.7	-0.4
97	Orai MB	8.2	27	63	43	-36	0.9	2.1	-1.2
98	Roorkee MB	19	21.3	28.9	74	-7.6	0.3	0.4	-0.1
West Bengal									
99	Bishnupur M	2.6	1	17	6.2	-16	0.1	1.8	-1.7
100	Chakdaha M	1.9	0.4	14.1	2.8	-13.7	0.06	2.03	-1.97
101	Contai M	1.6	n.a.	21	n.a.	n.a.	n.a.	3.7	n.a.
102	Cooch Behar M	9.9	4	32	11	-28	0.1	0.9	-0.8
103	Darjeeling M	6.0	4	72	5.3	-68	0.2	3.3	-3.1
104	Jalpaiguri M	4.9	9	39	24	-30	0.5	2.2	-1.7
105	Jangipur M	3.0	n.a.	8.50	n.a.	n.a.	n.a.	0.8	n.a.
106	Katwa M	1.5	n.a.	7.44	n.a.	n.a.	n.a.	1.4	n.a.
107	Raniganj M	5.1	1.5	50.3	3.0	-48.8	0.08	2.72	-2.64

Sl. No.	City/Town	Water supplied (mld)	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Cost Recovery (% Receipts to Expenditure)	Receipts-Expenditure Gap (Rs. in lakhs)	Revenue/kl (in Rs.)	Expenditure/kl (in Rs.)	Rev-Exp. Gap/kl
1		2	3	4	5	6	7	8	9
Small States									
Himachal Pradesh									
108	Shimla M.Corp.	28	150.6	152.9	98	-2.3	1.47	1.49	-0.02
Nagaland									
109	Kohima TC	2.9	5	n.a.	n.a.	n.a.	0.4	n.a.	n.a.
Union Territories									
110	Port Blair MCI	15	105	298	35	-193	1.9	5.5	-3.6
Others (Smaller than Class II towns)									
Small States									
Arunachal Pradesh									
111	Itanagar CT	5.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Goa									
112	Panaji MCI	12	479	n.a.	n.a.	n.a.	11.1	n.a.	n.a.
Union Territories									
113	Daman MCI	8.0	10	38	26	-28	0.3	1.3	-1.0
114	Kavarathi NMCT	0.04	0.04	18.31	0.2	-18.27	0.3	135.6	-135.3
115	Silvassa	1.4	1	24	4.3	-23	0.2	4.7	-4.5
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999</i>									

A-16

PER CAPITA REVENUE RECEIPTS AND
EXPENDITURE, 1997-98

A-16 : Per Capita Revenue Receipts and Expenditure, 1997-98

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
METROPOLITAN CITIES							
1	Ahmedabad M.Corp.	3,415	270	3947	7.9	116	-108
2	Bangalore M.Corp.	4,621	15384	14909	333	323	10
3	Bhopal M.Corp.	1,437	499	1427	35	99	-65
4	Calcutta M.Corp.	5,772	947	7534	16	131	-114
5	Chennai M.Corp.	4,294	16258	11858	379	276	102
6	Coimbatore M.Corp	950	1145	407	121	43	78
7	Delhi M.Corp.	11,259	7547	46829	67	416	-349
8	Greater Mumbai M.Corp.	10,946	35513	26275	324	240	84
9	Hyderabad M.Corp.	3,990	10623	10052	266	252	14
10	Indore M.Corp.	1,525	780	2773	51	182	-131
11	Jaipur M.Corp.	1,923	1405	3686	73	192	-119
12	Kanpur M.Corp.	2,412	1090	926	45	38	7
13	Kochi M.Corp.	664	844	635	127	96	31
14	Lucknow M.Corp.	2,368	1159	2118	49	89	-40
15	Ludhiana M.Corp.	1,844	335	1250	18	68	-50
16	Madurai M.Corp.	1,010	257	208	25	21	5
17	Nagpur M.Corp.	2,034	1108	3365	54	165	-111
18	Pune M.Corp.	2,192	2162	2928	99	134	-35
19	Surat M.Corp.	2,180	635	1676	29	77	-48
20	Vadodara M.Corp.	1,348	987	2048	73	152	-79
21	Varanasi M.Corp.	1,122	540	779	48	69	-21
22	Visakhapatnam M.Corp.	1,198	2875	1050	240	88	152
Total - Metropolitan Cities		68,502	102365	146679	149	214	-65

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
CLASS I							
Andhra Pradesh							
1	Anantapur MCI	239	131	92	55	38	16
2	Chittoor M	147	30	127	20	86	-66
3	Cuddapah MCI	160	36	148	23	92	-70
4	Eluru M	242	87	93	36	38	-2
5	Guntur MCI	545	343	586	63	107	-45
6	Hindupur M	135	20	87	15	65	-50
7	Kakinada M	319	144	159	45	50	-5
8	Kurnool MCI	275	48	75	17	27	-10
9	Machilipatnam M	194	4	n.a.	1.8	n.a.	n.a.
10	Nandyal MCI	146	27	74	19	51	-32
11	Nellore MCI	392	112	108	29	28	1
12	Nizamabad M	279	n.a.	n.a.	n.a.	n.a.	n.a.
13	Ongole MCI	167	69	78	41	47	-6
14	Qutubullapur M	225	44	207	20	92	-73
15	Rajahmundry M.Corp.	373	171	203	46	54	-8
16	Tenali M	166	7	6	4.1	3.4	0.7
17	Tirupati MCI	205	110	156	53	76	-23
18	Vijaywada M.Corp.	819	480	544	59	66	-7
19	Warangal M.Corp.	645	538	373	83	58	26
Bihar							
20	Bihar Sharif M	243	n.a.	n.a.	n.a.	n.a.	n.a.
21	Chhapra M	191	2	59	1.3	31	-30
22	Gaya M.Corp.	385	35	19	9	5	4
23	Katihar M	190	n.a.	n.a.	n.a.	n.a.	n.a.
24	Munger M	201	9	15	4	7	-3

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
25	Ranchi M.Corp.	687	2	44	0.3	6.3	-6
Gujarat							
26	Anand M	165	n.a.	n.a.	n.a.	n.a.	n.a.
27	Bharuch M	156	44	137	28	88	-60
28	Bhavnagar M.Corp.	529	255	1456	48	275	-227
29	Bhuj M	116	87	186	75	160	-85
30	Jamnagar M.Corp.	477	503	391	106	82	24
31	Junagadh M	160	13	89	8.2	55	-47
32	Nadiad M	279	56	64	20	23	-3
33	Navsari M	137	34	171	25	124	-99
34	Porbandar M	139	13	46	9.4	33	-24
35	Rajkot M.Corp.	930	264	571	28	61	-33
36	Surendranagar M	144	11	55	7.4	38	-31
Haryana							
37	Ambala MCI	138	56	154	40	112	-71
38	Faridabad M.Corp.	1,064	357	1618	34	152	-118
39	Gurgaon MCI	167	56	251	34	150	-116
40	Hisar MCI	239	58	210	24	88	-64
41	Karnal MCI	214	77	274	36	128	-92
42	Rohtak MCI	239	69	172	29	72	-43
Jammu & Kashmir							
43	Jammu M.Corp.	1,002	n.a.	225	n.a.	22	n.a.
Karnataka							
44	Belgaum M.Corp.	449	241	145	54	32	21
45	Bellary CMC	290	141	105	48	36	12
46	Davangere MCI	425	41	114	9.6	27	-17
47	Gadag-Betigeri CMC	146	40	70	28	48	-20

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
48	Gulbarga M.Corp.	428	66	153	15	36	-20
49	Hubli-Dharwar M.Corp.	822	289	295	35.2	35.9	-0.7
50	Mandya M	137	14	26	10	19	-9
51	Mangalore M.Corp.	390	1199	593	308	152	155
52	Mysore M.Corp.	952	521	578	55	61	-6
53	Shimoga CMC	216	22	102	10	47	-37
54	Tumkur M	272	28	341	10	125	-115
Kerala							
55	Alappuzha MC	197	36	169	19	86	-67
56	Kollam MC	157	58	77	37	49	-12
57	Kozhikode M.Corp.	483	44	n.a.	9.2	n.a.	n.a.
58	Thalaserry M	130	21	84	16	65	-49
59	Thiruvananthapuram M.Corp.	577	951	530	165	92	73
Madhya Pradesh							
60	Bhind M	165	25	66	15	40	-25
61	Burhanpur M.Corp.	205	21	38	10	18	-8
62	Dewas M.Corp.	195	46	150	24	77	-53
63	Guna M	122	44	130	36	107	-71
64	Gwalior M.Corp.	871	300	1161	34	133	-99
65	Jabalpur M.Corp.	963	447	586	46	61	-15
66	Khandwa M	171	40	127	23	74	-51
67	Morena M	122	17	28	14	23	-9
68	Murwara (Katni) M.Corp.	178	37	97	21	55	-34
69	Ratlam M.Corp.	228	195	89	86	39	46
70	Rewa M.Corp.	173	20	200	11	116	-105
71	Satna M.Corp.	194	13	60	6.6	31	-25
72	Shivpuri M	136	87	143	64	105	-42

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
Maharashtra							
73	Amravati M.Corp.	489	725	980	148	200	-52
74	Aurangabad M.Corp.	824	402	835	49	101	-53
75	Bhusawal MCI	192	67	187	35	97	-62
76	Chandrapur MCI	285	54	164	19	58	-39
77	Dhule MCI	323	68	516	21	160	-139
78	Ichalkaranji MCI	245	86	289	35	118	-83
79	Jalgaon MCI	376	38	489	10	130	-120
80	Kolhapur M.Corp.	489	911	852	186	174	12
81	Nanded Waghala M.Corp.	390	75	321	19	82	-63
82	Nashik M.Corp.	814	855	1941	105	239	-133
83	Parbhani MCI	227	48	85	21	38	-16
84	Solapur M.Corp.	856	836	1241	98	145	-47
85	Wardha M	143	29	54	20	38	-17
86	Yavatmal MCI	127	183	234	144	184	-40
Orissa							
87	Bhubaneswar M.Corp.	617	341	1309	55	212	-157
88	Cuttack M.Corp.	540	83	659	15	122	-107
89	Puri M	146	34	137	23	94	-71
90	Rourkela M	191	41	n.a.	21	n.a.	n.a.
91	Sambalpur M	154	22	149	15	97	-82
Punjab							
92	Amritsar M.Corp.	825	493	704	60	85	-26
93	Bathinda MCI	172	47	120	27	69	-42
94	Hoshiarpur MCI	142	63	128	44	90	-46
95	Jalandhar M.Corp.	705	399	810	57	115	-58
96	Moga MCI	142	60	93	43	65	-23

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
97	Pathankot MCI	184	42	144	23	78	-55
98	Patiala M.Corp.	315	154	204	49	65	-16
Rajasthan							
99	Ajmer MCI	529	384	1479	72	280	-207
100	Alwar M	286	132	633	46	221	-175
101	Beawar M	136	38	306	28	225	-197
102	Bhilwara M	219	103	257	47	117	-70
103	Bikaner M	573	469	1110	82	194	-112
104	Jodhpur M.Corp.	951	915	4389	96	462	-365
105	Kota M.Corp.	719	562	433	78	60	18
106	Sriganganagar M	216	123	275	57	127	-70
Tamil Nadu							
107	Cuddalore M	160	60	40	38	25	13
108	Dindigul M	210	163	133	78	64	14
109	Erode M	172	163	161	95	94	1
110	Kanchipuram M	155	156	101	101	65	35
111	Kumbakonam M	146	71	28	49	19	29
112	Nagercoil M	204	135	85	66	42	24
113	Rajapalayam M	122	72	59	59	49	11
114	Salem M.Corp.	436	400	368	91	84	7
115	Thanjavur M	215	135	90	63	42	21
116	Tiruchirapalli M.Corp.	782	430	539	55	69	-14
117	Tirunelveli M.Corp.	409	186	178	45	43	2
118	Tiruvannamalai M	126	62	54	49	43	6
119	Tiruppur M	287	468	181	163	63	100
120	Tuticorin M	214	180	212	84	99	-15
121	Vellore M	176	98	104	56	59	-3

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
Uttar Pradesh							
122	Agra M.Corp.	1,114	920	1008	83	91	-8
123	Aligarh M.Corp.	584	122	108	20	18	2
124	Allahabad M.Corp.	984	565	645	57	65	-8
125	Bareilly M.Corp.	727	123	485	17	67	-50
126	Etawah MB	138	17	52	13	38	-25
127	Faizabad MB	163	49	228	30	139	-110
128	Firozabad MB	245	14	26	6	11	-5
129	Ghaziabad M.Corp.	816	251	287	31	35	-4
130	Gorakhpur M.Corp.	587	106	178	18	30	-12
131	Haldwani-cum-Kathgodam MB	135	94	82	69	60	9
132	Hapur MB	192	22	29	11	15	-4
133	Hardwar MB	274	48	74	17	27	-10
134	Jhansi MB	475	95	197	20	41	-21
135	Mathura MB#	373	46	97	12	26	-14
136	Meerut M.Corp.	1,173	113	201	10	17	-7
137	Mirzapur MB	204	17	46	8.5	22	-14
138	Moradabad M.Corp.	634	21	50	3	8	-5
139	Muzaffarnagar MB	313	87	87	27.88	27.87	0.01
140	Rae Bareli MB	169	17	45	10	26	-16
141	Rampur MB	307	16	23	5.2	7.5	-2.3
142	Saharanpur MB	516	80	78	15.4	15.2	0.2
143	Sitapur MB	146	8	25	5.7	17	-12
144	Unnao MB	119	9	29	7.3	24	-17
West Bengal							
145	Asansol M.Corp.	308	17	74	5.5	24	-19
146	Baharampur M	139	4	25	3.0	18	-15

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
147	Balurghat M	130	n.a.	11	n.a.	8.8	n.a.
148	Bankura M	146	3	93	2.3	64	-61
149	Barasat M	143	7	138	4.6	96	-92
150	Burdwan M	312	5	76	1.6	24	-23
151	Halisahar M	144	n.a.	36	n.a.	25	n.a.
152	Krishnagar M	142	4	40	2.5	28	-26
153	Midnapore M	154	18	95	12	62	-50
154	North Barrackpore M	116	3	38	2.5	33	-31
155	Santipur M	131	0.2	n.a.	0.2	n.a.	n.a.
156	Siliguri M.Corp.	476	n.a.	n.a.	n.a.	n.a.	n.a.
Small States							
Assam							
157	Guwahati M.Corp.	931	41	535	4.4	57	-53
158	Jorhat MB	161	n.a.	n.a.	n.a.	n.a.	n.a.
Manipur							
159	Imphal MCI	239	n.a.	n.a.	n.a.	n.a.	n.a.
Meghalaya							
160	Shillong MB	204	31	n.a.	15	n.a.	n.a.
Mizoram							
161	Aizwal NM	231	78	n.a.	34	n.a.	n.a.
Tripura							
162	Agartala MCI	194	23	n.a.	12	n.a.	n.a.
Union Territories							
163	Chandigarh M.Corp.	796	1885	2859	237	359	-122
164	Pondicherry M	277	123	199	44	72	-27

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
CLASS II							
Andhra Pradesh							
1	Anakapalle M	111	30	17	27	16	12
2	Dharmavaram M	97	40	59	41	61	-19
3	Gudur MCI	70	60	83	86	118	-33
4	Kapra M	115	51	66	44	57	-13
5	Kavali MCI	82	5	18	5.6	21	-16
6	Madanapalle M	96	38	117	39	122	-83
7	Narasaraopet M	94	37	73	40	78	-38
8	Rajendra nagar MCI	115	n.a.	n.a.	n.a.	n.a.	n.a.
9	Sangareddy MCI	59	15	44	26	75	-49
10	Srikakulam MCI	99	34	32	35	33	2
11	Srikalahasti M	69	16	44	23	64	-41
12	Suryapet MCI	85	54	47	64	55	9
Bihar							
13	Buxar M	65	11	n.a.	17	n.a.	n.a.
14	Deoghar M	97	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	111	2	n.a.	1.5	n.a.	n.a.
16	Hazaribagh M	116	13	169	11	145	-134
17	Jehanabad M	56	n.a.	n.a.	n.a.	n.a.	n.a.
18	Madhubani M	64	2	37	3.0	58	-55
19	Mokama M	65	n.a.	n.a.	n.a.	n.a.	n.a.
Gujarat							
20	Amreli M	83	22	166	27	201	-175
21	Ankleswar M	59	18	55	30	93	-62

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
22	Dabhoi M	63	16	77	25	122	-97
23	Dohad M	76	19	33	25	43	-17
24	Gondal M	97	38	38	39.1	39.3	-0.2
25	Jetpur M	117	16	70	14	59	-46
26	Mahesana M	130	24	111	19	85	-66
27	Palanpur M	112	12	89	10	79	-69
Haryana							
28	Jind MCI	110	44	86	40	78	-38
29	Kaithal MCI	91	26	71	29	78	-50
30	Rewari MCI	101	40	166	40	164	-125
31	Thanesar MCI	97	43	112	45	114	-70
Karnataka							
32	Bagalkot CMC	97	3	37	2.9	38	-35
33	Chikmagalur CMC	94	49	29	52	31	21
34	Gokak CMC	66	32	19	49	29	20
35	Hospet CMC	112	12	16	11	14	-3
36	Kolar CMC	108	58	86	53	79	-26
37	Rabkavi-Banhatti CMC	70	7	39	11	56	-45
38	Ramanagaram CMC	67	10	19	15	29	-13
Kerala							
39	Changanessary MC	61	34	46	56	76	-21
40	Payyanur M	70	n.a.	n.a.	n.a.	n.a.	n.a.
41	Taliparamba M	53	n.a.	n.a.	n.a.	n.a.	n.a.
42	Thrissur MC	89	6	101	6.8	113	-107
Madhya Pradesh							
43	Hoshangabad M	96	16	29	17	30	-13

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
44	Itarsi M	101	9	20	8.5	19	-11
45	Khargone M	78	16	32	20	41	-21
46	Mandsaur M	119	28	56	24	47	-23
47	Nagda M	97	13	16	13	16	-3
48	Neemuch M	98	24	79	24	81	-57
49	Sehore M	96	4	15	4.5	16	-12
50	Shahdol M	72	18	23	24	32	-8
51	Vidisha M	120	21	81	17	67	-50
Maharashtra							
52	Amalner MCI	97	269	163	278	168	110
53	Ballarpur MCI	105	n.a.	90	n.a.	85	n.a.
54	Bhandara M	75	n.a.	n.a.	n.a.	n.a.	n.a.
55	Kamptee MCI	93	19	20	20	22	-1
56	Manmad MCI	83	12	864	15	1037	-1022
57	Ratnagiri MCI	68	39	107	58	157	-100
58	Satara MCI	99	33	151	34	152	-118
59	Virar MCI	93	118	n.a.	126	n.a.	n.a.
Orissa							
60	Balangir M	81	8	54	9.8	66	-57
61	Bhadrak M	91	4	n.a.	3.9	n.a.	n.a.
Punjab							
62	Ferozpur MCI	91	47	62	51	68	-17
63	Kapurthala M	82	62	77	76	94	-18
64	Mansa MCI	65	14	34	22	52	-31
65	Phagwara MCI	105	46	87	44	83	-39
66	Sangrur MCI	68	29	57	43	83	-41

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
Rajasthan							
67	Banswara M	103	50	n.a.	48	n.a.	n.a.
68	Barmer M	82	65	240	79	293	-214
69	Bundi M	78	46	189	59	243	-184
70	Churu M	98	n.a.	216	n.a.	220	n.a.
71	Hanumangarh M	118	40	19	34	16	18
72	Sawai Madhopur M	87	31	156	35	179	-144
Tamil Nadu							
73	Ambur M	84	36	33	43	39	4
74	Arakkonam M	86	35	46	41	54	-13
75	Attur M	63	43	19	68	30	38
76	Cambam M	53	22	18	41	34	7
77	Dharmapuri M	66	39	29	60	45	15
78	Guduivattam M	94	24	31	25	33	-8
79	Nagapattinam M	109	36	24	33	22	11
80	Pudukkottai M	107	104	100	97.2	93.5	3.7
81	Sivakasi M	70	110	168	158	242	-85
82	Srivilliputtur M	73	16	22	22	30	-7
83	Tindivanam MC	69	21	19	30	28	2
84	Udhagamandalam M	98	138	127	141	130	12
Uttar Pradesh							
85	Auraiya MB	84	9	8	10.3	9.9	0.4
86	Balrampur MB	69	1	5	1.5	7.7	-6.2
87	Basti MB	107	8	34	7.1	32	-25
88	Bhadohi MB	115	9	13	7.8	11	-4
89	Chandpur MB	76	10	5	12.6	7.1	5.5

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
90	Etah MB	126	7	17	5	13	-8
91	Ghazipur MB	93	10	23	11	25	-14
92	Gonda MB	112	16	18	14	16	-2
93	Lakhimpur MB	97	21	22	22	23	-1
94	Lalitpur MB	97	40	49	41	50	-9
95	Mughalsarai MB	143	5	42	3.3	29	-26
96	Nawabganj-Barabanki MB	87	9	23	10	27	-16
97	Orai MB	159	27	63	17	39	-22
98	Roorkee MB	97	21	29	22	30	-8
West Bengal							
99	Bishnupur M	66	1	17	1.6	26	-25
100	Chakdaha M	88	0.4	14	0.4	16	-16
101	Contai M	104	n.a.	21	n.a.	20	n.a.
102	Cooch Behar M	95	4	32	3.9	34	-30
103	Darjeeling M	90	4	72	4.3	80	-76
104	Jalpaiguri M	96	9	39	9.6	41	-31
105	Jangipur M	75	n.a.	9	n.a.	11	n.a.
106	Katwa M	66	n.a.	7	n.a.	11	n.a.
107	Raniganj M	111	2	50	1.3	45	-44
Small States							
Himachal Pradesh							
108	Shimla M.Corp.	107	151	153	141	143	-2
Nagaland							
109	Kohima TC	94	5	n.a.	5.0	n.a.	n.a.

Sl. No	City/Town	Population ('000) covered 1998	Revenue Receipts (Rs. in lakhs)	Revenue Expenditure (Rs. in lakhs)	Annual Revenue Receipts Per Capita (Rs.)	Annual Revenue Expenditure Per Capita (Rs.)	Annual Revenue Gap Per Capita (in Rs.)
1		2	3	4	5	6	7
Union Territories							
110	Port Blair MCI	101	105	298	104	296	-191
Others (Smaller than Class II towns)							
Small States							
Arunachal Pradesh							
111	Itanagar CT	31	n.a.	n.a.	n.a.	n.a.	n.a.
Goa							
112	Panaji MCI	55	479	n.a.	867	n.a.	n.a.
Union Territories							
113	Daman MCI	34	10	38	30	112	-83
114	Kavarathi NMCT	11	0.04	18	0.4	170	-170
115	Silvassa	19	1	24	5.6	131	-125
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>							

A-17

CAPITAL WORKS UNDERTAKEN BETWEEN
1994 AND 1999

A-17 : Capital Works undertaken between 1994 and 1999											
Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
Metropolitan Cities											
1	Calcutta M.Corp.	1	Augmentation	Treatment plant & Pumping station	7,500,000	90.00	1996	1997	2,500.00	Mega City Project	50
		2	Augmentation	Pipe lines & Treatment plant	8,000,000	270.00	1997	Ongoing	5,000.00	Mega City 91 Project	
		3	Improving existing system	Pipe lines & Reservoirs	8,000,000	176.00	1998	Ongoing	2,500.00	Self	91
		4	Increasing capacity of pipe line	Pipe lines	8,000,000	n.a.	1998	Ongoing	2,500.00	HUDCO & 91 Megacity Project	
2	Greater Bombay M.Corp.	1	Augmentation	Pipe lines, Treatment plant, Pumping station & Reservoirs	90,000,000	450.00	1999	Ongoing	35,784.75	World Bank & MMRDA	362
3	Indore M.Corp.	1	Improving existing system	n.a.	400,000	n.a.	1998	Ongoing	260.00	HUDCO & 162 Self	
4	Jaipur M.Corp.	1	Augmentation	n.a.	1,250,000	n.a.	1999	Ongoing	1,228.00	State Govt.	98
		2	Augmentation	n.a.	550,000	n.a.	1999	Ongoing	167.66	State Govt.	30
		3	Augmentation	n.a.	200,000	n.a.	1999	Ongoing	300.81	State Govt.	150
5	Ludhiana M.Corp.	1	Augmentation	Pipe lines & Tube wells	300,000	60.00	1994	1999	15.50	Self	516
6	Nagpur M.Corp.	1	Augmentation	Pipe lines & Pumping station	n.a.	21.00	1997	Ongoing	2,333.00	LIC & Self	111
		2	Augmentation	Pipe lines	n.a.	n.a.	1992	Ongoing	5,414.00	HUDCO & Self	258
		3	Augmentation	Pipe lines, Treatment plant & Reservoirs	600,000	120.00	1999	Ongoing	12,168.00	HUDCO & Self	450
7	Pune M.Corp.	1	Augmentation	Pipe lines & Pumping station	1,300,000	273.00	1993	1998	1,425.00	HUDCO	109
		2	Augmentation	Pipe lines	3,500,000	925.00	1997	Ongoing	5,200.00	Self	149
8	Visakhapatnam M.Corp.	1	Augmentation	Pipe lines, Treatment plant & Reservoirs	1,300,000	68.00	1989	1994	3,336.00	LIC, State Govt. & Sel	834
* Per Capita Cost as provided by the respective ULBs/relevant agencies Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.											

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
CLASS I											
Andhra Pradesh											
1	Chittoor M	1	Augmentation	n.a.	226,000	9.00	1999	Ongoing	4,500.00	HUDCO & State Govt.	10
2	Eluru M	1	Augmentation	Pipe lines & Reservoirs	247,000	5.00	1999	Ongoing	175.00	State Govt.	74
3	Guntur MCI	1	Augmentation	Pipe lines, Pumping station & Reservoirs	556,820	1.00	1999	Ongoing	100.00	Self	18
4	Kakinada M	1	Augmentation	Treatment plant	315,000	14.07	1998	Ongoing	100.00	Self	32
		2	Augmentation	Pipe lines, Pumping station & Reservoirs	315,000	0.05	1998	Ongoing	202.00	Central Govt. & Self	64
5	Machilipatnam M	1	Improving existing system	Pipe lines & Reservoirs	300,000	33.00	1998	Ongoing	693.00	HUDCO, State Govt. & Self	231
6	Qutubullapur M	1	Augmentation	Pipe lines & Reservoirs	250,000	12.00	1998	1999	953.00	HUDA, State Govt., & Self	400
		2	Augmentation	Pipe lines	50,000	9.00	1998	1999	221.00	Public contribution & Self	315
7	Rajahmundry M.Corp.	1	Improving existing system	Treatment plant	325,000	11.80	1998	Ongoing	100.00	Self	31
8	Tenali M	1	Augmentation	Pipe lines	10,000	0.50	1995	Ongoing	2.06	State Govt.	21
9	Vijaywada M.Corp.	1	Augmentation	Pipe lines, Pumping station & Reservoirs	100,000	n.a.	1992	1998	538.00	State Govt. & Self	538
Gujarat											
10	Anand M	1	Augmentation	Pipe lines, Tube wells & Reservoirs	27,000	30.00	1995	1996	420.00	World Bank	1,555
11	Bharuch M	1	Augmentation	Reservoirs	10,000	9.00	1996	1998	22.00	Local Bank	220
		2	Augmentation	Pumping station	20,000	15.00	1997	1999	54.00	Finance Board	270
12	Nadiad M	1	Augmentation	Pipe lines & Tube wells	700,000	n.a.	1994	1996	500.00	World Bank	71
13	Navsari M	1	Augmentation	Pipe lines & Reservoirs	25,000	3.50	1994	1995	170.00	State Govt. & Self	680
14	Porbandar M	1	Augmentation	Reservoirs	20,000	0.25	1994	1998	12.50	Self	65
15	Surendranagar M	1	Augmentation	Pipe line, Treatment plant & Reservoirs	35,000	5.00	1999	Ongoing	200.00	LIC	571

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
Haryana											
16	Ambala MCI	1	Augmentation	Pipe lines & Pumping station	204,060	37.00	1999	Ongoing	750.00	State Govt.	364
17	Gurgaon MCI	1	Augmentation	Pipe lines & Pumping station	193,160	23.40	1994	1999	354.00	State Govt.	271
		2	Augmentation	Pipe lines & Pumping station	221,940	30.00	1997	Ongoing	340.00	Central Govt.	214
		3	Adding new pipe lines	Pipe lines	221,940	30.00	1997	Ongoing	21.50	State Govt.	14
18	Hissar MCI	1	Augmentation	Pipe lines, Pumping station & Reservoirs	341,000	34.40	1994	Ongoing	2,824.00	State Govt.	820
19	Karnal MCI	1	Augmentation	Pipe lines, Pumping station & Tube wells	216,975	39.50	1994	Ongoing	518.20	State Govt.	358
20	Rohtak MCI	1	Augmentation	Treatment plant & Pumping station	130,000	13.62	1997	1988	116.00	State Govt.	89
		2	Augmentation	Pipe lines, Pumping station & Reservoirs	240,000	31.00	1998	Ongoing	410.00	Central Govt.	170
Karnataka											
21	Tumkur M	1	Augmentation	Source development	350,000	30.00	1993	Ongoing	2,498.00	HUDCO, State Govt. & Self	714
Madhya Pradesh											
22	Gwalior M.Corp.	1	Improving existing system	n.a.	900,000	136.20	1994	Ongoing	1,944.00	LIC & State Govt.	216
23	Murwara-Katni M.Corp.	1	Augmentation	n.a.	2,200,000	22.00	1991	Ongoing	1,188.00	LIC	540
Maharashtra											
24	Amravati M.Corp.	1	Augmentation	Pipe lines & Reservoirs	860,000	156.00	1997	Ongoing	4,365.00	State Govt.	508
25	Ichalkaranji MCI	1	Augmentation	Pipe lines & Purchase of machinery	850,000	45.00	1996	Ongoing	1,803.00	Popular contribution, State Govt. & OMB Loan	212
		2	Augmentation	Pipe lines, Pumping station & Reservoirs	475,000	54.00	1995	Ongoing	1,350.00		392
26	Kolhapur M.Corp.	1	Augmentation	Pipe lines, Treatment plant & Source development	620,500	119.00	1996	Ongoing	4,442.00	State govt.	716

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
27	Nanded Waghala M.Corp.	1	Augmentation	Treatment plant & Head work	700,000	60.00	1991	1997	2,200.00	LIC, State Govt. & OMB Loan	314
28	Nashik M.Corp.	1	Augmentation	n.a.	1,677,000	312.00	1997	Ongoing	12,633.00	n.a.	753
Orissa											
29	Bhubaneswar M.Corp.	1	Augmentation	Pipe lines & Treatment plant	1,200,000	115.00	1993	1998	6,300.00	HUDCO & State Govt.	625
30	Puri M	1	Augmentation	Pipe lines	800	0.36	1998	1998	1.73	State Govt.	216
		2	Augmentation	Pipe lines & Pumping station	125,199	5.50	1996	1996	269.96	State Govt.	215
Punjab											
31	Bathinda MCI	1	Augmentation	Installation of tube-wells	n.a.	16.70	1994	1999	100.00	10th F.C. Award & Self	80
32	Jalandhar M. Corp.	1	Augmentation	Pipe lines & Tube wells	100,000	20.00	1998	1999	1,150.00	PM's grant	115
33	Moga MCI	1	Augmentation	Pipe lines	n.a.	n.a.	1994	1998	135.16	Self	92
34	Patiala M.Corp.	1	Augmentation	Pipe lines & Tube wells	642,000	116.00	1994	1999	100.00	Self	30
Rajasthan											
35	Bhilwara M	1	Augmentation	Source development	337,000	40.00	1996	2000	1,353.00	HUDCO & State Govt.	400
36	Bikaner M	1	Augmentation	n.a.	513,000	18.77	1995	1999	651.00	LIC & State Govt.	127
37	Jodhpur M.Corp.	1	Improving existing system	n.a.	900,000	60.00	1994	Ongoing	2,802.00	State govt.	311
		2	Improving existing system	n.a.	900,000	n.a.	1994	Ongoing	1,119.00	HUDCO	124
		3	Improving existing system	n.a.	900,000	25.00	1999	Ongoing	1,688.29	State Govt.	188
38	Sriganganagar M	1	Improving existing system	Treatment plant, Pumping station & Reservoirs	16,100,000	23.00	1996	Ongoing	3,596.00	HUDCO & State Govt.	1,132
Tamil Nadu											
39	Kanchipuram M	1	Augmentation	Pipe lines, Reservoirs & Infiltration Wells	308,600	21.50	1994	1997	1,823.00	Grant & World Bank loan	70

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
Uttar Pradesh											
40	Bareilly M.Corp.	1	Augmentation	Installation of tube-wells	150,000	35.00	1696	1998	175.00	State Govt.	116
41	Haldwani-cum-Kathgodam MB	1	Augmentation	Installation of tube-wells	19,200	2.40	1995	1998	79.44	State govt.	414
		2	Augmentation	Installation of Tube wells	24,700	3.00	1997	1999	137.00	State Govt.	555
		3	Augmentation	Tube wells	60,000	7.50	1998	Ongoing	348.00	10th F.C. Award	580
West Bengal											
42	Bankura M	1	Augmentation	Pipe lines, Pumping station, Tube wells & Reservoirs	134,000	16.00	n.a.	Ongoing	473.00	HUDCO	298
43	Barasat M	1	Augmentation	Pumping station, Tube wells & Machinery	n.a.	n.a.	1995	1999	35.00	State Govt. & Self	92
		2	Augmentation	Pipe lines	n.a.	n.a.	1995	1999	40.00	State Govt. & Self	105
44	Siliguri M.Corp.	1	Augmentation	Pipe lines, Treatment plant & Reservoirs	366,939	55.02	1994	1999	46.17	HUDCO, State Govt. & Self	1,258
Small States											
Assam											
45	Guwahati M.Corp.	1	Augmentation	Pipe lines, Pumping station, Tube wells & reservoirs	36,000	n.a.	1995	n.a.	204.00	State Govt.	567
Manipur											
46	Imphal MCI	1	Augmentation	Pumping station & reservoirs	41,510	6.81	1994	Ongoing	207.00	LIC & State Govt.	692
		2	Augmentation	Treatment plant & Reservoirs	50,000	7.50	1994	Ongoing	264.50	LIC & State Govt.	529
		3	Augmentation	Treatment plant	238,000	9.08	1999	Ongoing	100.00	State Govt.	42
Meghalaya											
47	Shillong MB	1	Augmentation	Pipe lines, Pumping station, & Reservoirs	300,000	51.30	n.a.	Ongoing	n.a.	LIC & State Govt.	2,647
* Per Capita Cost as provided by the respective ULBs/relevant agencies Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.											

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
CLASS II											
Andhra Pradesh											
1	Kapra M	1	Augmentation	Pipe lines & Reservoirs	155,000	6.50	1998	Ongoing	7.73	World Bank & Self	499
2	Narasaraopet M	1	Augmentation	Pipe lines & Reservoirs	125,000	7.00	1995	2000	1,900.00	HUDCO & Self	1,520
Gujarat											
3	Dabhoi M	1	Improving existing system	Installation of tube-wells & Reservoir development	70,000	0.90	1997	1999	175.00	State govt.	250
4	Dohad M	1	Augmentation	Reservoirs	78,000	6.80	1989	n.a.	64.00	GWSSB & Self	82
Haryana											
5	Jind MCI	1	Improving existing system	Pipe lines & Pumping station	20,000	0.36	1997	Ongoing	66.00	State Govt.	330
6	Thanesar MCI	1	Improving existing system	Reservoirs & Purchase of machinery	56,475	6.41	1995	Ongoing	72.57	State Govt.	128
Karnataka											
7	Gokak CMC	1	Augmentation	Source development	102,900	13.00	1998	Ongoing	935.29	LIC, State Govt. & Self	112
Kerala											
8	Payyanur M wells & Reservoir	1	Augmentation	Installation of tube-wells & Reservoir	1,000	0.06	1997	1998	12.00	State govt.	1,200
Madhya Pradesh											
9	Nagda M	1	Augmentation	n.a.	132,000	16.00	1995	1999	510.00	State Govt.	39
Maharashtra											
10	Bhandara M	1	Augmentation	Pipe lines & Reservoirs	11,000	1.50	1998	Ongoing	586.00	LIC & OMB Loan	310
11	Ratnagiri MCI	1	Augmentation	Pumping station & Source development	80,000	12.00	1988	Ongoing	1,128.47	LIC & OMB Loan	791
12	Satara MCI	1	Augmentation	Pipe lines	110,000	9.00	1998	Ongoing	1,400.00	LIC & State Govt.	1,272

Sl. No.	City/Town	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11
Punjab											
13	Ferozepur MCI	1	Augmentation	Pipe lines & Tube wells	n.a.	n.a.	1994	1997	166.88	Self	179
14	Sangrur MCI	1	Augmentation	Pipe lines	n.a.	n.a.	1994	1996	7.50	Self	750
Rajasthan											
15	Barmer M	1	Augmentation	Source development	79,000	8.14	1995	1998	122.87	State govt.	156
16	Bundi M	1	Improving existing system	n.a.	120,000	12.00	1997	Ongoing	429.75	LIC & State Govt.	362
17	Churu M	1	Augmentation	n.a.	82,852	16.00	1995	1999	321.00	HUDCO & State Govt.	39
18	Sawai Madhopur M	1	n.a.	n.a.	1,373,845	13.74	1998	Ongoing	695.54	HUDCO & State Govt.	506
Uttar Pradesh											
19	Lalitpur MB	1	Augmentation	n.a.	11,000	0.64	1994	Ongoing	63.80	Central Govt. & State Govt.	585
West Bengal											
20	Jalpaiguri M	1	Augmentation	Pipe lines, Treatment plant & Pumping station	n.a.	n.a.	1994	Ongoing	n.a.	State Govt. & Self	296
21	Jangipur M	1	Improving	Treatment plant existing system	66,000	6.60	1984	Ongoing	173.33	LIC & State Govt.	370
Union Territories											
22	Port Blair MCI	1	Augmentation	n.a.	169,943	20.00	1997	Ongoing	610.97	Central Govt.	360
Others (Smaller than Class II towns)											
Union Territories											
22	Silvassa	1	Augmentation	Intake well, sump, filtration plant, overhead tank	40,000	1.70	1988	Ongoing	265.00	Minimum Needs Program	300
* Per Capita Cost as provided by the respective ULBs/relevant agencies Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.											

A-18

CAPITAL WORKS TO BE UNDERTAKEN IN
FUTURE

A-18 : Capital Works to be undertaken in Future

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11	12
METROPOLITAN CITIES												
1	Bhopal M.Corp.	Y	n.a.	n.a.	n.a.	n.a.	355.00	n.a.	n.a.	n.a.	n.a.	n.a.
2	Coimbatore M.Corp.	Y	1	Augmentation	Reservoirs	n.a.	n.a.	n.a.	n.a.	2,700	TNUDF, Self & HUDCO	n.a.
3	Greater Bombay M.Corp.	Y	1	Augmentation	Pipe lines, Treatment plant, Pumping station, Reservoirs & Tunnel	9,926,000	450.00	2000	2009	86,662	MMRDA	873
			2	Augmentation	Pipe lines, Treatment plant, Reservoirs, Tunnel & Land acquisition	11,837,000	450.00	n.a.	n.a.	181,800	World Bank	1,541
4	Indore M.Corp.	Y	1	Augmentation	n.a.	4,100,000	920.00	n.a.	n.a.	57,500	n.a.	1,402
5	Ludhiana M.Corp.	Y	1	Augmentation	Pipe lines, Tube wells & Reservoirs	500,000	63.00	2000	2001	3,353	Self	671
6	Nagpur M.Corp.	Y	1	Augmentation	Pipe lines, Treatment plant & Reservoirs	3,500,000	213.00	n.a.	n.a.	4,912	HUDCO, LIC & Self	141
			2	Augmentation		4,500,000	350.00	n.a.	n.a.	976		22
7	Pune M.Corp.	Y	1	Augmentation	Pipe lines, Treatment plant & Reservoirs	3,500,000	990.00	1999	2003	18,800	Self	537
8	Visakhapatnam M.Corp.	Y	1	Augmentation	Pipe lines & Treatment plant	1,400,000	68.00	2000	2005	8,800	Indo-French protocol & Self	1,760

* Per Capita Cost as provided by the respective ULBs/relevant agencies
 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11	12
CLASS I												775
Andhra Pradesh												
1	Eluru M	Y	1	Augmentation	Pumping station & Reservoirs	80,000	1368.00	2000	2002	160	HUDCO, State Govt. & Self	200
2	Hindupur M	Y	1	Augmentation	Pipe lines	200,000	n.a.	n.a.	n.a.	2,000	Satya Sai Sewa Samithi	1,000
3	Vijaywada M.Corp.	Y	1	Augmentation	Treatment plant & Pumping station	20,000	36.32	2000	2001	463	Self	2,315
			2	Improving existing system	Reservoirs	10,000	n.a.	2000	2001	400	Self	4,000
			3	Augmentation	Pumping station & Reservoirs	25,000	45.40	2000	2003	136	HUDCO	544
			4	Augmentation	Pipe lines	30,000	n.a.	n.a.	n.a.	100	Public contribution & Self	333
Gujarat												
4	Bharuch M	Y	1	Augmentation	Reservoirs	210,000	23.00	n.a.	n.a.	833	n.a.	397
5	Bhuj M	Y	1	Augmentation	Pipe lines, Tube wells & Reservoirs	118,000	5.00	2001	2004	232	State govt.	196
6	Porbandar M	Y	1	Augmentation	Pipe lines & Reservoirs	135,000	2.00	2000	2002	120	Self	89
Karnataka												
7	Mangalore M.Corp.	Y	1	Augmentation	n.a.	804,000	190.00	2001	2005	9,672	Asian Development Bank	1,203
8	Tumkur M	Y	1	Augmentation	Treatment plant	350,000	15.00	2006	n.a.	150	LIC, HUDCO & Self	43
Madhya Pradesh												
9	Guna M	Y	1	Adding new pipe lines	n.a.	166,500	24.98	2004	n.a.	1,640	HUDCO & State Govt.	985
10	Rewa M.Corp.	Y	1	Augmentation	n.a.	60,000	4.50	2000	2005	213	Self	355
11	Shivpuri M	Y	1	Augmentation	Source development	200,000	35.00	2005	n.a.	2,600	HUDCO & State Govt.	1,300

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)	
1	2	3	4	5	6	7	8	9	10	11	12		
Maharashtra													
12	Aurangabad	M.Corp.	Y	1	Augmentation	Pipe lines, Treatment plant & Pumping station	1,630,000	208.00	1999	2001	67,300	LIC & State Govt.	425
13	Bhusawal	M.Cl.	Y	1	Augmentation	Pipe lines, Treatment plant & Pumping station	24,100	15.00	2000	2002	3,139	LIC & OMB Loan	1,302
14	Kolhapur	M.Corp.	Y	1	Augmentation	Pipe lines & Treatment plant	620,500	133.00	2000	2001	2,752	State Govt.	444
				2	Augmentation	Pipe lines	735,000	190.00	2001	2005	15,799	State Govt.	2,150
15	Ichalkaranji	MCI	Y	1	Improving	Pipe lines existing system	475,000	54.00	n.a.	n.a.	342		759
16	Nanded Waghala M.Corp.	Y	1	Augmentation	Pipe lines, Pumping station & Reservoirs	800,000	120.00	1999	2001	6,400	LIC, State Govt. & OMB Loan	812	
				2	Augmentation	Treatment plant, Pumping station & Reservoirs	104,000	13.20	1999	2001	1,412	LIC, State Govt. & OMB Loan	1,300
17	Parbhani	MCI	Y	1	Augmentation	Pipe lines, Treatment plant & Pumping station	720,000	115.00	1999	2002	1,300	LIC & State Govt.	18
18	Yavatmal	MCI	Y	1	Augmentation	Source development	314,000	26.00	1999	2001	6,277	LIC & OMB Loan	1,999
Orissa													
19	Puri	M	Y	1	Augmentation	Pipe lines & Tube wells	12,715	1.90	2000	2001	37	State Govt.	294
				2	Augmentation	Pipe lines	480	0.22	1999	1999	3	State Govt.	652
Punjab													
20	Bathinda	MCI	Y	1	Augmentation	Pipe lines & Reservoirs	n.a.	36.32	2001	2006	2,046	State Govt.	1,120
21	Moga	MCI	Y	1	Augmentation	Tube wells	n.a.	0.90	1999	2000	49	Self	487
22	Patiala	M.Corp.	Y	1	Augmentation	Pipe lines & Tube wells	642,000	116.00	1999	2000	160	Self	49
Rajasthan													
23	Bikaner	M	Y	1	Augmentation	n.a.	883,000	60.00	2000	2003	5,100	Asian Development Bank	578

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11	12
Uttar Pradesh												
24	Bareilly M.Corp.	Y	1	Augmentation	Pipe lines, Tube wells & Reservoirs	750,000	75.00	n.a.	n.a.	2,125	n.a.	286
25	Meerut M.Corp.	Y	1	Augmentation	n.a.	150,000	30.00	1999	2001	495	Central Govt. & State Govt.	3,200
West Bengal												
26	Baharampur M	Y	1	Augmentation	Tube wells	12,000	6.75	1999	2000	15	Self	123
27	Barasat M	Y	1	Augmentation	Pumping station, Tube wells & Machinery	n.a.	n.a.	2000	2001	25	State Govt. & Self	83
			2	Augmentation	Pipe lines	n.a.	n.a.	2000	2001	70	State Govt. & Self	233
Small States												
Assam												
28	Guwahati M.Corp.	Y	1	Augmentation	Pipe lines, Treatment plant & Reservoirs	1,822,000	n.a.	2000	2005	44,461	UNESCO	2,440
Mizoram												
29	Aizwal NM	Y	1	Augmentation	Pipe lines, Treatment plant, Pumping station & Head work	225,000	36.50	2000	2003	9,000	Central Govt.	4,000
* Per Capita Cost as provided by the respective ULBs/relevant agencies Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.												

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)
1		2	3	4	5	6	7	8	9	10	11	12
CLASS II												
Andhra Pradesh												
1	Anakapalle M	Y	1	Augmentation	Tube wells	130,000	12.40	2000	2001	837	HUDCO & Self	643
2	Dharmavaram M	Y	1	Augmentation	n.a.	n.a.	1.82	2000	2002	400	State Govt.	40
			2	Augmentation	Infiltration wells, reservoirs, pumping station	n.a.	1.82	2000	2002	150	State Govt.	15
3	Srikakulam MCI	Y	1	Augmentation	n.a.	150,000	8.00	1999	2001	943	HUDCO	628
4	Suryapet MCI	Y	1	Augmentation	n.a.	140,000	17.01	2000	2002	1,675	HUDCO & Self	1,200
Haryana												
5	Jind MCI	Y	1	Augmentation	Tube wells	5,000	0.18	n.a.	n.a.	14	State govt.	400
Karnataka												
6	Chikmagalur CMC	Y	1	Augmentation	Source development	100,000	60.00	n.a.	n.a.	2,014	HUDCO & State Govt.	2,014
7	Rabkavi-Banhatti CMC	Y	1	Augmentation	n.a.	100,000	13.62	2001	n.a.	700	LIC	700
Maharashtra												
8	Bhandara M	Y	1	Augmentation	Pipe lines, Pumping station & Source development	192,300	18.00	2000	2004	2,442	LIC & Others	1,258
9	Kamptee MCI	Y	1	Augmentation	Pipe lines, Pumping station & Reservoirs	153,000	19.30	1998	2001	2,800	LIC & State Govt.	1,375
10	Ratnagiri MCI	Y	1	Augmentation	Pipe lines	88,550	14.00	n.a.	n.a.	1,508	LIC & State Govt.	1,703
11	Satara MCI	Y	1	Augmentation	Pipe lines, Pumping station & Reservoirs	181,000	12.00	n.a.	n.a.	1,600	n.a.	883
Punjab												
12	Sangrur MCI	Y	1	Augmentation	Pipe lines, Tube wells & Reservoirs	n.a.	n.a.	1999	2002	n.a.	HUDCO, Central Govt. & Self	750
Rajasthan												
13	Barmer M	Y	1	Improving existing system	n.a.	147,000	21.02	1999	2001	1,502	State Govt.	102

Sl. No.	City/Town	Future Scheme	No. of Schemes	Purpose	Components	Designed population	Designed capacity (mld)	Year of starting	Year of completion	Total cost (Rs. in lakh)	Source of funding	Per capita cost* (Rs.)	
1		2	3	4	5	6	7	8	9	10	11	12	
Uttar Pradesh													
14	Chandpur	MB	Y	1	Augmentation	n.a.	60,000	3.60	n.a.	n.a.	130	State Govt.	216
15	Lalitpur	MB	Y	1	Augmentation	n.a.	17,300	1.05	2000	2002	193	Central Govt. & State Govt.	1,115
West Bengal													
16	Bishnupur	M	Y	1	Augmentation	Pumping station, Tube wells & Reservoirs	42,490	67.40	2000	2005	2	State Govt.	4
17	Chakdaha	M	Y	1	Improving existing system	Pumping station & Reservoirs	50,000	6.25	2003	2006	200	State Govt.	400
* Per Capita Cost as provided by the respective ULBs / relevant agencies Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.													

**WATER TARIFFS AND
CONNECTION CHARGES
1999**

WATER TARIFF AND CONNECTION CHARGES

ANDHRA PRADESH

AT-1 : Water Tariff and Connection Charges, 1999 - Andhra Pradesh

Sl. No.	City/Town	Cost of production of water (1997-99) Rs./kl month)	Domestic		Unmetered Flat rate (Rs./year)	Non-Domestic	
			Metered			Metered	
			Consumption based rates			Volumetric rate (Rs./Kl/ month)	Increasing block tariff (Rs./month)
1	Hyderabad	5.96		Min. 55/month upto 15 kl 3.75/kl for 15 - 25 kl 6.00/kl for 25 - 500 kl 14.00/kl above 500 kl	1680		
2	Vishakhapatnam	6.60	5.00	Min. 150.00 per month	480		
3	Vijayawada	1.10	5.75		480		
4	Warangal		5.00		720		
5	Guntur	2.97			720		
6	Nellore	15.00	1.50		480		
7	Rajahmundry	1.70			720		
8	Kakinada	1.66			720		
9	Nizamabad	n.a.			720		
10	Kurnool	7.00			720	20.00	
11	Ananthapuram	0.97			480		
12	Qutbullapur	1.75			720		
13	Eluru	1.01			480		
14	Tirupati	3.84	2.25		720		
15	Machilipatnam	2.60			480		
16	Ongole	n.a.			720		

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Industrial		Commercial			Institutional	
		Metered	Unmetered	Metered	Unmetered		Metered	Unmetered
		Volumetric rate (Rs./Kl/month)	Flat rate (Rs./year)	Volumetric rate (Rs./Kl/ month)	Ferrule based rates Ferrule size	Others Rs./year	Volumetric Flat rate (Rs./year)	Others rate (Rs./Kl/ month)
1	Hyderabad							
2	Vishakhapatnam	12.00 (treated) 5.00 (untreated)	Min. 12000	10.00			Min. 12000	10.00
3	Vijayawada	-		10.50				-
4	Warangal	10.00		10.00				
5	Guntur	n.a.		n.a.				n.a.
6	Nellore	10.00		10.00				10.00
7	Rajahmundry	n.a.		n.a.				n.a.
8	Kakinada	12.50		12.50				-
9	Nizamabad	n.a.			1/2" 3/4" 1" 2"	1524 8420 6084 21420		n.a.
10	Kurnool							
11	Ananthapuram	10.00		10.00				10.00
12	Qutbullapur	10.00		4.00				4.00
13	Eluru	-		10.00				-
14	Tirupati	15.00		15.00				15.00
15	Machilipatnam	-		10.00				10.00
16	Ongole	15.00		15.00				

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Cost of production of water (1997-99) Rs./kl month)	Domestic		Unmetered Flat rate (Rs./year)	Non-Domestic	
			Metered			Metered	
			Consumption based rates			Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)
17	Tenali	1.43			480		
18	Cuddapah	n.a.			720	No non-domestic connections in the city	
19	Nandyal	10.00			480	10.00	
20	Chittoor	10.00			720		
21	Hindupur	n.a.			480		
22	Kapra	4.59			720		
23	Rajendranagar	15.00			720		
24	Anakapalle	10.00			600		
25	Srikakulam	n.a.			360		
26	Dharmavaram	n.a.			540		
27	Madanapalle	n.a.	2.25		540		
28	Narasaraopet	2.09			720		
29	Suryapet	1.70	3.00		480		
30	Kavali	10.00			360		
31	Gudur	n.a.			480		
32	Srialahati	n.a.			540		
33	Sangareddy	10.00			380		

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Cost of production of water (1997-99) Rs./kl month)	Domestic		Unmetered Flat rate (Rs./year)	Non-Domestic	
			Metered			Metered	
			Consumption based rates			Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)
17	Tenali						
18	Cuddapah						
19	Nandyal						
20	Chittoor	-	15.00				
21	Hindupur		2.20				
22	Kapra	-	-				
23	Rajendranagar	-			1440		
24	Anakapalle	15.00	15.00			15.00	
25	Srikakulam	-	10.00				
26	Dharmavaram	-			780		
27	Madanapalle	12.00	12.00			12.00	
28	Narasaraopet	-	1.50			1.50	
29	Suryapet	10.00	10.00			10.00	960
30	Kavali	-	-				
31	Gudur	-	n.a.				
32	Srikalahati	-	n.a.				
33	Sangareddy	-	n.a.				

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

GUJARAT

AT-2 : Water Tariff and Connection Charges, 1999 - Gujarat

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./kl	Domestic				Non-Domestic		Industrial		
			Metered Volumetric rate (Rs./Kl/month)	Unmetered (Flat rate)			Unmetered (flat rate) Others (Rs./year)	Metered Volumetric Ferrule size (Kl/month)	Unmetered (Flat rate)		
				Ferrule based rates		Others Flat Rate (Rs./year)			Ferrule based Rs./year	Flat rate (Rs./year)	Flat rate (Rs./year)
				Ferrule size	Rs./year						
1	Ahmedabad	2.00 - 3.15	3.00								25-30% of NRV or Min. 720
2	Surat	2.11	2.00 - inside city limits	Within city limits			8.00 - inside city limits				
				1/2"	120		28.00 - outside city limits				
			12.00 - outside city limits	3/4"	252						
				1"	648						
				1 1/2"	1296						
				Outside city limits							
				1/2"	1440						
				3/4"	3360						
				1"	6720						
				1 1/2"	14400						
3	Vadodara	3.40	1.50	Minimum charges			10.80	Minimum charges			
				1/2"	180			1/2"	6300		
				3/4"	720			3/4"	23738		
				1"	1440			1"	25200		
				1 1/2"	3000			1 1/2"	56700		
4	Rajkot	3.30	-			240	480				
5	Bhavnagar	7.00	n.a.			300		9.00			1250
6	Jamnagar	n.a.				240	600	25.00			
7	Nadiad	n.a.		1/2"	170						
				3/4"	600						
				1"	1000						
8	Surendranagar	n.a.		1/2"	60						
				3/4"	150						

Sl. No.	City/Town	Commercial			Institutional			
		Metered	Unmetered (flat rate)		Metered	Unmetered (/Flat rate)		
		Volumetric rate	Ferrule based rates		Volumetric rate	Ferrule based rates		
		(Rs./Kl/month)	Furrule size	Rs./year	Others	Furrule size	Rs./year	Others
			Flat rate			Flat rate	(Rs./year)	
			(Rs./year)					
1	Ahmedabad	8.00 - 20.00	25-30% of NRV or Min. 720					
2	Surat	8.00 - inside city limits 28.00 - outside city limits						
3	Vadodara	5.40	Minimum charges		3.60	Minimum charges		
			1/2"	1680		1/2"	1104	
			3/4"	3684		3/4"	2436	
			1"	6702		1"	4428	
			1 1/2"	15084		1 1/2"	9960	
4	Rajkot							
5	Bhavnagar	9.00			1200	n.a.	600	
6	Jamnagar	25.00						
7	Nadiad		1/2"	800				
			3/4"	1000				
			1"	1600				
8	Surendranagar		1/2"	300				
			3/4"	600				
			1"	1200				
			1 1/4"	1800				
			1 1/2"	2400				
			2"	4800				
			3"	7200				
9	Anand		1/2"	200				
			3/4"	400				
10	Junagadh				240			
11	Bharuch				384			

Sl. No.	City/Town	One time water connection charges (in Rs.)				Others (specify)	Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional			
1	Hyderabad	900 to 16000 for 1/2" dia depending upon plot size 11000 to 26000 for 3/4" dia depending upon plot size 33000 to 40000 for 1" dia depending upon plot size	5.00 per litre of agreed quantity of water			1.75 per litre of agreed quantity of water	n.a.	n.a.
2	Vishakhapatnam	4000	n.a.	15000	15000	30000 (Semi-bulk)	1993	5.3% of ARV for domestic, 7% of ARV for non-domestic
3	Vijayawada	4000 - ordinary 7000 - urgent	- -	10000 - ordinary 17000 - urgent			n.a.	n.a.
4	Warangal	6000	n.a.	n.a.	n.a.		1998	7% of ARV
5	Guntur	7000 - ordinary 10500 - urgent		15000 - 26000 - ordinary 26000 - 63000 - urgent			1998	n.a.
6	Nellore	n.a.	n.a.	n.a.	n.a.		1998	No
7	Rajahmundry	6000	16000				1998	4% of ARV
8	Kakinada	4000 - ordinary 7000 - urgent	20000 - ordinary 200000 - urgent	10000 - ordinary 24000 - urgent			n.a.	4% of ARV
9	Nizamabad	n.a.	n.a.	n.a.	n.a.		1997	n.a.
10	Kurnool	6000	20000	20000	20000		1999	No
11	Ananthapuram	6000	15000	15000	15000		1998	n.a.
12	Qutbullapur	900 to 16000 for 1/2" dia depending upon plot size 11000 to 26000 for 3/4" dia depending upon plot size 33000 to 40000 for 1" dia depending upon plot size	5.00 per litre of agreed quantity of water			1.75 per litre of agreed quantity of water	1997	No
13	Eluru	4000	-	10000	-		1993	n.a.
14	Tirupati	600 for metered 4800 for unmetered	-	5400	5400		1998	No

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
1	Ahmedabad	Varies from 100 to 20000 for various sizes of pipe lines + road cutting charges				1997	Residential: 15 to 25% of NRV For < 50 sq.m. area minimum 48 to 210/year Non-residential: 15 to 30% of NRV Minimum 360 to 720/year
2	Surat	n.a	n.a	n.a	n.a	1999	n.a.
3	Vadodara	n.a.	n.a.	n.a.	n.a.	1999	5% of ARV
4	Rajkot	200	1000	1000	1000	1989	Rates mentioned in umetered connections
5	Bhavnagar	340	340	340	340	1994	Rates mentioned in umetered connections
6	Jamnagar	500-1000	1500	1500	1500	1995	Rates mentioned in umetered connections
7	Nadiad	600 for 1/2" dia, 700 for 3/4" dia, and 800 for 1" dia				1989	Rates mentioned in umetered connections
8	Surendranagar	450	-	650	-	1976	Rates mentioned in umetered connections
9	Anand	204 for 1/2"		960 for 1/2"		1992	Rates mentioned in umetered connections
		720 for 3/4"		2160 for 3/4"			
10	Junagadh	360	720	720		1987	Rates mentioned in umetered connections
11	Bharuch	677		1397		1992	Rates mentioned in umetered connections
12	Porbander	100	100	100	100	1998	Rates mentioned in umetered connections
13	Navsari	500 to 1000		n.a.		1997	Rates mentioned in umetered connections
14	Mehsana	360	720	720		1999	Rates mentioned in umetered connections

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./kl	Domestic			Non-Domestic Unmetered (flat rate) Others (Rs./year) rate (Rs./	Industrial			
			Metered Volumetric rate (Rs./Kl/ month)	Unmetered (Flat rate)			Metered Volumetric Ferrule Kl/month)	Unmetered (Flat rate)		
				Ferrule based rates				Others Flat Rate (Rs./year)	Ferrule based Rs./year	Others Flat rate (Rs./year)
				Ferrule size	Rs./year					
				1"	300					
				1 1/4"	450					
				1 1/2"	600					
				2"	1200					
				3"	1800					
9	Anand	n.a.		1/2"	60					
				3/4"	90					
10	Junagadh	n.a.				120		240		
11	Bharuch	7.60	5.00	1/2"	144					
				3/4"	216					
				1"	576					
12	Porbander	2.50		1/2"	180		1/2"	600		
				3/4"	600		3/4"	1800		
				1"	1800		1"	3600		
				1 1/2"	3600		1 1/2"	7200		
				2"	4800		2"	9600		
				Outside municipal limits the charges are 1.5 times the above			Outside municipal limits the charges are 1.5 times the above			
13	Navsari	n.a.		1/2"	90	90 to 270 based on ARV				
				3/4"	135					
				1"	180					
14	Mehsana	n.a.				120		240		
15	Jetpur	n.a.		1/2"	240		1/2"	2400		
				3/4"	360		3/4"	3600		

* Estimated by respective local governments/authorities

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./kl	Domestic			Non-Domestic Unmetered (flat rate) Others (Rs./year) rate (Rs./	Industrial			
			Metered Volumetric rate (Rs./Kl/ month)	Unmetered (Flat rate)			Metered Volumetric Ferrule Kl/month)	Unmetered (Flat rate)		
				Ferrule based rates				Others Flat Rate (Rs./year)	Ferrule Rs./year	Flat rate Flat rate (Rs./year)
				Ferrule size	Rs./year					
16	Bhuj	n.a.	15 mm	360						
			20 mm	720						
17	Palanpur	n.a.	1/2"	120			1/2"	360		
			3/4"	360			3/4"	600		
			1"	720			1"	1200		
18	Gondal	n.a.	1/2"	120						
			1"	180						
19	Amreli	n.a.			120			240		
20	Dahod	3.50	1/2"	144						
			3/4"	180						
			1"	240						
21	Dabhoi	n.a.			120			380		
22	Ankleswar	6.00			200					

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Commercial			Institutional			
		Metered	Unmetered (flat rate)		Metered	Unmetered (/Flat rate)		
		Volumetric rate	Ferrule based rates		Volumetric rate	Ferrule based rates		
		(Rs./Kl/month)	Furrule size	Rs./year	Flat rate	Ferrule size	Rs./year	Flat rate
			(Rs./year)				(Rs./year)	
12	Porbander		1/2"	600		1/2"	360	
			3/4"	1800		3/4"	1200	
			1"	3600		1"	2400	
			1 1/2"	7200		1 1/2"	3600	
			2"	9600		2"	7200	
		Outside municipal limits the charges are 1.5 times the above				Outside municipal limits the charges are 1.5 times the above		
13	Navsari						300 to 450 based on ARV	
14	Mehsana						240	
15	Jetpur		1/2"	360				
			3/4"	600				
16	Bhuj		15 mm	860			1440-4800	
			20 mm	1220			180 (for social institutions)	
17	Palanpur		1/2"	240				
			3/4"	480				
			1"	720				
			2"	1440				
18	Gondal		1/2"	180				
			1"	240				
19	Amreli						240	
20	Dahod		1/2"	1800				
			3/4"	2100				
			1"	2400				
21	Dabhoi						380	
22	Ankleswar						400	

Source: NIUA Survey, 1999.

Sl. No.	City/Town	One time water connection charges (in Rs.)					Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional	Others (specify)		
15	Machilipatnam	6000	-	10000	-		1998	n.a.
16	Ongole	6000	10000	n.a.			1997	n.a.
17	Tenali	6000	-	-	-		1998	n.a.
18	Cuddapah	6000 - ordinary 12000 - urgent	-	-	-		1999	No
19	Nandyal	4000 - ordinary 7000 - urgent		8000 - ordinary 16000 - urgent	8000 - ordinary 16000 - urgent		1998	No
20	Chitoor	6000 - ordinary	-	-	-		1998	n.a.
21	Hindupur	4000	-	7000	-		1998	n.a.
22	Kapra	-	-	-	-		1999	n.a.
23	Rajendranagar	4500	-	4500	-		1999	No
24	Anakapalle	6000	-	10500	-		1997	n.a.
25	Srikakulam	6000	-	-	-		1998	No
26	Dharmavaram	4500	-	-	-		1998	No
27	Madanapalle	-	-	-	-		1998	No
28	Narasaraopet	6000 - ordinary 12000 - urgent	-	17500	-		1998	n.a.
29	Suryapet	4500	18000 - 135000	9000 to 22500			1997	6% of ARV
30	Kavali	4500	-	-	-		1998	n.a.
31	Gudur	4000	-	10000	-		1998	n.a.
32	Srikalahati	4500	-	7875	-		n.a.	No
33	Sangareddy	2200	-	4200	-		1998	No

Source: NIUA Survey, 1999.

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
15	Jetpur	150	1000	500		1998	Rates mentioned in unmetered connections
16	Bhuj						
17	Palanpur	25 to 400 for different sizes of connections				1985	Rates mentioned in unmetered connections
18	Gondal	1000	1500	1500		1997	Rates mentioned in unmetered connections
19	Amreli	360	720	720		1986	Rates mentioned in unmetered connections
20	Dahod	1000	-	2700		1989	Rates mentioned in unmetered connections
21	Dabhoi	n.a.	n.a.	n.a.	n.a.	1989	Rates mentioned in unmetered connections
22	Ankleswar	800	-	1000		1999	Rates mentioned in unmetered connections

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999

WATER TARIFF AND CONNECTION CHARGES

HARYANA

AT-3 : Water Tariff and Connection Charges, 1999 - Haryana

Sl. No.	City/Town	Cost of production of water (1997-99) Rs./kl	Domestic			Industrial	Commercial
			Metered	Unmetered (Flat rate)		Metered	Metered
				Volumetric rate (Rs./Kl/month)	Based on ferrule size		Volumetric rate (Rs.Kl/month)
			Ferrule size		(Rs./month)		
1	Faridabad	n.a.	1.00	10 mm (with one tap)	25	2.50	2.00
				10 mm (with more than one tap)	40		
				12 mm	100		
				15 mm	125		
				20 mm	150		
				Above 20 mm	200		
2	Hissar	2.33	Same as above	Same as above		2.50	2.00
3	Rohtak	1.91	Same as above	Same as above			
4	Karnal	1.87	Same as above	Same as above			2.50
5	Gurgaon	3.71	Same as above	Same as above	2.50		2.00
6	Ambala	2.68	Same as above	Same as above	2.50		2.00
7	Jind	1.56	Same as above	Same as above	2.50		2.00
8	Rewari	0.95	Same as above	Same as above			
9	Thanesar	2.30	Same as above	Same as above			2.00
10	Kaithal	1.81	Same as above	Same as above			

* Estimated by respective local governments/authorities

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
1	Faridabad	300	300	300	300	1994	No
2	Hissar	n.a.	n.a.	n.a.	n.a.	1994	No
3	Rohtak	n.a.	n.a.	n.a.	n.a.	1994	No
4	Karnal	300	300	300	300	1994	No
5	Gurgaon	300	300	300	300	1994	No
6	Ambala	300	300	300	300	1994	No
7	Jind	300	300	300	300	1994	No
8	Rewari	n.a.	n.a.	n.a.	n.a.	1993	No
9	Thanesar	300	300	300	300	1994	No
10	Kaithal	300	300	300	300	1994	No

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

KARNATAKA

AT-4 : Water Tariff and Connection Charges, 1999 - Karnataka

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./kl	Domestic			Non-Domestic		
			Consumption based rates Increasing block tariff (Rs./month)	Unmetered		Others Flat rate (Rs./year)	Metered	Unmetered
				Ferrule based rates Ferrule size	Rs./year		Increasing block tariff	Others
							(Rs./Kl/month)	Flat rate (Rs./year)
1	Bangalore	n.a.	Min. 65.00/month 3.50/kl upto 25 kl 7.00/kl for 25 - 50 kl 19.00/kl for 50 - 75 kl 26.00/kl for 75 - 100 kl 33.00/kl above 100 kl			540	Min. 275.00/month 33.00/kl upto 10 kl 39.00/kl for 10 - 20 kl 44.00/kl for 20 - 40 kl 51.00/kl for 40 - 60 kl 57.00/kl for 60 - 100 kl 60/kl above 100 kl	
2	Mysore	2.87	1.25/kl upto 10 kl 1.65/kl for 10-25 kl 2.65/kl for 25-50 kl 3.65/kl for 50-75 kl 5.15/kl for 75-100 kl 6.15/kl above 100 kl				3.30/kl upto 25 kl 4.30/kl for 25-50 kl 5.30/kl for 50-75 kl 6.30/kl for 75-100 kl 7.30/kl above 100 kl	
3	Hubli-Dharwad	n.a.	1.25/kl upto 10 kl 1.65/kl for 10-25 kl 2.65/kl for 25-50 kl 3.65/kl for 50-75 kl 5.15/kl for 75-100 kl 6.15/kl above 100 kl			540	3.30/kl upto 25 kl 4.30/kl for 25-50 kl 5.30/kl for 50-75 kl 6.30/kl for 75-100 kl 7.30/kl above 100 kl	
4	Belgaum	n.a.		1/2" 3/4" 1"	430 1085 1155			
5	Davangere	n.a.				540	2160	
6	Gulbarga	n.a.				540	1080	

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./kl	Domestic			Non-Domestic	
			Metered	Unmetered		Metered	Unmetered
			Consumption based rates	Ferrule based rates		Increasing block tariff	Others
			Increasing block tariff (Rs./month)	Ferrule size	Rs./year	Flat rate (Rs./year)	Flat rate (Rs./year)
7	Mangalore	2.13	Minimum 45.00/month 1.40/kl upto 10 kl 1.80/kl for 10-25 kl 2.80/kl for 25-50 kl 3.80/kl for 50-75 kl 5.30/kl for 75-100 kl 6.30/kl above 100 kl			Min. 90/month 4.00/kl upto 10 kl 8.00/kl above 10 kl	
8	Tumkur	n.a.			120		600
9	Bellaray				540		1080
10	Shimoga	n.a.			360		2160
11	Hospet	n.a.			540		
12	Gadag	6.00			360		
13	Mandya	n.a.			540		
14	Kolar	n.a.			540		
15	Bagalkot	n.a.			540		1080
16	Chikmagalur	n.a.			360		1200
17	Rabakavi-Banhatti	8.48			540		
18	Ramanagaram	n.a.			540		2160
19	Gokak	n.a.			540		

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl.No.	City/Town	Institutional Unmetered Others Flat rate (Rs./year)	Others (specify) Unmetered	One time water connection charges (in Rs.)					Year of last revision	Stand post charges	Water tax
				Domestic	Industrial	Commercial	Institutional	Others (specify)			
1	Bangalore				n.a.	n.a.	n.a.		1996	2680/month	No
2	Mysore			2000	8000	8000	-	4000	1996		No
3	Hubli-Dharwad	1080	1080 (Construction)	2000	8000	8000	4000	4000	1996		4% of ARV
4	Belgaum			n.a.	n.a.	n.a.	n.a.		n.a.		No
5	Davangere		1080 (Construction)	1500		3000		2000	n.a.		No
6	Gulbarga		2160 (Construction)	2050	4050	4050	4050	8050	1996		No
7	Mangalore			3000	3000	3000	3000		1996		No
8	Tumkur			n.a.	n.a.	n.a.	n.a.		1991		n.a.
9	Bellaray			1500	3000	3000	3000		1994		n.a.
10	Shimoga			1550	3000	3000	3000		1997		No
11	Hospet	1080		1500	6000	3000	3000		1996		n.a.
12	Gadag			100		200			1993		4% of ARV
13	Mandya		1080 (Construction)	1700	6200	6200		3200	1998		7% of ARV
14	Kolar		1080 (Construction)	2000	6000	6000		3000	1998		n.a.
15	Bagalkot			4500	6000	6000			1996		n.a.
16	Chikmagalur			1500	-	3000	3000		1997		No
17	Rabakavi-Banhatti		1080 (Construction)	1500	6000	6000	3000	3000			
18	Ramanagaram			400	3000	3000	1500		1999		No
19	Gokak	1080	1080 (Construction)	1500	6000	6000	3000	3000	1998		20% of ARV

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

KERALA

AT-5 : Water Tariff and Connection Charges, 1999 - Kerala

Sl. No.	City/Town	Cost of production of water (1997-98)* Rs./Kl	Domestic	Non-Domestic	Industrial
			Metered	Metered	Metered
			Consumption based rates Increasing block tariff (Rs./month)	Increasing block tariff (Rs./month)	Increasing block tariff (Rs./month)
	Same for all the urban areas of the state	n.a.	22/month - upto 10 kl 25-52/month - for 11-20 kl 55-82/month - for 21-30 kl 87-132/month - for 31-40 kl 137-182/month - for 41-50 kl 189-550/month - for 51-100 kl	102/month - upto 10 kl 102-149/month - for 11-20 kl 156-223/month - for 21-30 kl 230-296/month - for 31-40 kl 303-370/month - for 41-50 kl 381-900/month - for 51-100 kl	202/month upto 10 kl 202-214/month for 11-20 kl 225-320/month for 21-30 kl 331-426/month for 31-40 kl 437-532/month for 41-50 kl 532-1062/month for 51-100 kl

*Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities*

Sl. No.	City/Town	One time water connection charges (in Rs.)			Year of last revision	Water tax
		Domestic	Industrial	Commercial		
	Same for all the urban areas of the state	565	1065	1065	1999	No
<i>Source: NIUA Survey, 1999</i>						

WATER TARIFF AND CONNECTION CHARGES

MADHYA PRADESH

AT-6 : Water Tariff and Connection Charges, 1999 - Madhya Pradesh

Sl. No.	City/Town	Cost of production of water (1997-98)* Rs./KI	Domestic		Industrial		Commercial		
			Metered	Unmetered	Metered	Unmetered	Metered	Unmetered	
			Consumption based rates		Others	Volumetric	Others	Volumetric	Others
			Volumetric rate (Rs./KI/month)	Increasing block tariff (Rs./month)	Flat rate (Rs./year)	rate (Rs./KI/month)	Flat rate (Rs./year)	rate (Rs./KI/month)	Flat rate (Rs./year)
1	Bhopal	n.a.		720	8.00		6.00		
2	Indore	7 - 8	2.00	720	22.00	3600	10.50	1800	
3	Jabalpur	n.a.	3.00	720	6.00	2160	6.00	2160	
4	Gwalior	n.a.	All connections unmetered		720		1440	1280	
5	Ratlam	n.a.		600	15.00			1200	
6	Burhanpur	n.a.	All connections unmetered		600		n.a.	n.a.	
7	Dewas	n.a.	All connections unmetered		600		-	1200	
8	Satna	n.a.	0.33			2.20		1.75	
9	Katni	n.a.	1.50	600	3.50	900	3.50	900	
10	Rewa	n.a.	1.30	144	2.20		1.75		
11	Khandwa	n.a.	All connections unmetered		600		1200	1200	
12	Bhind	n.a.	All connections unmetered		480		600	n.a.	
13	Shivpuri			480	5.68		2.27		
14	Morena	1.16		480		480		480	
15	Guna	n.a.		480	5.68		2.27		
16	Vidisha	n.a.	All connections unmetered		480		1440	1440	
17	Mandsor	n.a.	All connections unmetered		480 - 720		720 - 1080	720 - 1080	
18	Itarsi	n.a.	All connections unmetered		480		480	480	
19	Nagda	n.a.		480		-		-	
20	Sehore	n.a.	All connections unmetered		480		1200	-	
21	Hoshangabad	n.a.	All connections unmetered		480		480	480	
22	Neemuch	3.68		480		960		-	
23	Khargaon	n.a.	All connections unmetered		480		n.a.	1200	
24	Shahdol	n.a.	All connections unmetered		480		-	1680	

* Estimated by respective local governments/authorities

Sl. No.	City/Town	Institutional Metered Volumetric rate (Rs./Kl month)	One time water connection charges (in Rs.)				Year of last revision	Water tax	Rate of bulk water purchase	
			Unmetered Others Flat rate (Rs./year)	Domestic	Industrial	Commercial				Institutional
1	Bhopal			2100	For 1/2" - 50000	For 1" - 100000	1998	No	1.00/kl	
2	Indore			250 +	Road repair charges			1995	No	
3	Jabalpur	6.00	2160	1356	1356	1356	1356	1997	No	
4	Gwalior		1280	1500	3000	3000	3000	1997	n.a.	
5	Ratlam		600	1500-1800	2500-3000	1600-2200	1500-1800	1998	n.a.	
6	Burhanpur		n.a.	1500 - 2500			1997	n.a.		
7	Dewas		-	2000-3000		-	-	1997	n.a.	2.00/kl
8	Satna			61	61	61	61	n.a.	No	
9	Katni	3.50	900	763	763	763	763	1997	No	
10	Rewa	1.75		n.a.	59	59	59	1986	No	
11	Khandwa		600	650	1300	1300	650	1997	n.a.	
12	Bhind		n.a.	34	n.a.	n.a.	n.a.	1997	n.a.	
13	Shivpuri	2.27		1600	2000	2000	2000	1996	No	
14	Morena		480	500	700	700	700	1997	n.a.	
15	Guna	2.27		1600	2000	2000	2000	1996	No	
16	Vidisha		-	850	1700	850	-	1997	No	
17	Mandsor		720 - 1080	1000	1250	1250	1250	1997	n.a.	
18	Itarsi		480	900	900	900	900	1997	No	
19	Nagda		-	1500	-	-	-	1997	n.a.	
20	Sehore		-	1885	3000	-	-	1997	No	
21	Hoshangabad		480	1530	1530	1530	1530	1997	n.a.	
22	Neemuch		-	1200	1500	-	1200	1997	n.a.	
23	Khargaon		n.a.	1200	1500	1500	1200	1998	n.a.	
24	Shahdol		-	n.a.	n.a.	n.a.	n.a.	1996	n.a.	

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

MAHARASHTRA

AT-7 : Water Tariff and Connection Charges, 1999 - Maharashtra

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./Kl	Domestic					Non-Domestic				
			Metered		Unmetered			Metered		Unmetered		Others Flat rate (Rs./year)
			Consumption based rates		Ferrule based rates		Others Flat rate (Rs./year)	Volumetric rate (Rs./Kl/ month)	Increasing block tariff	Ferrule based rates		
			Volumetric rate (Rs./ Kl/month)	Increasing block tariff (Rs./month)	Ferrule size	Rs./year				Ferrule size	Rs./year	
1	Mumbai	142	2.52	1.50 - 2.75			50% of rateable value of property	0.50 to 35.00			100% of rateable value of property	
2	Pune	n.a.	2.50		1/2 & 3/4"	750 & 1500	250 for slums	12.00	1/2 & 3/4"	1000 & 2000		
					1 & 2"	4000 & 10000			1 & 2"	5000 & 20000		
					3"	15000			3"	30000		
					>3"	20000			>3"	40000		
3	Nagpur	n.a.		1.00/kl - upto 10 kl	15 mm	300			15 mm	1200		
				1.25/kl - for next 30 kl	20 mm	600			20 mm	2400		
				1.50/kl for above								
4	Kolhapur	2.75	3.60									
5	Nasik	4.75	2.25				720					
6	Aurangabad	6.39	4.00		15 mm	1000		10.00	15 mm	4000		
						20 mm	2000			20 mm	4500	
						25 mm	3000			25 mm	10500	
7	Dhule	4.56	4.00		1/2"	806		8.00	1/2"	3580		
						3/4"	1555			3/4"	7138	
						1"	3662			1"	16152	

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Industrial			Commercial			Institutional		
		Metered Volumetric rate (Rs./Kl/month)	Unmetered		Metered Volumetric rate (Rs./Kl/month)	Unmetered		Metered Volumetric rate (Rs./Kl/month)	Unmetered	
			Furrule based			Furrule based			Furrule based	
			Ferrule size	Rs./year		Ferrule size	Rs./year		Ferrule size	Rs./year
1	Mumbai	Combined in non-domestic								
2	Pune									
3	Nagpur	12.00			7.50			2.50		
4	Kolhapur	17.30			7.20			7.20		
5	Nasik	12.00			9.00			12.00		
6	Aurangabad									
7	Dhule									
8	Parbhani									
9	Bhusawal		15 mm	3580						
			20 mm	1738						
			25 mm	16152						
10	Yavatmal				23.00			543	9.55	213
11	Kamptee							720		720
12	Virar									
13	Ratanagiri	15.55			7.90			3576		
14	Ichalkaranji	8.00			8.00			1280	8.00	1280
15	Ballarpur	28.00			28.00			5.60		
16	Chandrapur	153							1/2"	1612
									3/4"	3110
									1"	7324
17	Manmad									
18	Satara									
19	Wardha									
20	Jalgaon				12 mm	3580				
					18 mm	7138				
					25 mm	16152				

Sl. No.	City/Town	Others (specify) Metered Volumetric rate (Rs./Kl/month)	One time water connection charges (in Rs.)					Year of last revision	Stand post charges	Water tax	Rate of bulk water purchase
			Domestic	Industrial	Commercial	Institutional	Others (specify)				
1	Mumbai	-	-	-	-	-	-	1997	Re. 1.00/kl for metered stand posts	50% of the rateable value of the property for domestic and 100% for non-domestic	Domestic Rs.165.00 per million litres and Rs. 2475.00 for non-domestic
2	Pune						1999	No	N. A.		
3	Nagpur		-	-	-	-	-	1989	No	10%, 12%, 15%	
4	Kolhapur		3450 for 15mm	5550 for 15mm	3650 for 15mm	3650 for 15mm		1998	418/month	6% on ARV	NA
5	Nasik		n.a.	n.a.	n.a.	n.a.	n.a.	1998	No	2%	
6	Aurangabad		n.a.	n.a.	n.a.	n.a.	n.a.	1998	No	No	NA
7	Dhule		n.a.					1999		n.a.	
8	Parbhani		Road cutting charges levied bet. Rs. 30 and 1500 depending upon type of road + boring charges levied by size of connection varying bet. Rs. 100 and Rs. 2000					1999	No	No	Rs.4.90 per cubic meter
9	Bhusawal						1998		No		
10	Yavatmal		n.a.		n.a.			1998	550/yr.	No	
11	Kamptee		75	Nil	Nil	Nil	Nil	1991	No	n.a.	1.00/kl
12	Virar		n.a.					1998	No	No	
13	Ratanagiri							1997	No	No	Rs.1.5/per cum Rs.3.75/per cum

Sl. No.	City/Town	Industrial			Commercial			Institutional				
		Metered Volumetric rate (Rs./Kl/ month)	Unmetered		Metered Volumetric rate (Rs./Kl/ month)	Unmetered		Metered Volumetric rate (Rs./Kl/ month)	Unmetered			
			Ferrule based			Others Flat rate (Rs./year)	Ferrule based		Others Flat rate (Rs./year)	Ferrule based		
			Ferrule size	Rs./year			Ferrule size			Rs./year	Ferrule size	Rs./year
21	Nanded	15.55	1/2" 3/4" 1"	4370 19440 25920	15.55	1/2" 3/4" 1"	4370 19440 25920	9.00	1/2" 3/4" 1"	720 3240 4320		
22	Solapur	12.00			12.00			12.00				
23	Bhandara	9.55		213	23.00			543	23.00	543		
24	Amalner											
25	Amravati											

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Others (specify) Metered Volumetric rate (Rs./Kl/month)	One time water connection charges (in Rs.)					Year of last revision	Stand post charges	Water tax	Rate of bulk water purchase
			Domestic	Industrial	Commercial	Institutional	Others (specify)				
14	Ichalkaranji		50	200	200	200	1998	No	No	Rs.1.50/ 10.00cum	
15	Ballarpur	5600	401 for 1/2"	401 for 1/2"	401 for 1/2"	401 for 1/2"	1998	660/yr.	n.a.		
16	Chandrapur		21	21	21	21	1997	No	No		
17	Manmad		15 - 40			50 - 120	1999		n.a.		
18	Satara		400	400	400	400	1997		No		
19	Wardha		150				1999	No	n.a.		
20	Jalgaon		n.a.				1998		n.a.	1.50	
21	Nanded		Road cutting charges levied bet. Rs. 100 - 750 depending upon type of road				1999	No	No	0.75	
22	Solapur		1/2" - 1000	1/2" - 3000, 3/4" - 4500, above 1" - 3 month's average bill is taken as deposit			1998-99	No	No	Domestic - 2.04/10 kl Non-domestic - 18/10 kl	
23	Bhandara	163		253	955	955	955	1997	No	No	
24	Amalner	162		n.a.				n.a.	No	No	
25	Amravati										

Source: Respective urban local government/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Cost of production of water (1998-99)* Rs./Kl	Domestic					Non-Domestic				
			Metered		Unmetered			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others	Volumetric	Increasing	Ferrule based rates		Others
			Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Ferrule size	Rs./year	Flat rate (Rs./year)	rate (Rs./Kl/month)	block tariff	Ferrule size	Rs./year	Flat rate (Rs./year)
22	Solapur	3.24		2.50/kl upto 20 kl. 3.50/kl for 20-40 kl. 4.20/kl for >40 kl.	1/2" 3/4"	980 2350		12.00		1/2" 3/4"	3950 7900	
23	Bhandara	n.a.	4.75	15 mm min. 552/year 20 mm min. 1116/year 25 mm min. 2196/year	15mm 20mm 25mm	1272 2556 5124	106		15 mm min. 2736 /year 20 mm min. 5484 /year 25 mm min. 10968 /year	15mm 20mm 25mm	6516 14376 26028	
24	Amalner	1.00					806	4.00				
25	Amravati	0.90	5.75	15 mm min. 672/year 20 mm min. 1344/year 25 mm min. 2640/year	15 mm 20 mm 25 mm	min. 1536 min. 3000 min. 6156		28.00	15 mm min. 3288/year 20 mm min. 6588/year 25 mm min. 13164/year	15 mm 20 mm 25 mm	min. 7824 min. 17256 min. 31236	

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

WATER TARIFF AND CONNECTION CHARGES

ORISSA

AT-8 : Water Tariff and Connection Charges, 1999 - Orissa

Sl. No.	City/Town	Cost of production of water (1997-98)* Rs./Kl	Domestic		Non-Domestic		Industrial			Commercial			
			Metered		Unmetered	Metered		Metered	Unmetered	Metered	Unmetered		
			Consumption based rates		Flat rate (Rs./year)	Metered		Flat rate (Rs./year)	Volumetric rate (Rs./Kl/month)	Volumetric rate (Rs./Kl/month)	Ferrule based rates		Others
			Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)		Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)				Ferrule size	Rs./year	Flat rate (Rs./year)
1	Bhubaneswar	2.39	1.81		Rs. 36 per month up to two taps and Rs. 12 or each additional tap			3.63		4.24			
2	Cuttack	1.96	2.00		Rs. 40 per month for two taps			4.65		4.65			
3	Puri	1.75	2.00		Rs. 40 per month for two taps			4.00		4.65			
4	Rourkela	n.a.	1.83		n.a.			4.25		4.25			
5	Sambalpur	n.a.	1.50		Rs. 30 per month for two taps			3.00		3.00			
6	Balangir	2.35			Rs. 40 per month for two taps			4.40		5.10			
7	Bhadrak	n.a.			Water tax @ 10% of ARV			n.a		n.a			

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Institutional		One time water connection charges (in Rs.)					Year of last revision	Water tax
		Metered Volumetric rate (Rs./Kl/month)	Unmetered Others Flat rate (Rs./year)	Domestic	Industrial	Commercial	Institutional	Others (specify)		
1	Bhubaneshwar	4.24		3000	5000	5000	4000		Aug. 1996	
2	Cuttack	4.65		3000	5000	5000	4000		Aug. 1996, with 10% enhancement every year	
3	Puri	4.65		3000	5000	5000	4000		Aug. 1996	
4	Rourkela	4.25		3000	5000	5000	4000		1996	
5	Sambalpur	3.50		3000	5000	5000	4000		1996	
6	Balangir	5.10		3000	5000	5000	4000		1996	
7	Bhadrak	n.a		n.a	n.a	n.a	n.a			

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

PUNJAB

AT-9 : Water Tariff and Connection Charges, 1999 - Punjab

Sl. No.	City/Town	Cost of production of water (1997-98)* Rs./Kl	Domestic		Non-Domestic	Industrial		Commercial	
			Metered Volumetric rate (Rs./Kl month)	Unmetered Others Flat rate (Rs./year)	Unmetered Others Flat rate (Rs./year)	Metered Volumetric rate (Rs./Kl month)	Unmetered Others Flat rate (Rs./year)	Metered Volumetric rate (Rs./Kl/ month)	Unmetered Others Flat rate (Rs./year)
1	Ludhiana	3.60		600			1200		1200
2	Amritsar	2.50	1.20	360 or Rs. 20.00 per month for first tap and Rs. 7.50 for additional tap		2.50		2.50	
3	Jalandhar	0.46		90	180				
4	Patiala	n.a.	1.20	Rs. 20.00 per month for first tap and Rs. 7.50 for 2nd tap, 4.00 for additional tap		Rs. 60 per tap	2.50	Rs. 60 per tap	2.50
5	Pathankot	5.00	1.20	240		2.50	360	2.50	360
6	Bathinda	1.96	1.20			2.50		2.50	
7	Moga	1.20	1.20	Rs. 20.00 per tap/ month		2.50	Rs. 150/ tap/month	2.50	Rs. 150/ tap/month
8	Hoshiarpur	1.62	1.20	240		2.40	480	2.40	480
9	Phagwara	4.73	1.20	Rs. 20.00 per month for first tap and Rs. 7.50 for each subsequent tap		2.50		2.50	
10	Ferozpur	0.90	n.a.	Rs. 20.00 per tap/ month tap/month					Rs. 40 per
11	Kapurthala	1.00	1.20	Rs. 20.00 per month for first tap and Rs. 7.50 for each subsequent tap		2.50		2.50	
12	Sangrur	0.68	1.20	360		2.50	720	2.50	720
13	Mansa	n.a.		240	n.a.				

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Institutional		One time water connection charges (in Rs.)				Year of last revision	Water tax
		Metered Volumetric rate (Rs./Kl/month)	Unmetered Others Flat rate (Rs./year)	Domestic	Industrial	Commercial	Institutional		
1	Ludhiana							1999	No
2	Amritsar			21	21	21		1993	No
3	Jalandhar			15	15	15		1999	No
4	Patiala			175	175	175	175	1993	No
5	Pathankot			n.a.	n.a.	n.a.	n.a.	1995	No
6	Bathinda			n.a.	n.a.	n.a.	n.a.	1993	No
7	Moga			100	100	100		1998	No
8	Hoshiarpur	2.40	480	100	100	100	100	1992	No
9	Phagwara			34	34	34		n.a.	No
10	Ferozpur			n.a.	n.a.	n.a.	n.a.	1994	No
11	Kapurthala			50	50	50	50	1997	No
12	Sangrur			400	800	800		1993	No
13	Mansa			n.a.	n.a.	n.a.	n.a.	n.a.	No

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

RAJASTHAN

AT-10 : Water Tariff and Connection Charges, 1999 - Rajasthan

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic			Non-Domestic			
			Metered		Unmetered (Flat rate)		Metered	Unmetered	
			Consumption based rates		Based on ferrule size		Increasing block tariff (Rs./month)	Based on ferrule size	
			Increasing block tariff (Rs./month)		Ferrule size	Rs./year		Others Flat rate (Rs./year)	Ferrule size
	For all urban areas of the state	n.a.	1.56/kl - upto 15 kl	15 mm	min. 240	300 for 2 taps (for 15 mm connection)	4.68/kl - upto 15 kl	15 mm	min. 612
			3.00/kl - for 15 - 40 kl	20 mm	min. 1440		8.25/kl - for 15 - 40 kl	20 mm	min. 1440
			4.00/kl - above 40 kl	25 mm	min. 4440		11.00/kl - above 40 kl	25 mm	min. 4440
				40 mm	min. 10440			40 mm	min. 10440
				50 mm	min. 13440			50 mm	min. 13440
				80 mm	min. 26940			80 mm	min. 26940
				100 mm	min. 53940			100 mm	min. 53940
				150 mm	min. 134940			150 mm	min. 134940

*Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities*

Sl. No.	City/Town	Industrial		One time water connection charges (in Rs.) Domestic	Year of last revision	Water tax	
		Metered	Unmetered				
		Increasing block tariff (Rs./month)	Based on ferrule size Ferrule size Rs./year				
	For all urban areas of the state	11.00/kl upto 15 kl 13.75/kl for 15 - 40 kl 16.50/kl above 40 kl	15 mm 20 mm 25 mm 40 mm 50 mm 80 mm 100 mm 150 mm	min. 1440 min. 2880 min. 5760 min. 10500 min. 13500 min. 27000 min. 54000 min. 135000	15.00 per sq. mtr. of total plot area	1998	No
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>							

WATER TARIFF AND CONNECTION CHARGES

TAMIL NADU

AT-11 : Water Tariff and Connection Charges, 1999 - Tamil Nadu

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic		Non-Domestic			
			Metered		Unmetered	Metered		Unmetered
			Consumption based rates		Flat rate	Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Others
			Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	(Rs./year)			Flat rate (Rs./year)
1	Chennai	n.a.		2.50/kl upto 10 kl 10.00/kl for 10-15 kl 15.00/kl for 15-25 kl 25.00/kl above 25 kl	600			
2	Madurai	n.a.	5.00		240			
3	Coimbatore	n.a.		Free - upto 100 litres/day Min. 300 2.50/kl upto 50 kl 3.00/kl for 50-100 kl 3.50/kl for 100-200 kl 4.00/kl above 200 kl		5.00/kl upto 50 kl 6.00/kl for 50-100 kl 7.00/kl for 100-200 kl 8.00/kl above 200 kl		
4	Tiruchirapalli	67.00	5.00		420	15.00		
5	Salem	n.a.	3.00			6.00		
6	Tirunelveli	n.a.	2.00		240			
7	Tirupur	1.74	2.00		240			
8	Thanjavur	n.a.	3.00			6.00		
9	Tuticorin	n.a.	3.50					
10	Dindigul	n.a.	3.00					
11	Nagercoil	n.a.	2.00					
12	Vellore	0.86			240			
13	Erode	n.a.	2.00		240			
14	Cuddalore	n.a.			240		480	
15	Kanchipuram	n.a.	3.00		360			

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Industrial			Commercial			Institutional		
		Metered		Unmetered	Metered		Unmetered	Metered		Unmetered
		Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)
1	Chennai		25.00/kl upto 500 kl 40.00/kl above 500 kl	4800		5.00/kl upto 10 kl 15.00/kl for 10-15 kl 25.00/kl above 15 kl	1800	20.00		2400
2	Madurai	20.00		3360	20.00		3360	14.00		2160
3	Coimbatore					Free - upto 100 litres/day 5.00/kl upto 50 kl 6.00/kl for 50-100 kl 7.00/kl for 100-200 kl 8.00/kl above 200 kl			2.50/kl upto 50 kl 3.00/kl for 50-100 kl 3.50/kl for 100-200 kl 4.00/kl above 200 kl	
4	Tiruchirapalli	20.00								
5	Salem									
6	Tirunelveli	4.00		480	6.00		720			
7	Tirupur	4.00			6.00		480	2.00		
8	Thanjavur									
9	Tuticorin	7.00			7.00			10.50		
10	Dindigul	6.00			6.00			6.00		
11	Nagercoil	6.00			4.00					
12	Vellore						480			720
13	Erode	6.00			6.00					
14	Cuddalore									
15	Kanchipuram	6.00			9.00					

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic			Non-Domestic		
			Metered		Unmetered Flat rate (Rs./year)	Metered		Unmetered Others Flat rate (Rs./year)
			Consumption based rates			Volumetric rate (Rs./Kl/ month)	Increasing block tariff (Rs./month)	
			Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)				
16	Kumbakonam	n.a.	2.00		240	4.00		
17	Thiruvannamalai	n.a.	1.25		300			
18	Rajapalayam	n.a.	2.00		240			
19	Nagapatinam	n.a.			240		480	
20	Puddukottai	n.a.			816			
21	Udhagamandalam	n.a.	2.00			6.00		
22	Gudiyatham				240			
23	Arrakonam		2.00		480	4.00	960	
24	Ambur		1.00					
25	Srivilliputtur		2.00		240			
26	Sivakasi	4.10	2.00		240			
27	Tindivanam		2.00		300			
28	Dharmapuri		2.00					
29	Attur				504			
30	Cumbum		3.00		360			

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Industrial			Commercial			Institutional		
		Metered		Unmetered	Metered		Unmetered	Metered		Unmetered
		Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./Kl/month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)
16	Kumbakonam									
17	Thiruvannamalai	3.75		600	2.50				600	
18	Rajapalayam	4.00		480	6.00				720	
19	Nagapatinam									
20	Puddukottai			1608					2400	
21	Udhagamandalam									
22	Gudiyatham			480					720	
23	Arrakonam									
24	Ambur	4.00			6.00					
25	Srivilliputtur	4.00		480	6.00				720	
26	Sivakasi	4.00		480	6.00				720	
27	Tindivanam	4.00			6.00					
28	Dharmapuri	4.00			6.00					
29	Attur			1008					1008	
30	Cumbum				9.00					

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

UTTAR PRADESH

AT-12 : Water Tariff and Connection Charges, 1999 - Uttar Pradesh

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./KI	Domestic				
			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others
			Volumetric rate (Rs./KI month)	Increasing block tariff (Rs./month)	Ferrule size	(Rs./year)	Flat rate (Rs./year)
					For assessed properties		
1	Kanpur	3.48	2.00		ARV slab based		
				15mm	min. 360		
				20 mm	min 540		
				25 mm	min. 840		
					For unassessed properties		
				15 mm	min. 600		
				20 mm	min. 1800		
				25 mm	min. 2400		
2	Lucknow	4.00	2.00				
3	Varanasi	1.58	2.00		n.a	n.a.	
4	Meerut	n.a.	2.20			Min. 540	
5	Agra	1.10	3.00			360	
6	Allahabad	3.00	2.50			900	
7	Ghaziabad	n.a.	0.60	Only water tax charged from all connections			
8	Bareilly	1.70	0.75			96	
9	Moradabad	n.a.				180	
10	Gorakhpur	1.70	0.75	Only water tax charged from all connections			
11	Aligarh	4.95	1.75				
12	Saharanpur	n.a.	0.60				
13	Jhansi	9.00	2.00			480	
14	Mathura	n.a	1.00				
				ARV based slabs(within city limits)			
<i>Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities.</i>							

Sl. No.	City/Town	Non-Domestic			Industrial			
		Metered Volumetric rate (Rs.Kl/month)	Unmetered		Metered Volumetric rate (Rs./Kl/ month)	Unmetered		
			Ferrule based rates			Others Flat rate (Rs./year)	Ferrule based rates	
			Ferrule size	Rs./year			Ferrule size	Rs./year
1	Kanpur				10.00	15 mm 20 mm 25 mm	min. 4800 min. 7200 min. 12000	
2	Lucknow							
3	Varanasi	6.00					650	
4	Meerut	10.00					Min. 1200	
5	Agra				22.80			
6	Allahabad				12.50			
7	Ghaziabad				1.10			
8	Bareilly				2.50		360	
9	Moradabad						-	
10	Gorakhpur				2.00			
11	Aligarh				3.00			
12	Saharanpur	1.10						
13	Jhansi	4.00						
14	Mathura				2.00			
			Within city limits					
15	Muzzafarnagar	1.10 within city limits 2.00 outside city limits	12 mm 20 mm 25 mm	420 - 5400 480 - 6600 720 - 7200				
			Outside city limits Twice the domestic rate					
16	Rampur	1.50					600	
17	Haridwar						240 - 3600	
18	Firozabad						n.a.	
19	Mirzapur	1.10					50	

Sl. No.	City/Town	Commercial			Institutional			
		Metered	Unmetered		Metered	Unmetered		
		Volumetric rate (Rs.KI/month)	Ferrule based rates		Others Flat rate (Rs./year)	Volumetric rate (Rs./KI/ month)	Ferrule based rates	
			Ferrule size	Rs./year			Ferrule size	Rs./year
1	Kanpur	6.00	15 mm	min. 3600	4.00	15 mm	min. 1200	
			20 mm	min. 5400		20 mm	min. 1800	
			25 mm	min. 9000		25 mm	min. 3000	
2	Lucknow	6.00			4.00			
3	Varanasi							
4	Meerut							
5	Agra	22.80						
6	Allahabad	7.50			5.00			
7	Ghaziabad	1.10			0.60			
8	Bareilly	2.00		360	0.75		96	
9	Moradabad			360			-	
10	Gorakhpur	2.00			2.00			
11	Aligarh	3.00			3.00			
12	Saharanpur							
13	Jhansi							
14	Mathura	2.00			1.00			
15	Muzzafarnagar							
16	Rampur							
17	Haridwar							
18	Firozabad							
19	Mirzapur							
20	Hapur							
21	Rae Bareli							
22	Faizabad							
23	Orai							

Sl. No.	City/Town	One time water connection charges (in Rs.)					Year of last revision	Stand post charges	Water tax	Rate of bulk water purchase
		Domestic	Industrial	Commercial	Institutional	Others (specify)				
1	Chennai	n.a.					n.a.	No	7%	-
2	Madurai	1000	3000	3000	2000		1994	No	No	-
3	Coimbatore	3000	7500	7500			n.a.	No	5.94% of ARV	
4	Tiruchirapalli	2000	5000	5000			1995	No	3.5% of property tax	-
5	Salem	5000	25000	10000			1998	No	9% of ARV	-
6	Tirunelveli	3000	5000	5000			1993	No	3.75% of ARV	
7	Tirupur	2000	5000	5000	5000		1997	No	16.75%	3.50/kl to TWAD Board
8	Thanjavur	1350	3350	3350			1994	No	4.625% of ARV	-
9	Tuticorin						1996	No	6.75%	-
10	Dindigul	1000	3000	3000			1996	No	n.a	2.50/kl
11	Nagercoil	2000	6000	4000			n.a.	No	7% of ARV	-
12	Vellore						1993	No	6.25% of ARV	-
13	Erode	2000	3000	5000			1994	No	6.75%	-
14	Cuddalore	2000	4000	4000			1994	No	4.625% of ARV	-
15	Kanchipuram	3000	5000	8000			1995	No	5.25%	

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic				
			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others
			Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Ferrule size	(Rs./year)	Flat rate (Rs./year)
15	Muzzafarnagar	n.a.	0.60 within city limits		12 mm	300 - 840	
			1.10 outside city limits		20 mm	420 - 1020	
					25 mm	600 - 1200	
						Outside city limits	
					12 mm	1200	
					20 mm	1440	
			25 mm	2400			
16	Rampur	n.a.	0.80	Min. 25.00 per month			360
17	Haridwar	0.74	Monthly rate by size of plot				
			Rs. 15 upto 50 sq.m.				
			Rs. 20 for 50 - 100 sq.m.				
			Rs. 25 for 100-200 sq.m.				
			Rs. 50 for 200 - 300 sq.m.				
			Rs. 65 for 300 - 500 sq.m.				
			Rs. 100 above 500 sq.m.				
18	Firozabad	0.60	0.22				180
19	Mirzapur	n.a.	0.22				36
20	Hapur	n.a.	0.30				120
21	Rae Bareli	1.07	Meters not read, so unmetered rates applied				240
22	Faizabad	n.a.	0.50				36
23	Orai	2.07	2.00				480
24	Mughalsarai	n.a.	Meters not read				120
25	Sitapur	n.a.	0.22				36
26	Haldwani	1.15	Meters not read				600
27	Etawah	0.41	0.60				

Sl. No.	City/Town	One time water connection charges (in Rs.)					Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional	Others (specify)		
1	Kanpur	1000	1000	1000			1994 (revised annually at 10%)	n.a.
2	Lucknow	n.a.	n.a.	n.a.			1996	12.5% of ARV
3	Varanasi	1560	1560	1560			1994 (revised annually at 15%)	14% of ARV
4	Meerut	Avg. 500	Avg. 500	Avg. 500			1998	No
5	Agra	275	275	275	275		1994	14% of ARV
6	Allahabad	5000					1999	14% of ARV
7	Ghaziabad	500 - 700					n.a.	10% of ARV
8	Bareilly	120	120	120	120		1986	10% of ARV
9	Moradabad	300		450			1999	10% of ARV
10	Gorakhpur	About 500	About 1000	About 1000	About 1000		1990	14% of ARV
11	Aligarh		135 + road cutting charges				1997	7% of ARV
12	Saharanpur	500		1250	500		1987	12% of ARV
13	Jhansi	About 650	About 650	About 650	About 650		1994	12.5% of ARV
14	Mathura	About 250	About 250	About 250	About 250		1999	17.5% of ARV
15	Muzzafarnagar	500 for 15 mm 800 for 20 mm	1000 for 15 mm 1500 for 20 mm	1000 for 15 mm 1500 for 20 mm	1000 for 15 mm 1500 for 20 mm		1998	10% of ARV
16	Rampur	About 250	About 250	About 250	About 250		1999	10% of ARV
17	Haridwar	300	800	800			1997	10% of ARV
18	Firozabad	About 300	About 300	About 300	About 300		n.a.	n.a.
19	Mirzapur	750	-	-	-		1971	10% of ARV
20	Hapur	500	500	500			1990	10% of ARV
21	Rae Bareli	500	1000	1000			1999	n.a.
22	Faizabad	-	-	-	-		Long time ago	n.a.

Sl. No.	City/Town	One time water connection charges (in Rs.)					Year of last revision	Stand post charges	Water tax	Rate of bulk water purchase
		Domestic	Industrial	Commercial	Institutional	Others (specify)				
16	Kumbakonam	1000	2000	2000			1992	No	5.25% of ARV	-
17	Thiruvannamalai	2000	3000	5000			1991	No	12%	-
18	Rajapalayam	1000	3000	3000			1994	No	5% of ARV	-
19	Nagapatinam	2000	4000	4000			1994	No	8% of ARV	-
20	Puddukottai	2000	3000	5000			1994		12% of ARV	
21	Udhagamandalam	1000	2000	2000			1993		13% of ARV	
22	Gudiyatham	1000	2000	3000			1994		5% of ARV	
23	Arrakonam	1000	2000				1999		10% of ARV	
24	Ambur	1000	2000	3000			1994		6.5% of ARV	
25	Srivilliputtur	1000	2000	2000			1994		13% of ARV	
26	Sivakasi	1000	3000	3000			1994		13% of ARV	
27	Tindivanam	1000	2000	3000			1994		4.50%	
28	Dharmapuri	1000	2000	2000			1996		5.25%	
29	Attur	1000	3000	3000			1996		4% of ARV	
30	Cumbum	n.a.					1999		25%	3.50/kl

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./KI	Domestic				
			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others
			Volumetric rate (Rs./KI month)	Increasing block tariff (Rs./month)	Ferrule size	(Rs./year)	Flat rate (Rs./year)
28	Etah	2.61	1.00				
29	Bhadohi	n.a.		Meters not read		96	
30	Unnao	0.50	n.a.			36	
31	Gonda	n.a.		Only water tax charged from all consumers		1	
32	Basti	0.40	0.50			36	
33	Roorkee	n.a.	0.60	(Meters generally not read)			
34	Lalitpur	6.00				120	
35	Lakhimpur	n.a.	2.00			120	
36	Ghazipur	n.a.	0.18			240	
37	Barabanki	n.a.	1.50				
38	Auraiya	0.49		Meters not read			
39	Chandpur	0.82	0.25			120	
40	Balrampur	n.a.				36	

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Non-Domestic			Industrial			
		Metered Volumetric rate (Rs.Kl/month)	Unmetered		Metered Volumetric rate (Rs./Kl/ month)	Unmetered		
			Ferrule based rates			Others Flat rate (Rs./year)	Ferrule based rates	
			Ferrule size	Rs./year			Ferrule size	Rs./year
20	Hapur	0.40			180			
21	Rae Bareli				600			
22	Faizabad	1.00			36			
23	Orai	4.00			744			
24	Mughalsarai				180			
25	Sitapur	0.22			36			
26	Haldwani						720	
27	Etawah							
28	Etah							
29	Bhadohi			n.a.				
30	Unnao				36			
31	Gonda							
32	Basti				1.00			
33	Roorkee				1.10			
34	Lalitpur							
35	Lakhimpur	4.00			240			
36	Ghazipur							
37	Barabanki	2.00						
38	Auraiya							
39	Chandpur		0.35		180			
40	Balrampur				54			

Source: NIUA Survey, 1999.

Sl. No.	City/Town	Commercial			Institutional			
		Metered	Unmetered		Metered	Unmetered		
		Volumetric rate (Rs.Kl/month)	Ferrule based rates Ferrule size	Others Rs./year	Flat rate (Rs./year)	Volumetric rate (Rs./Kl/month)	Ferrule based rates Ferrule size	Others Rs./year
24	Mughalsarai							
25	Sitapur							
26	Haldwani						720	
27	Etawah	1.10					1.10	
28	Etah	1.50						
29	Bhadohi							
30	Unnao							
31	Gonda							
32	Basti	1.00					0.50	
33	Roorkee	1.10						
34	Lalitpur						240	
35	Lakhimpur							
36	Ghazipur	0.27						
37	Barabanki							
38	Auraiya							
39	Chandpur							
40	Balrampur							

Source: NIUA Survey, 1999.

Sl. No.	City/Town	One time water connection charges (in Rs.)					Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional	Others (specify)		
23	Orai	450	550	550			1994	12.5% of ARV
24	Mughalsarai	250	250	250	250		1983	7.8% of ARV
25	Sitapur	-	-	-	-		Long time ago	7.5% of ARV
26	Haldwani	2000	2500	-	-		1999	12.5% of ARV
27	Etawah	n.a.	n.a.	n.a.	n.a.		1990	10% of ARV
28	Etah	1000	1000	1000	1000		Long time ago	10% of ARV
29	Bhadohi	500	500	500	500		1988	7.5% of ARV
30	Unnao	-	-	-	-		Long time ago	n.a.
31	Gonda	300	500	500			n.a	10% of ARV
32	Basti	About 150	About 150	About 150	About 150		1982	10% of ARV
33	Roorkee	500	500	500			1985	10% of ARV
34	Lalitpur	Min. 500	Min. 500	Min. 500			1994	12.5% of ARV
35	Lakhimpur	n.a.	n.a.	n.a.	n.a.		n.a.	10% of ARV
36	Ghazipur	1500	-	200	-		1982	12.5% of ARV
37	Barabanki	n.a.	n.a.	n.a.	n.a.		Long time ago	10-12.5% of ARV
38	Auraiya	Avg. 300	Avg. 300	Avg. 300			n.a.	9% of ARV
39	Chandpur	Approx. 200	Approx. 200				1993	10% of ARV
40	Balrampur	Avg. 250	Avg. 250	Avg. 250	Avg. 250		Long time ago	10% of ARV

Source: NIUA Survey, 1999.

WATER TARIFF AND CONNECTION CHARGES

WEST BENGAL

AT-13 : Water Tariff and Connection Charges, 1999 - West Bengal

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic		Non-domestic			Industrial		
			Unmetered (Flat rate)		Unmetered			Unmetered (Flat rate)		
			Ferrule based rates		Others	Ferrule based rates		Others	Ferrule based rates	
			Ferrule size	Rs./year	Flat rate (Rs./year)	Ferrule size	Rs./year	Flat rate (Rs./year)	Ferrule size	Rs./year
1	Calcutta	1.64	10 mm	Free			1/ 8"	1560		
			15 mm	120			3/ 16"	2280		
			20 mm	480			1/ 4"	3120		
			25 mm	780			3/ 8"	5280		
							7/ 16"	6000		
							1/ 2"	7200		
							> 1/2"	10800		
							3/ 4"	18000		
							1"	28800		
2	Asansol	n.a.			Nil			Nil		
3	Siliguri	n.a.			Nil					
4	Burdwan	n.a.			Nil					
5	Barasat	1.12			Nil					
6	Midnapore	n.a.			Nil					
7	Bankura	2.33			Nil					
8	Darjeeling	n.a.	3/8"	240					3/8"	1000 - 1500
			1/2"	360					1/2"	2000 - 5000
			3/4"	480					3/4"	5000 - 20000
9	Halisahar	0.91			Nil					
10	Krishnagar	n.a.			Nil					
11	Berhampur	2.21			Nil					
12	Santipur	n.a.			Nil					
13	Balurghat	2.59			Nil					

* Estimated by respective local governments/authorities

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
1	Calcutta	10 mm - 10000 15 mm - 15000 20 mm - 20000 25 mm - 25000	Very elaborate structure - Ranges from 275 to 10500 (schedule attached)			1998	n.a.
2	Asansol	5000	-	10000	-	n.a.	No
3	Siliguri						No
4	Burdwan	1000	1000	1000	1000	n.a.	No
5	Barasat	1340	-	-	2500	n.a.	No
6	Midnapore	Min. 5590	n.a.	n.a.	n.a.	No	No
7	Bankura	1100 - 2100		2600			
8	Darjeeling	6750		26750			No
9	Halisahar	500	500	500	500		No
10	Krishnagar	910	910	910	910		No
11	Berhampur	4000					
12	Santipur	n.a.	n.a.	n.a.	n.a.		No
13	Balurghat	n.a.	n.a.	n.a.	n.a.		

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic			Non-domestic			Industrial	
			Unmetered (Flat rate)			Unmetered			Unmetered (Flat rate)	
			Ferrule based rates		Others	Ferrule based rates		Others	Ferrule based rates	
			Ferrule size	Rs./year	Flat rate (Rs./year)	Ferrule size	Rs./year	Flat rate (Rs./year)	Ferrule size	Rs./year
14	Raniganj	2.89								
15	North Barrackpur	0.76								
16	Contai									
17	Jalpaiguri	2.15								
18	Cooch Behar	n.a.								
19	Chakdaha	0.87								
20	Jangipur									
21	Katwa									
22	Bishnupur									
<p>Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities</p>										

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
14	Raniganj	5000	5000	5000	5000	No	
15	North Barrackpur	900 - 1300		1200 - 2000	900 - 1300	No	
16	Contai	n.a.	n.a.	n.a.	n.a.		
17	Jalpaiguri	3000		10000	3000	No	
18	Cooch Behar	1000	1000	1000	1000	No	
19	Chakdaha	n.a.	n.a.	n.a.	n.a.	No	
20	Jangipur	n.a.	n.a.	n.a.	n.a.	No	
21	Katwa	3000 - 3500				No	
22	Bishnupur	1500		2000		No	

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

**WATER TARIFF AND CONNECTION CHARGES
SMALL STATES AND UNION TERRITORIES**

AT-14 : Water Tariff and Connection Charges, 1999 - Small States and Union Territories

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic				
			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others
			Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Ferrule size	(Rs./year)	Flat rate (Rs./year)
Chandigarh							
1	Chandigarh	n.a.		0.70/kl - upto 15 kl 1.30/kl - for 15 - 30 kl 1.80/kl - above 30 kl			
Delhi							
2	MCD & NDMC	2.33		Min.20.00/month 0.35p/kl upto 10 kl 1.00/kl for 10 - 20 kl 1.50/kl for 20 - 30 kl 3.00/kl above 30 kl		20.00/month + 50% surcharge Rate doubled after three months of having unmetered connection	
In addition to above a surcharge of 50% of the rate is levied per kl per month for all consumers.							
NDMC levies an additional surcharge of 0.02% to the above							
J&K							
3	Jammu					180	
Arunachal Pradesh							
4	Itanagar					160	
Assam							
5	Guwahati	2.97				Only water tax levied	
Goa							
6	Panjim			Minimum charge - 20.00 2.00/kl - upto 30 kl 4.00/kl - above 30 kl			
<i>Source: NIUA Survey, 1999 . * Estimated by respective local governments/authorities</i>							

Sl. No.	City/Town	Non-Domestic				Industrial	
		Metered		Unmetered		Metered	Unmetered
		Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Ferrule based rates Ferrule size	Others Rs./year	Flat rate (Rs./year)	Volumetric rate (Rs./Kl month)
Chandigarh							
1	Chandigarh					3.00	
Delhi							
2	MCD & NDMC		Min. 100 - 300/month 5.00-8.00/kl - upto 50 kl 10.00-12.00/kl for 50-100 kl 16.00/kl above 100 kl In addition to above a surcharge of 50% of the rate is levied per kl per month for all consumers				
J&K							
3	Jammu				n.a.		
Arunachal Pradesh							
4	Itanagar						600
Assam							
5	Guwahati						
Goa							
6	Panjim	For small hotels Min. 150/ month 10.00/kl	For defence 7.00/kl - upto 100 kl 9.00/kl - above 100 kl			26.00/ kl	

Sl. No.	City/Town	Commercial			Institutional		
		Metered		Unmetered	Metered		Unmetered
		Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)
	Chandigarh						
1	Chandigarh	3.00			3.00		
2	Delhi						
	MCD & NDMC						
	J&K						
3	Jammu						
	Arunachal Pradesh						
4	Itanagar			1236			
	Assam						
5	Guwahati						
	Goa						
6	Panjim	26.00	For registered hotels 25.00/kl - upto 500 kl 30.00/kl - for 500 to 1000 kl 40.00/kl - 1000 to 5000 kl 50.00/kl - above 5000 kl		2.00		
	Himachal Pradesh						
7	Shimla	6.00			1.80		
	Manipur						
8	Imphal			9000 - 18000		3600 - 9000	
	Meghalaya						
9	Shillong						
	Mizoram						
10	Aizwal						

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
Chandigarh							
1	Chandigarh	n.a.	n.a.	n.a.	n.a.	1995	No
Delhi							
2	MCD & NDMC	n.a.	n.a.	n.a.	n.a.	1998	No
J&K							
3	Jammu	630	n.a.	n.a.	n.a.	n.a	n.a
Arunachal Pradesh							
4	Itanagar	n.a.	n.a.	n.a.	n.a.	n.a	No
Assam							
5	Guwahati	n.a.	n.a.	n.a.	n.a.		10% of ARV
Goa							
6	Panjim	400	n.a.	n.a.	n.a.	1999	n.a.
Himachal Pradesh							
7	Shimla	500		500	500	1999	No
Manipur							
8	Imphal	n.a.	n.a.	n.a.	n.a.	1999	n.a.
Meghalaya							
9	Shillong	1000	1000	1000	1000	n.a.	n.a.
Mizoram							
10	Aizwal	500				2000	n.a.
Nagaland							
11	Kohima	n.a.	n.a.	n.a.	n.a.	n.a.	No
Tripura							
12	Agartala	500	500	500	500	n.a.	3% of property tax.

Sl. No.	City/Town	Cost of Production of water (1997-98)* Rs./Kl	Domestic				
			Metered		Unmetered		
			Consumption based rates		Ferrule based rates		Others
			Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Ferrule size	(Rs./year)	Flat rate (Rs./year)
Himachal Pradesh							
7	Shimla	n.a.	1.80				
Manipur							
8	Imphal	2.43			900		
Meghalaya							
9	Shillong	n.a.			840		
Mizoram							
10	Aizwal	n.a.			1200		
Nagaland							
11	Kohima	n.a.			1st Tap - 10.00/month Additional tap - 5.00/month		
Tripura							
12	Agartala	20.00			Only water tax levied		
Andaman & Nicobar Islands							
13	Port Blair	5.43			216		
Dadra & Nagar Haveli							
14	Silvassa	1.72		1/2" 3/4" 1"	240 420 660		
Daman & Diu							
15	Daman	2.20		0.70/kl - upto 10 kl 1.50/kl - above 10 kl			
Lakshadweep							
16	Kavaratti Island	There are no water charges in this town					
Pondicherry							
17	Pondicherry	n.a.	0.50				

Source: NIUA Survey, 1999. * Estimated by respective local governments/authorities

Sl. No.	City/Town	Non-Domestic				Industrial	
		Metered		Unmetered		Metered	Unmetered
		Volumetric rate (Rs./KI month)	Increasing block tariff (Rs./month)	Ferrule based rates		Others Flat rate (Rs./year)	Volumetric rate (Rs./KI month)
Ferrule size	Rs./year						
	Himachal Pradesh						
7	Shimla						
	Manipur						
8	Imphal						1440 - 9000
	Meghalaya						
9	Shillong					1440	
	Mizoram						
10	Aizwal						
	Nagaland						
11	Kohima					n.a.	
	Tripura						
12	Agartala						
	Andaman & Nicobar Islands						
13	Port Blair						1356
	Dadra & Nagar Haveli						
14	Silvassa			1/2"	1800		
				3/4"	3360		
				1"	5160		
	Daman & Diu						
15	Daman						4.00
	Lakshadweep						
16	Kavaratti Island						
	Pondicherry						
17	Pondicherry	1.00					

Sl. No.	City/Town	Commercial			Institutional		
		Metered		Unmetered	Metered		Unmetered
		Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)	Volumetric rate (Rs./Kl month)	Increasing block tariff (Rs./month)	Others Flat rate (Rs./year)
	Nagaland						
11	Kohima						
	Tripura						
12	Agartala						
	Andaman & Nicobar Islands						
13	Port Blair			816		684.00	
	Dadra & Nagar Haveli						
14	Silvassa						
	Daman & Diu						
15	Daman		Min. charge Rs. 100 1.00/kl - upto 10 kl 2.00/kl - above 10 kl		0.70/kl - upto 10 kl 1.50/kl - above 10 kl		
	Lakshadweep						
16	Kavaratti Island						
	Pondicherry						
17	Pondicherry						

Sl. No.	City/Town	One time water connection charges (in Rs.)				Year of last revision	Water tax
		Domestic	Industrial	Commercial	Institutional		
Andaman & Nicobar Islands							
13	Port Blair	Charges vary based on size of connection, distance etc.				1999	No
Dadra & Nagar Haveli							
14	Silvassa	455	455	455		1999	No
Daman & Diu							
15	Daman	n.a.	n.a.	n.a.	n.a.	1994	No
Lakshadweep							
16	Kavaratti Island						
Pondicherry							
17	Pondicherry	1500	2500	2500		1997	No

Source: Respective urban local governments/relevant agencies, NISU Survey, 1989.

APPENDIX II

WASTEWATER MANAGEMENT AND LOW COST SANITATION, 1999

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B-1

**POPULATION AND AREA COVERED BY
SEWERAGE SYSTEM, 1999**

B-1 : Population and Area covered by Sewerage System - 1999

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
1		2	3	4	5	6	7
METROPOLITAN CITIES							
1	Ahmedabad M.Corp.	3,500	2,800	80	190.84	125.00	65
2	Bangalore M.Corp.	5,000	3,900	78	482.00	270.00	56
3	Bhopal M.Corp.	1,500	200	13	256.00	116.10	45
4	Calcutta M.Corp.	4,870	2,200	45	187.33	93.00	50
5	Chennai M.Corp.	4,363	4,100	94	172.00	165.00	96
6	Coimbatore M.Corp.	971	270	28	105.60	23.10	22
7	Delhi M.Corp.	12,000	8,500	71	1485.00	357.60	24
8	Greater Mumbai M.Corp.	11,100	8,400	76	437.71	247.41	57
9	Hyderabad M.Corp.	4,163	2,350	56	172.00	107.00	62
10	Indore M.Corp.	1,600	640	40	137.17	54.46	40
11	Jaipur M.Corp.	2,000	1,000	50	200.40	112.00	56
12	Kanpur M.Corp.	2,500	1,500	60	227.67	115.00	51
13	Kochi M.Corp.	680	20	3	94.88	2.89	3
14	Lucknow M.Corp.	2,500	800	32	310.00	114.00	37
15	Ludhiana M.Corp.	2,000	1,200	60	165.00	99.00	60
16	Madurai M.Corp.	1,020	350	34	51.96	17.32	33
17	Nagpur M.Corp.	2,100	1,260	60	217.56	84.00	39
18	Pune M.Corp.	2,300	1,732	75	416.00	120.00	29
19	Surat M.Corp.	2,300	1,200	52	112.28	41.54	37
20	Vadodara M.Corp.	1,400	875	63	108.26	75.00	69
21	Varanasi M.Corp.	1,150	700	61	73.89	49.64	67
22	Visakhapatnam M.Corp.	1,280	90	7	107.00	1.14	1
Total - Metropolitan Cities		70,297	44,087	63	5,711	2,390	42

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
1		2	3	4	5	6	7
CLASS I							
Andhra Pradesh							
1	Eluru M	247	100	40	14.55	7.28	50
2	Guntur MCI	557	100	18	45.79	11.75	26
3	Vijaywada M.Corp.	837	293	35	58.00	20.30	35
Gujarat							
4	Anand M	175	105	60	23.14	10.00	43
5	Bhavnagar M.Corp.	550	300	55	53.40	27.00	51
6	Bhuj M	118	106	90	9.49	9.00	95
7	Nadiad M	300	140	47	36.87	24.00	65
8	Navsari M	139	118	85	8.55	7.69	90
9	Rajkot M.Corp.	1,000	550	55	104.86	67.50	64
Haryana							
10	Ambala MCI	141	18	13	16.94	1.28	8
11	Faridabad M.Corp.	1,150	633	55	208.00	112.27	54
12	Gurgaon MCI	175	109	62	16.57	10.00	60
13	Hissar MCI	250	130	52	45.42	27.00	59
14	Rohtak MCI	243	183	75	28.38	15.75	55
Karnataka							
15	Bellary CMC	297	129	43	81.95	30.00	37
16	Mangalore M.Corp.	410	250	61	116.77	58.00	50
17	Mysore M.Corp.	1,050	400	38	100.00	40.00	40
18	Shimoga CMC	222	81	36	50.00	20.00	40
Madhya Pradesh							
19	Gwalior M.Corp.	900	516	57	166.83	108.50	65
20	Morena M	125	16	13	12.00	1.00	8
21	Shivpuri M	140	5	4	81.10	10.00	12

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
1		2	3	4	5	6	7
Maharashtra							
22	Aurangabad M.Corp.	868	684	79	138.00	60.00	43
23	Dhule MCI	330	150	45	46.46	22.00	47
24	Ichalkaranji MCI	250	198	79	29.91	15.00	50
25	Kolhapur M.Corp.	502	200	40	66.00	20.00	30
26	Nanded Waghala M.Corp.	410	250	61	46.00	30.00	65
27	Nashik M.Corp.	839	500	60	259.13	10.00	4
28	Solapur M.Corp.	900	810	90	233.00	30.00	13
Orissa							
29	Bhubaneswar M.Corp.	654	200	31	231.24	66.00	29
Punjab							
30	Amritsar M.Corp.	843	506	60	133.00	36.60	28
31	Bathinda MCI	174	69	40	99.00	39.00	39
32	Hoshiarpur MCI	145	87	60	35.00	15.50	44
33	Jalandhar M. Corp.	738	440	60	110.00	35.00	32
34	Moga MCI	148	100	67	18.50	10.91	59
35	Pathankot MCI	195	80	41	22.10	10.00	45
36	Patiala M.Corp.	328	200	61	41.00	19.00	46
Rajasthan							
37	Ajmer MCI	550	58	11	220.00	22.00	10
38	Bikaner M	600	126	21	175.76	35.00	20
39	Jodhpur M.Corp.	1,000	327	33	78.57	25.00	32
Tamil Nadu							
40	Kanchipuram M	157	116	74	11.60	9.00	78
41	Kumbakonam M	147	38	26	12.58	4.19	33
42	Tiruchirapalli M.Corp.	800	80	10	146.90	23.26	16
43	Tirunelveli M.Corp.	414	70	17	108.65	7.00	6

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
	1	2	3	4	5	6	7
44	Tuticorin M	217	40	18	13.47	5.39	40
Uttar Pradesh							
45	Aligarh M.Corp.	600	120	20	62.00	12.00	19
46	Allahabad M.Corp.	1,015	600	59	70.05	22.50	32
47	Bareilly M.Corp.	750	300	40	106.43	32.80	31
48	Ghaziabad M.Corp.	887	762	86	200.00	89.00	45
49	Gorakhpur M.Corp.	600	300	50	143.00	28.00	20
50	Hapur MB	200	75	38	14.20	6.00	42
51	Hardwar MB	300	184	61	4.70	n.a.	n.a.
52	Mathura MB	400	50	13	25.23	n.a.	n.a.
53	Meerut M.Corp.	1,250	315	25	141.94	40.00	28
54	Mirzapur MB	210	153	73	30.59	23.00	75
West Bengal							
55	Asansol M.Corp.	315	36	11	127.24	6.00	5
Union Territories							
56	Chandigarh M.Corp.	850	850	100	114.00	114.00	100
57	Pondicherry M	290	83	29	20.00	5.00	25
Total - Class I Cities		27,900	13,437	48	4,614	1,546	34
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>							

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
1		2	3	4	5	6	7
CLASS II							
Gujarat							
1	Ankleswar M	60	40	67	11.05	9.00	81
2	Dabhoi M	65	7	11	23.82	2.00	8
3	Mahesana M	138	100	72	12.87	10.00	78
Haryana							
4	Jind MCI	114	72	63	21.00	9.30	44
5	Kaithal MCI	95	51	54	5.05	n.a.	n.a.
6	Rewari MCI	105	65	62	18.43	12.90	70
7	Thanesar MCI	100	65	65	32.25	14.00	43
Karnataka							
8	Chikmaglur CMC	100	60	60	27.50	10.00	36
9	Kolar CMC	112	8	7	21.47	3.00	14
Punjab							
10	Ferozepur MCI	93	67	72	11.33	7.93	70
11	Kapurthala M	85	53	63	16.00	9.00	56
12	Mansa MCI	67	33	50	23.47	12.00	51
13	Phagwara MCI	108	49	45	16.00	6.50	41
14	Sangrur MCI	70	49	70	18.00	10.00	56
Tamil Nadu							
15	Nagapattinam M	112	28	25	14.90	5.00	34
16	Udhagamandalam M	100	51	51	30.67	12.95	42
Uttar Pradesh							
17	Etah MB	135	40	30	27.00	8.00	30
18	Roorkee MB	100	60	60	8.12	4.00	49
West Bengal							
19	Darjeeling M	93	30	32	10.60	5.80	55

Sl. No	City/Town	Population ('000)		% Population covered by service	Area (Sq.km.)		% area covered by service
		1999	Covered by service		1999	Covered by service	
1		2	3	4	5	6	7
Small States							
Himachal Pradesh							
20	Shimla M.Corp.	111	72	65	28.53	20.00	70
Others (Smaller than Class II towns)							
Small States							
Goa							
21	Panaji MCI	57	30	52	3.70	1.50	41
Total - Class II Towns		2,020	1,029	51	382	173	45
Grand Total		100,217	58,553	58	10,706	4,110	38
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>							

B-2

WASTE WATER MANAGEMENT DETAILS, 1999

B-2 : Waste Water Management Details, 1999

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	
METROPOLITAN CITIES													
1	Ahmedabad M.Corp.	Separate	1200	460	360	360	100	78	78	100	360	100	460
2	Bangalore M.Corp.	Separate	n.a.	564	403	403	161	71	71	100	0	564	564
3	Bhopal M.Corp.	Combined	175	216	60	60	156	28	28	100	0	216	216
4	Calcutta M.Corp.	Separate	1839	1350	870	870	480	64	64	100	480	870	1350
5	Chennai M.Corp.	Separate	1968	369	245	162	207	66	44	66	98	271	369
6	Coimbatore M.Corp.	Separate	119	84	36	36	48	43	43	100	84	0	84
7	Delhi M.Corp.	Separate	4500	2096	1290	915	1181	62	44	71	0	2096	2096
8	Greater Mumbai M.Corp.	Separate	1339	2382	1460	735	1647	61	31	50	0	2382	2382
9	Hyderabad M.Corp.	Combined	1650	546	338	133	413	62	24	39	546	0	546
10	Indore M.Corp.	Combined	600	190	95	0	190	50	0	0	190	0	190
11	Jaipur M.Corp.	Separate	n.a.	270	180	90	180	67	33	50	0	270	270
12	Kanpur M.Corp.	Separate	700	360	160	160	200	44	44	100	160	200	360
13	Kochi M.Corp.	Separate	27	67	4	4	63	6	6	100	0	67	67
14	Lucknow M.Corp.	Combined	480	328	151	n.a.	n.a.	46	n.a.	n.a.	n.a.	n.a.	n.a.
15	Ludhiana M.Corp.	Combined	840	310	140	0	310	45	0	0	0	310	310
16	Madurai M.Corp.	Separate	206	72	57	30	42	79	42	53	63	9	72
17	Nagpur M.Corp.	Combined	482	300	180	0	300	60	0	0	20	280	300
18	Pune M.Corp.	Separate	790	520	390	95	425	75	18	24	130	390	520
19	Surat M.Corp.	Separate	342	260	185	185	75	71	71	100	0	260	260
20	Vadodara M.Corp.	Separate	525	195	122	54	141	63	28	44	0	195	195
21	Varanasi M.Corp.	Separate	25	188	122	122	66	65	65	100	46	142	188
22	Visakhapatnam M.Corp.	Separate	n.a.	107	10	10	97	9	9	100	0	107	107

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1		2	3	4	5	6	7	8	9	10	11	12	13
CLASS I													
Andhra Pradesh													
1	Eluru M	Separate	25	19	6	6	13	32	32	100	0	19	19
2	Guntur MCI	Combined	95	60	11	4	56	18	7	37	30	30	60
3	Vijaywada M.Corp.	Combined	80	117	26	21	96	22	18	79	117	0	117
Gujarat													
4	Anand M	Combined	750	16	9	9	6	60	60	100	0	16	16
5	Bhavnagar M.Corp.	Separate	83	56	31	0	56	55	0	0	0	19	19
6	Bhuj M	Separate	12	15	13	13	2	90	90	100	15	0	15
7	Nadiad M	Combined	10	17	8	0	17	47	0	0	12	5	17
8	Navsari M	Combined	1200	13	11	0	13	85	0	0	0	13	13
9	Rajkot M.Corp.	Separate	600	85	47	25	60	55	29	53	30	55	85
Haryana													
10	Ambala MCI	Combined	11	13	11	0	13	88	0	0	2	11	13
11	Faridabad M.Corp.	Separate	618	147	112	80	67	76	54	72	0	147	147
12	Gurgaon MCI	Separate	102	17	11	11	6	62	62	100	15	2	17
13	Hissar MCI	Separate	203	22	13	0	22	59	0	0	22	0	22
14	Rohtak MCI	Separate	120	26	19	0	26	75	0	0	26	0	26
Karnataka													
15	Bellary CMC	Separate	110	24	11	5	19	43	21	48	15	10	24
16	Mangalore M.Corp.	Combined	235	68	41	18	50	61	27	44	0	68	68
17	Mysore M.Corp.	Separate	41	111	25	4	107	23	3	14	0	111	111
18	Shimoga CMC	Separate	220	27	7	0	27	25	0	0	0	27	27
Madhya Pradesh													
19	Gwalior M.Corp.	Separate	120	120	62	16	104	52	13	26	3	117	120
20	Morena M	Separate	5	7	1	0	7	14	0	0	0	7	7
21	Shivpuri M	Combined	17	10	3	0	10	30	0	0	10	0	10
Maharashtra													
22	Aurangabad M.Corp.	Separate	500	134	106	106	28	79	79	100	134	0	134

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	
23	Dhule MCI	Combined	10	25	12	0	25	48	0	0	0	25	25
24	Ichalkaranji MCI	Combined	71	26	20	20	6	78	78	100	0	26	26
25	Kolhapur M.Corp.	Combined	40	80	32	29	51	40	36	91	15	65	80
26	Nanded Waghala M.Corp.	Combined	160	31	2	0	31	6	0	0	0	31	31
27	Nashik M.Corp.	Combined	n.a.	126	75	19	108	60	15	25	0	126	126
28	Solapur M.Corp.	Combined	215	100	80	54	46	80	54	68	68	33	100
Orissa													
29	Bhubaneswar M.Corp.	n.a.	448	92	34	9	83	37	9	26	0	92	92
Punjab													
30	Amritsar M.Corp.	Combined	416	102	71	0	102	70	0	0	0	102	102
31	Bathinda MCI	Separate	101	49	19	0	49	40	0	0	49	0	49
32	Hoshiarpur MCI	Separate	113	28	17	0	28	60	0	0	3	25	28
33	Jalandhar M. Corp.	Separate	470	140	67	0	140	48	0	0	0	140	140
34	Moga MCI	Separate	13	16	11	0	16	67	0	0	4	12	16
35	Pathankot MCI	Combined	120	14	6	0	14	41	0	0	0	14	14
36	Patiala M.Corp.	Separate	199	48	29	0	48	60	0	0	0	48	48
Rajasthan													
37	Ajmer MCI	Separate	9	42	4	0	42	11	0	0	0	42	42
38	Bikaner M	Combined	72	54	11	0	54	21	0	0	54	0	54
39	Jodhpur M.Corp.	Separate	229	141	46	0	141	33	0	0	141	0	141
Tamil Nadu													
40	Kanchipuram M	Combined	79	13	10	0	13	74	0	0	13	0	13
41	Kumbakonam M	Combined	23	8	4	4	5	41	41	100	8	0	8
42	Tiruchirapalli M.Corp.	Combined	147	70	4	4	66	6	6	100	70	0	70
43	Tirunelveli M.Corp.	Separate	32	27	0.5	0	27	2	0	0	27	0	27
44	Tuticorin M	Separate	16	13	3	1.5	11	24	12	50	0	13	13
Uttar Pradesh													
45	Aligarh M.Corp.	Combined	35	37	7	0	37	20	0	0	37	0	37

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	
46	Allahabad M.Corp.	Combined	450	168	99	60	108	59	36	60	67	101	168
47	Bareilly M.Corp.	Separate	149	64	26	0	64	40	0	0	64	0	64
48	Ghaziabad M.Corp.	Separate	500	129	126	111	18	98	86	88	3	126	129
49	Gorakhpur M.Corp.	Separate	20	59	30	0	59	50	0	0	59	0	59
50	Hapur MB	Separate	16	11	5	0	11	49	0	0	11	0	11
51	Hardwar MB	Separate	92	39	24	18	21	61	46	75	39	0	39
52	Mathura MB	Combined	6	21	20	20	1	94	94	100	21	0	21
53	Meerut M.Corp.	Combined	155	106	40	0	106	38	0	0	82	24	106
54	Mirzapur MB	Combined	15	20	14	14	6	70	70	100	6	14	20
West Bengal													
55	Asansol M.Corp.	Separate	5	42	5	0	42	11	0	0	0	42	42
Union Territories													
56	Chandigarh M.Corp.	Separate	890	207	157	136	71	76	66	87	204	3	207
57	Pondicherry M	Separate	15	27	10	10	17	37	37	100	27	0	27

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1		2	3	4	5	6	7	8	9	10	11	12	13
CLASS II													
Gujarat													
1	Ankleswar M	Combined	28	8	4	0	8	53	0	0	0.4	8	8
2	Dabhoi M	Combined	17	7	6	0	7	83	0	0	7	0	7
3	Mahesana M	Combined	40	12	9	0	12	72	0	0	0	12	12
Haryana													
4	Jind MCI	Separate	65	13	8	0	13	63	0	0	13	0	13
5	Kaithal MCI	Separate	40	9	5	0	9	54	0	0	9	0	9
6	Rewari MCI	Separate	20	10	6	0	10	62	0	0	10	0	10
7	Thanesar MCI	Separate	37	11	7	0	11	65	0	0	11	0	11
Karnataka													
8	Chikmagalur CMC	Separate	40	12	7	0	12	60	0	0	12	0	12
9	Kolar CMC	Separate	10	6	4	4	2	63	63	100	6	0	6
Punjab													
10	Ferozepur MCI	Combined	78	16	13	0	16	81	0	0	0	16	16
11	Kapurthala M	Combined	59	11	7	0	11	63	0	0	0	11	11
12	Mansa MCI	n.a.	34	6	5	0	6	80	0	0	6	0	6
13	Phagwara MCI	Separate	74	12	5	0	12	45	0	0	0	12	12
14	Sangrur MCI	Separate	57	10	7	0	10	70	0	0	0	10	10
Tamil Nadu													
15	Nagapattinam M	Separate	108	6	1.6	1.6	5	25	25	100	0	6	6
16	Udhagamandalam M	Separate	17	5	4	4	1	81	81	100	0	5	5
Uttar Pradesh													
17	Etah MB	Combined	5	3	0.8	0	3	24	0	0	3	0	3
18	Roorkee MB	Combined	15	15	9	9	6	60	60	100	15	0	15

Sl. No.	City/Town	Type of system	Length of sewers (km)	Volume of Waste Water (mld)				% collected to generated	% treated to generated	% treated to collected	Volume (mld) discharged		
				Generated	Collected	Treated	Not treated				On land	In water bodies	Total
1		2	3	4	5	6	7	8	9	10	11	12	13
West Bengal													
19	Darjeeling M	Separate	90	5	1.5	0	5	32	0.3	1	0	5	5
Small States													
Himachal Pradesh													
20	Shimla M.Corp.	Separate	65	22	21	0	22	95	0	0	n.a.	22	22
Others (Smaller than Class II towns)													
Small States													
Goa													
21	Panaji MCI	Separate	25	9	5	5	4	52	52	100	0	9	9

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-3

**SEWAGE TREATMENT PROCESS AND SEWAGE
TREATMENT PLANTS, 1999**

B-3 : Sewage Treatment Process and Sewage Treatment Plants 1999

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1		2	3	4	5	6	7	8
Metropolitan Cities								
1	Ahmedabad M.Corp.	Extended aeration	360	160	200	4	634	360
2	Bangalore M.Corp.	Activated sludge process	403	180	223	3	458	403
3	Bhopal M.Corp.	Trickling filters & stabilisation pond	60	0	60	1	5	5
4	Calcutta M.Corp.	Treated naturally in wetlands	870	870	0	0		
5	Chennai M.Corp.	Extended aeration & Activated sludge process	162	35	127	6	220	162
6	Coimbatore M.Corp.	Extended aeration	36	0	36	2	36	36
7	Delhi M.Corp.	Activated sludge process	915	0	915	7	1290	915
8	Greater Mumbai M.Corp.	Extended aeration & Activated sludge process	735	599	136	4	2302	735
9	Hyderabad M.Corp.	Extended aeration	133	113	20	2	133	133
10	Indore M.Corp.	Not treated	0	0	0	1	14	0
11	Jaipur M.Corp.	Extended aeration	90	0	90	1	n.a.	9
12	Kanpur M.Corp.	Activated sludge process/ UASB	160	0	160	3	160	160
13	Kochi M.Corp.	Activated sludge process	4	0	4	1	5	4
14	Lucknow M.Corp.	n.a.	n.a.	n.a.	n.a.	0	n.a.	n.a.
15	Ludhiana M.Corp.	Not treated	0	0	0	0		
16	Madurai M.Corp.	Extended aeration	30	0	30	5	30	30
17	Nagpur M.Corp.	Not treated	0	0	0	0		
18	Pune M.Corp.	Extended aeration	95	50	45	2	122	95
19	Surat M.Corp.	Extended aeration	185	0	185	4	263	185
20	Vadodara M.Corp.	Trickling filters	54	0	54	2	54	54
21	Varanasi M.Corp.	Activated sludge process/ trickling filters	122	20	102	3	122	122
22	Visakhapatnam M.Corp.	Stabilisation pond	10	0	10	1	10	10

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1		2	3	4	5	6	7	8
CLASS I								
Andhra Pradesh								
1	Eluru M	Stabilisation pond	6	0	6	1	14	6
2	Guntur MCI	Extended aeration	4	0	4	1	8	4
3	Vijaywada M.Corp.	Extended aeration & Activated sludge process	21	0	21	1	27	21
Gujarat								
4	Anand M	Extended aeration	9	0	9	1	20	16
5	Bhavnagar M.Corp.	Not treated	0	0	0	0		
6	Bhuj M	Extended aeration	13	0	13	1	15	15
7	Nadiad M	Not treated	0	0	0	0		
8	Navsari M	Not treated	0	0	0	0		
9	Rajkot M.Corp.	Extended aeration	25	0	25	1	45	25
Haryana								
10	Ambala MCI	Not treated	0	0	0	0		
11	Faridabad M.Corp.	Up-flow anaerobic sludge blanket	80	0	80	3	110	80
12	Gurgaon MCI	Up-flow anaerobic sludge blanket	11	0	11	1	30	11
13	Hissar MCI	Not treated	0	0	0	0		
14	Rohtak MCI	Not treated	0	0	0	0		
Karnataka								
15	Bellary CMC	Extended aeration	5	0	5	2	16	5
16	Mangalore M.Corp.	n.a.	18	18	0	2	18	18
17	Mysore M.Corp.	Stabilisation pond	4	0	4	1	4	4
18	Shimoga CMC	Not treated	0	0	0	0		
Madhya Pradesh								
19	Gwalior M.Corp.	Extended aeration	16	0	16	2	19	16

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1		2	3	4	5	6	7	8
20	Morena M	Not treated	0	0	0	0		
21	Shivpuri M	Not treated	0	0	0	0		
Maharashtra								
22	Aurangabad M.Corp.	Extended aeration	106	0	106	1	106	106
23	Dhule MCI	Not treated	0	0	0	0		
24	Ichalkaranji MCI	Extended aeration	20	0	20	1	20	20
25	Kolhapur M.Corp.	Activated sludge process	29	0	29	1	29	29
26	Nanded Waghala M.Corp.	Not treated	0	0	0	1	2	0
27	Nashik M.Corp.	Extended aeration	19	0	19	3	19	19
28	Solapur M.Corp.	Activated sludge process	54	0	54	1	54	54
Orissa								
29	Bhubaneswar M.Corp.	Extended aeration	9	5	4	3	9	9
Punjab								
30	Amritsar M.Corp.	Not treated	0	0	0	0		
31	Bathinda MCI	Not treated	0	0	0	0		
32	Hoshiarpur MCI	Not treated	0	0	0	0		
33	Jalandhar M. Corp.	Not treated	0	0	0	0		
34	Moga MCI	Not treated	0	0	0	0		
35	Pathankot MCI	Not treated	0	0	0	0		
36	Patiala M.Corp.	Not treated	0	0	0	0		
Rajasthan								
37	Ajmer MCI	Not treated	0	0	0	0		
38	Bikaner M	Not treated	0	0	0	0		
39	Jodhpur M.Corp.	Not treated	0	0	0	0		
Tamil Nadu								
40	Kanchipuram M	Not treated	4	0	0	0		
41	Kumbakonam M	Extended aeration	4	0	4	1	8	4

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1	2		3	4	5	6	7	8
42	Tiruchirapalli M.Corp.	Extended aeration	4	0	4	1	5	4
43	Tirunelveli M.Corp.	Not treated	1	0	0	0		
44	Tuticorin M	Up-flow anaerobic sludge blanket	2	0	2	1	n.a.	2
Uttar Pradesh								
45	Aligarh M.Corp.	Not treated	0	0	0	0		
46	Allahabad M.Corp.	Extended aeration	60	0	60	1	60	60
47	Bareilly M.Corp.	Not treated	0	0	0	0		
48	Ghaziabad M.Corp.	Up-flow anaerobic sludge blanket	111	0	126	9	126	126
49	Gorakhpur M.Corp.	Not treated	0	0	0	0		
50	Hapur MB	Not treated	0	0	0	0		
51	Hardwar MB	Activated sludge process	18	0	18	1	18	18
52	Mathura MB	Not treated	0	0	0	0		
53	Meerut M.Corp.	Not treated	0	0	0	0		
54	Mirzapur MB	Up-flow anaerobic sludge blanket	14	0	14	2	14	14
West Bengal								
55	Asansol M.Corp.	Septic tank	5	0	0	0		
Union Territories								
56	Chandigarh M.Corp.	Activated sludge process	136	0	136	1	136	136
57	Pondicherry M	Extended aeration	10	0	10	3	10	8

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1		2	3	4	5	6	7	8
CLASS II								
Gujarat								
1	Ankleswar M	Not treated	4	0	0	0		
2	Dabhoi M	Not treated	0	0	0	0		
3	Mahesana M	Not treated	0	0	0	0		
Haryana								
4	Jind MCI	Not treated	0	0	0	0		
5	Kaithal MCI	Not treated	0	0	0	0		
6	Rewari MCI	Not treated	0	0	0	0		
7	Thanesar MCI	Not treated	0	0	0	0		
Karnataka								
8	Chikmaglur CMC	Not treated	0	0	0	0		
9	Kolar CMC	Not treated	4	0	0	0		
Punjab								
10	Ferozepur MCI	Not treated	0	0	0	0		
11	Kapurthala M	Not treated	0	0	0	0		
12	Mansa MCI	Not treated	0	0	0	0		
13	Phagwara MCI	Not treated	0	0	0	0		

Sl. No.	City/Town	Sewage treatment process adopted	Volume treated (mld) by treatment type			Sewage treatment plants		
			All methods	Primary	Primary & Secondary	Number	Installed capacity (mld)	Quantity treated (mld)
1		2	3	4	5	6	7	8
14	Sangrur MCI	Not treated	0	0	0	0		
Tamil Nadu								
15	Nagapattinam M	Extended aeration	2	0	2	1	4	2
16	Udhagamandalam M	Activated sludge process	4	0	4	1	5	4
Uttar Pradesh								
17	Etah MB	Not treated	0	0	0	0		
18	Roorkee MB	Extended aeration	9	0	9	2	9	9
West Bengal								
19	Darjeeling M	Septic tank	0	0	0	0		
Small States								
Himachal Pradesh								
20	Shimla M.Corp.	Not treated	0	0	0	0		
Others (Smaller than Class II towns)								
Small States								
Goa								
21	Panaji MCI	Trickling filters	5	0	5	1	6	5

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-4

WASTE WATER RECYCLE AND REUSE, 1999

B-4 : Waste Water Recycle and Reuse, 1999

Sl. No.	City/Town	Quantity of sewage collected (mld)	Total recycle & reuse of waste water (mld)	Recycle & reuse of waste water (mld) used for			Sewage gas (cu.m.)			Sewage sludge as manure (MT)		
				Agriculture & horticulture	Industrial cooling	Flushing toilets etc.	Pro-duction	Daily pro-duction	Daily sales	Daily quantity	Generated per annum	Sold per annum
1	2	3	4	5	6	7	8	9	10	11	12	13
METROPOLITAN CITIES												
1	Chennai M.Corp.	245	85 (35%)	65 (27%)	20 (8%)	0	No	0	0	0	0	0
2	Calcutta M.Corp.	870	870* (100%)	870* (100%)	0	0	No	0	0	0	0	0
3	Delhi M.Corp.	1290	10 (1%)	10 (1%)	n.a.	n.a.	Yes	19680	19680	2700	50068	n.a.
4	Greater Mumbai M.Corp.	1460	9 (0.6%)	4.5 (0.3%)	0	4.5 (0.3%)	Yes	4	4	0	300	100
5	Hyderabad M.Corp.	338	133 (39%)	133 (39%)	0	0	No	0	0	0	0	0
6	Jaipur M.Corp.	180	12 (7%)	12 (7%)	0	0	No	0	0	0	n.a.	n.a.
7	Kanpur M.Corp.	160	160 (100%)	160 (100%)	0	0	Yes	10000	n.a.	n.a.	20	20
8	Nagpur M.Corp.	180	20 (11%)	20 (11%)	0	0	No	0	0	0	0	0
9	Pune M.Corp.	390	50 (13%)	50 (13%)	0	0	No	0	0	0	0	0
10	Vadodara M.Corp.	122	5 (4%)	5 (4%)	0	0	No	0	0	0	0	0
11	Varanasi M.Corp.	122	50 (41%)	50 (41%)	0	0	Yes	3800	0	0	12000	12000
Total - Metropolitan Cities		5357	1404 (26%)	1379.5 (25.75%)	20 (0.37%)	4.5 (0.08%)		33484				

*Aquaculture and agriculture . Figures from Column 3 to 6 are percentage of Column 2
 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Quantity of sewage collected (mld)	Total recycle & reuse of waste water (mld)	Recycle & reuse of waste water (mld) used for			Sewage gas (cu.m.)			Sewage sludge as manure (MT)		
				Agriculture & horticulture	Industrial cooling	Flushing toilets etc.	Production	Daily production	Daily sales	Daily quantity	Generated per annum	Sold per annum
1	2	3	4	5	6	7	8	9	10	11	12	13
CLASS I												
Andhra Pradesh												
1	Guntur MCI	10.8	10.8 (100%)	10.8 (100%)	0	0	No	0	0	0	0	0
2	Vijaywada M.Corp.	26.0	26.0 (100%)	26.0 (100%)	0	0	No	0	0	0	182	182
Gujarat												
3	Bhuj M	13.5	13.5 (100%)	13.5 (100%)	0	0	No	0	0	0	0	0
4	Nadiad M	7.8	4.0 (51%)	4.0 (51%)	0	0	No	0	0	0	0	0
5	Rajkot M.Corp.	46.9	25.0 (53%)	25.0 (53%)	0	0	No	0	0	0	0	0
Haryana												
6	Gurgaon MCI	10.6	10.6 (100%)	10.6 (100%)	0	0	No	0	0	0	0	0
Madhya Pradesh												
7	Gwalior M.Corp.	61.8	2.3 (4%)	2.3 (4%)	0	0	No	0	0	0	0	0
8	Shivpuri M	3.1	3.1 (100%)	3.1 (100%)	0	0	No	0	0	0	0	0
Maharashtra												
9	Dhule MCI	12.0	9.0 (75%)	9.0 (75%)	0	0	No	0	0	0	0	0
10	Kolhapur M.Corp.	31.9	29.0 (91%)	29.0 (91%)	0	0	No	0	0	0	0	0
Punjab												
11	Hoshiarpur MCI	16.5	2.5 (15%)	2.5 (15%)	0	0	No	0	0	0	0	0
12	Moga MCI	10.8	3.6 (33%)	3.6 (33%)	0	0	No	0	0	0	0	0
13	Pathankot MCI	5.6	5.0 (90%)	5.0 (90%)	0	0	No	0	0	0	0	0
Rajasthan												
14	Jodhpur M.Corp.	46.1	17.0 (37%)	17.0 (37%)	0	0	No	0	0	0	0	0
Tamil Nadu												
15	Kanchipuram	9.7	4.4* (45%)	4.4* (45%)	0	0	No	0	0	0	0	0
16	Tiruchirapalli M.Corp.	4.0	4.0 (100%)	4.0 (100%)	0	0	No	0	0	0	0	0
Uttar Pradesh												
17	Allahabad M.Corp.	99.3	60.0 (60%)	60.0 (60%)	0	0	No	0	0	0	0	0

Sl. No.	City/Town	Quantity of sewage collected (mld)	Total recycle & reuse of waste water (mld)	Recycle & reuse of waste water (mld) used for			Sewage gas (cu.m.)			Sewage sludge as Manure (MT)		
				Agriculture & horticulture	Industrial cooling	Flushing toilets etc.	Pro-duction	Daily pro-duction	Daily sales	Daily quantity	Generated per annum	Sold per annum
1	2	3	4	5	6	7	8	9	10	11	12	13
18	Bareilly M.Corp.	25.6	15.0 (59%)	15.0 (59%)	0	0	No	0	0	0	0	0
19	Ghaziabad M.Corp.	126.0	3.0 (2%)	3.0 (2%)	0	0	No	0	0	0	0	0
20	Hapur MB	5.4	3.4 (62%)	3.4 (62%)	0	0	No	0	0	0	0	0
21	Hardwar MB	23.9	9.0 (38%)	9.0 (38%)	0	0	Yes	600	0	600	2500	413
22	Mathura MB	20.0	7.0 (35%)	7.0 (35%)	0	0	No	0	0	0	0	0
23	Mirzapur MB	14.0	4.2 (30%)	4.2 (30%)	0	0	Yes	200	0	160	100	n.a.
Union Territories												
24	Chandigarh M.Corp.	156.6	156.6 (100%)	156.6 (100%)	0	0	No	0	0	0	0	0
25	Pondicherry M	10.0	8.3 (83%)	8.3 (83%)	0	0	No	0	0	0	0	0
Total - Class I Cities		797.9	436.0 (55%)	436.0 (55%)	0	10		800	0	760	2782	
*Aquaculture and agriculture . Figures from Column 3 to 6 are percentage of Column 2 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.												

Sl. No.	City/Town	Quantity of sewage collected (mld)	Total recycle & reuse of waste water (mld)	Recycle & reuse of waste water (mld) used for			Sewage gas (cu.m.)			Sewage sludge as manure (MT)		
				Agriculture & horticulture	Industrial cooling	Flushing toilets etc.	Production	Daily production	Daily sales	Daily quantity	Generated per annum	Sold per annum
1	2	3	4	5	6	7	8	9	10	11	12	13
CLASS II												
Gujarat												
1	Dabhoi M	6.0	6.0 (100%)	6.0 (100%)	0	0	No	0	0	0	0	0
Haryana												
2	Jind MCI	8.0	8.0 (100%)	8.0 (100%)	0	0	No	0	0	0	0	0
3	Kaithal MCI	4.6	4.6 (100%)	4.6 (100%)	0	0	No	0	0	0	0	0
4	Thanesar MCI	6.9	6.9 (100%)	6.9 (100%)	0	0	No	0	0	0	0	0
Punjab												
5	Ferozepur MCI	12.7	12.7 (100%)	12.7 (100%)	0	0	No	0	0	0	0	0
6	Mansa MCI	5.1	5.1 (100%)	5.1 (100%)	0	0	No	0	0	0	0	0
Uttar Pradesh												
7	Etah MB	0.8	0.8 (100%)	0.8 (100%)	0	0	No	0	0	0	0	0
8	Roorkee MB	9.0	9.0 (100%)	9.0 (100%)	0	0	No	0	0	0	0	0
Total - Class II Towns		53.1	53.1 (100%)	53.1 (100%)	0	0		0	0	0	0	0
*Aquaculture and agriculture . Figures from Column 3 to 6 are percentage of Column 2												
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.												

B-5

**INSTITUTIONAL ARRANGEMENT AND STAFF
POSITION, 1999**

B-5 : Institutional Arrangement and Staff Position - 1999						
Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			
			Managerial	Technical	O&M	Total staff
1		2	3	4	5	6
METROPOLITAN CITIES						
1	Ahmedabad M.Corp.	M.Corp.	200		800	1000
2	Bangalore M.Corp.	BWS&SB		Combined with water supply		
3	Bhopal M.Corp.	PHED, Madhya Pradesh	5	28	271	304
4	Calcutta M.Corp.	C.M.C	32	173	1920	2125
5	Chennai M.Corp.	CMWSSB		Combined with water supply		
6	Coimbatore M.Corp.	M.Corp.		Combined with water supply		
7	Delhi M.Corp.	DJB		Combined with water supply		
8	Greater Mumbai M.Corp.	M.Corp.	249	447	5480	6176
9	Hyderabad M.Corp.	HMWSSB		Combined with water supply		
10	Indore M.Corp.	M.Corp.	60	22	236	318
11	Jaipur M.Corp.	PHED, Rajasthan	7	4	192	203
12	Kanpur M.Corp.	Jal Sansthan, Kanpur		Combined with water supply		
13	Kochi M.Corp.	KWA	7	21	39	67
14	Lucknow M.Corp.	Jal Sansthan, Lucknow	25	100	225	350
15	Ludhiana M.Corp.	M.Corp.		Combined with water supply		
16	Madurai M.Corp.	M.Corp.	49		164	213
17	Nagpur M.Corp.	M.Corp.	11	15	331	357
18	Pune M.Corp.	M.Corp.	83	58	509	650
19	Surat M.Corp.	M.Corp.	6	60	449	515
20	Vadodara M.Corp.	M.Corp.	9	7	391	407
21	Varanasi M.Corp.	M.Corp. Jal Nigam & Jal Sansthan, Varanasi		Combined with water supply		
22	Visakhapatnam M.Corp.	M.Corp.		Combined with water supply		

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			Total staff
			Managerial	Technical	O&M	
1		2	3	4	5	6
CLASS I						
Andhra Pradesh						
1	Eluru M	Municipality	1	3	98	102
2	Guntur MCI	Municipality	2	1	65	68
3	Vijaywada M.Corp.	M.Corp.		5	72	77
Gujarat						
4	Anand M	Municipality	3	6	30	39
5	Bhavnagar M.Corp.	M.Corp.	40	13	393	446
6	Bhuj M	Municipality	2	2	25	29
7	Nadiad M	Municipality	2	25	30	57
8	Navsari M	Municipality	9	40	20	69
9	Rajkot M.Corp.	M.Corp.	8	24	8	40
Haryana						
10	Ambala MCI	PHED	2	1	22	25
11	Faridabad M.Corp.	M.Corp.	5	49	253	307
12	Gurgaon MCI	PHED	4	3	59	66
13	Hissar MCI	PHED	6	5	86	97
14	Karnal MCI	PHED	3	2	20	25
15	Rohtak MCI	PHED	6	3	39	48
Karnataka						
16	Bellary CMC	KUWS&DB	3	3	25	31
17	Gulbarga M.Corp.	M.Corp.	1	9	32	42
18	Mangalore M.Corp.	Municipality	1	1	35	37
19	Mysore M.Corp.	Pvt. Contractor	3	11	48	62
20	Shimoga CMC	Municipality		2	20	22
Madhya Pradesh						
21	Bhind M	PHED		4	36	40

Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			Total staff
			Managerial	Technical	O&M	
1		2	3	4	5	6
22	Gwalior M.Corp.	PHED	1	44	209	254
23	Morena M	PHED/ Municipality		1	11	12
24	Shivpuri M	PHED	18	1	0	19
Maharashtra						
25	Aurangabad M.Corp.	Municipality	3	17	112	132
26	Dhule MCI	MJP	2	2	2	6
27	Ichalkaranji MCI	Pvt. Contractor	Not applicable			
28	Kolhapur M.Corp.	Municipality	1	3	128	132
29	Nanded Waghala M.Corp.	Municipality	10	5	40	55
30	Nashik M.Corp.	Municipality	1	20	100	121
31	Solapur M.Corp.	PHED	9	9	337	355
Orissa						
32	Bhubaneswar M.Corp.	PHED		56	442	498
Punjab						
33	Amritsar M.Corp.	M.Corp.	71	83	339	493
34	Bathinda MCI	PWSSB		8	142	150
35	Hoshiarpur MCI	Municipality	1	1	6	8
36	Jalandhar M. Corp.	Municipality	35	34	305	374
37	Moga MCI	Municipality	1	3	40	44
38	Pathankot MCI	MC	1	2	21	24
39	Patiala M.Corp.	Municipality	20	10	43	73
Rajasthan						
40	Ajmer MCI	PHED	n.a.	n.a.	n.a.	n.a.
41	Bikaner M	PHED			30	30
42	Jodhpur M.Corp.	PHED	12	0	175	187
Tamil Nadu						
43	Kanchipuram M	Municipality		4	13	17

Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			Total staff
			Managerial	Technical	O&M	
1		2	3	4	5	6
44	Kumbakonam M	Municipality		3	6	9
45	Tiruchirapalli M.Corp.	Pvt. Contractor		Not applicable		
46	Tirunelveli M.Corp.	M.Corp.		2	6	8
47	Tuticorin M	Municipality		4	28	32
Uttar Pradesh						
48	Aligarh M.Corp.	M. Corp.	4	4	32	40
49	Allahabad M.Corp.	Jal Sansthan, Allahabad	3	0	126	129
50	Bareilly M.Corp.	M.Corp.	2	2	70	74
51	Ghaziabad M.Corp.	Yamuna Pollution Control Unit & U.P. Jal Nigam	n.a.	n.a.	n.a.	n.a.
52	Gorakhpur M.Corp.	M. Corp.	1	3	40	44
53	Hapur MB	Municipality	1	2	10	13
54	Hardwar MB	Ganga Pollution Control Unit & U.P., Jal Nigam		Break-up not available		170
55	Mathura MB	Municipality	5	6	47	58
56	Meerut M.Corp.	M.Corp.	4	6	127	137
57	Mirzapur MB	Ganga Poll. Control Unit & UP Jal Nigam		6	86	92
58	Orai	Water works/ Jhansi		2	3	5
59	Rae Bareli MB	Municipality	3	13	20	36
60	Unnao MB	Municipality	2	2	4	8
West Bengal						
61	Asansol M.Corp.	M. Corp.	2	2	9	13
Union Territories						
62	Chandigarh M.Corp.	M.Corp.	53	n.a.	124	177
63	Pondicherry M	PWD		6	105	111
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>						

Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			Total staff
			Managerial	Technical	O&M	
1		2	3	4	5	6
CLASS II						
Gujarat						
1	Ankleswar M	Municipality		10	60	70
2	Dabhoi M	Municipality	1	2	6	9
3	Mahesana M	Municipality	1		10	11
Haryana						
4	Jind MCI	PHED	4	9	8	21
5	Kaithal MCI	PHED	3	4	30	37
6	Rewari MCI	PHED	3	3	20	26
7	Thanesar MCI	PHED	3	3	12	18
Karnataka						
8	Chikmagalur CMC	Municipality	1	3	15	19
9	Kolar CMC	Municipality		1	5	6
Punjab						
10	Ferozepur MCI	PWS&SB	1	1	40	42
11	Kapurthala M	Municipality	2	1	12	15
12	Mansa MCI	PWS&SB	2	2	39	43
13	Phagwara MCI	Municipality	2	1	63	66
14	Sangrur MCI	Municipality	1	3	44	48
Tamil Nadu						
15	Nagapattinam M	Municipality		2	4	6
16	Udhagamandalam M	Municipality		1	30	31
Uttar Pradesh						
17	Etah MB	Jal Sansthan	1	2	0	3
18	Roorkee MB	Municipality	5	5	5	15

Sl. No.	City/Town	Agency responsible for Operation & Maintenance	Staff Position			Total staff
			Managerial	Technical	O&M	
1		2	3	4	5	6
West Bengal						
19	Darjeeling M	Municipality	4	2	251	257
Small States						
Himachal Pradesh						
20	Shimla M.Corp.	M.Corp.	1	8	200	209
Others (Smaller than Class II towns)						
Goa						
21	Panaji MCI	PWD	4	4	69	77

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-6

**DETAILS OF PRIVATISATION IN WASTE WATER
TREATMENT, 1999**

B-6 : Details of Privatisation in Waste Water Treatment - 1999

Sl. No.	City/Town	Privatisation Details						
		Function	Activity	Mode used	Year privatised	No. of contractors	Cost before privatisation (Rs. 000)	Cost after privatisation (Rs. 000)
1		2	3	4	5	6	7	8
METROPOLITAN CITIES								
1	Chennai	O&M	Pumping stations	Contract	1996	3	2700	1440
2	Hyderabad	O&M	STPs	Contract	1997-1999	2	n.a.	n.a.
CLASS I								
Gujarat								
1	Rajkot	O&M	Pumping stations	Contract	1998	3	n.a.	n.a.
2	Bhavnagar	O&M		Contract	1994	1	n.a.	40
Maharashtra								
3	Nashik	O&M	STPs	Contract	1995	1	n.a.	952
Union Territories								
4	Chandigarh	O&M	Pumping stations	n.a.	1999	1	n.a.	n.a.
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

B-7

CAPITAL WORKS UNDERTAKEN SINCE 1994

B-7 : Capital Works Undertaken since 1994

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1	2	3	4	5	6	7	8	9	10	11	12	
Metropolitan Cities												
1	Ahmedabad	3	1	Sabarmati river cleaning	Laying of new trunk sewers, desilting, renovation of STPs etc.			1996	Ongoing	3,765	n.a.	n.a.
			2	East Ahmedabad Sewerage Project -II	Sewers, pumping stations etc.			n.a.	Ongoing	1,983	n.a.	n.a.
			3	Effluent disposal	Sewers, pumping stations etc.			n.a.	Ongoing	1,044	State govt./ industries	n.a.
2	Bangalore	1	1	Sewage treatment	Tertiary treatment		140	1998	2000	n.a.	French funding, HUDCO, KUIDFC	n.a.
3	Bhopal	1	1	Environmental	Wetland project conservation	500	100	Work in progress		6,000	Loan from OECF	1200
4	Calcutta	3	1	Pollution control under GAP II	n.a.			1999	Ongoing	1,800	Govt. of India	471
			2	Mega city	Rehab. of existing sewers			1999	Ongoing	200	Govt. of India	4
			3	10th Finance Commission	Imprv. & dev. of existing system			1998	Ongoing	190	Govt. of India	46
5	Coimbatore	1	1	Augmentation	Sewer lines	737	142	1999	2002	16,050	TN Infrastructure Financial Services Ltd.	2177
6	Greater Mumbai		1	Discharge sewage into sea	Worli & Bandra Outfall	4800 & 5240	726 & 785	1995	1999, 2000	38,300	IBRD Loan, IDA Credit, MCBM	383
			2	Discharge sewage into sea	Pumping station, repairs	5,240	785.00	1996	2001	21,300	IBRD Loan, IDA Credit, MCBM	426
			3	Provide biological trtmt. for sewage	Ghatkopar & Bhandup lagoons	1900 & 1860	285 & 280	1995	1999	12,600	IBRD Loan, IDA Credit, MCBM	335
			4	Stabilise the structures from uplift forces	Pumping stations			1996	1998	925	IBRD Loan, IDA Credit, MCBM	n.a.

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
			5	Transport sewage to pumping station	Pipelines	1,900	285.00	2000	2002	6,000	IBRD Loan, IDA Credit, MCBM	316
			6	To provide sewerage facility	Construction of Pumping station	4,000	11.89	1998	Ongoing	502	MMRDA	1,255
			31	To provide sewerage facility	Pipelines	combined	combined	combined	combined	combined	MCGM, MMRDA	237 to 2093
6	Hyderabad	2	1	Augmentation	Sewerage & sewers		1240	n.a.	Ongoing	n.a.	World Bank	n.a.
			2	Augmentation	STP			n.a.	Ongoing	n.a.	HUDCO	n.a.
7	Jaipur	1	1	Improving existing system	Outfall sewer	1,745	209	1996	1999	1,475	JDA/ PHED/ Housing Board/ self	85
8	Kochi	1	1	Augmentation	Pipe lines	89	16	1997	Ongoing	400	KWA funds	450
9	Ludhiana	1	1	Extension of network	Sewer lines	100	15	1994	1998	1,025	Self	1025
10	Nagpur	1	1	Sewage treatment	STP, sump	615	100	1991	Ongoing	2,777	State Government, Self	452
11	Pune	3	1	Augmentation	Pipe lines		70	1996	1997	35	C. Budget of PMC	7
			2	Dispose treated sewage to agri. land	Pipe lines		25	1997	1999	300	C. Budget of PMC	7
			3	To collect sewage for treatment	Pipe lines		50	1997	1999	74	C. Budget of PMC	5
12	Surat	1	1	n.a.	Pipe lines	1,747	350	1997	Ongoing	1,652		483-1885
13	Vadodara	2	1	Replacement of equipment	Civil and mechanical works	300	27	1998	1999	220	Own funds	73
			2	Replacement of equipment	Civil and mechanical works	250	27	1998	1999	190	Own funds	76
14	Visakhapatnam	2	1	Augmentation	Pipe lines	320	50	1994	Ongoing	1,421	HUDCO, self	n.a.
			2	Augmentation	Pipe lines	220	35	2000	2002	20	HUDCO, self	n.a.

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
CLASS I												
Andhra Pradesh												
1	Guntur	1	1	Treatment plant	Treatment plant/ sewer lines	350	35	1992	2002	3,200	HUDCO, self	914
2	Tirupati	1	1	Augmentation	Pipe lines	4,100	25	1994	1999	3,588	MCH, HUDCO& FTD	1500
3	Vijaywada	1	1	Augmentation	Pipe lines	200	32	1998	Ongoing	2,500	HUDCO, self	1250
Gujarat												
4	Bhavnagar	3	1	Improving existing system	Pipe lines	75	21	1995	Ongoing	600	Grant, Self	800
			2	Augmentation	Pipe lines	75	21	1994	Ongoing	56	Grant, Self	75
			3	Improving existing system	Pipe lines			1996	1998	190	Grant, Self	n.a.
5	Navsari	1	1	Augmentation	Pipe lines			1995	1998	98	Self	n.a.
6	Rajkot	2	1	Improving existing system	Pipe lines	550	n.a.	1978	1994	5,200	World Bank, HUDCO	1000
			2	Adding new pipe lines	Pipe lines	450	n.a.	1997	2001	1,200	Self	270
Haryana												
7	Gurgaon	1	1	Adding new pipe lines	Pipe lines	20	n.a.	1999	Ongoing	41	State Government	206
8	Hissar	4	1	Improving existing system	Pumping station	215	3	1998	Ongoing	194	State Government	902
			2	Adding new pipe lines	Pipe lines	1	0	1995	Ongoing	12	State Government	1150
			3	Adding new pipe lines	Pipe lines	2	0	1995	Ongoing	10	State Government	417
			4	Adding new pipe lines	Pipe lines	0.7	0	1997	1999	7	State Government	
9	Karnal	4	1	Adding new pipe lines	Pipe lines	54	7	1995	Ongoing	127	State Government	236
			2	Adding new pipe lines	Pipe lines	31	6	1985	Ongoing	130	State Government	250

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
			3	Adding new pipe lines	Pipe lines	160	23	1980	Ongoing	140	State Government	150
			4	Improving existing system	Treatment plant	218	0	1995	Ongoing	2,392	OECF	
10	Rohtak	2	1	Adding new pipe lines	Pipe lines	357	202	1994	1999	238	n.a.	421
			2	Adding new pipe lines	Pipe lines	76	8	1994	Ongoing	441	n.a.	578
Karnataka												
11	Davangere	1	1	n.a.	Pipe lines			1996	Ongoing	49	State Government	n.a.
Maharashtra												
12	Kolhapur	2	1	Divert sullage to drainage schemes	Weir, sump, pump, mech. Works			1999	Ongoing	488	GIA & loan	-
			2	Divert sullage to drainage, treatment	Treatment plant (pr. & sec. trt.), sump, pump	621	75	1999	Ongoing	5,085	GIA & loan	820
13	Nashik	1	1	Augmentation	Pipe lines	1,677	200	1998	Ongoing	8,278	Government grant&self	494
Orissa												
14	Bhubaneswar	1	1	Collection of sewage	Sump, sewer lines, pumping station	150	24	1997	Ongoing	274	State govt.	183
15	Puri	1	1	Treat west water	Screens, catchment basin, facullative ponds	142	10	1995	1996	638	State govt.	
Punjab												
16	Amritsar	4	1	Augmentation	Pipe lines			1994	Ongoing	126	Self	n.a.
			2	Augmentation	Pipe lines			1994	Ongoing	16	Self	n.a.
			3	Extension/ augmentation	Sewer lines govt./ self			1999	2002	3,742	HUDCO/ State	n.a.
			4	Extension of network	Sewer lines			1999	2001	782	Self	n.a.

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
17	Bathinda	1	1	Adding new pipe lines	Pipe lines		5	1994	1999	366		295
18	Jalandhar	1	1	Improving existing system	Treatment plant	1,236	100	1994	2002	2,256	Govt. of India	182
19	Moga	2	1	Augmentation	Pipe lines			1994	1998	109		360
			2	Extension/ augmentation	Sewer lines			1999	2002	1,573	HUDCO/ self	1622
Rajasthan												
20	Ajmer	1	1	Laying sewerage network in Dargah area	Sewer lines	60	7	1995	1999	160	PWD, Rajasthan	267
21	Jodhpur	1	1	Extension of network	Sewer lines	89	10	1996	Ongoing	508	HUDCO/ State govt.	570

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of Schemes	Scheme No.	Purpose	Components	Designed		Year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						population ('000)	capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
CLASS II												
Gujarat												
1	Mahesana	2	1	Improving existing system	Pumping station			1998	1999	10	Self	n.a.
			2	Augmentation	Pipe lines		3	1995	Ongoing	40	Self	n.a.
Haryana												
2	Jind	3	1	Adding new pipe lines	Pipe lines	135	51	1995	Ongoing	199	State Government	147
			2	Adding new pipe lines	Pipe lines	32	36	1984	Ongoing	60	State Government	188
			3	Adding new pipe lines	Pipe lines	1,120	6	1996	Ongoing	68	State Government	606
3	Thanesar	1	1	Augmentation	T,Pipe lines, Pumping Mach.	56	1	1984	Ongoing	101	State Government	179
Karnataka												
4	Gokak	1	1	n.a.	Pipe lines	350	0	1997	Ongoing	21		600
Punjab												
5	Firozpur	1	1	Augmentation	Pipe lines			1994	1997	122	Self	350
6	Mansa	1	1	Adding new pipe lines	Pipe lines			1999	n.a.	730	HUDCO/ State govt.	1100
7	Phagwara	2	1	Augmentation	Pipe lines			1997	Ongoing	200	Central govt.	n.a.
			2	Improvement	Treatment plant & pumping station	16	1999	2001	525		Central govt.	n.a.
8	Sangrur	2	1	Augmentation	Pipe lines			1994	1996	8	Self	n.a.
			2	Augmentation	Pipe lines			1996	Ongoing	7	Self	n.a.
Rajasthan												
9	Banswara	1	1	Sewerage scheme	n.a.	110	n.a.	n.a.	n.a.	n.a.		n.a.

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-8

**CAPITAL WORKS PROPOSED TO BE
UNDERTAKEN IN FUTURE**

B-8 : Capital Works Proposed to be Undertaken in Future

Sl. No.	City/Town	No. of Schemes clubed	Scheme No.	Purpose	Components	Designed		Expected year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						Population ('000)	Capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
Metropolitan Cities												
1	Coimbatore			Augmentation	Sewer lines	737	142	1999	2002	16,050	TN Infrastructure Financial Services Ltd.	2177
2	Greater Mumbai	8		Augmentation	Sewer lines, Combined treatment plant	Combined	Combined	2000	n.a.	2,539	World Bank & MCGM	n.a.
3	Hyderabad	1	1	Extension of network	Sewer lines	2,021	1242	2001	2006	30,000	HUDCO, HMWSSB	n.a.
4	Ludhiana	1	1	Extension of network	Sewer lines	425	70	2000	2002	5,782	Self	1360
5	Pune	1		Augmentation/improvement	Sewer lines	n.a.	n.a.	n.a.	n.a.	14,251	Self / State Govt.	570
6	Surat	1	1	Extention of sewerage	Sewer lines, pumping station, rising main lines, STP, treated effluent disposal line	1,615	341	2000	2005	14,046	Self	570-1282
7	Vadodara		1	Sewage treatment	STP	340	52	1999	2000	1,200	Loan	353
			2	Sewage treatment	STP	440	66	2000	2001	2,106	Loan	478
			3	Sewage treatment	STP	186	43	2000	2002	1,445	Loan	505

Sl. No.	City/Town	No. of Schemes clubed	Scheme No.	Purpose	Components	Designed		Expected year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						Population ('000)	Capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
CLASS I												
Gujarat												
1	Bhavnagar			Improving existing system	Treatment plant	n.a.	n.a.	n.a.	n.a.	n.a.	Grant	n.a.
Karnataka												
2	Mangalore	1	1	Upgradation	Replacement of sewer lines, Upgradation of STP	280	29	2001	2005	3,190	ADB	1140
3	Bellary	1	1	Upgradation	n.a.	350	50	n.a.	n.a.	5,070	HUDCO/ State Govt.	n.a.
Maharashtra												
4	Aurangabad	1		Treatment	Sewer lines/ treatment plant	1,600	192	n.a.	n.a.	10,000	n.a.	n.a.
5	Kolhapur	1		Augmentation/ improvement	Sewer lines	765	115	2000	2006	6,079	Grant/ loan	794
6	Nashik		1	Treatment Treatment plant	Pumpting status,	1,000,000	90	2000	2002	5,300	State & Central Govt.	n.a.
Orissa												
7	Bhubaneswar	1	1	Treatment/ disposal	Sewer lines, STP, filters, clear water sump	1,200	150	n.a.	n.a.	4,900	n.a.	408
8	Puri	1	1	Improvement	Treatment facility	159	27	2000	2005	44	State/ Central Govt.	2550
Punjab												
9	Amritsar	1	1	Treatment	2 treatment plants		n.a.	2005	2007	8,647	Self	n.a.
10	Bathinda		1	Augmentation	Pipe lines	n.a.	n.a.	2001	2006	3,420	AB	1875
11	Moga		1	Augmentation	Pipe lines	n.a.	n.a.	1999	2002	1,573	HUDCO, MC	1622
Rajasthan												
12	Ajmer	1	1	Augmentation	n.a.	500,000	70	2000	2005	10,215	ADB	1840
13	Bikaner	1	1	Sewerage system for Bikaner (Phase II)	n.a.	400	n.a.	2000	2005	11,700	ADB	230

Sl. No.	City/Town	No. of Schemes clubed	Scheme No.	Purpose	Components	Designed		Expected year of		Total cost (Rs. in lakhs)	Source of funding	Per capita cost* (Rs.)
						Population ('000)	Capacity (mld)	Starting	Completion			
1		2	3	4	5	6	7	8	9	10	11	12
Tamil Nadu												
14	Salem MCorp			Sewage Disposal	n.a.	400,000	n.a.	n.a.	2005	1,200	TWAD Board	n.a.
15	Tirunelveli			Augmentation	Pipe line, Treatment plant & Pumphouse	n.a.	n.a.	n.a.	n.a.	3,000	Self	n.a.
16	Vellore M			Sewage Disposal	n.a.	200,000	20	n.a.	n.a.	4,800	n.a.	2400
Uttar Pradesh												
17	Agra	1		New sewerage system	n.a.	159	20	2000	2004	4,805	Central, State Govt.	3000
18	Bareilly	1		Sewage treatment	n.a.	100	n.a.	n.a.	n.a.	663		663
19	Hapur	1		Sewage Disposal	Pumping station	na	n.a.	1999	n.a.	25	State Govt.	
20	Meerut	1		Sewage Rehabilitation	Pipe line Machinery		n.a.	1999	2001	477	Central, State Govt.	n.a.
21	Mirzapur	1		Sewerage scheme	n.a.	57	n.a.	n.a.	n.a.	1,505	State Govt.	n.a.
Union Territories												
22	Pondicherry	1		To upgrade the UGD of Pondichery	n.a.	50	5	2000	2001	56	UT Govt	112
CLASS II												
Gujarat												
1	Dabhoi	1	1	Extention of sewerage	Civil, electrical, mechanical	15	n.a.	2000	n.a.	85	Central Govt. grant	567
Goa												
2	Panaji	1		Augmentation	Sewage Treatment plant	75	13	2000	2002	800	State Govt. , HUDCO	1050
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>												

B-9

REVENUE RECEIPTS, 1997-98

B-9 : Revenue Receipts, 1997-98

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
Metropolitan Cities								
1	Ahmedabad M.Corp.	0	0	86	6181	8715	552	15534
2	Bangalore M.Corp.	These figures are combined with water supply revenue income figures						
3	Bhopal M.Corp.	n.a.						
4	Calcutta M.Corp.	0	0	0	50000	0	0	50000
5	Chennai M.Corp.	These figures are combined with water supply revenue income figures						
6	Coimbatore M.Corp.	0	0	0	0	21737	0	21737
7	Delhi M.Corp.	n.a.	0	1536	9	0	2656	4201
8	Greater Mumbai M.Corp.	0	0	0	0	2899525*	182047	3081572
9	Hyderabad M.Corp.	These figures are combined with water supply revenue income figures						
10	Indore M.Corp.	0	0	0	237	0	128	365
11	Jaipur M.Corp.	n.a.						
12	Kanpur M.Corp.	0	0	22	0	130	1185	1337
13	Kochi M.Corp.	0	0	0	977	0	0	977
14	Lucknow M.Corp.	0	0	0	0	13766	0	13766
15	Ludhiana M.Corp.	These figures are combined with water supply revenue income figures						
16	Madurai M.Corp.	0	0	0	8689	0	0	8689
17	Nagpur M.Corp.	0	0	0	0	0	260	260
18	Pune M.Corp.	0	0	0	100336	39300**		139636
19	Surat M.Corp.	0	0	169	0	0	250	419
20	Vadodara M.Corp.	357	0	0	305	96312	1463	98437
21	Varanasi M.Corp.	1706			0	5508	4000	11214
22	Visakhapatnam M.Corp.	These figures are combined with water supply revenue income figures						

* Revenue charged by measurement , Sewerage Tax , Sewerage Benefit Tax ; ** Sewerage Benefit Tax
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
CLASS I								
Andhra Pradesh								
1	Eluru M	0	0	0	0	111	2000	2111
2	Guntur MCI	100	0	0	1000	0	12000	13100
3	Vijaywada M.Corp.	1526	0	18	3200	6000	1225	11969
Gujarat								
4	Anand M	n.a.						
5	Bhavnagar M.Corp.	0	0	0	1500	157	157	1814
6	Bhuj M	0	0	0	32	4348	0	4380
7	Nadiad M	0	0	0	584	4689	0	5273
8	Navsari M	0	0	0	22	2849	1095	3966
9	Rajkot M.Corp.	71	0	0	44	0	0	115
Haryana								
10	Ambala MCI	0	0	0	2	80	0	82
11	Faridabad M.Corp.	0	0	0	3190	0	0	3190
12	Gurgaon MCI	0	0	0	746	753	0	1499
13	Hissar MCI	0	0	0	52	922	0	974
14	Rohtak MCI	0	0	0	284	0	0	284
Karnataka								
15	Bellary CMC	0	0	0	0	0	0	0
16	Mangalore M.Corp.	0	0	0	25	11021	0	11046
17	Mysore M.Corp.	0	0	88	1983	0	0	2071
18	Shimoga CMC	0	0	0	n.a.	0	0	
Madhya Pradesh								
19	Gwalior M.Corp.	0	0	0	0	0	0	0
20	Morena M	0	0	0	0	0	0	0
21	Shivpuri M	0	0	0	0	0	7	7

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
Maharashtra								
22	Aurangabad M.Corp.	0	0	0	144	1466	3683	5293
23	Dhule MCI	0	0	0	0	552	0	552
24	Ichalkaranji MCI	0	0	0	0	0	0	0
25	Kolhapur M.Corp.	0	0	0	22	3246	134	3402
26	Nanded Waghala M.Corp.	0	0	0	0	0	0	0
27	Nashik M.Corp.	0	0	0	0	7053	0	7053
28	Solapur M.Corp.	0	0	25	0	0	0	25
Orissa								
29	Bhubaneswar M.Corp.	0	0	0	280	2080	0	2360
Punjab								
30	Amritsar M.Corp.	0	n.a.	n.a.	2	752	n.a.	754
31	Bathinda MCI	0	0	0	684	0	0	684
32	Hoshiarpur MCI	0	0	0	0	2511	0	2511
33	Jalandhar M. Corp.	0	0	0	0	2736	1190	3926
34	Moga MCI	0	0	0	1677	0	0	1677
35	Pathankot MCI	0	0	0	0	0	0	0
36	Patiala M.Corp.	0	0	0	6600	0	0	6600
Rajasthan								
37	Ajmer MCI	0	0	0	50	0	0	50
38	Bikaner M	0	0	0	260	0	0	260
39	Jodhpur M.Corp.	0	0	0	n.a.	0	0	
Tamil Nadu								
40	Kanchipuram M	0	0	0	0	0	0	0
41	Kumbakonam M	0	0	0	n.a.	0	0	
42	Tiruchirapalli M.Corp.	0	0	0	0	18226	487	18713

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
043	Tirunelveli M.Corp.	0	0	0	0	0	0	0
44	Tuticorin M	0	0	0	0	0	0	0
Uttar Pradesh								
45	Aligarh M.Corp.	0	0	0	0	146	52	198
46	Allahabad M.Corp.	3450	0	0	0	n.a.	0	3450
47	Bareilly M.Corp.	0	0	0	216	2148	0	2364
48	Ghaziabad M.Corp.	0	0	0	0	10646	0	10646
49	Gorakhpur M.Corp.	0	0	0	0	0	0	0
50	Hapur MB	0	0	0	0	145	143	288
51	Hardwar MB	0	0	44	0	0	51	95
52	Mathura MB	These figures are combined with water supply revenue income figures						
53	Meerut M.Corp.	0	0	0	0	631	0	631
54	Mirzapur MB	0	0	156	2	0	0	158
West Bengal								
55	Asansol M.Corp.	0	0	0	0	0	0	0
Union Territories								
56	Chandigarh M.Corp.	1480	0	40	0	0	0	1520
57	Pondicherry M	200	0	0	0	0	0	200

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
CLASS II								
Gujarat								
1	Ankleswar M	0	0	0	105	0	0	105
2	Dabhoi M	1	0	0	5	1077	1	1084
3	Mahesana M	0	0	0	61	2805	0	2866
Haryana								
4	Jind MCI	0	0	0	27	352	0	379
5	Kaithal MCI	0	0	0	119	35	0	154
6	Rewari MCI	0	0	0	n.a.	0	0	
7	Thanesar MCI	0	0	0	22	0	215	237
Karnataka								
8	Chikmagalur CMC	0	0	0	50	0	0	50
9	Kolar CMC	These figures are combined with water supply revenue income figures						
Punjab								
10	Ferozepur MCI	0	0	0	1242	0	0	1242
11	Kapurthala M	0	0	0	2915	n.a.	0	2915
12	Mansa MCI	0	0	0	800	0	0	800
13	Phagwara MCI	0	0	0	9	0	1528	1537
14	Sangrur MCI	0	0	0	1062	0	0	1062
Tamil Nadu								
15	Nagapattinam M	0	0	0	0	0	0	0
16	Udhagamandalam M	0	0	0	0	0	1714	1714
Uttar Pradesh								
17	Etah MB	0	0	0	0	0	14	14
18	Roorkee MB	0	0	0	45	0	0	45

Sl. No.	City/Town	Revenue Receipts (Rs. in '000)						Total
		Recycled	Sewage gas	Manure	Connection charges	Sewage/ Drainage tax	Others	
1		2	3	4	5	6	7	8
West Bengal								
19	Darjeeling M	0	0	0	10	0	0	10
Small States								
Himachal Pradesh								
20	Shimla M.Corp.	0	0	0	0	0	0	0
Others (Smaller than Class II towns)								
Small States								
Goa								
21	Panaji MCI	0	0	0.7	0.5	0	0	1.2

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-10

REVENUE EXPENDITURE, 1997-98

B-10 : Revenue Expenditure, 1997-98

Sl. No.	City/ town	Revenue Expenditure (Rs. in '000)								Total
		Salary & Wages	Electricity	Consumables	Repairs/ replacements	Interest	Debt servicing	Depreciation	Others	
1		2	3	4	5	6	7	8	9	10
METROPOLITAN CITIES										
1	Ahmedabad M.Corp.	104,446	69,122	17,176		0	0	0	5,680	196,424
2	Bangalore M.Corp.	These figures are combined with water supply revenue expenditure figures								
3	Bhopal M.Corp.	12,872	2,006	6,466		0	0	0	0	21,344
4	Calcutta M.Corp.	61,400	30,300		33,817	0	0	0	0	125,517
5	Chennai M.Corp.	These figures are combined with water supply revenue expenditure figures								
6	Coimbatore M.Corp.	5,636	51,660.0			0	0	0	0	57,296
7	Delhi M.Corp.	161,415	35,907	6,619	17,340	0	0	0	0	221,281
8	Greater Mumbai M.Corp.	288,724	148,228	151,361	96,964	440,657	107,494	203,300	8,060	1,444,788
9	Hyderabad M.Corp.	These figures are combined with water supply revenue expenditure figures								
10	Indore M.Corp.	10,056	397	4,100		0	0	0	0	14,553
11	Jaipur M.Corp.	n.a.								
12	Kanpur M.Corp.	27,675	0	3,920	1,594	0	0	0	0	33,189
13	Kochi M.Corp.	795	255	156		0	0	0	0	1,206
14	Lucknow M.Corp.	15,729				0	0	0	0	15,729
15	Ludhiana M.Corp.	These figures are combined with water supply revenue expenditure figures								
16	Madurai M.Corp.	4,971	1,341			0	0	0	0	6,312
17	Nagpur M.Corp.	1,169	1,810	131		0	0	0	0	3,111
18	Pune M.Corp.	74,060	7,818	50	1,811	0	0	775	0	84,514
19	Surat M.Corp.	32,405	32,296	148	6,884	0	0	0	0	71,733
20	Vadodara M.Corp.	20,774	18,361	0	10,092	0	0	0	0	49,227
21	Varanasi M.Corp.	14,331	7,633	5,728	9,368	0	0	0	0	37,061
22	Visakhapatnam M.Corp.	These figures are combined with water supply revenue expenditure figures								

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/ town	Revenue Expenditure (Rs. in '000)								Total	
		Salary & Wages	Electricity	Consumables	Repairs/ replacements	Interest	Debt servicing	Depreciation	Others		
1		2	3	4	5	6	7	8	9	10	
CLASS I											
Andhra Pradesh											
1	Eluru M	3,620	0	150		12	0	0	1,416	5,198	
2	Guntur MCI	115	500	3,500		0	0	0	200	4,315	
3	Vijaywada M.Corp.	8,976	2,500	89	380	0	0	0	0	11,945	
Gujarat											
4	Anand M	n.a.									
5	Bhavnagar M.Corp.	14,004	1,500	3,010		0	0	0	0	18,514	
6	Bhuj M	1,275	0	1,249		0	0	0	0	2,524	
7	Nadiad M	4,233	1,785	76	1,107	0	0	0	30	7,230	
8	Navsari M	2,463	0	1,242		0	0	0	0	3,705	
9	Rajkot M.Corp.	5,039	6,280	10,109		0	2,113	0	92	23,633	
Haryana											
10	Ambala MCI	582	361	93	6	0	0	0	0	1,042	
11	Faridabad M.Corp.	11,048	0	5,155	371	394	0	0	0	16,968	
12	Gurgaon MCI	1,386	52	196	320	0	0	0	137	2,091	
13	Hissar MCI	4,177	5,659	941	1,562	0	0	0	642	12,981	
14	Rohtak MCI	3,737	2,903	293	0	0	0	0	228	7,161	
Karnataka											
15	Bellary CMC									Break-up not available	1,200
16	Mangalore M.Corp.	2,164	500	6,160		0	0	0	0	8,824	
17	Mysore M.Corp.	6,088	0	0	350	0	0	n.a.	3,577	10015*	
18	Shimoga CMC	n.a.									
Madhya Pradesh											
19	Gwalior M.Corp.	5,675	360	389	2,449	0	0	0	0	8,873	
20	Morena M	203	0	0	175	0	0	0	0	378	
21	Shivpuri M	539	0	0	315	0	0	0	0	854	
Maharashtra											
22	Aurangabad M.Corp.	1,769	0	0	8,924	0	0	0	6,038	16,731	

Sl. No.	City/ town	Revenue Expenditure (Rs. in '000)								Total
		Salary & Wages	Electricity	Consumables	Repairs/ replacements	Interest	Debt servicing	Depreciation	Others	
1		2	3	4	5	6	7	8	9	10
23	Dhule MCI	528	0	0	0	0	0	0	0	528
24	Ichalkaranji MCI	n.a.	7,190	1,003	0	0	0	1,680	0	9,873
25	Kolhapur M.Corp.	3,100	2,303	0	1,754	0	0	0	520	7,677
26	Nanded Waghala M.Corp.	2,056	118	0	1,544	0	0	0	188	3,906
27	Nashik M.Corp.	452	4,822	805	1,987	0	0	0	0	8,066
28	Solapur M.Corp.	8,987	29	0	129	0	0	0	1,597	10,741
Orissa										
29	Bhubaneswar M.Corp.	10,537	70	950	295	0	0	0	0	11,852
<i>* Probably unusual year - Repairs to UGD is Rs.3,528,000/-</i>										
Punjab										
30	Amritsar M.Corp.	24,428	10,945	0	12,377	0	6,062	0	0	53,812
31	Bathinda MCI	8,100	5,000	3,700	0	0	0	0	0	16,800
32	Hoshiarpur MCI	470	0	0	110	3,758	0	0	0	4,338
33	Jalandhar M. Corp.	15,607	9,445	663	7,553	0	0	0	7,908	41,176
34	Moga MCI	2,171	1,030	322	830	0	574	0	0	4,927
35	Pathankot MCI	400	600	50	100	0	0	0	0	1,150
36	Patiala M.Corp.	5,500	5,800	2,400	0	0	0	0	0	13,700
Rajasthan										
37	Ajmer MCI	n.a.								
38	Bikaner M	1,126	1,760	0	378	0	0	0	0	3,264
39	Jodhpur M.Corp.	10,781	0	0	1,300	0	0	0	567	12,648
Tamil Nadu										
40	Kanchipuram M	1,591	0	50	0	0	0	0	1,983	3,624
41	Kumbakonam M	n.a.								
42	Tiruchirapalli M.Corp.	2,885								2,885
43	Tirunelveli M.Corp.	3,110	14,944			0	0	0	0	18,054
44	Tuticorin M	2,085	0	238	0	0	0	0	621	2,944
Uttar Pradesh										
45	Aligarh M.Corp.	1,440	2,400	0	280	0	0	0	0	4,120

Sl. No.	City/ town	Revenue Expenditure (Rs. in '000)								Total
		Salary & Wages	Electricity	Consumables	Repairs/ replacements	Interest	Debt servicing	Depreciation	Others	
1		2	3	4	5	6	7	8	9	10
46	Allahabad M.Corp.	5,270	0	1,000	0	0	0	0	0	6,270
47	Bareilly M.Corp.	8,294	300	0	3,000	0	0	1,300	0	12,894
48	Ghaziabad M.Corp.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
49	Gorakhpur M.Corp.	2,372	0	406	27	0	0	0	0	2,805
50	Hapur MB	1,501	0	0	0	0	0	0	0	1,501
51	Hardwar MB	4,554	5,927	0	4,937	0	0	0	0	15,418
52	Mathura MB	These figures are combined with water supply revenue expenditure figures								
53	Meerut M.Corp.	n.a.								6,000
54	Mirzapur MB	13,053	887	0	2,040	0	0	0	248	16,228
West Bengal										
55	Asansol M.Corp.	2,039	0	0	0	0	0	0	0	2,039
Union Territories										
56	Chandigarh M.Corp.	7,467	5,500	1,800	300	0	0	0	0	15,067
57	Pondicherry M	9,781	0	0	0	0	0	0	1,949	11,730

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/ town	Revenue Expenditure (Rs. in '000)								Total
		Salary & Wages	Electricity	Consumables	Repairs/ replacements	Interest	Debt servicing	Depreciation	Others	
1		2	3	4	5	6	7	8	9	10
Small States										
Himachal Pradesh										
20	Shimla M.Corp.	2,056	96	0	1,395	0	0	0	0	3,547
Others (Smaller than Class II towns)										
Small States										
Goa										
21	Panaji MCI	3,673	760	46	215	0	0	0	0	4,694

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-11

COST RECOVERY 1997-98

B-11 : Cost Recovery 1997-98

Sl. No.	City	Population ('000) covered 1998	Waste water collected (mld)	Revenue (Rs.'000) 1997-98			% of receipts to expenditure	Rs /midwaste water collected			Rs/capita		
				Receipts	Expenditure	Gap		Receipt	Expenditure	Gap	Receipt	Expenditure	Gap
1		2	3	4	5	6	7	8	9	10	11	12	13
Metropolitan Cities													
1	Ahmedabad M.Corp.	2732	360.00	15534	196424	-180890	8	118	1495	-1377	5.69	72	-66
2	Bangalore M.Corp.	3604	403.00	*	*	n.app.							
3	Bhopal M.Corp.	192	60.00	n.a.	21344	n.app.	n.app.	n.app.	975	n.app.	n.app.	111	n.app.
4	Calcutta M.Corp.	2116	870.00	50000	125517	-75517	40	157	395	-238	24	59	-36
5	Chennai M.Corp.	4035	245.00	*	*	n.app.							
6	Coimbatore M.Corp.	264	36.04	21737	57296	-35559	38	1652	4356	-2703	82	217	-135
7	Delhi M.Corp.	7975	1,290.00	4201	221281	-217080	2	8.9	470	-461	0.53	28	-27
8	Greater Mumbai M.Corp.	8283	1,460.00	3081572	1444788	1636784	213	5783	2711	3071	372	174	198
9	Hyderabad M.Corp.	2252	338.00	*	*	n.app.							
10	Indore M.Corp.	610	95.00	365	14553	-14188	3	11	420	-409	0.60	24	-23
11	Jaipur M.Corp.	961	180.00	n.a.									
12	Kanpur M.Corp.	1447	160.00	1337	33189	-31851	4	23	568	-545	0.92	23	-22
13	Kochi M.Corp.	19	4.00	977	1206	-229	81	669	826	-157	51	63	-12
14	Lucknow M.Corp.	758	151.00	13766	15729	-1963	88	250	285	-36	18	21	-2.59
15	Ludhiana M.Corp.	1106	140.00	*	*	n.app.							
16	Madurai M.Corp.	346	57.00	8689	6312	2377	138	418	303	114	25	18	6.9
17	Nagpur M.Corp.	1220	180.00	260	3111	-2851	8	2.4	47	-45	0.21	2.55	-2.34
18	Pune M.Corp.	1651	390.00	139636	84514	55122	165	736	594	142	85	51	33
19	Surat M.Corp.	1137	185.00	419	71733	-71314	0.6	4.4	1062	-1058	0.37	63	-63
20	Vadodara M.Corp.	842	122.00	98437	49227	49210	200	1383	1105	278	117	58	58
21	Varanasi M.Corp.	683	122.00	11214	37061	-25847	30	163	832	-669	16	54	-38
22	Visakhapatnam M.Corp.	84	10.00	*	*	n.app.							

* These figures are combined with water supply revenue & expenditure
 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City	Population ('000) covered 1998	Waste water collected (mld)	Revenue (Rs.'000) 1997-98			% of receipts to expenditure	Rs /midwaste water collected			Rs/capita		
				Receipts	Expenditure	Gap		Receipt	Expenditure	Gap	Receipt	Expenditure	Gap
1		2	3	4	5	6	7	8	9	10	11	12	13
CLASS I													
Andhra Pradesh													
1	Eluru M	98	6.00	2111	5198	-3087	41	964	2374	-1410	22	53	-31
2	Guntur MCI	98	10.76	13100	4315	8785	304	3335	1099	2237	134	44	90
3	Vijaywada M.Corp.	287	25.99	11969	11945	25	100	1262	1259	3	42	42	0.1
Gujarat													
4	Anand M	99	9.30	n.a.									
5	Bhavnagar M.Corp.	289	30.55	1814	18514	-16700	10	163	1661	-1498	6.29	64	-58
6	Bhuj M	104	13.47	4380	2524	1856	174	891	513	377	42	24	18
7	Nadiad M	130	7.84	5273	7230	-1958	73	1843	2527	-684	41	56	-15
8	Navsari M	117	11.07	3966	3705	262	107	982	917	65	34	32	2.2
9	Rajkot M.Corp.	511	46.90	115	23633	-23518	0.5	6.7	1380	-1374	0.22	46	-46
Haryana													
10	Ambala MCI	18	11.34	82	1042	-960	8	20	252	-232	4.61	59	-54
11	Faridabad M.Corp.	585	111.88	3190	16968	-13778	19	78	416	-337	5.45	29	-24
12	Gurgaon MCI	104	10.59	1499	2091	-592	72	388	541	-153	14	20	-5.7
13	Hissar MCI	124	11.44	974	12981	-12007	8	233	3109	-2876	7.85	105	-97
14	Rohtak MCI	180	19.28	284	7161	-6877	4	40	1018	-977	1.57	40	-38
Karnataka													
15	Bellary CMC	126	10.60	0	1200	-1200	0	0	310	-310	0	9.53	-9.53
16	Mangalore M.Corp.	238	41.46	11046	8824	2222	125	730	583	147	46	37	9.4
17	Mysore M.Corp.	363	25.00	2071	10015	-7944	21	227	1098	-871	5.71	28	-21.90
18	Shimoga CMC	78	6.75	n.a.									
Madhya Pradesh													
19	Gwalior M.Corp.	449	61.85	0	8873	-8873	0	0	393	-393	0	20	-20
20	Morena M	16	0.96	0	378	-378	0	0	1079	-1079	0	24	-24

Sl. No.	City	Population ('000) covered 1998	Waste water collected (mld)	Revenue (Rs.'000) 1997-98			% of receipts to expenditure	Rs /mldwaste water collected			Rs/capita		
				Receipts	Expenditure	Gap		Receipt	Expenditure	Gap	Receipt	Expenditure	Gap
1		2	3	4	5	6	7	8	9	10	11	12	13
42	Tiruchirapalli M.Corp.	78	4.00	18713	2885	15828	649	12817	1976	10841	239	37	202
43	Tirunelveli M.Corp.	69	0.50	0	18054	-18054	0	0	98926	-98926	0	261	-261
44	Tuticorin M	40	3.01	0	2944	-2944	0	0	2680	-2680	0	74	-74
Uttar Pradesh													
45	Aligarh M.Corp.	117	7.44	198	4120	-3922	5	73	1517	-1444	1.70	35	-34
46	Allahabad M.Corp.	582	99.31	3450	6270	-2820	55.0	95	173	-78	5.93	11	-5
47	Bareilly M.Corp.	291	25.60	2364	12894	-10530	18	253	1380	-1127	8.12	44	-36
48	Ghaziabad M.Corp.	701	126.00	10646	n.a.	n.app.	n.app.	231	n.app.	n.app.	15	n.app.	n.app.
49	Gorakhpur M.Corp.	294	29.60	0	2805	-2805	0	0	260	-260	0	9.55	-9.55
50	Hapur MB	72	5.45	288	1501	-1213	19	145	755	-610	4.00	21	-17
51	Hardwar MB	168	23.92	95	15418	-15323	0.6	11	1766	-1755	0.56	92	-91
52	Mathura MB	47	20.00	*	*	n.app.							
53	Meerut M.Corp.	296	40.00	631	6000	-5369	11	43	411	-368	2.13	20	-18
54	Mirzapur MB	149	14.00	158	16228	-16070	0.98	31	3176	-3145	1.06	109	-108
West Bengal													
55	Asansol M.Corp.	35	4.80	0	2039	-2039	0	0	1164	-1164	0	58	-58
Union Territories													
56	Chandigarh M.Corp.	796	156.57	1520	15067	-13547	10	27	264	-237	1.91	19	-17
57	Pondicherry M	79	10.00	200	11730	-11530	2	55	3214	-3159	2.52	148	-145

* These figures are combined with water supply revenue & expenditure
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City	Population ('000) covered 1998	Waste water collected (mld)	Revenue (Rs.'000) 1997-98			% of receipts to expenditure	Rs /midwaste water collected			Rs/capita		
				Receipts	Expenditure	Gap		Receipt	Expenditure	Gap	Receipt	Expenditure	Gap
1		2	3	4	5	6	7	8	9	10	11	12	13
CLASS II													
Gujarat													
1	Ankleswar M	39	4.20	105	2960	-2854	4	36	1014	-977	2.68	75	-73
2	Dabhoi M	7	6.00	1084	2027	-943	53	412	771	-359	160	299	-139
3	Mahesana M	95	8.58	2866	1131	1735	253	663	262	401	30	12	18
Haryana													
4	Jind MCI	69	7.96	379	2280	-1901	17	82	496	-413	5.46	33	-27
5	Kaithal MCI	49	4.64	154	2541	-2387	6	49	809	-760	3.13	52	-49
6	Rewari MCI	62	5.90	n.a.	1640	n.app.	n.app.	n.app.	471	n.app.	n.app.	26	n.app.
7	Thanesar MCI	63	6.88	237	1333	-1096	18	61	345	-284	3.74	21	-17
Karnataka													
8	Chikmagalur CMC	56	7.20	50	3150	-3100	2	11	719	-708	0.89	56	-55
9	Kolar CMC	7	4.00	*	*	n.app.							
Punjab													
10	Ferozepur MCI	65	12.73	1242	3415	-2173	36	218	599	-381	19	52	-33
11	Kapurthala M	51	7.14	2915	560	2355	521	699	134	565	57	11	46
12	Mansa MCI	32	5.08	800	2200	-1400	36	345	948	-603	25	68	-43
13	Phagwara MCI	47	5.32	1537	2507	-970	61	356	581	-225	33	53	-21
14	Sangrur MCI	47	7.08	1062	1109	-47	96	286	299	-13	22	23	-0.99
Tamil Nadu													
15	Nagapattinam M	27	1.56	0	496	-496	0	0	218	-218	0	18	-18
16	Udhagamandalam M	50	4.05	1714	2686	-972	64	939	1472	-533	34	54	-20
Uttar Pradesh													
17	Etah MB	37	0.77	14	146	-133	9	12	125	-113	0.36	3.91	-3.55
18	Roorkee MB	58	9.00	45	n.a.	n.app.	n.app.	8.2	n.app.	n.app.	0.77	n.app.	n.app.

Sl. No.	City	Population ('000) covered 1998	Waste water collected (mld)	Revenue (Rs.'000) 1997-98			% of receipts to expenditure	Rs /mldwaste water collected			Rs/capita		
				Receipts	Expenditure	Gap		Receipt	Expenditure	Gap	Receipt	Expenditure	Gap
1		2	3	4	5	6	7	8	9	10	11	12	13
West Bengal													
19	Darjeeling M	29	1.55	10	165	-155	6	5.5	n.a.	n.a.	0.33	n.a.	n.a.
Small States													
Himachal Pradesh													
20	Shimla M.Corp.	69	21.25	0	3547	-3547	0	0	434	-434	0	51	-51
Others (Smaller than Class II towns)													
Small States													
Goa													
21	Panaji MCI	29	4.95	1.2	4694	-4693	0.03	0.3	1362	-1362	0.04	162	-162

* These figures are combined with water supply revenue & expenditure

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

B-12

POPULATION COVERED BY SAFE SANITATION

B-12 : Population Covered by Safe Sanitation

Sl. No.	City/town	Population 1999 (‘000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number (‘000)	%	Number (‘000)	%	Number (‘000)	%
			1	2	3	4	5	6
METROPOLITAN CITIES								
1	Ahmedabad M.Corp.	3500	2800	80	700	20	3500	100
2	Bangalore M.Corp.	5000	3900	78	1100	22	5000	100
3	Bhopal M.Corp.	1500	200	13	300	20	500	33
4	Calcutta M.Corp.	4870	2200	45	1300	27	3500	72
5	Chennai M.Corp.	4363	4100	94	-	-	4100	94
6	Coimbatore M.Corp.	971	270	28	388	40	658	68
7	Delhi M.Corp.	12000	8500	71	-	-	8500	71
8	Greater Mumbai M.Corp.	11100	8400	76	2000	18	10400	94
9	Hyderabad M.Corp.	4163	2350	56	-	-	2350	56
10	Indore M.Corp.	1600	640	40	480	30	1120	70
11	Jaipur M.Corp.	2000	1000	50	860	43	1860	93
12	Kanpur M.Corp.	2500	1500	60	1000	40	2500	100
13	Kochi M.Corp.	680	20	3	-	-	20	3
14	Lucknow M.Corp.	2500	800	32	950	38	1750	70
15	Ludhiana M.Corp.	2000	1200	60	38	2	1238	62
16	Madurai M.Corp.	1020	350	34	27	3	377	37
17	Nagpur M.Corp.	2100	1260	60	112	5	1372	65
18	Pune M.Corp.	2300	1732	75	500	22	2232	97
19	Surat M.Corp.	2300	1200	52	1000	43	2200	96
20	Vadodara M.Corp.	1400	875	63	375	27	1250	89
21	Varanasi M.Corp.	1150	700	61	449	39	1149	100
22	Visakhapatnam M.Corp.	1280	90	7	578	45	668	52

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/town	Population 1999 (‘000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number (‘000)	%	Number (‘000)	%	Number (‘000)	%
1		2	3	4	5	6	7	8
CLASS I								
Andhra Pradesh								
1	Anantapur MCI	250	-	-	175	70	175	70
2	Chittoor M	149	-	-	125	84	125	84
3	Cuddapah MCI	166	-	-	141	85	141	85
4	Eluru M	247	100	40	147	60	247	100
5	Guntur MCI	557	100	18	-	-	100	18
6	Hindupur M	140	-	-	29	21	29	21
7	Kakinada M	325	-	-	233	72	233	72
8	Kurnool MCI	282	-	-	24	9	24	9
9	Machilipatnam M	200	-	-	170	85	170	85
10	Nandyal MCI	150	-	-	43	29	43	29
11	Nellore MCI	404	-	-	183	45	183	45
12	Nizamabad M	285	-	-	27	9	27	9
13	Qutubullapur M	250	-	-	110	44	110	44
14	Tenali M	170	-	-	16	9	16	9
15	Tirupati MCI	210	-	-	170	81	170	81
16	Vijaywada M.Corp.	837	292.9	35	544	65	837	100
17	Warangal M.Corp.	680	-	-	188	28	188	28
Bihar								
18	Bihar Sharif M	250	-	-	22	9	22	9
19	Gaya M.Corp.	400	-	-	300	75	300	75
20	Katihar M	200	-	-	20	10	20	10
21	Munger M	210	-	-	52	25	52	25
Gujarat								
22	Anand M	175	105	60	60	34	165	94
23	Bharuch M	159	-	-	30	19	30	19
24	Bhavnagar M.Corp.	550	300	55	125	23	425	77

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
25	Bhuj M	118	106	90	11	9	117	99
26	Jamnagar M.Corp.	500	-	-	250	50	250	50
27	Junagadh M	165	-	-	8	5	8	5
28	Nadiad M	300	140	47	60	20	200	67
29	Navsari M	139	118	85	-	-	118	85
30	Porbandar M	142	-	-	90	63	90	63
31	Rajkot M.Corp.	1000	550	55	64	6	614	61
32	Surendranagar M	150	-	-	150	100	150	100
Haryana								
33	Ambala MCI	141	18.16	13	122	87	141	100
34	Faridabad M.Corp.	1150	632.5	55	-	-	633	55
35	Gurgaon MCI	175	109	62	29	17	138	79
36	Hissar MCI	250	130	52	25	10	155	62
37	Karnal MCI	220	-	-	31	14	31	14
38	Rohtak MCI	243	183	75	50	21	233	96
Karnataka								
39	Bellary CMC	297	129	43	30	10	159	54
40	Davangere MCI	455	-	-	46	10	46	10
41	Gadag-Betigeri CMC	148	-	-	65	44	65	44
42	Gulbarga M.Corp.	450	-	-	75	17	75	17
43	Hubli-Dharwad M.Corp.	850	-	-	102	12	102	12
44	Mandya M	140	-	-	56	40	56	40
45	Mangalore M.Corp.	410	250	61	10	2	260	63
46	Mysore M.Corp.	1050	400	38	150	14	550	52
47	Shimoga CMC	222	80.6	36	-	-	81	36
48	Tumkur M	300	-	-	50	17	50	17
Kerala								
49	Alappuzha MC	200	-	-	150	75	150	75

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
50	Kollam MC	160	-	-	112	70	112	70
51	Kozhikode M.Corp.	493	-	-	450	91	450	91
52	Thalaserry M	134	-	-	29	21	29	21
53	Thiruvananthapuram M.Corp.	585	-	-	585	100	585	100
Madhya Pradesh								
54	Guna M	125	-	-	75	60	75	60
55	Gwalior M.Corp.	900	516	57	200	22	716	80
56	Jabalpur M.Corp.	1000	-	-	900	90	900	90
57	Morena M	125	16	13	106	85	122	98
58	Ratlam M.Corp.	235	-	-	189	80	189	80
59	Rewa M.Corp.	180	-	-	103	57	103	57
60	Satna M.Corp.	200	-	-	172	86	172	86
61	Shivpuri M	140	5	4	100	71	105	75
Maharashtra								
62	Amravati M.Corp.	500	-	-	350	70	350	70
63	Aurangabad M.Corp.	868	684	79	155	18	839	97
64	Bhusawal M.Cl.	200	-	-	113	57	113	57
65	Chandrapur MCI	295	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
66	Dhule MCI	330	150	45	105	32	255	77
67	Ichalkaranji MCI	250	197.5	79	53	21	250	100
68	Jalgaon MCI	400	-	-	217	54	217	54
69	Kolhapur M.Corp.	502	200	40	-	-	200	40
70	Nanded Waghala M.Corp.	410	250	61	150	37	400	98
71	Nashik M.Corp.	839	500	60	336	40	836	100
72	Parbhani MCI	233	-	-	28	12	28	12
73	Solapur M.Corp.	900	810	90	-	-	810	90
74	Wardha M	150	-	-	10	7	10	7
75	Yavatmal MCI	130	-	-	43	33	43	33

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
100	Thanjavur M	217	-	-	19	9	19	9
101	Tiruchirapalli M.Corp.	800	80	10	280	35	360	45
102	Tirunelveli M.Corp.	414	70	17	-	-	70	17
103	Tiruvannamalai M	129	-	-	7	5	7	5
104	Tiruppur M	295	-	-	229	78	229	78
105	Tuticorin M	217	40	18	-	-	40	18
106	Vellore M	176	-	-	175	99	175	99
Uttar Pradesh								
107	Aligarh M.Corp.	600	120	20	350	58	470	78
108	Allahabad M.Corp.	1015	600	59	415	41	1015	100
109	Bareilly M.Corp.	750	300	40	150	20	450	60
110	Etawah MB	140	-	-	70	50	70	50
111	Firozabad MB	250	-	-	100	40	100	40
112	Ghaziabad M.Corp.	887	762	86	125	14	887	100
113	Gorakhpur M.Corp.	600	300	50	75	13	375	63
114	Haldwani-cum-Kathgodam MB	141	-	-	28	20	28	20
115	Hapur MB	200	75	38	19	9	94	47
116	Hardwar MB	300	184	61	-	-	184	61
117	Jhansi MB	507	-	-	230	45	230	45
118	Mathura MB	400	50	13	-	-	50	13
119	Meerut M.Corp.	1250	315	25	650	52	965	77
120	Mirzapur MB	210	153.168	73	57	27	210	100
121	Muzaffarnagar MB	325	-	-	241	74	241	74
122	Rae Bareli MB	175	-	-	105	60	105	60
123	Saharanpur MB	540	-	-	178	33	178	33
124	Sitapur MB	150	-	-	150	100	150	100
125	Unnao MB	121	-	-	33	27	33	27

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
West Bengal								
126	Asansol M.Corp.	315	36	11	183	58	219	70
127	Berhampore M	143	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
128	Balurghat M	132	-	-	130	98	130	98
129	Bankura M	151	-	-	126	83	126	83
130	Barasat M	150	-	-	120	80	120	80
131	Burdwan M	323	-	-	240	74	240	74
132	Halisahar M	149	-	-	16	11	16	11
133	Krishna Nagar M	145	-	-	116	80	116	80
134	Midnapur M	158	-	-	125	79	125	79
135	North Barrackpur M	118	-	-	20	17	20	17
136	Santipur M	134	-	-	65	49	65	49
137	Siliguri M.Corp.	500	-	-	341	68	341	68
Small States								
Manipur								
138	Imphal MCI	245	-	-	177	72	177	72
Meghalaya								
139	Shillong MB	217	-	-	209	96	209	96
Tripura								
140	Agartala MCI	200	-	-	176	88	176	88
Union Territories								
141	Chandigarh M.Corp.	850	850	100	-	-	850	100
142	Pondicherry	290	83	29	103	35	186	64
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
CLASS II								
Andhra Pradesh								
1	Anakapalle M	115	-	-	25	22	25	22
2	Dharmavaram M	100	-	-	10	10	10	10
3	Gudur MCI	72	-	-	39	54	39	54
4	Kapra M	120	-	-	98	82	98	82
5	Kavali MCI	85	-	-	31	36	31	36
6	Madanapalle M	100	-	-	94	94	94	94
7	Rajendra Nagar MCI	120	-	-	20	16	20	16
8	Sangareddy MCI	60	-	-	22	37	22	37
9	Srikakulam MCI	100	-	-	100	100	100	100
10	Srikalahasti M	70	-	-	70	100	70	100
11	Suryapet MCI	89	-	-	46	51	46	51
Bihar								
12	Buxar M	67	-	-	56	83	56	83
13	Deoghar M	100	-	-	40	40	40	40
14	Hajipur M	115	-	-	2	2	2	2
15	Jehanabad M	57	-	-	30	53	30	53
16	Madhubani M	65	-	-	35	54	35	54
Gujarat								
17	Amreli M	85	-	-	64	75	64	75
18	Ankleswar M	60	40	67	-	-	40	67
19	Dabhoi M	65	7	11	33	50	40	61
20	Dohad M	78	-	-	70	90	70	90
21	Gondal M	100	-	-	80	80	80	80
22	Jetpur M	125	-	-	125	100	125	100
23	Mahesana M	138	100	72	20	14	120	87
24	Palanpur M	117	-	-	100	85	100	85

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
Haryana								
25	Jind MCI	114	72	63	42	37	114	100
26	Kaithal MCI	95	51	54	13	14	64	68
27	Rewari MCI	105	65	62	40	38	105	100
28	Thanesar MCI	100	65	65	21	21	86	86
Karnataka								
29	Bagalkot CMC	100	-	-	32	32	32	32
30	Chikmagalur CMC	100	60	60	40	40	100	100
31	Gokak CMC	68	-	-	25	37	25	37
32	Kolar CMC	112	7.5	7	-	-	8	7
33	Rabkavi-Banhatti CMC	72	-	-	72	100	72	100
34	Ramanagaram CMC	70	-	-	40	57	40	57
Kerala								
35	Changanessary MC	62	-	-	7	10	7	10
36	Payyanur M	71	-	-	9	12	9	12
37	Taliparamba M	52	-	-	9	17	9	17
38	Thrissur MC	91	-	-	55	60	55	60
Madhya Pradesh								
39	Mandsaur M	123	-	-	62	50	62	50
40	Nagda M	100	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
41	Sehore M	100	-	-	80	80	80	80
42	Shahdol M	75	-	-	56	75	56	75
43	Vidisha M	125	-	-	57	46	57	46
Maharashtra								
44	Amalner MCI	100	-	-	76	76	76	76
45	Ballarpur MCI	109	-	-	74	67	74	67
46	Bhandara M	76	-	-	45	59	45	59
47	Kamptee MCI	95	-	-	12	12	12	12

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
			1	2	3	4	5	6
48	Manmad MCI	87	-	-	50	57	50	57
49	Ratnagiri MCI	70	-	-	28	40	28	40
50	Satara MCI	100	-	-	95	95	95	95
51	Virar MCI	100	-	-	100	100	100	100
Punjab								
52	Ferozepur MCI	93	67	72	26	28	93	100
53	Kapurthala M	85	53	63	32	37	85	100
54	Mansa MCI	67	33	50	-	-	33	50
55	Phagwara MCI	108	49	45	43	40	92	85
56	Sangrur MCI	70	49	70	21	30	70	100
Rajasthan								
57	Barmer M	84	-	-	60	71	60	71
58	Bundi M	80	-	-	25	31	25	31
59	Hanumangarh M	125	-	-	50	40	50	40
60	Sawai Madhopur M	89	-	-	44	49	44	49
Tamil Nadu								
61	Ambur M	86	-	-	43	50	43	50
62	Arakkonam M	88	-	-	10	11	10	11
63	Attur M	64	-	-	56	88	56	88
64	Cumbum M	54	-	-	34	63	34	63
65	Dharmapuri M	67	-	-	34	51	34	51
66	Gudiyatham M	95	-	-	91	95	91	95
67	Nagapattinam M	112	28	25	80	71	108	96
68	Pudukkottai M	108	-	-	75	69	75	69
69	Sivakasi M	70	-	-	35	50	35	50
70	Srivilliputtur M	74	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
71	Tindivanam M	70	-	-	70	100	70	100
72	Udhagamandalam M	100	51	51	49	49	100	100

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
Uttar Pradesh								
73	Auraiya MB	90	-	-	46	51	46	51
74	Balrampur MB	110	-	-	18	16	18	16
75	Basti MB	110	-	-	65	59	65	59
76	Bhadohi MB	125	-	-	75	60	75	60
77	Chandpur MB	80	-	-	36	45	36	45
78	Etah MB	135	40	30	95	70	135	100
79	Ghazipur MB	96	-	-	38	40	38	40
80	Gonda MB	114	-	-	48	42	48	42
81	Lakhimpur MB	100	-	-	70	70	70	70
82	Lalitpur MB	100	-	-	89	89	89	89
83	Mughalsarai MB	160	-	-	136	85	136	85
84	Nawabganj-Barabanki MB	90	-	-	60	67	60	67
85	Orai MB	170	-	-	150	88	150	88
86	Roorkee MB	100	60	60	34	34	94	94
West Bengal								
87	Bishnupur M	67	-	-	49	72	49	72
88	Chakdaha M	90	-	-	59	66	59	66
89	Contai M	114	-	-	90	79	90	79
90	Cooch Behar M	99	-	-	60	60	60	60
91	Darjeeling M	93	30	32	63	68	93	100
92	Jalpaiguri M	101	-	-	30	29	30	29
93	Jangipur M	78	-	-	36	46	36	46
94	Katwa M	68	-	-	50	74	50	74
95	Raniganj M	121	-	-	87	72	87	72
Small States								
Himachal Pradesh								
96	Shimla M.Corp.	111	72	65	39	35	111	100

Sl. No.	City/town	Population 1999 ('000)	Population covered by Sewerage System		Population covered by Septic Tanks and Low Cost Sanitation (LCS)		Total population covered by Sewerage System, Septic Tanks and LCS	
			Number ('000)	%	Number ('000)	%	Number ('000)	%
1		2	3	4	5	6	7	8
Nagaland								
97	Kohima TC	103	-	-	10	10	10	10
Others (Smaller than Class II towns)								
Small States								
Arunachal Pradesh								
98	Itanagar NTAC	34	-	-	28	84	28	84
Goa								
99	Panaji MCI	57	30	52	14	25	44	77
Union Territories								
100	Silvassa	20	-	-	20	100	20	100
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

B-13

**NUMBER OF INDIVIDUAL AND COMMUNITY
TOILETS**

B-13 : Number of Individual and Community Toilets									
Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
METROPOLITAN CITIES									
1	Ahmedabad M.Corp.	35000	-	18000	-	-	-	-	-
2	Bangalore M.Corp.	-	-	500	15	-	-	-	-
3	Bhopal M.Corp.	210000	-	725	-	6500	5000	-	-
4	Calcutta M.Corp.	50000	-	5000	-	-	1500	-	-
5	Chennai M.Corp.	-	-	757	793	-	-	-	-
6	Coimbatore M.Corp.	892	-	135	-	-	-	-	-
7	Delhi M.Corp.	-	-	16200	-	-	-	-	-
8	Greater Mumbai M.Corp.	-	-	27000	1200	-	-	3653	-
9	Hyderabad M.Corp.	21311	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	Indore M.Corp.	26992	-	1440	25	20000	-	-	-
11	Jaipur M.Corp.	215000	4816	70	-	10000	11184	-	500
12	Kanpur M.Corp.	37222	-	-	-	-	-	-	-
13	Kochi M.Corp.	-	-	70	-	-	-	-	-
14	Lucknow M.Corp.	81250	-	263	-	13500	-	-	8000
15	Ludhiana M.Corp.	6310	-	314	-	-	4000	-	-
16	Madurai M.Corp.	46297	-	501	-	-	-	-	-
17	Surat M.Corp.	-	-	3150	-	-	-	-	-
18	Varanasi M.Corp.	-	-	811	-	-	-	-	-
19	Visakhapatnam M.Corp.	12863	348	123	74	-	-	-	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
CLASS I									
Andhra Pradesh									
1	Anantapur MCI	3737	100	10	-	-	-	-	-
2	Chittoor M	630	1749	39	-	380	-	-	-
3	Cuddapah MCI	6500	1000	35	-	-	-	-	-
4	Eluru M	-	-	58	16	-	-	-	-
5	Kakinada M	-	-	107	-	-	-	-	-
6	Kurnool MCI	5668	1395	40	2	-	2	-	-
7	Machilipatnam M	-	-	16	-	-	-	20	-
8	Nandyal MCI	6978	-	68	-	-	-	30	-
9	Nellore MCI	2100	400	18	-	-	-	-	-
10	Nizamabad M	5371	2496	14	3	-	-	-	-
11	Qutubullapur M	2000	-	19	1	-	-	-	-
12	Tirupati MCI	18319	-	16	-	3500	-	-	-
13	Warangal M.Corp.	9975	-	54	-	-	-	-	-
Bihar									
14	Bihar Sharif M	100	-	12	-	200	3000	-	-
15	Chhapra M	-	-	14	-	-	9633	-	-
16	Gaya M.Corp.	-	-	12	-	-	-	-	-
17	Katihar M	100	-	-	-	-	-	-	-
18	Munger M	-	-	120	-	-	-	-	-
19	Ranchi M.Corp.	-	-	29	2	-	-	-	-
Gujarat									
20	Anand M	-	-	112	-	-	-	-	-
21	Bharuch M	-	-	111	-	-	-	-	-
22	Bhavnagar M.Corp.	80000	-	500	-	-	-	-	-
23	Bhuj M	15000	-	100	-	-	-	-	-
24	Jamnagar M.Corp.	-	-	779	-	-	-	-	-

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
25	Junagadh M	-	-	110	-	-	-	-	-
26	Nadiad M	-	-	250	-	-	-	-	-
27	Navsari M	216	-	579	-	-	-	-	-
28	Porbandar M	18000	-	50	6	-	-	-	-
29	Rajkot M.Corp.	-	-	1700	-	-	-	-	-
30	Surendranagar M	-	-	600	15	-	-	-	-
Haryana									
31	Ambala MCI	35377	-	5	-	4148	-	-	415
32	Faridabad M.Corp.	-	-	13	-	-	-	-	-
33	Gurgaon MCI	1470	-	9	-	-	-	-	-
34	Hissar MCI	5013	-	26	-	-	75	-	-
35	Karnal MCI	3105	-	5	-	1820	-	-	115
36	Rohtak MCI	5	-	5	-	-	3273	-	-
Karnataka									
37	Belgaum M.Corp.	80000	-	60	-	-	-	-	-
38	Bellary CMC	1000	-	50	-	-	-	-	-
39	Davangere MCI	-	-	40	-	-	-	-	-
40	Gadag-Betigeri CMC	6000	300	26	-	200	-	72	-
41	Gulbarga M.Corp.	35000	8000	14	-	-	-	-	-
42	Hubli-Dharwad M.Corp.	-	-	182	-	-	-	-	-
43	Mandya M	-	-	18	2	-	-	120	100
44	Mangalore M.Corp.	-	-	120	-	-	-	-	-
45	Mysore M.Corp.	-	-	30	10	-	-	-	-
46	Shimoga CMC	-	-	25	-	-	-	60	-
47	Tumkur M	180	9783	20	-	-	26	-	-
Kerala									
48	Alappuzha MC	-	-	31	-	-	-	-	-
49	Kollam MC	-	-	12	-	-	-	-	-

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
50	Kozhikode M.Corp.	-	-	60	-	-	-	212	-
51	Thalaserry M	-	-	8	-	-	-	-	-
52	Thiruvananthapuram M.Corp.	-	-	1135	-	-	-	-	-
Madhya Pradesh									
53	Bhind M	-	-	3	-	1497	-	-	40
54	Dewas M.Corp.	-	-	36	-	-	-	-	-
55	Guna M	1500	-	18	-	1435	-	-	1435
56	Gwalior M.Corp.	17027	-	10	61	24361	-	n.a.	n.a.
57	Jabalpur M.Corp.	-	-	117	-	3000	12000	-	-
58	Khandwa M	12000	-	24	1	-	2000	-	-
59	Morena M	1550	72	10	-	5000	72	-	100
60	Murwara-Katni M.Corp.	-	-	7	0	199	11052	-	-
61	Ratlam M.Corp.	17271	-	3	-	-	-	-	-
62	Rewa M.Corp.	4688	-	4	3	2761	-	-	-
63	Satna M.Corp.	2540	-	20	-	2400	2540	-	-
64	Shivpuri M	1500	-	30	-	1500	-	-	920
Maharashtra									
65	Nanded Waghala M.Corp.	6000	500	45	-	-	-	-	-
Orissa									
66	Cuttack M.Corp.	0	-	35	-	-	-	-	-
67	Puri M	2941	-	19	-	-	-	-	-
Punjab									
68	Amritsar M.Corp.	78879	8433	33	-	-	220	-	150
69	Bathinda MCI	500	-	10	-	300	500	-	-
70	Hoshiarpur MCI	13487	-	5	-	-	-	-	-
71	Jalandhar M. Corp.	59968	1000	16	2	-	-	-	-
72	Moga MCI	273	-	40	-	-	1200	32	88
73	Patiala M.Corp.	10000	-	16	-	8000	-	-	105

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
Rajasthan									
74	Ajmer MCI	16000	6000	7	6	-	8000	-	112
75	Alwar M	6000	-	10	1	536	31	1	-
76	Bhilwara M	20000	450	8	-	95	-	-	-
77	Bikaner M	800	700	4	4	-	-	-	300
78	Jodhpur M.Corp.	-	-	24	-	3411	9589	-	3411
79	Kota M.Corp.	-	-	20	6	6123	-	-	-
80	Sriganganagar M	13495	-	1	-	-	-	-	-
Tamil Nadu									
81	Cuddalore M	140	-	12	-	-	-	-	-
82	Dindigul M	n.a.	-	68	-	-	-	-	-
83	Erode M	-	-	35	-	-	-	-	-
84	Kanchipuram M	12703	-	35	-	-	32	200	-
85	Kumbakonam M	-	-	74	-	-	-	-	-
86	Nagercoil M	-	-	48	-	-	-	-	-
87	Rajapalayam M	1451	-	0	-	-	-	-	-
88	Salem M.Corp.	-	-	138	-	-	-	-	-
89	Thanjavur M	-	-	32	-	-	-	-	-
90	Tiruchirapalli M.Corp.	8487	5648	0	-	8487	8487	-	-
91	Tirunelveli M.Corp.	-	-	105	9	2164	10	-	-
92	Tiruvannamalai M	-	-	8	3	-	-	-	-
93	Tiruppur M	3602	-	39	-	323	-	-	-
94	Tuticorin M	-	-	22	-	-	-	-	-
95	Vellore M	12990	-	29	-	1904	-	420	-
Uttar Pradesh									
96	Aligarh M.Corp.	40	-	3	2	-	-	50	20
97	Allahabad M.Corp.	87	-	29	-	-	-	-	-
98	Bareilly M.Corp.	15000	-	15	-	-	41000	-	2500

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
99	Etawah MB	8280	-	28	-	9000	-	-	115
100	Faizabad MB	10	-	15	-	15	-	200	-
101	Firozabad MB	200	-	10	1	1000	1000	-	2000
102	Ghaziabad M.Corp.	-	-	6	-	-	-	-	-
103	Gorakhpur M.Corp.	-	-	56	-	-	-	-	-
104	Haldwani-cum-Kathgodam MB	1410	400	9	-	40	40	-	200
105	Hapur MB	3695	-	11	-	-	5	11	-
106	Jhansi MB	10000	-	20	11	-	-	-	200
107	Mathura MB	-	-	32	2	-	-	-	-
108	Mirzapur MB	5787	-	31	-	15000	-	-	-
109	Moradabad M.Corp.	0	-	-	-	-	8	-	-
110	Muzaffarnagar MB	5965	-	32	-	-	-	-	-
111	Rae Bareli MB	-	-	5	-	-	-	-	-
112	Saharanpur MB	37000	-	927	-	-	-	-	-
113	Sitapur MB	-	-	10	1	526	-	-	-
114	Unnao MB	6160	-	12	-	15016	15016	-	-
West Bengal									
115	Asansol M.Corp.	7590	250	1	-	11000	250	-	-
116	Baharampur M	4175	489	10	3	1466	1000	-	-
117	Balurghat M	3400	1200	4	12	-	-	-	-
118	Bankura M	1047	200	10	-	500	-	112	-
119	Barasat M	650	-	3	-	10400	-	-	-
120	Burdwan M	6000	-	250	100	-	-	650	-
121	Halisahar M	-	-	86	-	-	-	-	-
122	Krishna Nagar M	3200	-	14	-	3000	-	65	-
123	Midnapur M	2250	100	112	5	-	-	10	-
124	North Barrackpur M	1861	-	4	-	1352	-	-	-
125	Santipur M	4015	-	3	-	809	-	10	-

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
126	Siliguri M.Corp.	5673	4600	10	4	4500	2000	-	-
Small States									
Assam									
127	Guwahati M.Corp.	3000	-	1	-	20000	1700	1500	-
Manipur									
128	Imphal MCI	28000	-	13	1	-	3500	-	-
Meghalaya									
129	Shillong MB	1000	2000	-	-	-	2000	-	-
Tripura									
130	Agartala MCI	16000	-	8	-	-	22400	-	-
Union Territories									
131	Chandigarh M.Corp.	-	-	172	-	-	-	-	-
132	Pondicherry	-	-	92	-	-	-	-	-
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>									
CLASS II									
Andhra Pradesh									
1	Anakapalle M	5456	680	-	1	31	-	-	-
2	Dharmavaram M	2783	300	2	-	-	-	-	-
3	Kapra M	18600	1000	49	-	-	-	10	15
4	Kavali MCI	1237		10	-	-	-	28	-
5	Madanapalle M	12000	412	12	-	-	-	-	-
6	Rajendra Nagar MCI	1500	900	2	-	-	-	-	-
7	Sangareddy MCI	1400	200	10	1	1000	1000	-	-
8	Srikakulam MCI	20000	-	12	2	-	-	-	-
9	Srikalahasti M	20000	-	3	-	-	-	-	-
10	Suryapet MCI	1690	255	8	-	-	668	5	17

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
Bihar									
11	Buxar M	143	-	4	-	-	-	-	-
12	Deoghar M	-	-	2	-	-	-	-	-
13	Hajipur M	-	-	12	-	-	-	-	-
14	Hazaribagh M	-	-	4	-	-	-	-	-
15	Jehanabad M	-	-	5	-	-	-	-	-
16	Madhubani M	-	-	9	-	-	-	-	-
17	Mokama M	-	-	5	-	-	-	5	-
Gujarat									
18	Amreli M	-	-	119	-	-	-	-	-
19	Ankleswar M	-	-	354	-	-	-	-	-
20	Dabhoi M	12000	-	80	-	-	-	-	-
21	Dohad M	-	-	90	-	-	-	-	-
22	Gondal M	-	-	105	-	-	-	-	-
23	Jetpur M	-	-	240	-	-	-	-	-
24	Palanpur M	-	-	120	-	-	-	-	-
Haryana									
25	Jind MCI	1126	-	1	1	1270	-	-	-
26	Kaithal MCI	-	-	6	-	-	16000	290	1200
27	Rewari MCI	-	-	4	1	-	-	-	-
28	Thanesar MCI	785	100	3	-	1021	100	-	285
Karnataka									
29	Bagalkot CMC	400	-	15	-	-	-	-	-
30	Gokak CMC	10000	-	299	-	-	-	12	-
31	Hospet CMC	-	-	-	-	-	57	10	-
32	Rabkavi-Banhatti CMC	-	-	-	2	-	-	-	-
33	Ramanagaram CMC	-	-	1	-	-	-	-	-

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
Kerala									
34	Changanessary MC	2500	-	22	-	-	-	-	-
35	Payyanur M	1000	25	6	-	-	-	-	-
36	Taliparamba M	5000	-	-	-	-	-	-	-
37	Thrissur MC	-	-	18	-	-	-	-	-
Madhya Pradesh									
38	Hoshangabad M	-	-	2	-	1000	-	-	-
39	Itarsi M	327	-	2	-	1000	881	-	-
40	Khargone M	5000	-	31	-	1090	2090	22	30
41	Mandsaur M	5417	-	60	-	634	-	3	52
42	Nagda M	532	-	-	1	505	1428	-	-
43	Neemuch M	-	-	32	2	-	695	5	-
44	Sehore M	9000	-	6	-	550	-	-	20
45	Shahdol M	4600	200	8	-	-	-	-	-
46	Vidisha M	-	-	7	6	400	400	-	1
Maharashtra									
47	Amalner MCI	-	-	407	-	-	-	-	-
48	Ballarpur MCI	6393	20	1152	6	-	-	-	-
49	Bhandara M	9800	-	208	-	-	-	15	102
50	Kamptee MCI	407	-	32	-	-	-	-	-
51	Manmad MCI	500	2000	6	7	-	-	210	25
52	Ratnagiri MCI	4282	41	284	-	-	-	16	-
Punjab									
53	Ferozepur MCI	13250	200	4	-	206	523	-	50
54	Kapurthala M	7422	-	2	-	-	-	200	450
55	Phagwara MCI	7174	-	17	1	13800	-	225	600
56	Sangrur MCI	10519	-	3	-	-	-	128	11

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
Rajasthan									
57	Banswara M	322	-	-	-	-	-	-	-
58	Barmer M	-	-	6	1	-	1	-	-
59	Bundi M	1205	-	2	-	1651	-	-	-
60	Hanumangarh M	5000	3000	6	-	6000	3000	-	-
61	Sawai Madhopur M	1475	1000	2625	1775	3399	4150	5	-
Tamil Nadu									
62	Ambur M	6872	-	9	-	-	-	-	-
63	Arakkonam M	-	-	9	-	-	-	-	-
64	Attur M	-	-	32	-	-	-	-	-
65	Cumbum M	-	-	21	-	-	-	-	-
66	Dharmapuri M	6806	-	18	2	-	-	-	-
67	Gudiyatham M	-	-	19	-	-	-	36	-
68	Sivakasi M	4948	-	32	-	-	-	-	-
69	Srivilliputtur M	-	1739	6	-	-	267	22	-
70	Tindivanam M	-	-	13	-	-	-	-	-
71	Udhagamandalam M	34	-	37	-	-	-	172	-
Uttar Pradesh									
72	Auraiya MB	2000	-	5	-	2000	-	-	50
73	Basti MB	5000	-	8	2	5000	-	-	-
74	Bhadohi MB	1500	-	-	-	-	-	-	-
75	Chandpur MB	4300	200	4	-	-	-	10	150
76	Etah MB	-	-	6	-	-	-	-	-
77	Ghazipur MB	7561	-	8	-	-	-	-	78
78	Gonda MB	-	-	6	-	-	-	-	-
79	Lakhimpur MB	6000	-	6	-	2000	-	3	150
80	Lalitpur MB	196	-	14	-	-	-	1063	9566
81	Mughalsarai MB	-	-	15	-	-	-	-	-

Sl. No.	City/ town	No. of individual pour flush latrines		No. of community latrines		No. of dry latrines		No. of scavengers	
		Existing	Under construction	Existing	Under construction	Existing	Under construction	Public	Private
1		2	3	4	5	6	7	8	9
82	Nawabganj-Barabanki MB	3949	-	8	1	50	-	-	-
83	Orai MB	-	-	-	-	200	360	-	-
84	Roorkee MB	30	-	-	-	-	-	-	-
West Bengal									
85	Bishnupur M	861	-	-	-	350	-	-	-
86	Chakdaha M	4390	220	15	-	6016	220	18	45
87	Contai M	1700	250	7	-	-	-	-	-
88	Cooch Behar M	1500	41	5	-	-	-	-	-
89	Darjeeling M	117	-	117	-	-	-	-	-
90	Jalpaiguri M	3000	-	7	-	4000	-	266	-
91	Jangipur M	2721	-	22	-	1621	-	70	20
92	Katwa M	3669	-	18	-	37	-	4	-
93	Raniganj M	1212	300	21	-	100	60	160	58
Small States									
Himachal Pradesh									
94	Shimla M.Corp.	8140	-	86	-	97	-	-	-
Nagaland									
95	Kohima TC	2000	100	10	40	50	100	80	200
Union Territories									
96	Port Blair MCI	-	-	51	-	-	-	-	-
Others (Smaller than Class II towns)									
Small States									
Goa									
97	Panaji MCI	9950	35	21	-	-	-	26	-
Union Territories									
98	Silvassa	-	-	120	20	-	-	-	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

APPENDIX III

MUNICIPAL

SOLID WASTE MANAGEMENT, 1999

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C-1

POPULATION, AREA AND COVERAGE, 1999

C-1 : Population, Area and Coverage, 1999

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
Metropolitan Cities									
1	Ahmedabad M.Corp.	2,877	3,500	100	186.78	190.84	100	1,179,000	1,435,000
2	Bangalore M.Corp.	2,660	5,000	100	125.90	227.00	100	399,013	750,000
3	Bhopal M.Corp.	1,063	1,500	100	284.09	284.09	100	n.a.	230,512
4	Calcutta M.Corp.	4,400	4,870	100	187.33	187.33	100	2,000,000	2,290,000
5	Chennai M.Corp.	3,841	4,363	100	174.00	174.00	100	n.a.	1,500,000
6	Coimbatore M.Corp.	816	971	100	105.60	105.60	100	n.a.	n.a.
7	Delhi M.Corp.	7,207	12,000	63	1399.26	1484.46	n.a.	1,300,000	3,000,000
8	Greater Mumbai M.Corp.	9,926	11,100	100	437.71	437.71	100	4,459,000	5,823,510
9	Hyderabad M.Corp.	2,965	4,163	100	172.68	172.68	100	n.a.	601,336
10	Indore M.Corp.	1,092	1,600	75	137.17	137.17	75	264,000	300,000
11	Jaipur M.Corp.	1,458	2,000	100	200.40	200.40	100	214,000	433,000
12	Kanpur M.Corp.	1,874	2,500	86	106.00	227.67	n.a.	200,000	500,000
13	Kochi M.Corp.	565	680	100	94.88	94.88	100	52,090	69,500
14	Lucknow M.Corp.	1,619	2,500	70	310.10	310.00	90	120,000	200,000
15	Ludhiana M.Corp.	1,043	2,000	40**	134.67	165.00	40	350,000	700,000
16	Madurai M.Corp.	941	1,020	100	46.99	51.96	100	195,266	310,000
17	Nagpur M.Corp.	1,625	2,100	100	217.17	217.56	100	650,000	890,000
18	Pune M.Corp.	1,567	2,300	100	146.11	416.11	100	628,000	879,200
19	Surat M.Corp.	1,499	2,300	100	111.16	111.16	100	450,000	750,000
20	Vadodara M.Corp.	1,031	1,400	100	108.26	108.26	100	185,000	250,000
21	Varanasi M.Corp.	929	1,152	81	73.89	73.89	81	160,854	265,027
22	Visakhapatnam M.Corp.	752	1,280	100	78.33	107.00	100	n.a.	265,000
Total-Metropolitan Cities		51,749	70,299	90	4838.48	5484.77			

* Estimated by respective local governments/relevant agencies . ** Remaining population of Ludhiana is covered by CBOs
 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
CLASS I									
Andhra Pradesh									
1	Anantapur MCI	175	250	100	16.35	16.35	100	55,000	70,000
2	Chittoor M	133	149	100	33.57	33.57	100	40,907	41,928
3	Cuddapah MCI	121	166	100	7.50	7.50	100	25,023	29,364
4	Eluru M	213	247	100	14.55	14.55	100	62,000	78,000
5	Guntur MCI	471	557	100	30.01	45.79	100	n.a.	157,015
6	Hindupur M	105	140	100	38.16	38.16	100	n.a.	41,203
7	Kakinada M	280	325	85	30.51	30.51	85	62,230	91,940
8	Kurnool MCI	237	282	100	15.01	15.01	100	83,634	93,624
9	Machilipatnam M	159	200	100	26.67	26.67	100	n.a.	13,600
10	Nandyal MCI	120	150	100	15.42	15.42	100	30,292	38,362
11	Nellore MCI	317	404	100	48.39	48.39	100	93,900	119,000
12	Nizamabad M	241	285	100	36.86	36.86	100	n.a.	109,144
13	Ongole MCI	101	180	100	8.24	8.24	100	24,034	27,232
14	Qutubullapur M	107	250	100	46.87	46.87	100	n.a.	67,489
15	Rajahmundry M.Corp.	325	380	100	38.90	44.50	100	52,000	78,000
16	Tenali M	144	170	100	15.11	15.11	100	n.a.	42,592
17	Tirupati MCI	174	210	100	16.07	24.00	100	44,680	54,000
18	Vijaywada M.Corp.	702	837	100	57.33	57.33	100	240,000	300,000
19	Warangal M.Corp.	448	680	100	54.98	68.50	100	36,492	40,684
Bihar									
20	Bihar Sharif M	201	250	100	23.50	23.50	100	82,099	135,938
21	Chhapra M	137	200	95	16.96	16.96	n.a.	n.a.	n.a.
22	Gaya M.Corp.	292	400	100	28.62	28.62	100	42,169	n.a.
23	Katihar M	135	200	100	12.00	12.00	100	n.a.	n.a.
24	Munger M	150	210	67	17.50	19.00	84	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
25	Ranchi M.Corp.	599	700	85	177.19	177.19	85	n.a.	n.a.
Gujarat									
26	Anand M	110	175	100	21.13	23.14	100	32,000	40,000
27	Bharuch M	133	159	100	18.43	19.93	100	10,000	15,000
28	Bhavnagar M.Corp.	402	550	100	90.16	n.a.	n.a.	48,397	50,935
29	Bhuj M	102	118	100	9.48	9.49	100	15,000	20,000
30	Jamnagar M.Corp.	342	500	100	26.40	26.40	100	90,214	101,824
31	Junagadh M	130	165	100	13.47	n.a.	n.a.	n.a.	n.a.
32	Nadiad M	167	300	100	28.48	28.48	100	25,000	40,000
33	Navsari M	126	139	100	8.52	8.55	100	25,000	30,000
34	Porbandar M	117	142	100	12.30	12.30	100	8,100	9,500
35	Rajkot M.Corp.	559	1,000	100	69.00	104.86	100	90,000	125,000
36	Surendranagar M	106	150	100	14.19	36.87	100	10,082	n.a.
Haryana									
37	Ambala MCI	119	141	85	16.94	16.94	85	11,720	18,550
38	Faridabad M.Corp.	618	1,150	100	178.00	208.00	100	130,000	150,000
39	Gurgaon MCI	121	175	85	15.33	16.57	85	31,390	37,863
40	Hissar MCI	173	250	75	45.42	45.42	100	42,525	52,100
41	Karnal MCI	174	220	72	22.10	22.10	60	41,300	46,000
42	Rohtak MCI	216	243	100	20.38	28.38	100	66,945	103,351
Jammu & Kashmir									
43	Jammu M.Corp.	716*	909	100	n.a.	130.36	n.a.	n.a.	n.a.
44	Srinagar M.Corp.		800	n.a.	n.a.	210.00	n.a.	n.a.	n.a.
Karnataka									
45	Belgaum M.Corp.	326	470	100	83.93	n.a.	n.a.	100,000	120,000
46	Bellary CMC	245	297	100	65.90	81.95	100	61,990	95,000
47	Davangere MCI	266	455	99	20.51	n.a.	n.a.	72,000	140,392

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
48	Gadag-Betigeri CMC	134	148	100	34.75	n.a.	n.a.	7,285	9,276
49	Gulbarga M.Corp.	304	450	100	32.14	55.00	100	48,000	89,000
50	Hubli-Dharwad M.Corp.	648	850	100	190.94	190.94	100	102,000	270,000
51	Mandya M	120	140	100	17.03	17.03	100	n.a.	8,000
52	Mangalore M.Corp.	273	410	100	73.71	116.77	100	16,690	n.a.
53	Mysore M.Corp.	481	1,050	100	36.69	n.a.	n.a.	52,200	69,500
54	Shimoga CMC	179	222	100	16.26	n.a.	n.a.	8,000	42,000
55	Tumkur M	139	300	60	15.32	45.90	n.a.	10,000	22,800
Kerala									
56	Alappuzha MC	175	200	100	46.77	46.77	100	42,170	53,000
57	Kollam MC	140	160	100	18.48	18.48	100	33,500	45,000
58	Kozhikode M.Corp.	420	493	100	82.68	84.23	100	71,300	73,000
59	Thalassery M	104	134	100	23.96	n.a.	n.a.	10,000	11,200
60	Thiruvananthapuram M.Corp.	524	585	100	74.93	78.40	100	20,000	25,000
Madhya Pradesh									
61	Bhind M	110	175	44	17.18	17.18	47	3,000	3,200
62	Burhanpur M.Corp.	173	210	100	24.00	24.00	100	n.a.	84,000
63	Dewas M.Corp.	164	200	100	100.22	100.22	100	n.a.	n.a.
64	Guna M	100	125	100	45.75	45.75	100	24,750	38,950
65	Gwalior M.Corp.	691	900	100	289.85	n.a.	n.a.	200,000	270,000
66	Jabalpur M.Corp.	742	1,000	100	133.97	133.97	100	n.a.	n.a.
67	Khandwa M	145	175	100	35.77	35.77	100	35,000	n.a.
68	Morena M	105*	125	100	12.00*	12.00	100	20,000	25,000
69	Murwara-Katni M.Corp.	163	180	100	107.10	107.10	100	n.a.	n.a.
70	Ratlam M.Corp.	183	235	85	39.19	39.19	85	62,000	70,000
71	Rewa M.Corp.	129	180	100	54.99	54.99	100	n.a.	n.a.
72	Satna M.Corp.	157	200	100	86.77	n.a.	n.a.	4,000	5,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
73	Shivpuri M	108	140	100	81.10	81.10	100	22,800	28,470
Maharashtra									
74	Amravati M.Corp.	422	500	100	121.65	121.65	100	100,000	150,000
75	Aurangabad M.Corp.	573	868	100	138.50	138.50	100	170,000	270,000
76	Bhusawal M.Cl.	145	200	85	13.38	13.38	78	13,100	n.a.
77	Chandrapur MCI	226	295	100	56.28	56.28	100	n.a.	80,753
78	Dhule MCI	278	330	100	46.46	46.46	100	35,000	55,000
79	Ichalkaranji MCI	215	250	100	29.89	29.89	100	22,000	30,000
80	Jalgaon MCI	242	400	100	62.29	65.64	100	75,000	75,000
81	Kolhapur M.Corp.	406	502	100	66.82	66.82	100	41,970	68,395
82	Nanded Waghala M.Corp.	275	410	100	20.62	46.00	100	n.a.	71,190
83	Nashik M.Corp.	657	839	100	259.13	259.13	100	140,000	200,000
84	Parbhani MCI	190	233	100	n.a.	57.60	100	58,774	125,000
85	Solapur M.Corp.	604	900	100	33.11	n.a.	n.a.	n.a.	240,000
86	Wardha M	103	150	100	7.77	9.04	100	16,900	19,617
87	Yavatmal MCI	109	130	100	10.17	10.69	100	39,000	40,000
Orissa									
88	Bhubaneswar M.Corp.	412	654	100	124.74	n.a.	n.a.	103,730	n.a.
89	Cuttack M.Corp.	403	563	100	121.91	121.91	n.a.	90,798	n.a.
90	Puri M	125	150	100	16.84	n.a.	n.a.	n.a.	n.a.
91	Rourkela M	140	200	100	33.00	n.a.	n.a.	n.a.	n.a.
92	Sambalpur M	131	157	100	46.48	n.a.	n.a.	n.a.	n.a.
Punjab									
93	Amritsar M.Corp.	709	843	95	114.95	133.00	80	246,675	253,000
94	Bathinda MCI	159	174	40	97.00	99.00	n.a.	24,250	27,911
95	Hoshiarpur MCI	123	145	76	28.21	35.00	76	n.a.	28,000
96	Jalandhar M. Corp.	510	738	91	80.41	110.00	91	200,000	150,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
97	Moga MCI	108	148	80	16.10	18.50	81	13,835	18,447
98	Pathankot MCI	124	195	100	22.10	22.10	100	11,000	11,000
99	Patiala M.Corp.	238	328	100	31.20	41.00	100	80,000	70,000
Rajasthan									
100	Ajmer MCI	403	550	100	241.58	n.a.	n.a.	111,897	150,000
101	Alwar M	205	300	90	48.40	58.15	90	20,000	25,000
102	Beawar M	105	141	100	17.69	17.69	100	n.a.	2,130
103	Bhilwara M	184	225	100	118.49	n.a.	n.a.	37,000	45,000
104	Bikaner M	416	600	100	165.75	175.76	100	14,400	24,500
105	Jodhpur M.Corp.	666	1,000	100	78.60	n.a.	n.a.	194,400	280,500
106	Kota M.Corp.	537	750	100	221.36	221.36	100	n.a.	n.a.
107	Sriganganagar M	161	225	100	20.87	20.87	100	8,500	11,000
Tamil Nadu									
108	Cuddalore M	145	162	100	27.71	27.71	100	28,020	34,000
109	Dindigul M	182	214	100	14.01	14.01	100	21,680	27,000
110	Erode M	159	174	100	8.44	8.44	100	37,190	40,000
111	Kanchipuram M	145	157	100	11.60	11.60	100	n.a.	n.a.
112	Kumbakonam M	139	147	100	12.58	12.58	100	48,819	51,892
113	Nagercoil M	190	206	100	24.27	24.27	100	10,500	12,648
114	Rajapalayam M	114	123	100	11.36	11.36	100	15,770	17,000
115	Salem M.Corp.	367	447	100	19.94	19.94	100	62,000	125,300
116	Thanjavur M	202	217	100	15.36	n.a.	n.a.	38,040	41,000
117	Tiruchirapalli M.Corp.	669*	800	100	23.00	n.a.	n.a.	n.a.	167,162
118	Tirunelveli M.Corp.	374*	414	100	15.15	n.a.	n.a.	82,810	93,520
119	Tiruvannamalai M	109	129	100	13.64	13.64	100	21,000	34,000
120	Tiruppur M	236	295	100	43.52	n.a.	n.a.	n.a.	63,094
121	Tuticorin M	200	217	100	13.47	13.47	100	32,350	35,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
122	Vellore M	175	176	100	11.65	11.65	100	45,887	65,587
Uttar Pradesh									
123	Agra M.Corp.	892	1,150	75	120.57	120.57	n.a.	n.a.	n.a.
124	Aligarh M.Corp.	481	600	75	34.05	n.a.	n.a.	n.a.	n.a.
125	Allahabad M.Corp.	793	1,015	90	62.94	70.05	90	83,160	106,122
126	Bareilly M.Corp.	587	750	100	106.43	106.43	100	n.a.	n.a.
127	Etawah MB	124	140	100	9.35	n.a.	n.a.	678	2,750
128	Faizabad MB	124	170	70	33.47	33.47	n.a.	n.a.	n.a.
129	Firozabad MB	215	250	60	9.17	n.a.	n.a.	n.a.	n.a.
130	Ghaziabad M.Corp.	454	887	100	63.79	n.a.	n.a.	n.a.	n.a.
131	Gorakhpur M.Corp.	506	600	80	136.58	143.00	80	76,000	90,000
132	Haldwani-cum-Kathgodam MB	104	141	100	10.62	10.62	100	16,854	n.a.
133	Hapur MB	146	200	75	14.20	14.20	70	1,500	2,000
134	Hardwar MB	147	300	100	11.91	11.91	100	27,000	40,000
135	Jhansi MB	301	507	75	46.32	46.32	n.a.	120,000	170,000
136	Mathura MB	227	400	67	9.37	n.a.	n.a.	n.a.	80,000
137	Meerut M.Corp.	754	1,250	100	141.94	141.94	100	n.a.	n.a.
138	Mirzapur MB	169	210	81	38.85	38.85	62	26,000	31,500
139	Moradabad M.Corp.	429	670	72	34.19	50.48	80	n.a.	n.a.
140	Muzaffarnagar MB	241	325	80	12.04	12.04	80	42,471	57,966
141	Rae Bareli MB	130	175	75	50.12	n.a.	n.a.	14,846	29,750
142	Rampur MB	244	317	100	20.20	n.a.	n.a.	n.a.	n.a.
143	Saharanpur MB	375	540	50	25.36	25.36	51	142,000	175,000
144	Sitapur MB	122	150	100	25.90	35.00	100	n.a.	n.a.
145	Unnao MB	107	121	100	15.54	21.50	100	10,000	13,000
West Bengal									
146	Asansol M.Corp.	262	315	100	25.12	n.a.	n.a.	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
147	Baharampur M	115	143	100	16.19	16.19	100	32,000	55,690
148	Balurghat M	120	132	100	6.37	8.50	100	40,000	52,000
149	Bankura M	115	151	95	19.06	19.06	100	25,000	33,000
150	Barasat M	103	150	67	20.25	34.50	75	39,000	64,845
151	Burdwan M	245	323	84	23.04	34.18	84	97,000	110,000
152	Halisahar M	114	149	n.a.	8.28	n.a.	n.a.	47,919	n.a.
153	Krishna Nagar M	121	145	100	15.96	15.96	100	50,523	60,603
154	Midnapur M	125	158	100	14.78	18.85	100	42,000	59,000
155	North Barrackpur M	101	118	100	8.42	12.22	100	17,548	22,500
156	Santipur M	110	134	100	24.60	25.88	100	60,000	64,000
157	Siliguri M.Corp.	338*	500	64	15.54	41.90	64	42,000	157,000
Small States									
Assam									
158	Guwahati M.Corp.	584	1,400	100	216.79	216.79	100	95,000	105,000
159	Jorhat MB	112	170	100	9.20	n.a.	n.a.	18,600	n.a.
Manipur									
160	Imphal MCI	199	245	100	33.30	33.30	100	0	0
Meghalaya									
161	Shillong MB	132	217	100	10.36	10.36	100	n.a.	n.a.
Tripura									
162	Agartala MCI	157	200	100	15.80	16.01	100	25,000	27,000
Union Territories									
163	Chandigarh M.Corp.	504	850	94	69.52	n.a.	n.a.	n.a.	n.a.
164	Pondicherry M	203	290	100	19.54	19.54	100	40,500	58,000

* Estimated by respective local governments/relevant agencies

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
CLASS II									
Andhra Pradesh									
1	Anakapalle M	84	115	100	23.28	23.28	100	20,942	22,000
2	Dharmavaram M	79	100	100	40.45	40.45	100	36,322	46,982
3	Gudur MCI	56	72	100	9.42	9.42	100	19,402	21,000
4	Kapra M	88	120	80	43.90	65.00	80	23,887	30,387
5	Kavali MCI	66	85	100	22.95	22.95	100	25,168	30,000
6	Madanapalle M	74	100	100	7.74	14.20	100	13,283	15,975
7	Narasaraopet M	89	95	93	7.65	7.65	93	40,594	45,244
8	Rajendra Nagar MCI	85	120	100	52.25	52.25	100	24,346	26,281
9	Sangareddy MCI	50	60	100	13.60	13.69	100	23,225	25,246
10	Srikakulam MCI	89	100	100	14.12	14.12	100	37,375	n.a.
11	Srikalahasti M	62	70	100	24.50	n.a.	n.a.	14,000	20,506
12	Suryapet MCI	61	89	100	23.54	11.50	100	42,931	49,000
Bihar									
13	Buxar M	56	67	82	5.16	8.50	82	14,270	15,500
14	Deoghar M	76	100	100	n.a.	n.a.	n.a.	n.a.	n.a.
15	Hajipur M	88	115	100	19.64	19.64	100	26,000	30,000
16	Hazaribagh M	98	119	100	26.35	n.a.	n.a.	n.a.	n.a.
17	Jehanabad M	52	57	88	8.00	7.00	88	9,351	11,225
18	Madhubani M	54	65	77	19.00	19.00	77	n.a.	n.a.
19	Mokama M	60	66	n.a.	14.18	n.a.	n.a.	n.a.	36,000
Gujarat									
20	Amreli M	68	85	100	11.44	13.59	100	n.a.	n.a.
21	Ankleswar M	52	60	100	11.05	11.05	100	15,000	16,000
22	Dabhoi M	51	65	100	23.82	23.82	100	8,000	10,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
23	Dohad M	67	78	100	6.54	7.00	100	3,000	7,000
24	Gondal M	81	100	100	7.29	11.00	100	15,000	20,000
25	Jetpur M	74	125	100	10.36	36.00	100	12,000	20,000
26	Mahesana M	88	138	100	12.87	12.87	100	18,000	24,000
27	Palanpur M	81	117	100	14.92	23.48	100	20,000	30,000
Haryana									
28	Jind MCI	85	114	70	15.30	15.00	70	22,550	26,160
29	Kaithal MCI	71	95	81	7.90	n.a.	n.a.	7,874	26,286
30	Rewari MCI	75	105	100	18.43	n.a.	n.a.	29,600	34,236
31	Thanesar MCI	81	100	72	32.25	32.25	72	23,746	38,687
Karnataka									
32	Bagalkot CMC	77	100	85	33.59	42.00	85	15,360	23,500
33	Chikmagalur CMC	61	100	100	9.32	n.a.	n.a.	8,000	12,000
34	Gokak CMC	52	68	100	7.22	n.a.	n.a.	10,000	13,500
35	Hospet CMC	96	114	100	7.66	n.a.	n.a.	30,000	32,000
36	Kolar CMC	83	112	100	7.91	n.a.	n.a.	16,643	22,000
37	Rabkavi-Banhatti CMC	61	72	100	3.62	n.a.	n.a.	5,700	7,099
38	Ramanagaram CMC	50	70	100	4.96	n.a.	n.a.	8,000	20,000
Kerala									
39	Changanessary MC	52	62	100	13.50	13.50	100	15,000	25,000
40	Payyanur M	64	71	100	54.63	54.63	100	1,000	1,100
41	Taliparamba M	60	52	100	43.08	18.21	100	0	0
42	Thrissur MC	75	91	100	12.65	16.65	100	17,900	21,000
Madhya Pradesh									
43	Hoshangabad M	71	100	100	24.27	24.27	100	n.a.	n.a.
44	Itarsi M	77	105	100	14.07	14.07	100	n.a.	n.a.

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
45	Khargone M	67	80	100	10.00	10.00	100	30,000	35,000
46	Mandsaur M	96	123	100	10.32	10.32	100	n.a.	10,000
47	Nagda M	80	100	80	23.83	18.00	100	17,000	18,685
48	Neemuch M	86	100	100	13.42	13.42	100	40,465	44,962
49	Sehore M	71	100	100	16.42	18.00	100	11,434	n.a.
50	Shahdol M	56	75	100	19.92	19.92	100	12,000	15,000
51	Vidisha M	93	125	100	5.83	5.83	100	23,229	26,423
Maharashtra									
52	Amalner MCI	76	100	100	9.71	9.71	100	18,000	24,000
53	Ballarpur MCI	84	109	100	16.51	n.a.	n.a.	n.a.	n.a.
54	Bhandara M	72	76	100	16.84	16.84	100	28,970	37,661
55	Kamptee MCI	79	95	100	4.27	4.27	100	n.a.	n.a.
56	Manmad MCI	61	87	100	28.70	28.70	100	n.a.	n.a.
57	Ratnagiri MCI	57	70	100	10.49	10.19	100	9,065	11,594
58	Satara MCI	95	100	100	7.69	8.16	100	21,620	25,000
59	Virar MCI	58	100	100	19.52	19.52	100	11,520	20,000
Punjab									
60	Ferozepur MCI	79	93	80	11.33	9.00	80	11,300	15,400
61	Kapurthala M	65	85	63	56.00	56.00	63	8,400	8,400
62	Mansa MCI	55	67	100	20.00	23.47	100	10,427	11,265
63	Phagwara MCI	83	108	80	16.00	12.80	80	10,424	8,610
64	Sangrur MCI	56	70	75	13.90	18.00	75	10,950	20,500
Rajasthan									
65	Banswara M	67	110	100	16.01	16.01	100	n.a.	n.a.
66	Barmer M	69	84	100	10.29	10.29	100	13,000	16,000
67	Bundi M	65	80	100	22.76	30.00	100	15,000	18,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
68	Churu M	82	100	100	28.00	35.00	100	6,000	7,260
69	Hanumangarh M	79	125	100	13.42	13.42	100	4,000	5,000
70	Sawai Madhopur M	72	89	100	59.00	59.00	100	12,433	15,000
Tamil Nadu									
71	Ambur M	76	86	100	18.05	18.05	100	22,900	23,500
72	Arakkonam M	72	88	100	9.06	9.06	100	14,000	15,000
73	Attur M	56	64	100	27.62	27.62	100	7,125	9,000
74	Cumbum M	52	54	100	6.48	6.58	100	10,656	10,656
75	Dharmapuri M	59	67	100	11.65	11.65	100	26,809	30,000
76	Gudiyatham M	83	95	100	4.71	4.71	100	16,425	18,000
77	Nagapattinam M	86	112	100	14.80	14.80	100	12,557	16,160
78	Pudukkottai M	99	108	100	12.95	12.95	100	34,673	38,000
79	Sivakasi M	66	70	100	6.89	6.89	100	4,720	5,000
80	Srivilliputtur M	69	74	100	5.72	5.72	100	12,800	13,000
81	Tindivanam M	62	70	100	22.37	22.37	100	26,109	29,700
82	Udhagamandalam M	82	100	100	30.67	30.67	100	n.a.	13,620
Uttar Pradesh									
83	Auraiya MB	51	90	100	4.24	9.00	100	n.a.	n.a.
84	Balrampur MB	60	70	86	14.25	n.a.	n.a.	9,500	12,500
85	Basti MB	87	110	91	19.43	19.43	91	n.a.	n.a.
86	Bhadohi MB	64	125	40	10.36	n.a.	n.a.	10,300	15,180
87	Chandpur MB	56	80	50	1.53	n.a.	n.a.	15,000	30,000
88	Etah MB	78	135	65	5.18	n.a.	n.a.	10,000	25,000
89	Ghazipur MB	77	96	70	13.73	9.45	70	30,627	35,527
90	Gonda MB	96	114	100	12.67	12.67	100	10,000	12,000
91	Lakhimpur MB	80	100	100	6.99	9.00	100	11,900	15,000

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
	1	2	3	4	5	6	7	8	9
92	Lalitpur MB	80	100	90	17.35	10.84	100	30,000	40,500
93	Mughalsarai MB	67	160	75	3.89	n.a.	n.a.	14,648	38,353
94	Nawabganj-Barabanki MB	65	90	100	3.63	n.a.	n.a.	n.a.	n.a.
95	Orai MB	99	170	75	20.29	15.00	100	20,000	35,000
96	Roorkee MB	80	100	85	n.a.	n.a.	n.a.	n.a.	n.a.
West Bengal									
97	Bishnupur M	56	67	100	22.02	22.02	100	14,250	19,380
98	Chakdaha M	75	90	50	15.54	7.68	100	n.a.	40,090
99	Contai M	53	114	66	14.25	9.50	100	25,947	40,200
100	Cooch Behar M	71	99	100	8.29	8.29	100	24,000	25,000
101	Darjeeling M	73	93	100	10.57	10.57	100	n.a.	31,534
102	Jalpaiguri M	69	101	100	10.08	12.98	100	n.a.	30,350
103	Jangipur M	56	78	87	7.77	8.20	100	n.a.	35,186
104	Katwa M	56	68	100	8.53	8.53	100	22,214	27,065
105	Raniganj M	62	121	63	4.79	n.a.	n.a.	36,000	45,000
Small States									
Himachal Pradesh									
106	Shimla M.Corp.	82	111	100	19.55	28.53	100	0	0
Nagaland									
107	Kohima TC	51	103	100	23.00	36.00	100	21,000	37,500
Union Territories									
108	Port Blair MCI	75	105	100	14.14	16.64	100	n.a.	9,800

Sl. No	City/Town	Population ('000)		% Population covered by service 1999	Area (Sq.km.)		% area covered by service 1999	Slum population ('000)	
		1991 (Census)	1999 (Estimated)*		1991 (Census)	1999 (Estimated)*		1991 (Estimated)*	1999 (Estimated)*
1		2	3	4	5	6	7	8	9
Others (Smaller than Class II towns)									
Small States									
Goa									
109	Panaji MCI	43	57	100	22.63	22.63	100	2,000	2,000
Sikkim									
110	Gangtok (Greater Gangtok) NTAC	25	106	75	7.25	7.25	75	n.a.	18,000
Union Territories									
111	Daman MCI	27	35	100	5.60	5.60	100	2,700	3,500
112	Silvassa CT	12	20	100	6.65	6.65	100	3,000	5,000
* Estimated by respective local governments/relevant agencies									
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.									

C-2

**SOLID WASTE GENERATION AND
COLLECTION, 1999**

C-2 : Solid Waste Generation and Collection, 1999

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
Metropolitan Cities										
1	Ahmedabad M.Corp.	364	1273	703	570	1273	100	once daily	Yes	Incineration
2	Bangalore M.Corp.	500	2500	1500	1000	2200	88	once daily	Yes	Incineration
3	Bhopal M.Corp.	320	480	384	96	360	75	once daily	Yes	n.a.
4	Calcutta M.Corp.	513	2500	1375	1125	2100	84	once daily	Yes	n.a.
5	Chennai M.Corp.	573	2500	1700	800	2500	100	once daily	Yes	None
6	Coimbatore M.Corp.	690	670	n.a.	n.a.	670	100	once daily	Yes	Incineration
7	Delhi M.Corp.	500	6000	4800	1200	5500	92	once daily	Yes	Incineration
8	Greater Mumbai M.Corp.	541	6000	3600	2400	6000	100	once daily	Yes	Incineration
9	Hyderabad M.Corp.	504	2100	n.a.	n.a.	1900	90	once daily	Yes	Incineration
10	Indore M.Corp.	375	600	240	360	600	100	twice daily	Yes	Incineration
11	Jaipur M.Corp.	742	1483	n.a.	n.a.	1483	100	once daily	Yes	Incineration
12	Kanpur M.Corp.	520	1300	910	390	1100	85	once daily	No	n.app.
13	Kochi M.Corp.	368	250	n.a.	n.a.	240	96	once daily	No	n.app.
14	Lucknow M.Corp.	500	1250	800	450	875	70	once daily	No	n.app.
15	Ludhiana M.Corp.	600	1200	800	400	875	73	n.a.	No	n.app.
16	Madurai M.Corp.	471	480	335	145	450	94	once daily	Yes	Incineration
17	Nagpur M.Corp.	286	600	400	200	500	83	once daily	Yes	Incineration
18	Pune M.Corp.	522	1200	900	300	900	75	once daily	No	Incineration
19	Surat M.Corp.	414	1035	466	569	960	93	twice daily	Yes	None
20	Vadodara M.Corp.	400	560	n.a.	n.a.	440	79	twice daily	Yes	Incineration
21	Varanasi M.Corp.	500	576	432	144	461	80	twice daily	No	n.app.
22	Visakhapatnam M.Corp.	469	600	300	300	600	100	once daily	Yes	None
Total-Metropolitan Cities		500	35157	19645	10449	31987	91			

* Estimated by respective local governments/relevant agencies
 Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
CLASS I										
Andhra Pradesh										
1	Anantapur MCI	440	110	60	50	110	100	once daily	No	n.app.
2	Chittoor M	502	75	54	21	70	100	once daily	No	n.app.
3	Cuddapah MCI	506	84	39	45	84	100	once daily	No	n.app.
4	Eluru M	591	146	90	56	146	100	n.a.	No	n.app.
5	Guntur MCI	449	250	190	60	250	100	once daily	No	n.app.
6	Hindupur M	500	70	n.a.	n.a.	70	100	once daily	No	n.app.
7	Kakinada M	492	160	90	70	145	91	twice daily	No	n.app.
8	Kurnool MCI	355	100	56	44	90	90	once daily	No	n.app.
9	Machilipatnam M	350	70	28	42	50	71	once daily	No	n.app.
10	Nandyal MCI	400	60	36	24	60	100	once daily	Yes	n.a.
11	Nellore MCI	413	167	120	47	167	100	once daily	No	n.app.
12	Nizamabad M	498	142	85	57	88	62	twice daily	No	n.app.
13	Ongole MCI	500	90	57	33	90	100	once daily	Yes	n.a.
14	Qutubullapur M	280	70	60	10	70	100	once daily	No	n.app.
15	Rajahmundry M.Corp.	508	193	31	162	193	100	twice daily	No	n.app.
16	Tenali M	529	90	11	79	80	89	twice daily	No	n.app.
17	Tirupati MCI	619	130	85	45	130	100	once daily	No	n.app.
18	Vijaywada M.Corp.	568	475	250	225	465	98	twice daily	Yes	Incineration
19	Warangal M.Corp.	412	280	140	140	230	82	once daily	No	n.app.
Bihar										
20	Bihar Sharif M	200	50	22	29	50	100	once daily	No	n.app.
21	Chhapra M	480	96	n.a.	n.a.	66	69	twice daily	Yes	Incineration
22	Gaya M.Corp.	200	80	60	20	80	100	twice daily	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
23	Katihar M	400	80	n.a.	n.a.	45	56	once daily	No	n.app.
24	Munger M	333	70	n.a.	n.a.	50	71	twice daily	No	n.app.
25	Ranchi M.Corp.	146	102	n.a.	n.a.	34	33	once daily	No	n.app.
Gujarat										
26	Anand M	57	10	4.0	6	10	100	twice daily	No	n.app.
27	Bharuch M	535	85	44	41	85	100	once daily	No	n.app.
28	Bhavnagar M.Corp.	300	165	95	70	115	70	n.a.	No	n.app.
29	Bhuj M	339	40	28	12	40	100	once daily	No	n.app.
30	Jamnagar M.Corp.	600	300	150	150	300	100	once daily	No	n.app.
31	Junagadh M	515	85	45	40	75	88	twice daily	No	n.app.
32	Nadiad M	200	60	30	30	60	100	twice daily	No	n.app.
33	Navsari M	288	40	30	10	31	78	twice daily	No	n.app.
34	Porbandar M	204	29	n.a.	n.a.	22	76	once daily	No	n.app.
35	Rajkot M.Corp.	450	450	450	n.a.	425	94	once daily	Yes	None
36	Surendranagar M	207	31	n.a.	n.a.	31	100	once daily	No	n.app.
Haryana										
37	Ambala MCI	248	35	25	10	30	86	once daily	No	n.app.
38	Faridabad M.Corp.	478	550	492	58	480	87	once daily	No	n.app.
39	Gurgaon MCI	514	90	70	20	80	89	twice daily	No	n.app.
40	Hissar MCI	200	50	32	18	32	64	once daily	No	n.app.
41	Karnal MCI	341	75	50	25	52	69	twice daily	No	n.app.
42	Rohtak MCI	210	51	30	21	28	55	once daily	No	n.app.
Jammu & Kashmir										
43	Jammu M.Corp.	468	425	n.a.	n.a.	300	71	twice daily	No	n.app.
44	Srinagar M.Corp.	375	300	200	100	200	67	once daily	Yes	Incineration

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
Karnataka										
45	Belgaum M.Corp.	266	125	75	50	100	80	once daily	No	n.app.
46	Bellary CMC	202	60	36	24	50	83	once daily	No	n.app.
47	Davangere MCI	198	90	36	54	78	87	twice daily	No	n.app.
48	Gadag-Betigeri CMC	506	75	20	55	60	80	twice daily	No	n.app.
49	Gulbarga M.Corp.	200	90	60	30	76	84	once daily	Yes	n.a.
50	Hubli-Dharwad M.Corp.	376	320	100	220	220	69	once daily	No	n.app.
51	Mandya M	179	25	18	7.0	25	100	twice daily	No	n.app.
52	Mangalore M.Corp.	190	78	46	32	70	90	twice daily	No	n.app.
53	Mysore M.Corp.	195	205	138	67	205	100	twice daily	No	n.app.
54	Shimoga CMC	361	80	35	45	72	89	once daily	No	n.app.
55	Tumkur M	290	87	26	61	84	97	once daily	No	n.app.
Kerala										
56	Alappuzha MC	125	25	19	6.3	20	80	once daily	Yes	Incineration
57	Kollam MC	375	60	19	41	58	97	twice daily	Yes	Incineration
58	Kozhikode M.Corp.	446	220	145	75	154	70	twice daily	Yes	Incineration
59	Thalaserry M	299	40	20	20	30	75	once daily	No	n.app.
60	Thiruvananthapuram M.Corp.	513	300	n.a.	n.a.	250	83	once daily	Yes	Incineration
Madhya Pradesh										
61	Bhind M	160	28	21	7.3	24	86	twice daily	No	n.app.
62	Burhanpur M.Corp.	286	60	n.a.	n.a.	60	100	twice daily	No	n.app.
63	Dewas M.Corp.	250	50	n.a.	n.a.	40	80	once daily	Yes	Incineration
64	Guna M	144	18	12	6.0	18	100	twice daily	No	n.app.
65	Gwalior M.Corp.	400	360	n.a.	n.a.	280	78	once daily	No	n.app.
66	Jabalpur M.Corp.	300	300	145	155	298	99	once daily	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
67	Khandwa M	114	20	18	2.0	20	100	once daily	No	n.app.
68	Morena M	400	50	28	22	44	88	twice daily	No	n.app.
69	Murwara-Katni M.Corp.	350	63	33	30	63	100	twice daily	No	n.app.
70	Ratlam M.Corp.	213	50	n.a.	n.a.	35	70	once daily	Yes	n.a.
71	Rewa M.Corp.	267	48	48	n.app.	40	83	twice daily	No	n.app.
72	Satna M.Corp.	250	50	n.a.	n.a.	50	100	twice daily	No	n.app.
73	Shivpuri M	129	18	10	8.0	18	100	twice daily	No	n.app.
Maharashtra										
74	Amravati M.Corp.	200	100	n.a.	n.a.	100	100	once daily	No	n.app.
75	Aurangabad M.Corp.	392	340	170	170	340	100	thrice daily	No	n.app.
76	Bhusawal M.CI.	150	30	30	n.a.	30	100	once daily	No	n.app.
77	Chandrapur MCI	502	148	15	133	110	74	once daily	No	n.app.
78	Dhule MCI	106	35	n.a.	n.a.	30	86	once daily	No	n.app.
79	Ichalkaranji MCI	660	165	132	33	150	91	once daily	No	n.app.
80	Jalgaon MCI	550	220	100	120	220	100	once daily	No	n.app.
81	Kolhapur M.Corp.	309	155	n.a.	n.a.	115	74	once daily	No	n.app.
82	Nanded Waghala M.Corp.	312	128	110	18	90	70	twice daily	No	n.app.
83	Nashik M.Corp.	334	280	251	29	280	100	weekly	No	n.app.
84	Parbhani MCI	309	72	n.a.	n.a.	72	100	thrice daily	No	n.app.
85	Solapur M.Corp.	450	405	243	162	353	87	twice daily	No	n.app.
86	Wardha M	267	40	20	20	40	100	alternate day	No	n.app.
87	Yavatmal MCI	77	10	4.5	5.5	10	100	twice daily	No	n.app.
Orissa										
88	Bhubaneswar M.Corp.	535	350	n.a.	n.a.	175	50	once daily	No	n.app.
89	Cuttack M.Corp.	568	320	219	101	320	100	once daily	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
90	Puri M	401	60	33	27	53	88	once daily	No	n.app.
91	Rourkela M	300	60	28	32	40	67	once daily	No	n.app.
92	Sambalpur M	465	73	n.a.	n.a.	32	44	once daily	No	n.app.
Punjab										
93	Amritsar M.Corp.	711	600	375	225	510	85	once daily	No	n.app.
94	Bathinda MCI	603	105	60	45	95	90	once daily	No	n.app.
95	Hoshiarpur MCI	228	33	26	6.6	33	100	once daily	No	n.app.
96	Jalandhar M. Corp.	339	250	185	65	236	94	once daily	No	n.app.
97	Moga MCI	243	36	25	11	36	100	once daily	No	n.app.
98	Pathankot MCI	128	25	20	5.3	23	92	once daily	No	n.app.
99	Patiala M.Corp.	244	80	50	30	80	100	once daily	No	n.app.
Rajasthan										
100	Ajmer MCI	545	300	250	50	250	83	twice daily	No	n.app.
101	Alwar M	333	100	n.a.	n.a.	100	100	once daily	No	n.app.
102	Beawar M	298	42	n.a.	n.a.	42	100	twice daily	No	n.app.
103	Bhilwara M	324	73	29	44	58	79	twice daily	Yes	n.a.
104	Bikaner M	300	180	126	54	180	100	twice daily	No	n.app.
105	Jodhpur M.Corp.	308	308	240	69	308	100	twice daily	Yes	Incineration
106	Kota M.Corp.	280	210	n.a.	n.a.	120	57	once daily	No	n.app.
107	Sriganganagar M	116	26	26	0.1	24	92	twice daily	No	n.app.
Tamil Nadu										
108	Cuddalore M	401	65	45	20	60	92	once daily	Yes	Incineration
109	Dindigul M	178	38	17	21	17	43	once daily	Yes	Incineration
110	Erode M	518	90	30	60	85	94	once daily	No	n.app.
111	Kanchipuram M	210	33	26	7.0	19	58	twice daily	Yes	None

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
112	Kumbakonam M	306	45	15	30	40	89	twice daily	Yes	Incineration
113	Nagercoil M	170	35	28	7.0	30	86	once daily	Yes	Incineration
114	Rajapalayam M	359	44	26	18	43	97	once daily	No	n.app.
115	Salem M.Corp.	559	250	160	90	214	86	once daily	Yes	Incineration
116	Thanjavur M	198	43	24	19	35	81	once daily	Yes	Incineration
117	Tiruchirapalli M.Corp.	375	300	255	45	280	93	twice daily	Yes	None
118	Tirunelveli M.Corp.	242	100	60	40	87	87	once daily	No	n.app.
119	Tirunvannamalai M	300	39	24	15	32	83	once daily	No	n.app.
120	Tiruppur M	339	100	51	49	100	100	n.a.	No	n.app.
121	Tuticorin M	115	25	10	15	25	100	once daily	No	n.app.
122	Vellore M	227	40	n.a.	n.a.	35	88	once daily	No	n.app.
Uttar Pradesh										
123	Agra M.Corp.	500	575	230	345	430	75	once daily	No	n.app.
124	Aligarh M.Corp.	600	360	180	180	275	76	twice daily	No	n.app.
125	Allahabad M.Corp.	300	305	204	101	250	82	twice daily	No	n.app.
126	Bareilly M.Corp.	533	400	152	248	320	80	twice daily	No	n.app.
127	Etawah MB	193	27	24	3.0	27	100	twice daily	No	n.app.
128	Faizabad MB	400	68	45	23	54	79	twice daily	No	n.app.
129	Firozabad MB	640	160	128	32	144	90	twice daily	No	n.app.
130	Ghaziabad M.Corp.	338	300	n.a.	n.a.	300	100	twice daily	No	n.app.
131	Gorakhpur M.Corp.	500	300	225	75	240	80	twice daily	No	n.app.
132	Haldwani-cum-Kathgodam MB	569	80	30	50	80	100	twice daily	No	n.app.
133	Hapur MB	575	115	n.a.	n.a.	70	61	twice daily	No	n.app.
134	Hardwar MB	683	205	n.a.	n.a.	182	89	twice daily	No	n.app.
135	Jhansi MB	355	180	100	80	135	75	twice daily	No	n.app.

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
136	Mathura MB	425	170	n.a.	n.a.	150	88	once daily	Yes	Incineration
137	Meerut M.Corp.	500	625	n.a.	n.a.	500	80	twice daily	No	n.app.
138	Mirzapur MB	500	105	75	30	86	81	twice daily	No	n.app.
139	Moradabad M.Corp.	448	300	200	100	300	100	thrice daily	No	n.app.
140	Muzaffarnagar MB	498	162	100	62	130	80	twice daily	No	n.app.
141	Rae Bareli MB	500	88	53	35	66	75	twice daily	No	n.app.
142	Rampur MB	505	160	n.a.	n.a.	120	75	twice daily	No	n.app.
143	Saharanpur MB	500	270	130	140	200	74	twice daily	No	n.app.
144	Sitapur MB	500	75	n.a.	n.a.	70	93	once daily	No	n.app.
145	Unnao MB	99	12	n.a.	n.a.	8	67	once daily	No	n.app.
West Bengal										
146	Asansol M.Corp.	248	78	52	26	60	77	once daily	No	n.app.
147	Baharampur M	566	81	59	22	81	100	once daily	No	n.app.
148	Balurghat M	250	33	18	15	33	100	once daily	No	n.app.
149	Bankura M	183	28	10	18	26	94	once daily	Yes	None
150	Barasat M	353	53	45	8.0	24	45	thrice daily	No	n.app.
151	Burdwan M	310	100	55	45	75	75	twice daily	No	n.app.
152	Halisahar M	134	20	8.0	12	17	85	once daily	n.a.	n.a.
153	Krishna Nagar M	342	50	25	25	38	76	once daily	No	n.app.
154	Midnapur M	400	63	33	30	53	84	twice daily	No	n.app.
155	North Barrackpur M	338	40	30	10	40	100	once daily	No	n.app.
156	Santipur M	250	33	20	13	33	100	twice weekly	No	n.app.
157	Siliguri M.Corp.	480	240	202	38	150	63	once daily	No	n.app.

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
Small States										
Assam										
158	Guwahati M.Corp.	214	300	180	120	240	80	once daily	Yes	Incineration
159	Jorhat MB	118	20	11	9.0	14	70	once daily	n.a.	n.a.
Manipur										
160	Imphal MCI	249	61	20	41	38	62	once daily	Yes	None
Meghalaya										
161	Shillong MB	360	78	51	27	78	100	once daily	No	n.app.
Tripura										
162	Agartala MCI	400	80	47	33	60	75	twice daily	Yes	n.a.
Union Territories										
163	Chandigarh M.Corp.	382	325	n.a.	n.a.	280	86	once daily	No	n.app.
164	Pondicherry M	517	150	112	38	120	80	twice daily	Yes	Incineration
* Estimated by respective local governments/relevant agencies										
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.										

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
CLASS II										
Andhra Pradesh										
1	Anakapalle M	565	65	50	15	55	85	twice daily	No	n.app.
2	Dharmavaram M	100	10	4.0	6.0	9	90	once daily	No	n.app.
3	Gudur MCI	417	30	6.0	24	18	60	twice daily	No	n.app.
4	Kapra M	400	48	29	19	48	100	once daily	No	n.app.
5	Kavali MCI	424	36	23	13	24	67	once daily	No	n.app.
6	Madanapalle M	250	25	15	10	20	80	twice daily	No	n.app.
7	Narasaraopet M	474	45	15	30	42	93	once daily	No	n.app.
8	Rajendra Nagar MCI	100	12	6.0	6.0	12	100	once daily	Yes	None
9	Sangareddy MCI	300	18	5.4	13	18	100	once daily	No	n.app.
10	Srikakulam MCI	400	40	28	12	25	63	once daily	No	n.app.
11	Srikalahasti M	500	35	n.a.	n.a.	30	86	once daily	No	n.app.
12	Suryapet MCI	506	45	17	28	40	89	once daily	No	n.app.
Bihar										
13	Buxar M	180	12	n.a.	n.a.	12	100	once daily	No	n.app.
14	Deoghar M	250	25	n.a.	n.a.	10	40	once daily	No	n.app.
15	Hajipur M	497	57	n.a.	n.a.	24	42	once daily	No	n.app.
16	Hazaribagh M	504	60	42	18	36	60	once daily	No	n.app.
17	Jehanabad M	175	10	9.5	0.5	10	100	once daily	No	n.app.
18	Madhubani M	338	22	n.a.	n.a.	15	68	twice daily	No	n.app.
19	Mokama M	606	40	30	10	4	10	once daily	No	n.app.
Gujarat										
20	Amreli M	353	30	n.a.	n.a.	30	100	twice daily	No	n.app.
21	Ankleswar M	100	6	n.a.	n.a.	6	100	once daily	Yes	None

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
22	Dabhoi M	277	18	n.a.	n.a.	18	100	once daily	No	n.app.
23	Dohad M	51	4	2.5	1.5	4	100	twice daily	No	n.app.
24	Gondal M	100	10	8.0	2.0	10	100	once daily	No	n.app.
25	Jetpur M	400	50	25	25	40	80	once daily	No	n.app.
26	Mahesana M	58	8	n.a.	n.a.	8	100	twice daily	Yes	None
27	Palanpur M	598	70	n.a.	n.a.	40	57	twice weekly	No	n.app.
Haryana										
28	Jind MCI	211	24	19	5.0	18	75	once daily	No	n.app.
29	Kaithal MCI	159	15	11	4.0	12	80	once daily	No	n.app.
30	Rewari MCI	152	16	16	0	16	100	twice daily	No	n.app.
31	Thanesar MCI	305	31	25	5.5	24	80	once daily	No	n.app.
Karnataka										
32	Bagalkot CMC	150	15	9.0	6.0	13	87	twice daily	No	n.app.
33	Chikmagalur CMC	200	20	9.0	11	18	90	once daily	No	n.app.
34	Gokak CMC	132	9	4.0	5.0	7	78	twice daily	Yes	None
35	Hospet CMC	350	40	17	23	31	78	alternate day	No	n.app.
36	Kolar CMC	223	25	12	13	15	60	alternate day	No	n.app.
37	Rabkavi-Banhatti CMC	250	18	13	4.7	12	67	once daily	No	n.app.
38	Ramanagaram CMC	357	25	17	8.0	10	40	alternate day	No	n.app.
Kerala										
39	Changanessary MC	242	15	7.5	7.5	12	80	once daily	No	n.app.
40	Payyanur M	142	10	6.0	4.0	4	40	once daily	No	n.app.
41	Taliparamba M	200	10	7.0	3.4	3	29	once daily	No	n.app.
42	Thrissur MC	440	40	24	16	35	88	once daily	Yes	Incineration
Madhya Pradesh										
43	Hoshangabad M	150	15	14	1.0	15	100	twice daily	No	n.app.

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		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
44	Itarsi M	143	15	12	3.0	15	100	once daily	No	n.app.
45	Khargone M	75	6	n.a.	n.a.	6	100	twice daily	No	n.app.
46	Mandsaur M	325	40	30	10	26	65	twice daily	No	n.app.
47	Nagda M	200	20	n.a.	n.a.	10	50	twice daily	No	n.app.
48	Neemuch M	80	8	5.0	3.0	8	100	twice daily	No	n.app.
49	Sehore M	300	30	n.a.	n.a.	30	100	once daily	No	n.app.
50	Shahdol M	150	11	5.3	6.0	9	80	once daily	No	n.app.
51	Vidisha M	100	13	9.0	3.5	10	80	twice daily	No	n.app.
Maharashtra										
52	Amalner MCI	60	6	n.a.	n.a.	6	100	once daily	No	n.app.
53	Ballarpur MCI	165	18	10	8.0	18	100	once daily	Yes	Incineration
54	Bhandara M	158	12	n.a.	n.a.	12	100	twice daily	No	n.app.
55	Kamptee MCI	584	55	35	20	40	72	once daily	No	n.app.
56	Manmad MCI	98	8.5	5.4	3.1	5.4	64	twice daily	No	n.app.
57	Ratnagiri MCI	429	30	22	8.0	22	73	once daily	No	n.app.
58	Satara MCI	300	30	n.a.	n.a.	17	55	once daily	No	n.app.
59	Virar MCI	500	50	40	10	50	100	twice daily	No	n.app.
Punjab										
60	Ferozepur MCI	543	50	38	12	40	80	twice daily	No	n.app.
61	Kapurthala M	118	10	8.0	2.0	10	100	twice daily	No	n.app.
62	Mansa MCI	406	27	27	0	27	100	once daily	No	n.app.
63	Phagwara MCI	148	16	13	3.0	14	88	twice daily	No	n.app.
64	Sangrur MCI	285	20	15	5.0	15	75	twice daily	No	n.app.
Rajasthan										
65	Banswara M	227	25	n.a.	n.a.	25	100	twice daily	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
66	Barmer M	298	25	23	2.0	18	72	twice daily	No	n.app.
67	Bundi M	375	30	24	6.0	24	80	once daily	No	n.app.
68	Churu M	343	34	25	9.2	30	87	twice daily	No	n.app.
69	Hanumangarh M	344	43	39	4.0	43	100	once daily	No	n.app.
70	Sawai Madhopur M	45	4	3.0	1.0	4	100	once daily	Yes	n.a.
Tamil Nadu										
71	Ambur M	187	16	8.0	8.0	13	81	once daily	Yes	n.a.
72	Arakkonam M	205	18	n.a.	n.a.	11	61	once daily	No	n.app.
73	Attur M	203	13	8.0	5.0	10	77	once daily	No	n.app.
74	Cumbum M	76	4	n.a.	n.a.	4	100	once daily	No	n.app.
75	Dharmapuri M	250	17	10	6.7	11	66	twice daily	Yes	Incineration
76	Gudiyatham M	179	17	8.5	8.5	16	94	once daily	No	n.app.
77	Nagapattinam M	267	30	n.a.	n.a.	25	83	once daily	Yes	Incineration
78	Pudukkottai M	204	22	n.a.	n.a.	20	91	once daily	Yes	None
79	Sivakasi M	100	7	4.0	3.0	5	71	once daily	No	n.app.
80	Srivilliputtur M	298	22	13	9.0	20	91	once daily	No	n.app.
81	Tindivanam M	214	15	n.a.	n.a.	12	80	once daily	Yes	None
82	Udhagamandalam M	74	7.4	2.3	5.1	7.4	100	once daily	No	n.app.
Uttar Pradesh										
83	Auraiya MB	244	22	19	3.3	21	95	twice daily	No	n.app.
84	Balrampur MB	371	26	n.a.	n.a.	20	77	once daily	No	n.app.
85	Basti MB	364	40	n.a.	n.a.	35	88	once daily	No	n.app.
86	Bhadohi MB	600	75	30	45	40	53	twice daily	No	n.app.
87	Chandpur MB	61	4.9	4.8	0.1	4.9	100	twice daily	No	n.app.
88	Etah MB	450	61	43	18	40	66	twice daily	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
89	Ghazipur MB	403	39	29	10	27	70	twice daily	Yes	n.a.
90	Gonda MB	298	34	n.a.	n.a.	25	74	twice daily	No	n.app.
91	Lakhimpur MB	450	45	n.a.	n.a.	35	78	twice daily	No	n.app.
92	Lalitpur MB	550	55	50	5.0	55	100	twice daily	Yes	n.a.
93	Mughalsarai MB	400	64	39	26	48	75	twice daily	No	n.app.
94	Nawabganj-Barabanki MB	111	10	n.a.	n.a.	6	62	once daily	No	n.app.
95	Orai MB	450	77	55	22	29	38	twice daily	No	n.app.
96	Roorkee MB	300	30	18	12	27	90	twice daily	No	n.app.
West Bengal										
97	Bishnupur M	199	13	11	2.7	13	100	once daily	No	n.app.
98	Chakdaha M	300	27	20	6.7	7	28	twice weekly	No	n.app.
99	Contai M	250	29	22	6.4	9	31	twice daily	Yes	None
100	Cooch Behar M	214	21	10	11	21	100	twice daily	Yes	None
101	Darjeeling M	538	50	15	35	30	60	once daily	No	n.app.
102	Jalpaiguri M	247	25	20	5.3	21	82	once daily	Yes	None
103	Jangipur M	422	33	11	23	18	55	once daily	No	n.app.
104	Katwa M	547	37	14	23	36	97	once daily	Yes	None
105	Raniganj M	446	54	36	18	41	76	once daily	Yes	None
Small States										
Himachal Pradesh										
106	Shimla M.Corp.	396	44	19	25	35	80	once daily	No	n.app.
Nagaland										
107	Kohima TC	219	23	n.a.	n.a.	23	100	n.a.	No	n.app.

Sl. No.	City/Town	Solid waste generated		Solid Waste by source (MT/day)		Waste collected (MT/day)	% waste collected to generated	Frequency of solid waste collection	Medical waste collected and disposed	
		gms pc/day	MT/day*	Domestic	Non-domestic				Separately (Yes/No.)	Treatment provided
1		2	3	4	5	6	7	8	9	10
Union Territories										
108	Port Blair MCI	476	50	45	5.0	44	88	once daily	Yes	Incineration
Others (Smaller than Class II towns)										
Small States										
Goa										
109	Panaji MCI	385	22	9.0	13	11	51	twice daily	Yes	Incineration
Sikkim										
110	Gangtok (Greater Gangtok) NTAC	660	70	30	40	35	50	once daily	No	n.app.
Union Territories										
111	Daman MCI	314	11	n.a.	n.a.	11	100	twice daily	No	n.app.
112	Silvassa CT	200	4	3.5	0.5	4	100	once daily	No	n.app.
Total-Class II Towns		297	3079	1520	869	2314	75			
Grand Total		433	60823	32003	18130	53505	88			
* Estimated by respective local governments /relevant agencies										
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.										

C-3

TRANSPORTATION OF SOLID WASTE, 1999

C-3 : Transportation of Solid Waste, 1999

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motor ized	Motorized	Non-mototized			Yes / No	Place
1		2	3	4	5	6	7	8	9
Metropolitan Cities									
1	Ahmedabad M.Corp.	92	-	1-5	-	867	10	Y	-
2	Bangalore M.Corp.	316	-	1-2	-	2200	15	Y	-
3	Bhopal M.Corp.	51	-	2	-	360	15	Y	-
4	Calcutta M.Corp.	225	-	2-3	-	2100	5	Y	-
5	Chennai M.Corp.	425	-	2-4	-	2500	5	Y	-
6	Coimbatore M.Corp.	68	-	3	-	563	15	N	n.a.
7	Delhi M.Corp.	560	-	3	-	5500	20	Y	-
8	Greater Mumbai M.Corp.	1173	-	1-2	-	6000	15	Y	-
9	Hyderabad M.Corp.	175	-	2-4	-	1885	5	Y	-
10	Indore M.Corp.	n.a.	-	n.a.	-	600	5	Y	-
11	Jaipur M.Corp.	64	-	3	-	1483	10	Y	-
12	Kanpur M.Corp.	103	-	4-5	-	1100	30	Y	-
13	Kochi M.Corp.	43	-	2	-	240	n.a.	N	Private workshop
14	Lucknow M.Corp.	47	-	4-8	-	875	20	Y	-
15	Ludhiana M.Corp.	66	-	2-15	-	875	n.a.	n.a.	n.a.
16	Madurai M.Corp.	64	-	3	-	450	10	N	Private workshop
17	Nagpur M.Corp.	74	-	2-5	-	500	10	Y	-
18	Pune M.Corp.	123	-	2-5	-	900	n.a.	Y	-
19	Surat M.Corp.	124	-	2-4	-	960	20	Y	-
20	Vadodara M.Corp.	47	-	2-7	-	440	10	Y	-
21	Varanasi M.Corp.	40	-	2-5	-	456	5	Y	-
22	Visakhapatnam M.Corp.	91	-	2	-	600	20	Y	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
CLASS I									
Andhra Pradesh									
1	Anantapur MCI	7	-	4	-	108	10	N	Private workshop
2	Chittoor M	7	-	6	-	70	60	N	Private workshop
3	Cuddapah MCI	8	-	4-6	-	73	10	N	Private workshop
4	Eluru M	10	50	5	5	146	15	N	Private workshop
5	Guntur MCI	27	20	4	4	250	10	Y	Municipal workshop
6	Hindupur M	4	-	6	-	70	10	N	Private workshop
7	Kakinada M	14	22	4	1-4	142	15	N	Private workshop
8	Kurnool MCI	11	-	3-6	-	90	10	N	Private workshop
9	Machilipatnam M	4	26	4	3	50	20	N	Private workshop
10	Nandyal MCI	4	105	2	2	60	10	N	Private workshop
11	Nellore MCI	29	-	2-4	-	165	12	N	Private workshop
12	Nizamabad M	9	-	4-6	-	88	30	N	Private workshop
13	Ongole MCI	10	-	5-6	-	90	20	N	Private workshop
14	Qutubullapur M	6	-	4	-	69	2	N	State govt. agency
15	Rajahmundry M.Corp.	23	-	5	-	193	15	N	Private workshop
16	Tenali M	5	-	8	-	80	15	N	Private workshop
17	Tirupati MCI	15	-	3-4	-	130	15	N	Private workshop
18	Vijaywada M.Corp.	48	-	2-5	-	465	10	Y	Municipal workshop
19	Warangal M.Corp.	20	130	3	2	177	10	N	Private workshop
Bihar									
20	Bihar Sharif M	4	n.a.	6	n.a.	50	50	N	Private workshop
21	Chhapra M	6	-	3	-	66	5	N	Private workshop
22	Gaya M.Corp.	9	-	4-6	-	80	70	Y	Private workshop
23	Katihar M	5	n.a.	5	n.a.	45	20	N	Private workshop
24	Munger M	8	-	5	-	50	10	Y	n.a.

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
25	Ranchi M.Corp.	12	-	6-10	-	34	5	Y	Private workshop
Gujarat									
26	Anand M	10	-	4	-	10	10	Y	Municipal workshop
27	Bharuch M	16	-	4-10	-	84	20	N	n.a.
28	Bhavnagar M.Corp.	38	-	1-2	-	115	10	Y	Municipal workshop
29	Bhuj M	8	16	4	4	40	10	N	Private workshop
30	Jamnagar M.Corp.	23	14	3-5	7	300	10	Y	Municipal workshop
31	Junagadh M	6	-	15	-	75	10	Y	Municipal workshop
32	Nadiad M	9	-	2-4	-	60	15	N	Private workshop
33	Navsari M	6	-	4-7	-	31	20	N	Private workshop
34	Porbandar M	10	-	4	-	22	30	N	Private workshop
35	Rajkot M.Corp.	35	-	4-6	-	425	20	Y	Municipal workshop
36	Surendranagar M	5	-	4	-	30	10	Y	Municipal workshop
Haryana									
37	Ambala MCI	5	5	5	4	30	20	N	Private workshop
38	Faridabad M.Corp.	39	-	3	-	480	30	Y	Municipal workshop
39	Gurgaon MCI	4	-	3	-	80	10	N	Private workshop
40	Hissar MCI	8	-	4	-	32	50	N	Private workshop
41	Karnal MCI	8	20	4	2	52	25	N	Private workshop
42	Rohtak MCI	10	-	1-3	-	28	10	N	Private workshop
Jammu & Kashmir									
43	Jammu M.Corp.	21	-	5-6	-	288	10	Y	Municipal workshop
44	Srinagar M.Corp.	33	1500	2-8		200	10	Y	Municipal workshop
Karnataka									
45	Belgaum M.Corp.	14	-	2	-	100	n.a.	N	Private workshop
46	Bellary CMC	5	-	4	-	50	n.a.	N	Private workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
47	Davangere MCI	12	-	3	-	77	n.a.	Y	Municipal workshop
48	Gadag-Betigeri CMC	6	-	5	-	60	0	N	Private workshop
49	Gulbarga M.Corp.	11	-	3	-	76	n.a.	N	Private workshop
50	Hubli-Dharwad M.Corp.	27	-	3-5	-	220	10	N	Private workshop
51	Mandya M	5	-	2-3	-	25	n.a.	N	Private workshop
52	Mangalore M.Corp.	10	-	3	-	69	0	N	Private workshop
53	Mysore M.Corp.	28	8	3	4	202	5	N	Private workshop
54	Shimoga CMC	18	-	2-3	-	72	0	N	Private workshop
55	Tumkur M	8	150	4	n.a.	84	10	N	Private workshop
Kerala									
56	Alappuzha MC	4	-	1-2	-	20	0	N	Private workshop
57	Kollam MC	12	-	1-2	-	58	10	N	Private workshop
58	Kozhikode M.Corp.	22	-	4	-	152	10	N	Private workshop
59	Thalaserry M	5	-	2-3	-	30	20	N	Private workshop
60	Thiruvananthapuram M.Corp.	44	-	1-3	-	250	15	N	Private workshop
Madhya Pradesh									
61	Bhind M	22	-	2-3	-	24	n.a.	N	Private workshop
62	Burhanpur M.Corp.	8	-	2-5	-	60	10	N	n.a.
63	Dewas M.Corp.	10	-	1-3	-	39	10	N	n.a.
64	Guna M	7	-	2	-	18	20	N	Private workshop
65	Gwalior M.Corp.	32	-	2-4	-	280	5	Y	Municipal workshop
66	Jabalpur M.Corp.	25	-	5-8	-	298	30	N	n.a.
67	Khandwa M	5	-	1-2	-	20	n.a.	N	Private workshop
68	Morena M	6	-	2-3	-	44	10	N	Private workshop
69	Murwara-Katni M.Corp.	5	-	3-5	-	63	20	Y	Municipal workshop
70	Ratlam M.Corp.	4	-	3-6	-	35	n.a.	Y	Municipal workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
71	Rewa M.Corp.	5	-	4	-	40	20	N	Private workshop
72	Satna M.Corp.	14	-	2-8	-	50	10	Y	Municipal workshop
73	Shivpuri M	4	-	3	-	18	10	N	n.a.
Maharashtra									
74	Amravati M.Corp.	14	-	4	-	96	n.a.	N	n.a.
75	Aurangabad M.Corp.	27	-	3	2-3	340	n.a.	Y	Municipal workshop
76	Bhusawal M.CI.	5	-	6	-	30	10	N	Private workshop
77	Chandrapur MCI	14	-	1-3	-	110	2	N	Private workshop
78	Dhule MCI	8	-	1-12	-	30	20	N	Private workshop
79	Ichalkaranji MCI	15	-	5	-	150	n.a.	Y	Municipal workshop
80	Jalgaon MCI	24	-	3-4	-	220	10	N	Private workshop
81	Kolhapur M.Corp.	18	-	2	-	115	20	Y	Municipal workshop
82	Nanded Waghala M.Corp.	13	-	3	-	90	10	N	Private workshop
83	Nashik M.Corp.	89	7	2	4	279	2	Y	Municipal workshop
84	Parbhani MCI	8	-	3	-	72	25	N	Private workshop
85	Solapur M.Corp.	26	-	5-6	-	353	5	Y	Municipal workshop
86	Wardha M	6	-	2	-	40	0	N	Private workshop
87	Yavatmal MCI	8	-	1	-	10	10	N	Private workshop
Orissa									
88	Bhubaneswar M.Corp.	18	-	n.a.	-	n.a	n.a.	N	Private workshop
89	Cuttack M.Corp.	20	-	3-5	-	n.a	3	N	Private workshop
90	Puri M	9	-	4	-	n.a	n.a.	N	Private workshop
91	Rourkela M	6	-	4	-	n.a	n.a.	N	Private workshop
92	Sambalpur M	7	-	3	-	n.a	n.a.	N	Private workshop
Punjab									
93	Amritsar M.Corp.	74	-	4-7	-	510	2	Y	Municipal workshop
94	Bathinda MCI	10	-	3	-	95	10	N	Private workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
95	Hoshiarpur MCI	4	-	2-10	-	33	0	N	Private workshop
96	Jalandhar M. Corp.	54	-	2-5	-	236	5	Y	Municipal workshop
97	Moga MCI	7	-	2	-	36	20	N	Private workshop
98	Pathankot MCI	38	-	1-2	-	23	8	N	Private workshop
99	Patiala M.Corp.	36	-	1-2	-	80	0	N	Private workshop
Rajasthan									
100	Ajmer MCI	28	-	6	-	250	10	N	Private workshop
101	Alwar M	22	-	1-5	-	100	10	Y	Municipal workshop
102	Beawar M	3	-	8	-	42	n.a.	Y	Municipal workshop
103	Bhilwara M	10	-	3	-	58	10	Y	Municipal workshop
104	Bikaner M	13	-	6	-	180	10	Y	Municipal workshop
105	Jodhpur M.Corp.	57	-	2-3	-	308	12	Y	Municipal workshop
106	Kota M.Corp.	30	-	3	-	120	20	N	n.a.
107	Sriganganagar M	9	-	1-2	-	24	5	N	Private workshop
Tamil Nadu									
108	Cuddalore M	9	-	3	-	59	0	N	Private workshop
109	Dindigul M	11	-	1-2	-	17	10	N	Private workshop
110	Erode M	10	25	3-4	2	85	10	N	Private workshop
111	Kanchipuram M	8	10	3	1	19	15	N	Private workshop
112	Kumbakonam M	13	10	3-4	4	40	n.a.	N	Private workshop
113	Nagercoil M	9	-	2	-	30	0	N	Private workshop
114	Rajapalayam M	11	-	2	-	43	20	N	Private workshop
115	Salem M.Corp.	68	-	3	-	214	n.a.	N	Private workshop
116	Thanjavur M	14	-	2	-	34	15	N	Private workshop
117	Tiruchirapalli M.Corp.	46	-	2-4	-	280	10	N	Private workshop
118	Tirunelveli M.Corp.	26	-	3	-	87	20	N	Private workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
119	Tiruvannamalai M	10	-	2-3	-	32	30	N	Private workshop
120	Tiruppur M	20	-	2-3	-	100	n.a.	Y	Municipal workshop
121	Tuticorin M	14	-	1-2	-	25	20	Y	Municipal workshop
122	Vellore M	12	-	1-2	-	35	25	N	Private workshop
Uttar Pradesh									
123	Agra M.Corp.	36	-	5-7	-	430	n.a.	Y	Municipal workshop
124	Aligarh M.Corp.	33	-	2-3	-	275	22	Y	Municipal workshop
125	Allahabad M.Corp.	22	-	2-4	-	250	30	Y	Municipal workshop
126	Bareilly M.Corp.	33	-	1-5	-	320	1	Y	Municipal workshop
127	Etawah MB	5	-	4	-	27	28	N	Private workshop
128	Faizabad MB	4	-	5	-	54	50	N	Private workshop
129	Firozabad MB	11	-	3-6	-	144	15	N	Private workshop
130	Ghaziabad M.Corp.	31	-	3-6	-	300	25	N	Private workshop
131	Gorakhpur M.Corp.	29	-	2-4	-	238	10	N	Private workshop
132	Haldwani-cum-Kathgodam MB	4	-	10	-	38	25	N	Private workshop
133	Hapur MB	4	-	5	-	70	10	N	Private workshop
134	Hardwar MB	35	-	1-6	-	182	8	Y	Municipal workshop
135	Jhansi MB	14	-	4-5	-	134	30	Y	Municipal workshop
136	Mathura MB	10	25	2-6	2	150	5	Y	Municipal workshop
137	Meerut M.Corp.	35	-	4-5	-	500	10	Y	Municipal workshop
138	Mirzapur MB	18	105	2-5	n.a	85	10	Y	Municipal workshop
139	Moradabad M.Corp.	17	-	6-7	-	300	1	Y	Municipal workshop
140	Muzaffarnagar MB	10	-	3-6	-	130	5	N	Private workshop
141	Rae Bareli MB	4	-	6	-	66	5	N	Private workshop
142	Rampur MB	20	-	6	-	120	2	Y	Municipal workshop
143	Saharanpur MB	27	-	2	-	200	30	N	Private workshop
144	Sitapur MB	17	-	2-4	-	70	10	N	Private workshop
145	Unnao MB	2	-	4	-	8	50	N	Private workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
West Bengal									
146	Asansol M.Corp.	23	-	3	-	60	n.a.	N	n.a.
147	Baharampur M	13	-	3	-	81	2	Y	Municipal workshop
148	Balurghat M	3	-	3-5	-	33	10	N	Private workshop
149	Bankura M	6	20	1	1	26	n.a.	Y	Municipal workshop
150	Barasat M	5	-	3	-	24	30	N	Private workshop
151	Burdwan M	8	-	2-4	-	75	15	Y	Municipal workshop
152	Halisahar M	3	-	3	-	17	n.a.	N	Private workshop
153	Krishna Nagar M	5	-	3-4	-	37	30	Y	Municipal workshop
154	Midnapur M	5	-	2-5	-	53	15	N	Private workshop
155	North Barrackpur M	6	-	3	-	40	n.a.	N	Private workshop
156	Santipur M	6	-	2-4	-	33	1	Y	Municipal workshop
157	Siliguri M.Corp.	26	-	3	-	150	n.a.	N	n.a.
Small States									
Assam									
158	Guwahati M.Corp.	Privatised	-	-	-	240	n.app	N	Private workshop
159	Jorhat MB	5	-	3	-	14	n.a.	N	Private workshop
Manipur									
160	Imphal MCI	10	-	2-4	-	38	70	Y	Municipal workshop
Meghalaya									
161	Shillong MB	10	-	1	-	78	20	N	Private workshop
Tripura									
162	Agartala MCI	12	-	2-4	-	60	20	n.a.	n.a.
Union Territories									
163	Chandigarh M.Corp.	45	-	2-4	-	280	5	N	Private workshop
164	Pondicherry M	18	-	2-4	-	114	20	Y	Municipal workshop

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
CLASS II									
Andhra Pradesh									
1	Anakapalle M	13	-	1-3	-	55	25	N	Private workshop
2	Dharmavaram M	2	-	3	-	9	0	N	Private workshop
3	Gudur MCI	3	-	5	-	18	30	N	Private workshop
4	Kapra M	9	-	4-6	-	45	2	N	Private workshop
5	Kavali MCI	3	-	4	-	24	30	N	Private workshop
6	Madanapalle M	6	-	1-2	-	20	n.a.	N	Private workshop
7	Narasaraopet M	7	9	1-3	5	42	15	N	Private workshop
8	Rajendra Nagar MCI	3	-	2-3	-	9	20	N	Private workshop
9	Sangareddy MCI	5	-	2-3	-	14	20	N	Private workshop
10	Srikakulam MCI	5	16	4	3	25	n.a.	N	Private workshop
11	Srikalahasti M	3	-	6	-	24	0	N	Private workshop
12	Suryapet MCI	4	-	5	-	30	25	N	Private workshop
Bihar									
13	Buxar M	2	-	2	-	12	25	N	Private workshop
14	Deoghar M	1	n.a.	6	n.a.	10	10	N	Private workshop
15	Hajipur M	3	-	2	-	24	5	N	Private workshop
16	Hazaribagh M	6	-	3	-	36	25	N	Private workshop
17	Jehanabad M	1	-	4	-	10	30	N	Private workshop
18	Madhubani M	4	-	4	-	15	10	N	Private workshop
19	Mokama M	1	-	4	-	4	n.a.	N	Private workshop
Gujarat									
20	Amreli M	4	-	7	-	30	15	Y	Municipal workshop
21	Ankleswar M	3	-	2	-	6	5	N	n.a.
22	Dabhoi M	1	-	6	-	18	0	N	Municipal Mechanic

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-mototized			Yes / No	Place
1		2	3	4	5	6	7	8	9
23	Dohad M	4	-	1-2	-	4	10	N	Private workshop
24	Gondal M	9	27	2	2	10	0	Y	Municipal workshop
25	Jetpur M	3	24	8	7	40	0	Y	Municipal workshop
26	Mahesana M	5	-	1-2	-	8	10	Y	Municipal workshop
27	Palanpur M	5	-	3	-	40	10	Y	Municipal workshop
Haryana									
28	Jind MCI	3	na	4	-	18	10	N	Private workshop
29	Kaithal MCI	4	-	3	-	12	20	N	Private workshop
30	Rewari MCI	4	-	12	-	16	10	N	Private workshop
31	Thanesar MCI	5	3	1-3	3	24	10	N	Private workshop
Karnataka									
32	Bagalkot CMC	4	-	2	-	13	n.a.	N	Private workshop
33	Chikmagalur CMC	4	-	2	-	18	0	N	Private workshop
34	Gokak CMC	4	-	1-2	-	7	0	N	Private workshop
35	Hospet CMC	5	-	5	-	31	n.a.	N	Private workshop
36	Kolar CMC	5	-	3-4	-	15	30	N	Private workshop
37	Rabkavi-Banhatti CMC	Privatised	-	-	-	Auctioned	n.app	N	Private workshop
38	Ramanagaram CMC	4	-	2-3	-	10	50	N	Private workshop
Kerala									
39	Changanessary MC	n.a.	n.a.	n.a.	n.a.	12	n.a.	n.a.	n.a.
40	Payyanur M	1	-	2	-	4	0	N	Private workshop
41	Taliparamba M	1	-	1	-	3	0	N	Private workshop
42	Thrissur MC	15	-	1-2	-	35	0	N	Private workshop
Madhya Pradesh									
43	Hoshangabad M	2	-	5	-	15	50	N	Private workshop
44	Itarsi M	6	-	1-2	-	15	30	Y	Municipal workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
45	Khargone M	3	-	2	-	6	n.a.	N	n.a.
46	Mandsaur M	4	-	2	-	26	25	Y	Municipal workshop
47	Nagda M	2	-	1-3	-	10	n.a.	N	Private workshop
48	Neemuch M	6	-	2	-	8	n.a.	Y	Municipal workshop
49	Sehore M	4	-	4	-	30	25	N	Private workshop
50	Shahdol M	4	-	3	-	9	20	N	Private workshop
51	Vidisha M	5	-	4	-	10	10	N	Private workshop
Maharashtra									
52	Amalner MCI	4	-	2-3	-	6	n.a.	N	Private workshop
53	Ballarpur MCI	5	-	1-2	-	18	10	N	n.a.
54	Bhandara M	5	-	1-2	-	12	10	N	Private workshop
55	Kamptee MCI	3	-	10	-	40	25	N	Private workshop
56	Manmad MCI	3	-	2-10	-	5	2	N	Private workshop
57	Ratnagiri MCI	4	-	2	-	22	10	Y	Municipal workshop
58	Satara MCI	3	-	3	-	17	0	Y	Municipal workshop
59	Virar MCI	9	-	2	-	50	0	N	Private workshop
Punjab									
60	Ferozepur MCI	5	-	4	-	40	20	N	Private workshop
61	Kapurthala M	4	-	3	-	10	n.a.	N	Private workshop
62	Mansa MCI	3	-	6	-	27	n.a.	N	Private workshop
63	Phagwara MCI	5	-	2	-	14	0	N	Private workshop
64	Sangrur MCI	3	-	2	-	15	25	N	Private workshop
Rajasthan									
65	Banswara M	5	-	n.a.	-	25	n.a.	Y	Municipal workshop
66	Barmer M	6	-	1-3	-	18	30	N	Private workshop
67	Bundi M	3	-	4	-	24	0	Y	Municipal workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
	1	2	3	4	5	6	7	8	9
68	Churu M	4	15	2	2	30	10	N	Private workshop
69	Hanumangarh M	8	-	4	-	43	4	N	Private workshop
70	Sawai Madhopur M	4	-	1	-	4	25	N	Private workshop
Tamil Nadu									
71	Ambur M	5	12	3	3	13	20	Y	Municipal workshop
72	Arakkonam M	5	6	1	3	11	0	N	Private workshop
73	Attur M	4	-	2	-	10	10	N	Private workshop
74	Cumbum M	3	13	2	2	4	15	N	Private workshop
75	Dharmapuri M	2	19	2	1	11	30	N	Private workshop
76	Gudiyatham M	2	-	3	-	16	10	N	Private workshop
77	Nagapattinam M	4	-	4	-	25	0	N	Private workshop
78	Pudukkottai M	7	-	2	-	20	10	N	Private workshop
79	Sivakasi M	9	-	1	-	5	25	N	Private workshop
80	Srivilliputtur M	4	-	2	-	20	25	N	Private workshop
81	Tindivanam M	5	-	2	-	12	15	N	Private workshop
82	Udhagamandalam M	7	-	2	-	7	30	N	Private workshop
Uttar Pradesh									
83	Auraiya MB	2	-	7	-	21	10	N	Private workshop
84	Balrampur MB	3	-	2	-	20	10	N	Private workshop
85	Basti MB	5	-	2	-	35	20	N	Private workshop
86	Bhadohi MB	2	20	8	5	40	5	N	Private workshop
87	Chandpur MB	2	14	3	2	5	10	N	Private workshop
88	Etah MB	3	-	4-8	-	40	25	N	Private workshop
89	Ghazipur MB	4	-	3	-	27	10	N	Private workshop
90	Gonda MB	3	-	3	-	25	10	N	Private workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
91	Lakhimpur MB	3	-	2-6	-	35	10	N	Private workshop
92	Lalitpur MB	5	-	2-3	-	54	5	N	Private workshop
93	Mughalsarai MB	5	-	2-3	-	48	5	N	Private workshop
94	Nawabganj-Barabanki MB	3	-	2	-	6	35	N	Private workshop
95	Orai MB	3	50	5	8	29	30	N	Private workshop
96	Roorkee MB	3	-	3	-	27	20	N	Private workshop
West Bengal									
97	Bishnupur M	2	30	2	1	13	25	N	Private workshop
98	Chakdaha M	1	8	2	4	7	3	N	Private workshop
99	Contai M	9	-	1-2	-	9	22	N	n.a.
100	Cooch Behar M	7	20	2-3	2	21	60	Y	Municipal workshop
101	Darjeeling M	n.a.	-	3	-	30	25	Y	Municipal workshop
102	Jalpaiguri M	5	-	1-3	-	20	20	N	Private workshop
103	Jangipur M	2	-	3	-	18	n.a.	N	Private workshop
104	Katwa M	6	-	3	-	36	n.a.	Y	Municipal workshop
105	Raniganj M	7	-	3	-	41	33	N	Private workshop
Small States									
Himachal Pradesh									
106	Shimla M.Corp.	8	-	3	-	35	2	N	Private workshop
Nagaland									
107	Kohima TC	4	-	2-4	-	22	n.a.	N	Private workshop
Union Territories									
108	Port Blair MCI	8	-	2-3	-	44	15	Y	Municipal workshop

Sl. No.	City/Town	No. of vehicles used for transportation		Average trips per vehicle per day		Approx. waste (MT) transported daily	% of vehicles usually under repair	Vehicle maintenance workshop	
		Motorized	Non-motorized	Motorized	Non-motorized			Yes / No	Place
1		2	3	4	5	6	7	8	9
Others (Smaller than Class II towns)									
Small States									
Goa									
109	Panaji MCI	8	-	2	-	11	10	Y	Municipal workshop
Sikkim									
110	Gangtok (Greater Gangtok) NTAC	7	-	1	-	35	n.a.	Y	Municipal workshop
Union Territories									
111	Daman MCI	5	-	1-2	-	11	10	N	Private workshop
112	Silvassa CT	2	-	2	-	4	0	N	Private workshop

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

C-4

**TRANSPORTATION VEHICLES AND THEIR
DETAILS**

C-4 : Transportation Vehicles and their Details

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Metropolitan Cities						
1	Ahmedabad M.Corp.	JCB	41	n.a.	2-3	563
		Truck	3		7	19
		Tipper	20		2-3	126
		Dumper	27		1-5	143
		Compact Machine	1		3	15
		Total				
2	Bangalore M.Corp.	Tipplers	90	5	1	400
		Truck	226	4	2	1800
		Total				2200
3	Bhopal M.Corp.	Truck	23	4	2	161
		Compactor	4	5	2	40
		Dumper	9	3	2	45
		Tractor Trolley	11	3	2	66
		Tipper	4	4	2	28
		Others*	10			20
		Total				360
4	Calcutta M.Corp.	Truck	163	n.a.		
		Dumper	52			
		Tractor Trolley/Trailer	10			
		Total				2100
5	Chennai M.Corp.	Truck	230	n.a.	2	n.a.
		Truck	120		3	
		Autos	75		4	
		Total				2500
6	Coimbatore M.Corp.	Truck	24	n.a.	3	n.a.
		Tractor Trolley	2		3	

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Tippers	26		3	
		JCB	16		3	
		Dumper	16		3	
		Total				670
7	Delhi M.Corp.	Tractor Trolley	2	3	3	15
		Tipper truck	558	4	3	5485
		Total				5500
8	Greater Mumbai M.Corp.	Mobile compactors	146	8	1	1168
		Skip vehicles	123	3	1	308
		Dumpers	82	4	1	328
		Dumpers (private)	606	4	1	2424
		Others *	216	n.a.	n.a.	1772
		Total				6000
9	Hyderabad M.Corp.	Dumper	45	3	5	563
		Tipper	90	4	3	945
		Large compactors	12	8	3	288
		Small compactors	12	3	2	60
		Power tiller	16	1	2	32
		Total				1888
10	Indore M.Corp.	Tippers	n.a.	n.a.	3	n.a.
		Dumper			n.a.	
		Total				600
11	Jaipur M.Corp.	Dumpers	12	4	3	144
		Canters	52	4	3	624
		JCB	4	n.a.	n.a.	n.a.
		Total				768
12	Kanpur M.Corp.	Tippers	40	5	3	600
		Truck	28	3	3	252

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Tractor Trolley	35	2	3-4	250
		Total				1102
13	Kochi M.Corp.	Tractor Trolley	11	4	2	77
		Truck	6	6	2	72
		Tippers	2	7	3	42
		Dumper	12	1	2	24
		Auto-trailer	9	0.5	2	9
		Side load lorry & JCB	3	5	n.a.	30
		Total				254
14	Lucknow M.Corp.	Tippers	30	4	5	600
		Refuse Collector	5	5	8	200
		Refuse collector	1	5	10	50
		Total				850
15	Ludhiana M.Corp.	Tippers	27	5	5	608
		Dumper placer	25	1.5	4	150
		Tractor Trolley	9	1.5	2	27
		H. Tugger	4	1.5	15	90
		Total				875
16	Madurai M.Corp.	Truck	11	3	3	99
		Tractor Trolley/Trailer	4	3	3	30
		Tippers	13	n.a.	3	60
		Mini-Truck	4	1.5	3	18
		Truck (hired)	27	3	3	243
		Total				450
17	Nagpur M.Corp.	Truck	30	5	2	300
		Tippers	6	3	3	54
		Truck (hired)	20	3	3	144
		Tractor Trolley	2	0.5	2	2
		Total				500

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
18	Pune M.Corp.	Dumper placer	70	1.5	4	420
		Tippers	52	3	3	460
		Compactor	1	10	2	20
		Total				900
19	Surat M.Corp.	Dumper trucks	38	6	2	456
		Dumper placer	57	2	2	228
		Tractor Trailer	28	3	3	252
		Tipper	1	6	4	24
		Total				960
20	Vadodara M.Corp.	Dumper placer	22	1.5	7	230
		Tippers	15	5	2	150
		Pick-up van	10	3	2	60
		Total				440
21	Varanasi M.Corp.	Tipper truck	12	5	3	180
		Tractor Trolley	16	3	5	240
		Dumper placer	4	1.5	2	12
		JCB	3	2	n.a.	24
		Total				456
22	Visakhapatnam M.Corp.	Van	33	3	2	198
		Tractors	27	3	2	135
		Tipper	15	6	2	180
		Mini-Truck	2	4	2	16
		Truck	1	6	2	12
		Dumper	12	2	n.a.	48
		Compactor	1	6	2	12
		Total				601

Note : Data for average waste transported was furnished by the respective urban local bodies. The number of vehicles, multiplied by the average capacity and number of trips may not add up to the waste transported.

"Others" include stationary compactors, tempo private, dumpers private, bulk refuse carrier

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
CLASS I						
Andhra Pradesh						
1	Anantapur MCI	Tractor	4	3	4	48
		Tipper	3	5	4	60
		Total				108
2	Chittoor M	Tractor	2	4	6	40
		Truck (privatised service)	2	3	6	30
		Total				70
3	Cuddapah MCI	Tractor (private)	7	1.5	6	63
		Tractor (own)	1	3	4	10
		Total				73
4	Eluru M	Tractor	10	2	5	100
		Bullock Carts	50	0.2	5	46
		Total				146
5	Guntur MCI	Truck	3	4	4	48
		Tractor	24	2	4	192
		Rickshaw	20	0.1	4	10
		Total				250
6	Hindupur M	Tractor	4	3	6	70
		Total				70
7	Kakinada M	Tractor	14	2	4	112
		Others	12	3	1	30
		Total				142
8	Kurnool MCI	Tipper	1	2	3	n.a.
		Tractor	10	1.5	6	
		Total				90
9	Machilipatnam M	Tractor	4	2	4	31
		Bullock Carts	26	0.3	3	20
		Total				50

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
10	Nandyal MCI	Wheel barrow	104	0.3	2	52
		Tractor	4	1	2	8
		Total				60
11	Nellore MCI	Truck	1	5	2	9
		Tractor	26	1.5	4	156
		Total				165
12	Nizamabad M	Tractor	4	3	5	60
		Truck	1	7	4	28
		Total				88
13	Ongole MCI	Tractor	5	3	6	90
		Total				90
14	Qutubullapur M	Truck	5	3	4	60
		Tractor Trolley	1	3	3	9
		Total				69
15	Rajahmundry M.Corp.	Tractor	19	2	5	193
		Total				193
16	Tenali M	Tractor	5	2	8	80
		Total				80
17	Tirupati MCI	Truck	1	4	3	12
		Tractor	6	2	4	54
		Tractor (hired)	8	2	4	64
		Total				130
18	Vijaywada M.Corp.	Van	13	3	5	195
		Tipper	20	3	2	120
		Tractor	15	2	5	150
		Total				465
19	Warangal M.Corp.	Tractor	19	3	3	171
		JCB	1	3	2	6
		Total				177

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Bihar						
20	Bihar Sharif M	Tractor	4	1	6	24
		Handcarts	n.a.	n.a.	n.a.	26
		Total				50
21	Chhapra M	Tractor	6	4	3	72
		Total				72
22	Gaya M.Corp.	Loader	1	2	6	12
		Dumper	2	1.5	4	12
		Tractor	7	2	4	56
		Total				80
23	Katihar M	Tractor	5	1.5	5	38
		Handcarts	n.a.	n.a.	n.a.	8
		Total				45
24	Munger M	Tractor	7	1.5	5	53
		Total				53
25	Ranchi M.Corp.	Tractor	11	n.a.	6	n.a.
		Dumper placer	1		10	
		Total				34
Gujarat						
26	Anand M	Wheel barrow	13	n.a.	4	3
		Truck	2	n.a.	4	4
		Tractor Trolley	1	1.5	2	3
		Total				10
27	Bharuch M	Tractor	1	1	4	4
		Truck	1	5	4	20
		Dumper	3	3	4	30
		Tempo	6	0.5	10	30
		Total				84

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
28	Bhavnagar M.Corp.	Refuse Collector	4	7	1	28
		Truck	2	5	1	10
		Tractor Trolley	32	1.2	2	77
		Total				115
29	Bhuj M	Tractor Trolley	4	1.5	4	24
		Bullock Carts	3	n.a.	4	2
		Tractor(Hired)	4	1.5	2	12
		Donkey cart (Hired)	13	n.a.	4	2
		Total				40
30	Jamnagar M.Corp.	Tractor	17	3	3	153
		Container Carrier	3	3	5	45
		Rickshaw	14	1.1	7	105
		Total				303
31	Junagadh M	Tractor	5	1	15	75
		Total				75
32	Nadiad M	Truck	2	n.a.	n.a.	29
		Tractor Trolley	2	1	2	4
		Tippers	3	2	4	24
		Rickshaw	2	0.5	3	3
		Total				60
33	Navsari M	Tippers	1	2	6	12
		Tractor	3	1.5	4	18
		Tricycle	5	n.a.	4	1
		Total				31
34	Porbandar M	Tractor	6	n.a.	4	11
		Truck	4		4	11
		Total				22
35	Rajkot M.Corp.	Truck	16	3	6	240
		Tippers	8	4	4	128
		Others (Geep)	10	1.5	4	60
		Total				428

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
36	Surendranagar M	Tractor	5	1.5	4	30
		Total				30
Haryana						
37	Ambala MCI	Tractor Trolley	5	1	5	25
		Carts	5	0.05	20	5
		Total				30
38	Faridabad M.Corp.	Refuse Collector	3	7	3	63
		Truck	3	3	3	27
		Dumper	3	2	3	18
		Tractor Trolley	30	n.a.	n.a.	372
		Total				480
39	Gurgaon MCI	Refuse Collector	1	15	3	45
		Tractor Trolley	3	2	3	18
		Loader	2	n.a.	n.a.	17
		Total				80
40	Hissar MCI	Tractor Trolley	8	1	4	32
		Total				32
41	Karnal MCI	Tractor	8	1	4	32
		Rickshaw	20	0.1	10	20
		Total				52
42	Rohtak MCI	Truck	2	2	3	12
		Tractor Trolley	8	2	1	16
		Total				28
Jammu & Kashmir						
43	Jammu M.Corp.	Tractor	12	3	5	180
		Trolley	9	2	6	108
		Total				288
44	Srinagar M.Corp	Trippers/Trucks	18	0.5	3	27
		Dumper Placer	12	1.5	8	144

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Tractor Trolley	2	6	2	24
		Compacter	1	16	2	32
		Total				227
Karnataka						
45	Belgaum M.Corp.	Tipper (Big)	4	6	2	44
		Truck	10	3	2	56
		Total				100
46	Bellary CMC	Truck	5	3	4	50
		Total				50
47	Davangere MCI	Tractor	7	1.5	3	32
		Truck	5	3	3	45
		Total				77
48	Gadag-Betigeri CMC	Tractor Trolley	6	2	5	60
		Total				60
49	Gulbarga M.Corp.	Truck	7	3	3	53
		Tractor	4	2	3	24
		Total				77
50	Hubli-Dharwad M.Corp.	Truck	19	3	3	171
		Tractor Trolley	8	1.3	5	50
		Total				221
51	Mandya M	Tractor	3	2	3	18
		Truck	2	2	2	8
		Total				26
52	Mangalore M.Corp.	Truck	6	3	3	45
		Tractor	3	2	3	18
		Mini-Truck	1	2	3	6
		Total				69
53	Mysore M.Corp.	Truck	16	3	3	120
		Tractor	7	2	3	42

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Mini-Truck	5	2	3	30
		Carts	8	0.3	5	10
		Total				202
54	Shimoga CMC	Tractor	11	n.a.	3	41
		Truck	3	3	3	27
		Power tiller	4	1.5	2	12
		Total				80
55	Tumkur M	Tractor	7	3	4	84
		Total				84
Kerala						
56	Alappuzha MC	Tippers	2	2	1	4
		Truck	2	4	2	16
		Total				20
57	Kollam MC	Truck	3	5	1	15
		Tractor	9	3	2	45
		Total				60
58	Kozhikode M.Corp.	Truck	2	3	4	24
		Excavator	2	2	4	16
		Tractor	14	2	4	112
		Total				152
5	Thalaserry M	Tractor	2	3	3	15
		Tiller	2	1.5	3	9
		Truck	1	3	2	6
		Total				30
60	Thiruvananthapuram M.Corp.	Truck	16	5	2	160
		Tractor	8	3	3	60
		Truck	20	1.5	1	30
		Total				250

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Madhya Pradesh						
61	Bhind M	Tipper	1	4	3	12
		Tractor trolley	5	1	2	10
		Wheel barrow	6	0.2	2	2
		Total				24
62	Burhanpur M.Corp.	Truck	2	3	5	25
		Tractor trolley	4	3	3	30
		Auto	2	0.5	2	2
		Total				57
63	Dewas M.Corp.	Tractor trolley	1	2	3	6
		Truck	3	3	3	27
		Dumper	6	1	1	6
		Total				39
64	Guna M	Tractor trolley	4	1	2	8
		Dumper	3	1.5	2	9
		Total				17
65	Gwalior M.Corp.	Truck	7	5	4	140
		Container	2	2	4	16
		Tractor	20	1.5	3	90
		Refuse Collector	2	8	2	32
		Tipper	1	1	4	4
		Total				282
66	Jabalpur M.Corp.	Tractor	13	2	5	130
		Truck	1	4	2	7
		Hydraulic Truck	5	3	3	45
		Mini Dumper	4	3	5	50
		Dumper	2	4	8	56
		Largea truck	1	5		10
		Total				298

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
67	Khandwa M	Tractor	3	2	1	6
		Truck	1	3	2	6
		Dumper	1	4	2	8
		Total				20
68	Morena M	Dumper	2	5	2	20
		Tractor trolley	4	2	3	24
		Total				44
69	Murwara-Katni M.Corp.	Truck	3	3	4	36
		Dumper	1	4	3	12
		Tractor	1	3	5	15
		Total				63
70	Ratlam M.Corp.	Truck	2	n.a.	6	n.a.
		Tractor trolley	2		3	
		Total				35
71	Rewa M.Corp.	Tractor trolley	5	2	4	40
		Total				40
72	Satna M.Corp.	Dumper	2	8	2	n.a.
		Tractor	11	n.a.	4	
		Truck	1		2	
		Total				50
73	Shivpuri M	Tractor trolley	3	1.2	n.a.	
		Dumper	1	2		
		Total				18
Maharashtra						
74	Amravati M.Corp.	Truck	12	2	4	96
		Total				96
75	Aurangabad M.Corp.	Truck	14	5	3	210
		Tippers	10	3	3	90
		Rickshaw	4	0.05	10	2

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Matador	3	3	3	27
		Total				329
76	Bhusawal M.CI.	Tractor Trolley	5	1	6	30
		Total				30
77	Chandrapur MCI	Truck	6	3	3	45
		Tractor	3	3	3	23
		Truck (large)	1	4	1	4
		Truck (hired)	4	4	3	42
		Total				114
78	Dhule MCI	Truck	5	2	1	10
		Hydraulic truck	1	1	12	12
		Tractor	1	2	2	4
		Dumper	1	3	2	6
		Total				32
79	Ichalkaranji MCI	Tractor Trolley	15	2	5	150
		Total				150
80	Jalgaon MCI	Tractor	16	3	4	160
		Dumper	6	3	3	54
		Total				214
81	Kolhapur M.Corp.	Truck	14	3	2	84
		Refuse Collector	2	8	2	32
		Total				116
82	Nanded Waghala M.Corp.	Truck	1	3	3	9
		Mini-truck	6	2	3	36
		Tipper	1	3	3	9
		Tempo	1	1	3	3
		Tractor Trolley	4	2	3	24
		Total				81

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
83	Nashik M.Corp.	Truck	6	2	2	24
		Tempo	37	1.5	2	111
		Truck	5	1.5	2	15
		Tractor Trolley	38	1.5	2	114
		5 wheeler	5	0.1		15
		Total				279
84	Parbhani MCI	Tempo	2	3	3	18
		Tractor Trolley	6	3	3	54
		Total				72
85	Solapur M.Corp.	Truck	14	4	5	245
		Tempo	12	1.5	6	108
		Total				353
86	Wardha M	Truck	4	4	2	32
		Tractor Trolley	2	2	2	8
		Total				40
87	Yavatmal MCI	Tractor	4	1	1	4
		Truck	3	2	1	6
		Total				10
Orissa						
88	Bhubaneswar M.Corp.	Truck	10	2	n.a.	
		Tractor Trolley	8	n.a.		
		Total				n.a.
89	Cuttack M.Corp.	Truck	6	n.a.	3	n.a.
		Tractor Trolley	14		n.a.	
		Total				n.a.
90	Puri M	Truck	2	n.a.	n.a.	n.a.
		Tractor Trolley	7		4	
		Total				n.a.
91	Rourkela M	Truck	4	n.a.	4	n.a.

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Tractor Trolley	2		n.a.	
		Total				n.a.
92	Sambalpur M	Truck	2	1.3	3	n.a.
		Tractor Trolley	4	n.a.	n.a.	
		Dumper	1			
		Total				8
Punjab						
93	Amritsar M.Corp.	Tractor Trolley	56	3	2	336
		Dumper	15	4	2	120
		Tippers	3	10	2	60
		Total				516
94	Bathinda MCI	Tractor Trolley	8	3	3	72
		Dumper	2	5	3	27
		Total				99
95	Hoshiarpur MCI	Truck	1	5	2	10
		Tractor Trolley	1	1	3	3
		Dumper	2	1	10	20
		Total				33
96	Jalandhar M. Corp.	Tippers	11	4	3	132
		Tractor	2	2	4	16
		Dumper	8	1	5	40
		Three wheeler	30	0.2	4	18
		Refuse Collector	3	5	2	30
		Total				236
97	Moga MCI	Truck	2	4	2	16
		Tractor Trolley	5	2	2	20
		Total				36
98	Pathankot MCI	Auto rickshaw	6	0.4	2	4
		Tractor Trolley	2	1.2	2	5

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Dumper	30	0.5	1	15
		Total				24
99	Patiala M.Corp.	Tractor Trolley	13	1	2	26
		Truck	3	4	2	24
		Container	20	1.5	1	30
		Total				80
Rajasthan						
100	Ajmer MCI	Tractor Trolley	17	3	6	255
		Total				255
101	Alwar M	Tractor Trolley	18	1	5	90
		Tempo	2	0.3	5	3
		Dumper	2	5	1	9
		Total				102
102	Beawar M	Tractor Trolley	3	1.8	8	42
		Total				42
103	Bhilwara M	Dumper	5	3	3	45
		Tractor Trolley	5	1	3	15
		Total				60
104	Bikaner M	Tractor	9	1.1	6	60
		Dumper	4	5	6	120
		Total				180
105	Jodhpur M.Corp.	Dumper	17	2	2	68
		Tractor	40	2	3	240
		Total				308
106	Kota M.Corp.	Dumper	8	1.5	3	36
		Tractor Trolley	19	1.5	3	86
		Total				122
107	Sriganganagar M	Tractor Trolley	6	2	1	12
		Truck	3	2	2	12
		Total				24

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Tamil Nadu						
108	Cuddalore M	Truck	2	3	3	15
		Tractor	1	2	4	8
		Mini-Truck	6	2	3	36
		Total				59
109	Dindigul M	Truck	1	3	2	5
		Mini-Truck	5	1.5	1	8
		Tractor	2	1	1	2
		Power tiller	2	1	1	2
		Total				17
110	Erode M	Truck	3	2	3	18
		Mini-Truck	5	1.5	4	30
		Tractor	1	2	4	8
		Power tiller	1	1	4	4
		Bullock Carts	25	0.5	2	25
		Total				85
111	Kanchipuram M	Truck	6	n.a.	1	12
		Power Tiller	2	1	3	6
		Total				18
112	Kumbakonam M	Truck	1	3	3	9
		Mini-Truck	10	1	3	30
		Total				39
113	Nagercoil M	Truck	3	3	2	15
		Power tiller	2	1	2	4
		Truck	4	1.5	2	12
		Total				31
114	Rajapalayam M	Truck	3	2	2	12
		Tractor	8	2	2	32
		Total				44

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
115	Salem M.Corp.	Tractor	40	1.5	2	120
		Truck	6	4	2	48
		Mini-Truck	4	2	2	16
		Swaraj Mazda truck	7	2	2	28
		Van	2	1.5	2	6
		Total				
116	Thanjavur M	Truck	11	1	2	22
		Tippers	2	2	2	8
		Tractor	1	2	2	4
		Total				34
117	Tiruchirapalli M.Corp.	Truck	31	n.a.	2	n.a.
		Tractor	4		2	
		Pick up van	11		4	
		Total				280
118	Tirunelveli M.Corp.	Truck	4	2	3	24
		Mini-Truck	14	1	3	42
		Tractor	4	1	3	12
		Tippers	2	1	3	6
		Container	2	0.5	3	3
		Total				87
119	Tirunvannamalai M	Tippers	3	3	2	15
		Tippers (small)	2	1	3	6
		Truck	1	1.5	2	3
		DCM truck	4	1	2	8
		Total				32
120	Tiruppur M	Truck	7	3	2	42
		Mini-Truck	7	2	3	42
		Tractor	4	1	3	12
		Tippers	2	1	2	4
		Total				100

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
121	Tuticorin M	Tiller	2	3	1	6
		Truck	3	1	2	6
		Tractor	4	2	1	8
		Mini van	5	1	1	5
		Total				
122	Vellore M	Truck	8	2	2	
		Power tiller	4	1	1	
		Total				
Uttar Pradesh						
123	Agra M.Corp.	Tippers	24	n.a.	7	n.a.
		Tractor	6		5	
		D.P.	3		3	
		Total				
124	Aligarh M.Corp.	Tractor Trolley	16	1.8	3	84
		Truck	12	5	2	120
		Tippers	2	2	3	12
		Refuse Collector	2	10	3	60
		Total				
125	Allahabad M.Corp.	Tippers	15	3	4	180
		Refuse Collector	4	8	2	64
		Tractor Trolley	3	1.5	2	9
		Total				
126	Bareilly M.Corp.	Refuse Collector	3	15	1	45
		Dumper placer	3	1	5	15
		Tractor Trolley	21	2	4	168
		Tippers	6	4	4	96
		Total				
127	Etawah MB	Tractor	5	n.a.	4	
		Total				

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
128	Faizabad MB	Dumper	2	n.a.	5	n.a.
		Tractor Trolley	2		5	
		Total				54
129	Firozabad MB	Tractor	6	2	3	36
		Truck	4	4	6	96
		DCM Truck	1	4	3	12
		Total				144
130	Ghaziabad M.Corp.	Tippers	6	n.a.	6	n.a.
		Tractor Trolley	24		3	
		Carrier	1		5	
		Total				300
131	Gorakhpur M.Corp.	Tractor Trolley	18	2	4	144
		Truck	6	3	3	54
		Refuse Collector	3	4	2	24
		Dumper	2	4	2	16
		Total				238
132	Haldwani-cum-Kathgodam MB	Truck	1	2	10	20
		Tractor Trolley	3	2	3	18
		Total				38
133	Hapur MB	Tractor	4	4	5	70
		Total				70
134	Hardwar MB	Tractor	7	2	4	56
		Gas mover	1	1	3	3
		Truck	5	3	6	90
		Carrier bin	22	1.5	1	33
		Total				182
135	Jhansi MB	Tractor Trolley	13	1.5	5	98
		Dumper	1	9	4	36
		Total				134

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
136	Mathura MB	Truck	2	5	5	50
		Dumper placer	3	3	6	54
		LCV	1	3	3	9
		Tractor	4	1.5	2	12
		Bullock Carts	25	0.5	2	25
		Total				150
137	Meerut M.Corp.	Tractor Trolley	14	2	5	140
		Tippers	8	5	5	200
		Truck	12	4	4	168
		Total				508
138	Mirzapur MB	Tractor Trolley	15	2	2	60
		Dumper	1	2	5	10
		Bullock Carts	2	0.4	3	2
		Total				72
139	Moradabad M.Corp.	Tractor	12	3	5	150
		Truck	2	5	7	70
		Swaraj Mazda	3	4	7	74
		Total				294
140	Muzaffarnagar MB	Tippers	2	3	5	25
		Tractor Trolley	8	4	3	96
		Hand cart	125	0.05	2	13
		Total				134
141	Rae Bareli MB	Dumper	1	4	6	24
		Tractor Trolley	3	2	6	36
		Total				60
142	Rampur MB	Tractor	18	1	6	108
		Tippers	2	1	6	12
		Total				120
143	Saharanpur MB	Truck	8	4	2	64

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Tractor Trolley	10	4	2	80
		Mini-Truck	8	3	2	48
		Gas mover	1	4	2	8
		Total				200
144	Sitapur MB	Tractor Trolley	8	1	4	32
		Tippers	7	1	2	14
		Tempo	2	3	4	24
		Total				70
145	Unnao MB	Tractor	2	1	4	8
		Total				8
West Bengal						
146	Asansol M.Corp.	Truck	23	2	n.a.	n.a.
		Total				60
147	Baharampur M	Truck	1	3	3	9
		Tractor	12	2	3	72
		Total				81
148	Balurghat M	Truck	1	3	5	15
		Tractor	2	3	3	18
		Total				33
149	Bankura M	Tractor	6	4	1	22
		Handcarts	20	0.3	1	5
		Total				27
150	Barasat M	Tractor	3	2	3	18
		Truck	1	3	3	9
		Total				27
151	Burdwan M	Truck	6	n.a.	4	67
		Tractor Trolley	2	2	2	8
		Total				75

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
152	Halisahar M	Tractor	3	2	3	18
		Total				18
153	Krishna Nagar M	Truck	1	4	3	12
		Tractor Trolley	4	2	3	24
		Total				36
154	Midnapur M	Truck	3	3	5	45
		Tractor Trailer	2	2	2	8
		Total				53
155	North Barrackpur M	Tractor	5	2	3	30
		Truck	1	3	3	9
		Total				39
156	Santipur M	Truck	1	2	2	4
		Tractor	5	1.5	4	30
		Total				34
157	Siliguri M.Corp.	Tractor	4	n.a.	3	
		Truck	6		3	
		Total				150
Small States						
Assam						
158	Guwahati M.Corp.	Truck (large)	25	3	3	225
		Truck (small)	3	1	5	15
		Total				240
159	Jorhat MB	Truck	2	1.5	3	9
		Tractor Trolley	3	n.a.	3	5
		Total				14
Manipur						
160	Imphal MCI	Truck	2	1	2	4
		Dumper	4	1.5	4	24
		Tractor Trolley	4	1	4	16

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Total				44
Meghalaya						
161	Shillong MB	Tipper	4	n.a.	1	31
		Truck	6		1	47
		Total				78
Tripura						
162	Agartala MCI	Truck	9	3	2	50
		Tractor Trolley	1	2	2	4
		Tipper	2	1.8	2	7
		Total				61
Union Territories						
163	Chandigarh M.Corp.	Dumper	16	1	7	112
		Compactors	5	3	3	45
		Tractor Trolley	20	1.5	4	120
		Truck	1	1	3	3
		Total				280
164	Pondicherry M	Tipper	7	4	2	56
		Truck	6	3	2	36
		Power tiller	2	0.5	4	4
		Tractor	3	2	3	18
		Total				114
<p><i>Note : Data for average waste transported was furnished by the respective urban local bodies. The number of vehicles, multiplied by the average capacity and number of trips may not add up to the waste transported.</i></p> <p><i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i></p>						

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
CLASS II						
Andhra Pradesh						
1	Anakapalle M	Tractor	4	2	3	24
		Tractor (hired)	2	2	3	12
		Tipper	1	3	1	3
		Tiller	6	0.9	3	16
		Total				
2	Dharmavaram M	Tractor	2	1.5	3	9
		Total				9
3	Gudur MCI	Tractor	3	2	3	18
		Total				18
4	Kapra M	Tractor	6	1.5	5	45
		Total				45
5	Kavali MCI	Tractor	3	2	4	24
		Total				24
6	Madanapalle M	Tractor	4	3	1	12
		Tractor (hired)	2	2	2	8
		Total				20
7	Narasaraopet M	Tractor	3	3	3	23
		Bullock Carts	9	0.3	5	11
		Tipper	4	2	1	8
		Total				42

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
8	Rajendra Nagar MCI	Tractor	1	1.5	3	5
		Truck	1	2	2	4
		Total				9
9	Sangareddy MCI	Tractor	1	1.5	3	5
		Tractor (hired)	3	1.5	2	9
		Total				14
10	Srikakulam MCI	Tractor	3	2	3	18
		Tractor (hired)	2	2	4	16
		Total				34
11	Srikalahasti M	Tractor trailer	2	2	6	24
		Total				24
12	Suryapet MCI	Tractor	3	2	5	30
		Total				30
Bihar						
13	Buxar M	Tractor	2	3	2	12
		Total				12
14	Deoghar M	Tractor	1	1.5	6	9
		Handcarts	n.a.	n.a.	n.a.	1
		Total				10
15	Hajipur M	Tractor	3	n.a.	2	24
		Total				24
16	Hazaribagh M	Tractor	3	1	3	9
		Truck	3	3	3	27
		Total				36
17	Jehanabad M	Tractor	1	3	4	10
		Total				10
18	Madhubani M	Tractor	4	1	4	16
		Total				16

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
19	Mokama M	Tractor (hired)	1	4	1	4
		Total				4
Gujarat						
20	Amreli M	Tractor	4	1	8	30
		Total				30
21	Ankleswar M	Tractor Trolley	3	1	2	6
		Total				6
22	Dabhoi M	Truck	1	3	6	18
		Total				18
23	Dohad M	Truck	1	1	1	1
		Tractor	3	0.5	2	3
		Total				4
24	Gondal M	Two wheeler	25	n.a.	8	n.a.
		Tractor	7		1	
		Total				0
25	Jetpur M	Tractor	3	1.5	8	36
		Handcarts	24	n.a.	7	4
		Total				40
26	Mahesana M	Tractor	4	1	2	8
		Total				8
27	Palanpur M	Tractor	3	4	3	32
		Auto	2	n.a.	n.a.	10
		Total				42
Haryana						
28	Jind MCI	Tractor Trolley	3	1.5	4	18
		Total				18
29	Kaithal MCI	Tractor Trolley	4	1	3	12
		Total				12

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)	
1		2	3	4	5	6	
30	Rewari MCI	Tractor Trolley	3	1.3	4	16	
						16	
31	Thanesar MCI	Tractor Trolley	4	1	3	12	
		Refuse Collector	1	10	1	10	
		Thela	3	0.3	3	2	
		Total				24	
Karnataka							
32	Bagalkot CMC	Tractor	3	1.5	2	9	
		Truck	1	2	2	4	
		Total				13	
33	Chikmagalur CMC	Truck	2	3	2	12	
		Tractor	2	1.5	2	6	
		Total				18	
34	Gokak CMC	Tractor	2	1.5	1	3	
		Tempo	2	1.5	2	6	
		Total				9	
35	Hospet CMC	Tractor	3	1.5	5	23	
		Tippers	1	3	4	10	
		Total				33	
36	Kolar CMC	Tractor	4	2	1	8	
		Tippers	1	3	3	8	
		Total				16	
37	Rabkavi-Banhatti CMC	Municipality sells waste by auction not applicable					
		Total					
38	Ramanagaram CMC	Truck	2	1.5	3	9	
		Tractor	1	1	2	2	
		Total				11	

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Kerala						
39	Changanessary MC	Truck	1	2	2	4
		Tempo	2	1	2	4
		Tiller	1	0.5	2	1
		Tractor	1	1.5	2	3
		Total				
40	Payyanur M	Truck	1	2	2	4
		Total				
41	Taliparamba M	Truck	1	3	1	3
		Total				
42	Thrissur MC	Truck	11	2	1	22
		Tractor	3	2	2	12
		Tipper	1	0.5	2	1
		Total				
Madhya Pradesh						
43	Hoshangabad M	Tractor trolley	2	1.5	5	15
		Total				
44	Itarsi M	Tractor trolley	5	1.3	2	13
		Truck	1	3	1	3
		Total				
45	Khargone M	Tractor trolley	3	1	2	6
		Total				
46	Mandsaur M	Truck	1	4	2	8
		Tractor trolley	3	3	2	18
		Total				
47	Nagda M	Dumper	1	3	3	9
		Tractor trolley	1	1	1	1
		Total				

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
48	Neemuch M	Tractor trolley	4	n.a.	2	n.a.
		Truck	1		2	
		Auto rickshaw	1		3	
		Total				8
49	Sehore M	Tractor trolley	4	2	4	30
		Total				30
50	Shahdol M	Tractor trolley	4	1.2	3	9
		Total				9
51	Vidisha M	Tractor trolley	5	0.5	4	10
		Total				10
Maharashtra						
52	Amalner MCI	Tractor	3	n.a.	3	n.a.
		Truck	1		2	
		Total				6
53	Ballarpur MCI	S.Model Truck	1	2	3	6
		Truck	1	2	3	6
		Tractor	3	2	1	6
		Total				18
54	Bhandara M	Truck	1	3	2	6
		Tractor Trolley	3	2	1	6
		Total				12
55	Kamptee MCI	Handcarts	30	0.03	6	5
		Refuse trolley	4	0.5	8	16
		Tippers	3	1.1	7	23
		Private trolley	2	0.5	6	6
		Total				45
56	Manmad MCI	Truck	1	1	1	1
		Tractor	2	3	1	5
		Total				6

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
57	Ratnagiri MCI	Truck	3	3	2	15
		Tippers	1	4	2	8
		Total				23
58	Satara MCI	Truck (large)	2	2	3	12
		Truck (small)	1	1.5	3	5
		Total				17
59	Virar MCI	Tractor	4	2	2	16
		Dumper	2	5	2	20
		Tipper	2	2	2	8
		Truck	1	3	2	6
		Total				50
Punjab						
60	Ferozepur MCI	Tractor Trolley	5	2	4	40
		Total				40
61	Kapurthala M	Tractor Trolley	4	1	3	n.a.
		Dumper placer	40	n.a.	n.a.	
		Total				10
62	Mansa MCI	Tractor Trolley	3	1.5	6	27
		Total				27
63	Phagwara MCI	Tractor Trolley	4	1.3	2	10
		Truck	1	2	2	4
		Total				14
64	Sangrur MCI	Tractor Trolley	3	3	2	15
		Total				15
Rajasthan						
65	Banswara M	Tractor Trolley	2	n.a.	8	n.a.
		Dumper	2		12	
		Loader	1		n.a.	
		Total				25

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
66	Barmer M	Tractor	4	3	1	12
		Truck	2	1	3	6
		Total				18
67	Bundi M	Tractor Trolley	3	2	4	24
		Total				24
68	Churu M	Tractor Trolley	4	3	2	24
		Donkey cart	15	0.2	2	6
		Total				30
69	Hanumangarh M	Tractor	7	1.5	4	42
		Total				42
70	Sawai Madhopur M	Tractor Trolley	4	1	1	4
		Total				4
Tamil Nadu						
71	Ambur M	Truck	1	2	3	6
		Mini-Truck	1	1	4	4
		Tractor	2	1	3	6
		Total				16
72	Arakkonam M	Bullock Cart	6	0.3	2	3
		Truck	4	2	1	8
		Total				11
73	Attur M	Truck	1	2	2	4
		Mini-Truck	3	1	2	6
		Total				10
74	Cumbum M	Mini-Truck	2	0.6	2	2
		Tractor	1	0.5	2	0.9
		Total				3
75	Dharmapuri M	Truck	2	1.8	2	7
		Bullock Carts	16	0.3	1	4
		Total				11

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
76	Gudiyatham M	Truck	2	3	3	17
		Total				17
77	Nagapattinam M	Truck	4	1.5	4	24
		Total				24
78	Pudukkottai M	Truck	2	2	2	8
		Mini-Truck	3	1	2	6
		Tractor	2	1.5	2	6
		Total				20
79	Sivakasi M	Truck	1	1	1	1
		Mini-Truck	3	1	1	3
		Tractor	3	0.5	1	2
		Total				6
80	Srivilliputtur M	Mini-Truck	4	3	2	20
		Total				20
81	Tindivanam M	Truck	1	2	2	4
		Mini-Truck	2	1	2	4
		Tractor	2	1	2	4
		Total				12
82	Udhagamandalam M	Truck	3	1.5	1	5
		Mini-Truck	3	1	1	3
		Total				8
Uttar Pradesh						
83	Auraiya MB	Tractor Trolley	2	1.5	7	21
		Total				21
84	Balrampur MB	Tractor	2	2	2	8
		Dumper	1	4	3	12
		Total				20
85	Basti MB	Tractor	5	4	2	35
		Total				35

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
86	Bhadohi MB	Tractor Trolley	2	2	8	32
		Handcarts	20	0.08	5	8
		Total				40
87	Chandpur MB	Tractor Trolley	2	0.5	3	3
		Bullock Carts	8	0.1	2	2
		Handcarts	6	0.02	2	0.2
		Total				5
88	Etah MB	Tractor Trolley	2	2	4	16
		Tipplers	1	3	8	24
		Total				40
89	Ghazipur MB	Tractor Trolley	3	3	2	18
		Dumper	1	3	3	9
		Total				27
90	Gonda MB	Tractor Trolley	3	3	3	27
		Total				27
91	Lakhimpur MB	Tractor Trolley	2	n.a.	2	14
		Dumper	1	1.5	6	21
		Total				35
92	Lalitpur MB	Tractor	4	4	3	48
		Dumper	1	2	3	6
		Total				54
93	Mughalsarai MB	Tractor Trolley	3	4	3	36
		Power tiller	2	n.a.	2	1
		Handcarts	183	0.03	2	11
		Total				48
94	Nawabganj-Barabanki MB	Tractor	3	1	2	6
		Total				6
95	Orai MB	Tractor Trolley	3	1	5	15

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
		Handcarts	50	0.04	8	14
		Total				29
96	Roorkee MB	Tractor Trolley	3	3	3	27
		Total				27
West Bengal						
97	Bishnupur M	Tractor Trailer	2	2	2	8
		Handcarts	30	0.2	1	5
		Total				13
98	Chakdaha M	Handcarts	8	0.1	4	3
		Tractor Trailer	1	2	2	4
		Total				7
99	Contai M	Tractor Trolley	6	0.8	1	5
		Truck	3	1.3	1	4
		Total				9
100	Cooch Behar M	Wheel barrow	20	0.01	2	0.3
		Three wheeler	20	0.05	2	2
		Tractor Trolley	3	1	2	6
		Truck	2	3	2	10
		Auto van	2	0.5	3	3
		Total				21
101	Darjeeling M	Mini-Truck	4	1.3	3	15
		Truck	n.a.	n.a.	n.a.	15
		Total				30
102	Jalpaiguri M	Truck	3	2	3	18
		Tractor	2	1	1	2
		Total				20
103	Jangipur M	Tractor & Trailer	2	3	3	18
		Total				18

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
104	Katwa M	Tractor Trailer	6	2	3	36
		Total				36
105	Raniganj M	Tractor Trailer	6	2	3	41
		Total				41
Small States						
Himachal Pradesh						
106	Shimla M.Corp.	Dumper placer	5	n.a.	8	n.a.
		Tipper	3		3	
		Total				35
Nagaland						
107	Kohima TC	Truck	2	2	4	16
		Tractor Trailer	2	1.1	3	6
		Total				22
Union Territories						
108	Port Blair MCI	Tipper	7	2	3	42
		Tractor Trolley	1	1	2	2
		Total				44
Others(Smaller than Class II towns)						
Small States						
Goa						
109	Panaji MCI	Compactor	6	n.a.	2	n.a.
		Dumper Truck	7		2	
		Truck	1		2	
		Total				11
Sikkim						
110	Gangtok (Greater Gangtok) NTAC	Truck	7	5	1	35
		Total				35

Sl. No.	City/Town	Type	Number	Approx. Capacity (MT)	Avg. no. of trips per day	Approx. waste transported daily (MT)
1		2	3	4	5	6
Union Territories						
111	Daman MCI	Truck	2	3	1	5
		Tempo	2	1	2	4
		Tractor	1	1.5	1	2
		Others	1	0.5	1	0.5
		Total				
112	Silvassa CT	Dumper	1	2	1	2
		Hydraulic Dumper	1	2	1	2
		Total				
<p><i>Note : Data for average waste transported was furnished by the respective urban local bodies. The number of vehicles, multiplied by the average capacity and number of trips may not addup to the waste transported.</i></p> <p><i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i></p>						

C-5

DISPOSAL OF SOLID WASTE, 1999

C-5 : Disposal of Solid Waste, 1999

Sl.	City/Town	Quantity of solid waste treated/ disposed by								No. (MT/day)
		Composting		Land fill		Crude/ open dumping		Other methods		
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1		2	3	4	5	6	7	8	9	10
Metropolitan Cities										
1	Ahmedabad M.Corp.	500	39	-	-	773	61	-	-	1273
2	Bangalore M.Corp.	440	20	-	-	1760	80	-	-	2200
3	Bhopal M.Corp.	100	28	260	72	-	-	-	-	360
4	Calcutta M.Corp.	300	14	1800	86	-	-	-	-	2100
5	Chennai M.Corp.	-	-	-	-	2500	100	-	-	2500
6	Coimbatore M.Corp.	-	-	-	-	670	100	-	-	670
7	Delhi M.Corp.	150	3	5350	97	-	-	-	-	5500
8	Greater Mumbai M.Corp.	100	2	5900	98	-	-	-	-	6000
9	Hyderabad M.Corp.	40	2	-	-	1845	97	15	1	1900
10	Indore M.Corp.	-	-	-	-	600	100	-	-	600
11	Jaipur M.Corp.	-	-	1483	100	-	-	-	-	1483
12	Kanpur M.Corp.	-	-	-	-	1100	100	-	-	1100
13	Kochi M.Corp.	-	-	-	-	240	100	-	-	240
14	Lucknow M.Corp.	-	-	-	-	875	100	-	-	875
15	Ludhiana M.Corp.	-	-	-	-	875	100	-	-	875
16	Madurai M.Corp.	30	7	-	-	420	93	-	-	450
17	Nagpur M.Corp.	-	-	100	20	400	80	-	-	500
18	Pune M.Corp.	-	-	900	100	-	-	-	-	900
19	Surat M.Corp.	-	-	960	100	-	-	-	-	960
20	Vadodara M.Corp.	-	-	-	-	440	100	-	-	440
21	Varanasi M.Corp.	-	-	-	-	461	100	-	-	461
22	Visakhapatnam M.Corp.	-	-	600	100	-	-	-	-	600
Total-Metropolitan Cities		1660	5.2	17353	54.25	12959	40.5	15	0.05	31987

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
CLASS I										
Andhra Pradesh										
1	Anantapur MCI	60	55	-	-	50	45	-	-	110
2	Chittoor M	35	50	12	17	23	33	-	-	70
3	Cuddapah MCI	-	-	-	-	84	100	-	-	84
4	Eluru M	6	4	-	-	140	96	-	-	146
5	Guntur MCI	250	100	-	-	-	-	-	-	250
6	Hindupur M	-	-	-	-	70	100	-	-	70
7	Kakinada M	-	-	-	-	145	100	-	-	145
8	Kurnool MCI	-	-	90	100	-	-	-	-	90
9	Machilipatnam M	45	90	-	-	5	10	-	-	50
10	Nandyal MCI	36	60	-	-	24	40	-	-	60
11	Nellore MCI	-	-	-	-	167	100	-	-	167
12	Nizamabad M	-	-	-	-	88	100	-	-	88
13	Ongole MCI	-	-	-	-	90	100	-	-	90
14	Qutubullapur M	-	-	-	-	70	100	-	-	70
15	Rajahmundry M.Corp.	-	-	-	-	193	100	-	-	193
16	Tenali M	64	80	-	-	16	20	-	-	80
17	Tirupati MCI	-	-	-	-	130	100	-	-	130
18	Vijaywada M.Corp.	-	-	300	65	-	-	165	35	465
19	Warangal M.Corp.	-	-	-	-	230	100	-	-	230
Bihar										
20	Bihar Sharif M	-	-	-	-	50	100	-	-	50
21	Chhapra M	-	-	-	-	66	100	-	-	66
22	Gaya M.Corp.	-	-	-	-	80	100	-	-	80
23	Katihar M	-	-	-	-	45	100	-	-	45
24	Munger M	-	-	-	-	50	100	-	-	50

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
25	Ranchi M.Corp.	-	-	-	-	34	100	-	-	34
Gujarat										
26	Anand M	-	-	-	-	10	100	-	-	10
27	Bharuch M	-	-	-	-	85	100	-	-	85
28	Bhavnagar M.Corp.	-	-	-	-	115	100	-	-	115
29	Bhuj M	-	-	-	-	40	100	-	-	40
30	Jamnagar M.Corp.	-	-	-	-	300	100	-	-	300
31	Junagadh M	-	-	-	-	75	100	-	-	75
32	Nadiad M	-	-	-	-	60	100	-	-	60
33	Navsari M	-	-	-	-	31	100	-	-	31
34	Porbandar M	-	-	-	-	22	100	-	-	22
35	Rajkot M.Corp.	-	-	-	-	425	100	-	-	425
36	Surendranagar M	-	-	-	-	31	100	-	-	31
Haryana										
37	Ambala MCI	-	-	-	-	30	100	-	-	30
38	Faridabad M.Corp.	-	-	-	-	480	100	-	-	480
39	Gurgaon MCI	-	-	-	-	80	100	-	-	80
40	Hissar MCI	-	-	-	-	32	100	-	-	32
41	Karnal MCI	-	-	-	-	52	100	-	-	52
42	Rohtak MCI	-	-	-	-	28	100	-	-	28
Jammu & Kashmir										
43	Jammu M.Corp.	-	-	-	-	300	100	-	-	300
44	Srinagar M.Corp.	-	-	-	-	200	100	-	-	200
Karnataka										
45	Belgaum M.Corp.	-	-	100	100	-	-	-	-	100
46	Bellary CMC	-	-	-	-	50	100	-	-	50
47	Davangere MCI	78	100	-	-	-	-	-	-	78

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								Total (MT/day)
		Composting		Land fill		Crude/ open dumping		Other methods		
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
48	Gadag-Betigeri CMC	10	17	-	-	50	83	-	-	60
49	Gulbarga M.Corp.	-	-	-	-	76	100	-	-	76
50	Hubli-Dharwad M.Corp.	-	-	-	-	220	100	-	-	220
51	Mandya M	-	-	-	-	25	100	-	-	25
52	Mangalore M.Corp.	-	-	-	-	70	100	-	-	70
53	Mysore M.Corp.	-	-	-	-	205	100	-	-	205
54	Shimoga CMC	-	-	-	-	72	100	-	-	72
55	Tumkur M	-	-	-	-	84	100	-	-	84
Kerala										
56	Alappuzha MC	-	-	-	-	20	100	-	-	20
57	Kollam MC	-	-	-	-	58	100	-	-	58
58	Kozhikode M.Corp.	-	-	-	-	154	100	-	-	154
59	Thalaserry M	30	100	-	-	-	-	-	-	30
60	Thiruvananthapuram M.Corp.	-	-	-	-	250	100	-	-	250
Madhya Pradesh										
61	Bhind M	-	-	-	-	24	100	-	-	24
62	Burhanpur M.Corp.	21	35	-	-	39	65	-	-	60
63	Dewas M.Corp.	-	-	20	50	20	50	-	-	40
64	Guna M	-	-	-	-	18	100	-	-	18
65	Gwalior M.Corp.	100	36	-	-	180	64	-	-	280
66	Jabalpur M.Corp.	-	-	-	-	298	100	-	-	298
67	Khandwa M	10	50	5	25	5	25	-	-	20
68	Morena M	-	-	-	-	44	100	-	-	44
69	Murwara-Katni M.Corp.	-	-	-	-	63	100	-	-	63
70	Ratlam M.Corp.	-	-	-	-	35	100	-	-	35
71	Rewa M.Corp.	-	-	-	-	40	100	-	-	40
72	Satna M.Corp.	-	-	-	-	50	100	-	-	50

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
73	Shivpuri M	-	-	-	-	18	100	-	-	18
Maharashtra										
74	Amravati M.Corp.	-	-	-	-	100	100	-	-	100
75	Aurangabad M.Corp.	10	3	-	-	330	97	-	-	340
76	Bhusawal M.Cl.	-	-	-	-	30	100	-	-	30
77	Chandrapur MCI	-	-	70	64	40	36	-	-	110
78	Dhule MCI	-	-	-	-	30	100	-	-	30
79	Ichalkaranji MCI	150	100	-	-	-	-	-	-	150
80	Jalgaon MCI	-	-	220	100	-	-	-	-	220
81	Kolhapur M.Corp.	-	-	-	-	115	100	-	-	115
82	Nanded Waghala M.Corp.	-	-	-	-	90	100	-	-	90
83	Nashik M.Corp.	-	-	-	-	280	100	-	-	280
84	Parbhani MCI	-	-	-	-	72	100	-	-	72
85	Solapur M.Corp.	353	100	-	-	-	-	-	-	353
86	Wardha M	-	-	10	25	30	75	-	-	40
87	Yavatmal MCI	-	-	-	-	10	100	-	-	10
Orissa										
88	Bhubaneswar M.Corp.	-	-	-	-	175	100	-	-	175
89	Cuttack M.Corp.	-	-	-	-	320	100	-	-	320
90	Puri M	-	-	-	-	53	100	-	-	53
91	Rourkela M	-	-	-	-	40	100	-	-	40
92	Sambalpur M	-	-	-	-	32	100	-	-	32
Punjab										
93	Amritsar M.Corp.	-	-	200	39	310	61	-	-	510
94	Bathinda MCI	-	-	-	-	95	100	-	-	95
95	Hoshiarpur MCI	-	-	-	-	33	100	-	-	33
96	Jalandhar M. Corp.	-	-	-	-	236	100	-	-	236

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
97	Moga MCI	-	-	36	100	-	-	-	-	36
98	Pathankot MCI	-	-	23	100	-	-	-	-	23
99	Patiala M.Corp.	-	-	80	100	-	-	-	-	80
Rajasthan										
100	Ajmer MCI	-	-	-	-	250	100	-	-	250
101	Alwar M	-	-	-	-	100	100	-	-	100
102	Beawar M	-	-	-	-	42	100	-	-	42
103	Bhilwara M	-	-	-	-	58	100	-	-	58
104	Bikaner M	-	-	-	-	180	100	-	-	180
105	Jodhpur M.Corp.	-	-	-	-	308	100	-	-	308
106	Kota M.Corp.	-	-	20	17	100	83	-	-	120
107	Sriganganagar M	-	-	-	-	24	100	-	-	24
Tamil Nadu										
108	Cuddalore M	60	100	-	-	-	-	-	-	60
109	Dindigul M	17	100	-	-	-	-	-	-	17
110	Erode M	-	-	-	-	85	100	-	-	85
111	Kanchipuram M	19	100	-	-	-	-	-	-	19
112	Kumbakonam M	-	-	-	-	40	100	-	-	40
113	Nagercoil M	30	100	-	-	-	-	-	-	30
114	Rajapalayam M	-	-	-	-	43	100	-	-	43
115	Salem M.Corp.	21	10	156	73	-	-	36	17	214
116	Thanjavur M	35	100	-	-	-	-	-	-	35
117	Tiruchirappalli M.Corp.	280	100	-	-	-	-	-	-	280
118	Tirunelveli M.Corp.	-	-	-	-	87	100	-	-	87
119	Tiruvannamalai M	32	100	-	-	-	-	-	-	32
120	Tiruppur M	-	-	-	-	100	100	-	-	100
121	Tuticorin M	-	-	-	-	25	100	-	-	25

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
122	Vellore M	24	69	10	29	-	-	1	3	35
Uttar Pradesh										
123	Agra M.Corp.	30	7	400	93	-	-	-	-	430
124	Aligarh M.Corp.	-	-	-	-	275	100	-	-	275
125	Allahabad M.Corp.	-	-	-	-	250	100	-	-	250
126	Bareilly M.Corp.	-	-	-	-	320	100	-	-	320
127	Etawah MB	-	-	-	-	27	100	-	-	27
128	Faizabad MB	-	-	-	-	54	100	-	-	54
129	Firozabad MB	-	-	-	-	144	100	-	-	144
130	Ghaziabad M.Corp.	-	-	-	-	300	100	-	-	300
131	Gorakhpur M.Corp.	-	-	-	-	240	100	-	-	240
132	Haldwani-cum-Kathgodam MB	-	-	-	-	80	100	-	-	80
133	Hapur MB	20	29	-	-	50	71	-	-	70
134	Hardwar MB	-	-	-	-	182	100	-	-	182
135	Jhansi MB	-	-	89	66	35	26	11	8	135
136	Mathura MB	40	27	-	-	110	73	-	-	150
137	Meerut M.Corp.	-	-	-	-	500	100	-	-	500
138	Mirzapur MB	-	-	-	-	86	100	-	-	86
139	Moradabad M.Corp.	-	-	-	-	300	100	-	-	300
140	Muzaffarnagar MB	-	-	-	-	130	100	-	-	130
141	Rae Bareli MB	-	-	-	-	66	100	-	-	66
142	Rampur MB	120	100	-	-	-	-	-	-	120
143	Saharanpur MB	-	-	-	-	200	100	-	-	200
144	Sitapur MB	-	-	-	-	70	100	-	-	70
145	Unnao MB	-	-	-	-	8	100	-	-	8
West Bengal										
146	Asansol M.Corp.	-	-	-	-	60	100	-	-	60

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
147	Baharampur M	2	2	49	60	25	31	5	6	81
148	Balurghat M	33	100	-	-	-	-	-	-	33
149	Bankura M	-	-	-	-	26	100	-	-	26
150	Barasat M	-	-	-	-	24	100	-	-	24
151	Burdwan M	-	-	75	100	-	-	-	-	75
152	Halisahar M	-	-	-	-	17	100	-	-	17
153	Krishna Nagar M	-	-	-	-	38	100	-	-	38
154	Midnapur M	49	91	5	9	-	-	-	-	53
155	North Barrackpur M	-	-	10	25	30	75	-	-	40
156	Santipur M	-	-	-	-	33	100	-	-	33
157	Siliguri M.Corp.	-	-	-	-	150	100	-	-	150
Small States										
Assam										
158	Guwahati M.Corp.	-	-	-	-	240	100	-	-	240
159	Jorhat MB	-	-	14	100	-	-	-	-	14
Manipur										
160	Imphal MCI	-	-	-	-	38	100	-	-	38
Meghalaya										
161	Shillong MB	-	-	-	-	78	100	-	-	78
Tripura										
162	Agartala MCI	-	-	-	-	60	100	-	-	60
Union Territories										
163	Chandigarh M.Corp.	-	-	280	100	-	-	-	-	280
164	Pondicherry M	120	100	-	-	-	-	-	-	120
Total-Class I Cities		2189	11	2274	12	14522	76	218	1	19204

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by								
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)
		MT/day	%	MT/day	%	MT/day	%	MT/day	%	
1	2	3	4	5	6	7	8	9	10	
CLASS II										
Andhra Pradesh										
1	Anakapalle M	50	91	-	-	5	9	-	-	55
2	Dharmavaram M	9	100	-	-	-	-	-	-	9
3	Gudur MCI	-	-	18	100	-	-	-	-	18
4	Kapra M	-	-	-	-	48	100	-	-	48
5	Kavali MCI	-	-	24	100	-	-	-	-	24
6	Madanapalle M	20	100	-	-	-	-	-	-	20
7	Narasaraopet M	-	-	-	-	42	100	-	-	42
8	Rajendra Nagar MCI	-	-	12	100	-	-	-	-	12
9	Sangareddy MCI	-	-	18	100	-	-	-	-	18
10	Srikakulam MCI	-	-	-	-	25	100	-	-	25
11	Srikalahasti M	-	-	-	-	30	100	-	-	30
12	Suryapet MCI	-	-	30	75	10	25	-	-	40
Bihar										
13	Buxar M	-	-	-	-	12	100	-	-	12
14	Deoghar M	-	-	-	-	10	100	-	-	10
15	Hajipur M	-	-	-	-	24	100	-	-	24
16	Hazaribagh M	-	-	-	-	36	100	-	-	36
17	Jehanabad M	-	-	-	-	10	100	-	-	10
18	Madhubani M	-	-	-	-	15	100	-	-	15
19	Mokama M	-	-	-	-	4	100	-	-	4
Gujarat										
20	Amreli M	30	100	-	-	-	-	-	-	30
21	Ankleswar M	-	-	-	-	6	100	-	-	6
22	Dabhoi M	-	-	-	-	18	100	-	-	18
23	Dohad M	-	-	-	-	4	100	-	-	4

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by									
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)	
		MT/day	%	MT/day	%	MT/day	%	MT/day	%		
1	2	3	4	5	6	7	8	9	10		
24	Gondal M	-	-	-	-	10	100	-	-	10	
25	Jetpur M	-	-	-	-	40	100	-	-	40	
26	Mahesana M	-	-	-	-	8	100	-	-	8	
27	Palanpur M	-	-	-	-	40	100	-	-	40	
Haryana											
28	Jind MCI	-	-	-	-	18	100	-	-	18	
29	Kaithal MCI	-	-	-	-	12	100	-	-	12	
30	Rewari MCI	-	-	-	-	16	100	-	-	16	
31	Thanesar MCI	-	-	-	-	24	100	-	-	24	
Karnataka											
32	Bagalkot CMC	-	-	-	-	13	100	-	-	13	
33	Chikmagalur CMC	-	-	-	-	18	100	-	-	18	
34	Gokak CMC	7	100	-	-	-	-	-	-	7	
35	Hospet CMC	-	-	-	-	31	100	-	-	31	
36	Kolar CMC	-	-	-	-	15	100	-	-	15	
37	Rabkavi-Banhatti CMC	-	-	-	-	12	100	-	-	12	
38	Ramanagaram CMC	-	-	-	-	10	100	-	-	10	
Kerala											
39	Changanessary MC	-	-	-	-	12	100	-	-	12	
40	Payyanur M	-	-	-	-	4	100	-	-	4	
41	Taliparamba M	3	100	-	-	-	-	-	-	3	
42	Thrissur MC	-	-	-	-	35	100	-	-	35	
Madhya Pradesh											
43	Hoshangabad M	-	-	-	-	15	100	-	-	15	
44	Itarsi M	-	-	-	-	15	100	-	-	15	
45	Khargone M	6	100	-	-	-	-	-	-	6	
46	Mandsaur M	-	-	-	-	26	100	-	-	26	
47	Nagda M	-	-	-	-	10	100	-	-	10	

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by									
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)	
		MT/day	%	MT/day	%	MT/day	%	MT/day	%		
1	2	3	4	5	6	7	8	9	10		
48	Neemuch M	-	-	-	-	8	100	-	-	8	
49	Sehore M	-	-	-	-	30	100	-	-	30	
50	Shahdol M	-	-	-	-	9	100	-	-	9	
51	Vidisha M	-	-	10	100	-	-	-	-	10	
Maharashtra											
52	Amalner MCI	5	83	-	-	1	17	-	-	6	
53	Ballarpur MCI	-	-	-	-	18	100	-	-	18	
54	Bhandara M	-	-	-	-	12	100	-	-	12	
55	Kamptee MCI	-	-	40	100	-	-	-	-	40	
56	Manmad MCI	4	80	-	-	1	20	-	-	5	
57	Ratnagiri MCI	-	-	-	-	22	100	-	-	22	
58	Satara MCI	-	-	-	-	17	100	-	-	17	
59	Virar MCI	-	-	-	-	50	100	-	-	50	
Punjab											
60	Ferozepur MCI	-	-	16	40	24	60	-	-	40	
61	Kapurthala M	-	-	5	50	5	50	-	-	10	
62	Mansa MCI	-	-	-	-	27	100	-	-	27	
63	Phagwara MCI	-	-	-	-	14	100	-	-	14	
64	Sangrur MCI	-	-	-	-	15	100	-	-	15	
Rajasthan											
65	Banswara M	-	-	-	-	25	100	-	-	25	
66	Barmer M	-	-	-	-	18	100	-	-	18	
67	Bundi M	-	-	-	-	24	100	-	-	24	
68	Churu M	-	-	-	-	30	100	-	-	30	
69	Hanumangarh M	-	-	-	-	43	100	-	-	43	
70	Sawai Madhopur M	-	-	-	-	4	100	-	-	4	
Tamil Nadu											
71	Ambur M	13	100	-	-	-	-	-	-	13	

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by									
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)	
		MT/day	%	MT/day	%	MT/day	%	MT/day	%		
1	2	3	4	5	6	7	8	9	10		
72	Arakkonam M	-	-	-	-	11	100	-	-	11	
73	Attur M	-	-	-	-	10	100	-	-	10	
74	Cumbum M	4	100	-	-	-	-	-	-	4	
75	Dharmapuri M	-	-	-	-	11	100	-	-	11	
76	Gudiyatham M	-	-	-	-	16	100	-	-	16	
77	Nagapattinam M	-	-	-	-	25	100	-	-	25	
78	Pudukkottai M	20	100	-	-	-	-	-	-	20	
79	Sivakasi M	-	-	-	-	5	100	-	-	5	
80	Srivilliputtur M	-	-	-	-	20	100	-	-	20	
81	Tindivanam M	-	-	-	-	12	100	-	-	12	
82	Udhagamandalam M	7	100	-	-	-	-	-	-	7	
Uttar Pradesh											
83	Auraiya MB	-	-	-	-	21	100	-	-	21	
84	Balrampur MB	-	-	-	-	20	100	-	-	20	
85	Basti MB	-	-	-	-	35	100	-	-	35	
86	Bhadohi MB	-	-	-	-	40	100	-	-	40	
87	Chandpur MB	-	-	-	-	5	100	-	-	5	
88	Etah MB	-	-	-	-	40	100	-	-	40	
89	Ghazipur MB	-	-	-	-	27	100	-	-	27	
90	Gonda MB	-	-	-	-	25	100	-	-	25	
91	Lakhimpur MB	-	-	-	-	35	100	-	-	35	
92	Lalitpur MB	25	45	-	-	30	55	-	-	55	
93	Mughalsarai MB	-	-	-	-	48	100	-	-	48	
94	Nawabganj-Barabanki MB	-	-	-	-	6	100	-	-	6	
95	Orai MB	-	-	-	-	29	100	-	-	29	
96	Roorkee MB	12	44	-	-	15	56	-	-	27	
West Bengal											
97	Bishnupur M	-	-	-	-	13	100	-	-	13	

Sl. No.	City/Town	Quantity of solid waste treated/ disposed by									
		Composting		Land fill		Crude/ open dumping		Other methods		Total (MT/day)	
		MT/day	%	MT/day	%	MT/day	%	MT/day	%		
1	2	3	4	5	6	7	8	9	10		
98	Chakdaha M	-	-	-	-	7	100	-	-	7	
99	Contai M	-	-	-	-	9	100	-	-	9	
100	Cooch Behar M	-	-	-	-	21	100	-	-	21	
101	Darjeeling M	-	-	-	-	30	100	-	-	30	
102	Jalpaiguri M	-	-	-	-	21	100	-	-	21	
103	Jangipur M	-	-	18	100	-	-	-	-	18	
104	Katwa M	-	-	-	-	36	100	-	-	36	
105	Raniganj M	-	-	-	-	-	-	41	100	41	
Small States											
Himachal Pradesh											
106	Shimla M.Corp.	-	-	-	-	35	100	-	-	35	
Nagaland											
107	Kohima TC	-	-	-	-	23	100	-	-	23	
Union Territories											
108	Port Blair MCI	-	-	-	-	44	100	-	-	44	
Others(Smaller than Class II towns)											
Small States											
Goa											
109	Panaji MCI	-	-	11	100	-	-	-	-	11	
Sikkim											
110	Gangtok (Greater Gangtok) NTAC	-	-	-	-	35	100	-	-	35	
Union Territories											
111	Daman MCI	-	-	-	-	11	100	-	-	11	
112	Silvassa CT	-	-	-	-	4	100	-	-	4	
Total-Class II Towns		216	9	202	9	1855	80	41	2	2314	
Grand Total		4065	7.6	19829	37.1	29336	54.8	274	0.5	53505	

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

C-6

COMPOSTING DETAILS

C-6 : Composting Details

Sl. No.	City/Town	Quantity composted (MT)	Method of Composting
1		2	3
METROPOLITAN CITIES			
1	Ahmedabad M.Corp.	500	Mechanical composting
2	Bangalore M.Corp.	500	Pit composting
3	Bhopal M.Corp.	100	Mechanical composting
4	Calcutta M.Corp.	300	
5	Delhi M.Corp.	650	Mechanical composting
6	Greater Mumbai M.Corp.	50	Wind rows
7	Hyderabad M.Corp.	40	Vermi-composting
8	Madurai M.Corp.	30	Pit composting
Total-Metropolitan Cities		2170	
CLASS I			
Andhra Pradesh			
1	Anantapur MCI	60	Pit composting
2	Chittoor M	35	Pit composting
3	Cuddapah MCI	-	Pit composting
4	Eluru M	6	Pit composting
5	Guntur MCI	250	Vermi-composting
6	Hindupur M	45	Pit composting
7	Kakinada M	36	Pit composting
8	Tenali M	64	n.a.
Karnataka			
9	Davangere MCI	78	Pit composting
10	Gadag-Betigeri CMC	10	Pit composting
Kerala			
11	Thalaserry M	30	Pit Composting

Sl. No.	City/Town	Quantity composted (MT)	Method of Composting
1		2	3
Madhya Pradesh			
12	Burhanpur M.Corp.	21	Pit composting
13	Gwalior M.Corp.	100	Vermi-composting
14	Khandwa M	10	Pit composting
Maharashtra			
15	Aurangabad M.Corp.	10	Excel technology
16	Ichalkaranji MCI	150	Pit composting
17	Solapur M.Corp.	353	Bangalore system
Tamil Nadu			
18	Cuddalore M	60	Pit composting
19	Dindigul M	17	Pit composting
20	Kanchipuram M	19	Pit composting
21	Nagercoil M	30	Pit composting
22	Salem M.Corp.	21	Pit composting
23	Thanjavur M	35	Pit composting
24	Tiruchirapalli M.Corp.	280	Pit composting
25	Tiruvannamalai M	32	Heap composting
26	Vellore M	24	Pit composting
Uttar Pradesh			
27	Agra M.Corp.	30	Wind rows
28	Hapur MB	20	Pit composting
29	Mathura MB	40	Tranching
30	Rampur MB	120	Pit composting
West Bengal			
31	Balurghat M	33	Pit composting
32	Baharampur M	2	Pit composting
33	Midnapur M	49	Pit composting

Sl. No.	City/Town	Quantity composted (MT)	Method of Composting
1		2	3
Small States			
Tripura			
34	Agartala MCI	31	Mechanical composting
Union Territories			
35	Pondicherry M	120	Pit composting
Total-Class I Cities		2220	
CLASS II			
Andhra Pradesh			
1	Anakapalle M	50	Pit composting
2	Dharmavaram M	9	Pit composting
3	Madanapalle M	20	Wind rows
Gujarat			
4	Amreli M	30	n.a.
Karnataka			
5	Gokak CMC	7	Pit composting
Kerala			
6	Taliparamba M	3	Pit Composting
Madhya Pradesh			
7	Khargone M	6	Pit composting
Maharashtra			
8	Amalner MCI	5	Pit composting
9	Manmad MCI	4	Pit composting
Tamil Nadu			
10	Cumbum M	4	Heap composting
11	Pudukkottai M	20	Pit composting
12	Udhagamandalam M	7	Pit composting

Sl. No.	City/Town	Quantity composted (MT)	Method of Composting
1		2	3
Uttar Pradesh			
13	Lalitpur MB	25	Pit & Vermi-composting
14	Roorkee MB	12	Pit composting
Total-Class II Towns		203	
Grand Total		4593	
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>			

C-7

LANDFILL DETAILS, 1999

C-7 : Landfill Details, 1999							
Sl. No.	City/Town	Existing Landfill site(s)			Future Landfill site(s)		
		No.	Area (ha)	Future life (yrs)	No.	Area (ha)	Expected life (yrs)
1		2	3	4	5	6	7
Metropolitan Cities							
1	Bangalore M.Corp.	n.a	n.a	n.a	2	8	20
2	Bhopal M.Corp.	2	6	n.a	1	11	n.a
3	Calcutta M.Corp.	5	8	n.a	n.a	n.a	n.a
4	Chennai M.Corp.	n.a	n.a	n.a	1	55	10
5	Delhi M.Corp.	4	60	3	1	10	10
6	Greater Mumbai M.Corp.	4	173	2	n.a	n.a	10
7	Indore M.Corp.	1	59	n.a	1	30	n.a
8	Jaipur M.Corp.	1	30	7	n.a	n.a	n.a
9	Kochi M.Corp.	n.a	n.a	n.a	1	18	n.a
10	Nagpur M.Corp.	1	16	n.a	n.a	n.a	n.a
11	Pune M.Corp.	2	29	10	n.a	n.a	n.a
12	Surat M.Corp.	2	7	1	1	200	50
13	Vadodara M.Corp.	n.a	n.a	n.a	1	2	50
14	Visakhapatnam M.Corp.	2	42	n.a	n.a	n.a	n.a
CLASS I							
Andhra Pradesh							
1	Chittoor M	1	2	2	-	-	-
2	Cuddapah MCI	-	-	-	1	9	25
3	Hindupur M	-	-	-	1	1	n.a.
4	Kurnool MCI	1	11	20	-	-	-
5	Nizamabad M	-	-	-	1	5	n.a.
6	Ongole MCI	-	-	-	1	16	n.a.
7	Vijaywada M.Corp.	3	10	n.a.	-	-	-

Sl. No.	City/Town	Existing Landfill site(s)			Future Landfill site(s)		
		No.	Area (ha)	Future life (yrs)	No.	Area (ha)	Expected life (yrs)
1		2	3	4	5	6	7
Gujarat							
8	Rajkot M.Corp.	-	-	-	1	25	25
Jammu & Kashmir							
9	Srinagar M.Corp.	1	n.a.	5	-	-	-
Karnataka							
10	Belgaum M.Corp.	1	4	n.a.	1	43	n.a.
11	Mysore M.Corp.	-	-	-	1	3	n.a.
Kerala							
12	Thalaserry M	-	-	-	1	5	20
13	Thiruvananthapuram M.Corp.	-	-	-	1	5	n.a.
Madhya Pradesh							
14	Dewas M.Corp.	1	4	1	1	15	n.a.
15	Khandwa M	1	7	2	-	-	-
16	Rewa M.Corp.	-	-	-	1	6	n.a.
17	Satna M.Corp.	-	-	-	1	5	n.a.
18	Shivpuri M	-	-	-	1	9	n.a.
Maharashtra							
19	Chandrapur MCI	1	11	4	-	-	-
20	Jalgaon MCI	1	n.a.	n.a.	-	-	-
21	Nanded Waghala M.Corp.	-	-	-	2	22	50
22	Solapur M.Corp.	-	-	-	1	2	15
23	Wardha M	1	12	10	-	-	-
Punjab							
24	Moga MCI	1	6	5	-	-	-
25	Pathankot MCI	1	n.a.	n.a.	-	-	-
26	Patiala M.Corp.	4	5	4-6	-	-	-
Rajasthan							
27	Ajmer MCI	-	-	-	1	100	50

Sl. No.	City/Town	Existing Landfill site(s)			Future Landfill site(s)		
		No.	Area (ha)	Future life (yrs)	No.	Area (ha)	Expected life (yrs)
1		2	3	4	5	6	7
28	Bhilwara M	-	-	-	1	45	3
29	Bikaner M	-	-	-	1	12	n.a.
30	Kota M.Corp.	5	n.a.	1	-	-	-
31	Sriganganagar M	-	-	-	1	6	1
Tamil Nadu							
32	Kanchipuram M	-	-	-	1	0	10
33	Salem M.Corp.	4	19	n.a.	-	-	-
34	Vellore M	1	5	n.a.	1	10	n.a.
Uttar Pradesh							
35	Agra M.Corp.	1	n.a.	1	1	40	15
36	Jhansi MB	5	15	20	-	-	-
West Bengal							
37	Baharampur M	4	73	5-6	-	-	-
38	Burdwan M	1	2	-	1	7	25
39	Midnapur M	1	2	15	2	5	20
40	North Barrackpur M	1	1	2	-	-	-
Small States							
Assam							
41	Guwahati M.Corp.	-	-	-	1	n.a.	5
42	Jorhat MB	1	3	6	-	-	-
Manipur							
43	Imphal MCI	-	-	-	1	n.a.	n.a.
Tripura							
44	Agartala MCI	-	-	-	1	3	13
Union Territories							
45	Chandigarh M.Corp.	1	45	15	-	-	-
46	Pondicherry M	-	-	-	1	4	n.a.

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Existing Landfill site(s)			Future Landfill site(s)		
		No.	Area (ha)	Future life (yrs)	No.	Area (ha)	Expected life (yrs)
1		2	3	4	5	6	7
CLASS II							
Andhra Pradesh							
1	Gudur MCI	1	1	-	1	5	30
2	Kavali MCI	2	3	10	1	4	25
3	Rajendra Nagar MCI	3	3	6	1	4	25
4	Sangareddy MCI	1	2	25	-	-	-
5	Suryapet MCI	2	20	-	1	1	5
Karnataka							
6	Kolar CMC	-	-	-	1	8	-
Kerala							
7	Changanessary MC	-	-	-	1	1	-
8	Payyanur M	-	-	-	1	5	15
9	Taliparamba M	-	-	-	1	0	20
Madhya Pradesh							
10	Mandsaur M	-	-	-	1	3	10
11	Vidisha M	1	5	5	-	-	-
Maharashtra							
12	Kamptee MCI	4	1	2	2	5	10
Punjab							
13	Ferozepur MCI	1	-	3	-	-	-
14	Kapurthala M	1	1	5	-	-	-
Rajasthan							
15	Barmer M	-	-	-	1	5	-
West Bengal							
16	Bishnupur M	-	-	-	1	100	25
17	Chakdaha M	-	-	-	1	0	20
18	Jangipur M	2	10	50	2	35	50

Sl. No.	City/Town	Existing Landfill site(s)			Future Landfill site(s)		
		No.	Area (ha)	Future life (yrs)	No.	Area (ha)	Expected life (yrs)
1		2	3	4	5	6	7
Small States							
Nagaland							
19	Kohima TC	-	-	-	2	8	25
Others(Smaller than Class II towns)							
Small States							
Goa							
20	Panaji MCI	1	1	10	-	-	-

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

C-8

STAFF POSITION, 1999

C-8 : Staff Position, 1999

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
Metropolitan Cities					
1	Ahmedabad M.Corp.	400	8,500	8,900	2.4
2	Bangalore M.Corp.	326	5,700	6,026	1.1
3	Bhopal M.Corp.	21	1,000	1,021	0.67
4	Calcutta M.Corp.	1,560	13,500	15,060	2.8
5	Chennai M.Corp.	300	10,130	10,430	2.3
6	Coimbatore M.Corp.	126	2,483	2,609	2.6
7	Delhi M.Corp.	1,647	42,317	43,964	5.6
8	Greater Mumbai M.Corp.	1,200	35,526	36,726	3.2
9	Hyderabad M.Corp.	460	9,500	9,960	2.3
10	Indore M.Corp.	135	2,700	2,835	2.3
11	Jaipur M.Corp.	419	7,016	7,435	3.5
12	Kanpur M.Corp.	232	4,626	4,858	2.2
13	Kochi M.Corp.	102	847	949	1.2
14	Lucknow M.Corp.	120	3,940	4,060	2.3
15	Ludhiana M.Corp.	102	2,100	2,202	2.6
16	Madurai M.Corp.	202	2,534	2,736	2.5
17	Nagpur M.Corp.	70	3,629	3,699	1.7
18	Pune M.Corp.	9	1,867	1,876	0.81
19	Surat M.Corp.	24	675	699	0.27
20	Vadodara M.Corp.	61	2,660	2,721	1.9
21	Varanasi M.Corp.	120	2,665	2,785	2.9
22	Visakhapatnam M.Corp.	188	1,587	1,775	1.2
Total-Metropolitan Cities		7,824	165,502	173,326	2.6
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>					

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
CLASS I					
Andhra Pradesh					
1	Anantapur MCI	19	278	297	1.1
2	Chittoor M	7	238	245	1.6
3	Cuddapah MCI	26	292	318	1.8
4	Eluru M	30	384	414	1.6
5	Guntur MCI	73	863	936	1.5
6	Hindupur M	5	142	147	1.0
7	Kakinada M	15	378	393	1.4
8	Kurnool MCI	27	502	529	1.8
9	Machilipatnam M	9	300	309	1.5
10	Nandyal MCI	5	196	201	1.3
11	Nellore MCI	50	527	577	1.3
12	Nizamabad M	38	366	404	1.3
13	Ongole MCI	15	207	222	1.2
14	Qutubullapur M	5	45	50	0.18
15	Rajahmundry M.Corp.	18	820	838	2.2
16	Tenali M	21	249	270	1.5
17	Tirupati MCI	22	321	343	1.5
18	Vijaywada M.Corp.	43	2,696	2,739	3.2
19	Warangal M.Corp.	57	671	728	0.99
Bihar					
20	Bihar Sharif M	7	280	287	1.1
21	Chhapra M	16	213	229	1.1
22	Gaya M.Corp.	5	n.a.	n.a.	n.a.
23	Katihar M	4	23	27	0.12
24	Munger M	4	18	22	0.13

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
25	Ranchi M.Corp.	45	770	815	1.3
Gujarat					
26	Anand M	4	169	173	0.97
27	Bharuch M	22	698	720	4.4
28	Bhavnagar M.Corp.	4	1,400	1,404	2.5
29	Bhuj M	16	150	166	1.3
30	Jamnagar M.Corp.	40	1,260	1,300	2.5
31	Junagadh M	23	369	392	2.2
32	Nadiad M	11	278	289	0.93
33	Navsari M	14	220	234	1.6
34	Porbandar M	10	486	496	3.4
35	Rajkot M.Corp.	26	3,024	3,050	3.0
36	Surendranagar M	4	475	479	3.2
Haryana					
37	Ambala MCI	18	355	373	3.0
38	Faridabad M.Corp.	46	2,614	2,660	2.3
39	Gurgaon MCI	5	467	472	3.1
40	Hissar MCI	18	573	591	3.1
41	Karnal MCI	5	518	523	3.3
42	Rohtak MCI	4	578	582	2.4
Jammu & Kashmir					
43	Jammu M.Corp.	11	218	229	0.24
44	Srinagar M.Corp.	n.a.	1,700	1,700	n.a.*
Karnataka					
45	Belgaum M.Corp.	15	589	604	1.3
46	Bellary CMC	7	225	232	0.76

* population covered by the service is not available

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
47	Davangere MCI	10	463	473	1.0
48	Gadag-Betigeri CMC	5	286	291	1.9
49	Gulbarga M.Corp.	14	349	363	0.78
50	Hubli-Dharwad M.Corp.	7	1,163	1,170	1.4
51	Mandya M	4	8	12	0.06
52	Mangalore M.Corp.	18	380	398	0.93
53	Mysore M.Corp.	30	873	903	0.83
54	Shimoga CMC	11	573	584	2.6
55	Tumkur M	20	228	248	1.3
Kerala					
56	Alappuzha MC	5	165	170	0.83
57	Kollam MC	26	186	212	0.83
58	Kozhikode M.Corp.	33	670	703	1.4
59	Thalaserry M	8	139	147	1.0
60	Thiruvananthapuram M.Corp.	76	966	1,042	1.7
Madhya Pradesh					
61	Bhind M	10	147	157	1.9
62	Burhanpur M.Corp.	16	382	398	1.8
63	Dewas M.Corp.	n.a.	674	674	3.4
64	Guna M	9	140	149	1.1
65	Gwalior M.Corp.	158	1,364	1,522	1.5
66	Jabalpur M.Corp.	144	2,064	2,208	2.1
67	Khandwa M	24	584	608	3.3
68	Morena M	3	229	232	1.8
69	Murwara-Katni M.Corp.	54	356	410	2.0
70	Ratlam M.Corp.	38	295	333	1.5
71	Rewa M.Corp.	54	354	408	2.0

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
72	Satna M.Corp.	41	412	453	2.1
73	Shivpuri M	13	148	161	1.1
Maharashtra					
74	Amravati M.Corp.	16	837	853	1.7
75	Aurangabad M.Corp.	28	1,718	1,746	2.0
76	Bhusawal M.CI.	15	307	322	1.8
77	Chandrapur MCI	25	752	777	2.5
78	Dhule MCI	38	750	788	2.3
79	Ichalkaranji MCI	36	724	760	2.9
80	Jalgaon MCI	49	636	685	1.6
81	Kolhapur M.Corp.	71	1,144	1,215	2.3
82	Nanded Waghala M.Corp.	14	477	491	1.2
83	Nashik M.Corp.	38	1,881	1,919	2.2
84	Parbhani MCI	4	345	349	1.5
85	Solapur M.Corp.	206	973	1,179	1.1
86	Wardha M	36	322	358	2.1
87	Yavatmal MCI	10	236	246	1.8
Orissa					
88	Bhubaneswar M.Corp.	38	987	1,025	1.5
89	Cuttack M.Corp.	49	1,431	1,480	2.5
90	Puri M	34	451	485	3.0
91	Rourkela M	22	669	691	3.4
92	Sambalpur M	18	571	589	3.6
Punjab					
93	Amritsar M.Corp.	18	1,683	1,701	2.1
94	Bathinda MCI	11	602	613	8.7
95	Hoshiarpur MCI	9	252	261	2.3

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
96	Jalandhar M. Corp.	50	1,490	1,540	2.2
97	Moga MCI	10	546	556	4.6
98	Pathankot MCI	1	230	231	1.2
99	Patiala M.Corp.	15	596	611	1.8
Rajasthan					
100	Ajmer MCI	8	1,469	1,477	2.7
101	Alwar M	5	350	355	1.3
102	Beawar M	4	314	318	2.2
103	Bhilwara M	31	645	676	2.9
104	Bikaner M	9	869	878	1.4
105	Jodhpur M.Corp.	60	2,525	2,585	2.5
106	Kota M.Corp.	18	n.a.	n.a.	n.a.
107	Sriganganagar M	14	961	975	4.3
Tamil Nadu					
108	Cuddalore M	31	444	475	2.7
109	Dindigul M	18	451	469	2.1
110	Erode M	35	594	629	3.4
111	Kanchipuram M	24	70	94	0.45
112	Kumbakonam M	20	383	403	2.6
113	Nagercoil M	31	383	414	1.9
114	Rajapalayam M	19	287	306	2.3
115	Salem M.Corp.	75	1,638	1,713	3.7
116	Thanjavur M	27	542	569	2.5
117	Tiruchirapalli M.Corp.	90	1,959	2,049	2.4
118	Tirunelveli M.Corp.	15	176	191	0.43
119	Tiruvannamalai M	15	144	159	1.1
120	Tiruppur M	n.a.	819	819	2.8
121	Tuticorin M	36	417	453	1.9

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
122	Vellore M	31	430	461	2.4
Uttar Pradesh					
123	Agra M.Corp.	109	2,622	2,731	3.0
124	Aligarh M.Corp.	11	n.a.	n.a.	n.a.
125	Allahabad M.Corp.	153	2,345	2,498	2.6
126	Bareilly M.Corp.	16	1,518	1,534	2.0
127	Etawah MB	15	289	304	2.1
128	Faizabad MB	17	400	417	3.4
129	Firozabad MB	10	44	54	0.29
130	Ghaziabad M.Corp.	8	1,147	1,155	1.3
131	Gorakhpur M.Corp.	28	774	802	1.6
132	Haldwani-cum-Kathgodam MB	28	378	406	2.7
133	Hapur MB	17	399	416	2.7
134	Hardwar MB	20	512	532	1.7
135	Jhansi MB	34	700	734	1.8
136	Mathura MB	30	825	855	3.1
137	Meerut M.Corp.	11	1,854	1,865	1.5
138	Mirzapur MB	34	500	534	2.9
139	Moradabad M.Corp.	63	1,001	1,064	2.1
140	Muzaffarnagar MB	20	667	687	2.6
141	Rae Bareli MB	20	531	551	4.0
142	Rampur MB	32	485	517	1.5
143	Saharanpur MB	51	985	1,036	3.6
144	Sitapur MB	10	295	305	2.0
145	Unnao MB	11	170	181	1.4
West Bengal					
146	Asansol M.Corp.	20	487	507	1.5

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
147	Baharampur M	24	356	380	2.5
148	Balurghat M	2	67	69	0.51
149	Bankura M	23	450	473	3.1
150	Barasat M	6	115	121	1.2
151	Burdwan M	45	650	695	2.4
152	Halisahar M	4	21	25	n.a.*
153	Krishna Nagar M	18	214	232	1.5
154	Midnapur M	34	425	459	2.7
155	North Barrackpur M	n.a.	n.a.	n.a.	n.a.
156	Santipur M	6	170	176	1.3
157	Siliguri M.Corp.	63	140	203	0.44
Small States					
Assam					
158	Guwahati M.Corp.	n.a.	492	492	0.35
159	Jorhat MB	6	48	54	0.28
Manipur					
160	Imphal MCI	18	200	218	0.82
Meghalaya					
161	Shillong MB	11	375	386	1.7
Tripura					
162	Agartala MCI	3	85	88	0.43
Union Territories					
163	Chandigarh M.Corp.	141	1,638	1,779	2.0
164	Pondicherry M	38	677	715	2.3

* population covered by the service is not available
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
CLASS II					
Andhra Pradesh					
1	Anakapalle M	8	40	48	0.35
2	Dharmavaram M	2	72	74	0.72
3	Gudur MCI	1	87	88	1.2
4	Kapra M	8	167	175	1.7
5	Kavali MCI	3	89	92	1.0
6	Madanapalle M	10	131	141	1.3
7	Narasaraopet M	6	138	144	1.6
8	Rajendra Nagar MCI	1	70	71	0.58
9	Sangareddy MCI	1	65	66	1.1
10	Srikakulam MCI	15	165	180	1.7
11	Srikalahasti M	3	110	113	1.6
12	Suryapet MCI	1	100	101	1.1
Bihar					
13	Buxar M	6	n.a.	n.a.	n.a.
14	Deoghar M	2	27	29	0.27
15	Hajipur M	22	159	181	1.4
16	Hazaribagh M	22	292	314	2.5
17	Jehanabad M	7	68	75	1.4
18	Madhubani M	9	59	68	1.2
19	Mokama M	1	92	93	n.a.*
Gujarat					
20	Amreli M	18	265	283	3.1
21	Ankleswar M	5	92	97	1.5
22	Dabhoi M	1	62	63	0.95
23	Dohad M	10	118	128	1.5

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
24	Gondal M	6	185	191	1.9
25	Jetpur M	3	167	170	1.3
26	Mahesana M	4	205	209	1.5
27	Palanpur M	2	307	309	2.6
Haryana					
28	Jind MCI	7	246	253	3.1
29	Kaithal MCI	9	290	299	3.8
30	Rewari MCI	8	243	251	2.3
31	Thanesar MCI	12	192	204	2.7
Karnataka					
32	Bagalkot CMC	4	102	106	1.2
33	Chikmagalur CMC	5	109	114	1.1
34	Gokak CMC	6	56	62	0.82
35	Hospet CMC	3	173	176	1.5
36	Kolar CMC	11	112	123	1.0
37	Rabkavi-Banhatti CMC	3	56	59	0.78
38	Ramanagaram CMC	6	74	80	1.1
Kerala					
39	Changanessary MC	3	125	128	2.0
40	Payyanur M	4	16	20	0.23
41	Taliparamba M	5	15	20	0.29
42	Thrissur MC	21	180	201	2.0
Madhya Pradesh					
43	Hoshangabad M	13	230	243	2.3
44	Itarsi M	12	203	215	1.9
45	Khargone M	26	220	246	2.8
46	Mandsaur M	4	325	329	2.6
47	Nagda M	2	164	166	2.1

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
48	Neemuch M	11	288	299	2.9
49	Sehore M	6	139	145	1.4
50	Shahdol M	6	107	113	1.4
51	Vidisha M	15	254	269	2.0
Maharashtra					
52	Amalner MCI	17	385	402	3.9
53	Ballarpur MCI	22	338	360	3.1
54	Bhandara M	9	176	185	2.3
55	Kamptee MCI	16	207	223	2.2
56	Manmad MCI	3	210	213	2.4
57	Ratnagiri MCI	5	76	81	1.1
58	Satara MCI	15	95	110	0.95
59	Virar MCI	2	n.a.	n.a.	n.a.
Punjab					
60	Ferozepur MCI	8	119	127	1.6
61	Kapurthala M	2	200	202	3.8
62	Mansa MCI	2	106	108	1.6
63	Phagwara MCI	4	223	227	2.6
64	Sangrur MCI	2	128	130	2.4
Rajasthan					
65	Banswara M	18	350	368	3.2
66	Barmer M	6	201	207	2.4
67	Bundi M	7	220	227	2.8
68	Churu M	2	138	140	1.4
69	Hanumangarh M	7	271	278	2.2
70	Sawai Madhopur M	2	184	186	2.1
Tamil Nadu					
71	Ambur M	14	152	166	1.8

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
72	Arakkonam M	6	144	150	1.6
73	Attur M	2	84	86	1.3
74	Cumbum M	n.a.	n.a.	n.a.	n.a.
75	Dharmapuri M	9	202	211	3.0
76	Gudiyatham M	4	153	157	1.6
77	Nagapattinam M	16	197	213	1.8
78	Pudukkottai M	10	368	378	3.4
79	Sivakasi M	14	195	209	2.8
80	Srivilliputtur M	4	149	153	2.0
81	Tindivanam M	9	113	122	1.6
82	Udhagamandalam M	11	282	293	2.8
Uttar Pradesh					
83	Auraiya MB	5	82	87	0.91
84	Balrampur MB	13	150	163	2.5
85	Basti MB	8	165	173	1.7
86	Bhadohi MB	4	77	81	1.5
87	Chandpur MB	5	96	101	2.4
88	Etah MB	7	199	206	2.3
89	Ghazipur MB	7	174	181	2.6
90	Gonda MB	2	216	218	1.9
91	Lakhimpur MB	22	229	251	2.3
92	Lalitpur MB	10	146	156	1.6
93	Mughalsarai MB	12	335	347	2.8
94	Nawabganj-Barabanki MB	9	165	174	1.8
95	Orai MB	8	285	293	2.2
96	Roorkee MB	2	15	17	0.18
West Bengal					
97	Bishnupur M	8	300	308	4.5

Sl. No.	City/Town	No. of staff			Staff per 1000 population
		Supervisory	Subordinate	Total	
1		2	3	4	5
98	Chakdaha M	5	27	32	0.60
99	Contai M	18	98	116	1.3
100	Cooch Behar M	30	150	180	1.5
101	Darjeeling M	16	163	179	1.8
102	Jalpaiguri M	38	286	324	2.8
103	Jangipur M	3	10	13	0.15
104	Katwa M	5	212	217	3.1
105	Raniganj M	8	161	169	2.1
Small States					
Himachal Pradesh					
106	Shimla M.Corp.	40	490	530	4.4
Nagaland					
107	Kohima TC	6	80	86	0.78
Union Territories					
108	Port Blair MCI	12	764	776	7.3
Others(Smaller than Class II towns)					
Small States					
Goa					
109	Panaji MCI	15	125	140	2.2
Sikkim					
110	Gangtok (Greater Gangtok) NTAC	2	100	102	1.3
Union Territories					
111	Daman MCI	10	105	115	3.0
112	Silvassa CT	1	35	36	1.8
* population covered by the service is not available					
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.					

C-9

PRIVATISATION, 1999

C-9 : Privatisation, 1999

Sl. No.	City/Town	Aspect privatised	Details of privatisation					Cost before privatisation (Rs in '000)	Cost after privatisation (Rs in '000)
			Specific area covered	Mode used	Year of privatisation	No. of contractors			
1		2	3	4	5	6	7	8	
Metropolitan Cities									
1	Bangalore M.Corp.	Sweeping	n.a.	Contract	1989	120	n.a.	n.a.	
2	Calcutta M.Corp.	Transportation	-	n.a.	n.a.	n.a.	n.a.	n.a.	
3	Chennai M.Corp.	Collection	3 Zones	BOO	Starting 2000	1	n.a.	n.a.	
4	Delhi M.Corp.	Composting	n.a.	Contract	1999	1	n.a.	n.a.	
5	Greater Mumbai M.Corp.	Transportation	n.a.	Contract	n.a.	n.a.	n.a.	n.a.	
6	Hyderabad M.Corp.	Sweeping	n.a.	n.a.	1998	122	n.a.	n.a.	
7	Jaipur M.Corp.	Transportation	n.a.	n.a.	1990	18	n.a.	n.a.	
8	Ludhiana M.Corp.	Sweeping & collection	n.a.	CBO	n.a.	114	2827	n.a.	
9	Madurai M.Corp.	Transportation	Commercial	Contract	1998	2	n.a.	n.a.	
10	Nagpur M.Corp.	Collection	n.a.	Contract	1997	2	n.a.	n.a.	
11	Surat M.Corp.	Collection & transportation	n.a.	n.a.	n.a.	2	n.a.	n.a.	
12	Visakhapatnam M.Corp.	Sweeping & collection	n.a.	n.a.	1994	5	n.a.	n.a.	
CLASS I									
Andhra Pradesh									
1	Anantapur MCI	Sweeping	n.a.	Contract	1997	1	11500	14500	
2	Chittoor M	Sweeping & collection	n.a.	Contract	1999	1	n.a.	n.a.	
3	Eluru M	Collection & disposal	n.a.	Contract	1998	2	n.a.	1800	
4	Guntur MCI	Collection & disposal	n.a.	Contract	1996	3	n.a.	3864	
5	Hindupur M	Sweeping & collection	n.a.	Contract	1996	1	n.a.	100	
6	Nandyal MCI	Sweeping	n.a.	NGO	1998	1	n.a.	n.a.	
7	Nellore MCI	Sweeping	n.a.	Contract	1998	5	23843	27812	

Sl. No.	City/Town	Aspect privatised	Details of privatisation					
			Specific area covered	Mode used	Year of privatisation	No. of contractors	Cost before privatisation (Rs in '000)	Cost after privatisation (Rs in '000)
1	2	3	4	5	6	7	8	
8	Qutubullapur M	Sweeping	n.a.	Contract	1997	5	2000	4200
9	Tenali M	Collection & disposal	n.a.	Contract	1998	1	n.a.	144
10	Tirupati MCI	Sweeping & collection	n.a.	Contract	1997	4	n.a.	n.a.
11	Vijaywada M.Corp.	Disposal & treatment	n.a.	n.a.	n.a.	3	n.a.	n.a.
Bihar								
12	Gaya M.Corp.	Drain cleaning	n.a.	Contract	1999	4	n.a.	740
Gujarat								
13	Bhuj M	Collection & transportation	-	-	-	-	-	-
14	Jamnagar M.Corp.	Primary collection	n.a.	Contract	1987	6	8000	2200
15	Rajkot M.Corp.	Collection & transportation	n.a.	Contract	1990	9	n.a.	7000
Jammu & Kashmir								
16	Srinagar M.Corp.	Collection	New colonies	Contract	1999	3	n.a.	n.a.
Karnataka								
17	Belgaum M.Corp.	Transportation	n.a.	Contract	1994	2	n.a.	n.a.
18	Bellary CMC	Sweeping & transportation	n.a.	Contract	1998	2	n.a.	n.a.
19	Davangere MCI	Composting	n.a.	Auction	1996	55	n.a.	n.a.
20	Hubli-Dharwad M.Corp.	Vermi-composting	n.a.	Contract	1998	1	n.a.	n.a.
21	Mysore M.Corp.	Sweeping & transportation	n.a.	Contract	1998	7	n.a.	n.a.
22	Shimoga CMC	Disposal	12 wards	Contract	1994	6	n.a.	n.a.
Kerala								
23	Alappuzha MC	Disposal	n.a.	Contract	1999	1	n.a.	n.a.
Madhya Pradesh								
24	Jabalpur M.Corp.	Sweeping	n.a.	Contract	1998	1	1164	770
Maharashtra								
25	Amravati M.Corp.	Sweeping	n.a.	Contract	1985	2	n.a.	700
26	Aurangabad M.Corp.	Composting	entire town	Contract	1997	1	n.a.	30000

Sl. No.	City/Town	Aspect privatised	Details of privatisation					
			Specific area covered	Mode used	Year of privatisation	No. of contractors	Cost before privatisation (Rs in '000)	Cost after privatisation (Rs in '000)
1	2	3	4	5	6	7	8	
27	Nanded Waghala M.Corp.	Sweeping	entire city	Contract	1997	1	n.a.	1000
28	Nashik M.Corp.	Transportation	n.a.	Contract	1997	77	n.a.	26500
29	Parbhani MCI	Transportation	n.a.	Contract	1999	2	n.a.	1205
Orissa								
30	Bhubaneswar M.Corp.	Collection	n.a.	Contract	n.a.	n.a.	n.a.	n.a.
Rajasthan								
31	Ajmer MCI	Transportation	entire town	n.a.	1998	2	n.a.	n.a.
32	Sriganganagar M	Sweeping	entire town	Contract	1994	3	700	350
Tamil Nadu								
33	Tiruppur M	Secondary collection	Major roads	Contract	1997	1	n.a.	n.a.
West Bengal								
34	Asansol M.Corp.	Primary collection & transportation	n.a.	Contract	n.a.	7	n.a.	n.a.
Small States								
Assam								
35	Guwahati M.Corp.	Transportation	entire city	Contract	1988	13	n.a.	n.a.
Tripura								
36	Agartala MCI	Composting	n.a.	n.a.	1999	n.a.	n.a.	n.a.
Union Territories								
37	Chandigarh M.Corp.	Sweeping & collection	n.a.	Contract	1996	3	n.a.	2720
38	Pondicherry M	Sweeping & collection	n.a.	Contract	1997	1	n.a.	n.a.
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

Sl. No.	City/Town	Aspect privatised	Details of privatisation					
			Specific area covered	Mode used	Year of privatisation	No. of contractors	Cost before privatisation (Rs in '000)	Cost after privatisation (Rs in '000)
1	2	3	4	5	6	7	8	
CLASS II								
Andhra Pradesh								
1	Kapra M	Sweeping	n.a.	n.a.	1999	3	4640	2908
2	Madanapalle M	Sweeping & collection	n.a.	Contract	n.a.	2	n.a.	97
3	Narasaraopet M	Collection & disposal	n.a.	Contract	1998	1	n.a.	1248
4	Rajendra Nagar MCI	Sweeping & collection	n.a.	NGO	1997	1	20	85
5	Srikalahasti M	Sweeping & collection	n.a.	Contract	1998	n.a.	n.a.	-
6	Suryapet MCI	Sweeping & collection	n.a.	Contract	1997	2	n.a.	n.a.
Karnataka								
7	Bagalkot CMC	Sweeping	n.a.	Contract	1999	2	n.a.	n.a.
8	Chikmagalur CMC	Collection & transportation	entire town	Contract	1997	1	n.a.	n.a.
9	Gokak CMC	Sweeping & transportation	n.a.	n.a.	1999	1	n.a.	n.a.
10	Rabkavi-Banhatti CMC	Transportation	n.a.	Auction	n.a.	n.a.	n.a.	n.a.
Maharashtra								
11	Bhandara M	Nala cleaning	n.a.	n.a.	1999	1	n.a.	n.a.
12	Kamptee MCI	Sweeping & collection	commercial	Contract	1999	1	25	18
13	Manmad MCI	Transportation	n.a.	Contract	1999	1	300	147
14	Virar MCI	Sweeping & collection	entire town	Contract	1999	1	4500	3500
Others(Smaller than Class II towns)								
Small States								
Goa								
15	Panaji MCI	Collection, transportation & disposal	Restaurants	Contract	1995	2	n.a.	n.a.
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								

C-10

REVENUE RECEIPTS FOR SOLID WASTE
MANAGEMENT, 1997-98

C-10: Revenue Receipts for Solid Waste Management, 1997-98

Sl. No.	City/Town	Rates of sanitation		Revenue Receipts (Rs. in '000)				
		Unit	Rate (%)	Sanitation tax/ cess	Sale of compost	Sale of rubbish	Others	Total
1		2	3	4	5	6	7	8
Metropolitan Cities								
1	Ahmedabad M.Corp.	-	-	-	91	-	1,984	2,075
2	Bhopal M.Corp.	-	-	-	80	-	-	80
3	Delhi M.Corp.	-	-	-	n.a.	-	6900*	6,900
4	Chennai M.Corp.							2,755,700
5	Greater Mumbai M.Corp.	-	-	-	-	-	80000**	80,000
6	Lucknow M.Corp.	-	-	-	-	102	-	102
7	Nagpur M.Corp.	n.a.	n.a.	48,300	-	-	-	48,300
8	Pune M.Corp.	% of arv	13	116,600	-	-	-	116,600
9	Surat M.Corp. ^	% of arv	6, 12, 24	12,622				12,622
* Private removal charges (54 lakh) and Other receipts (15 lakh) ; ** Administration Charges ; arv = Annual rateable value ; ^ Different rates of sanitation are for residential, non-residential and commercial respectively in Surat M.Corp								
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.								
CLASS I								
Andhra Pradesh								
1	Eluru M	n.a.	n.a.	1,522	5	-	107	1,634
2	Vijaywada M.Corp.	-	-	-	-	-	1,500	1,500
Bihar								
3	Bihar Sharif M	% of arv	8	1,480	-	-	-	1,480
Gujarat								
4	Bhavnagar M.Corp.	% of arv	9	14,916	-	-	-	14,916
5	Jamnagar M.Corp.	n.a.	n.a.	5,529	-	-	177	5,706
6	Navsari M	% of arv	4	2,056	-	-	-	2,056
7	Porbandar M	-	-	-	39	-	-	39
8	Rajkot M.Corp.	% of arv	4-10	26,451	-	-	-	26,451

Sl. No.	City/Town	Rates of sanitation		Revenue Receipts (Rs. in '000)				
		Unit	Rate (%)	Sanitation tax/ cess	Sale of compost	Sale of rubbish	Others	Total
1		2	3	4	5	6	7	8
9	Surendranagar M	-	-	-	-	-	74	74
Karnataka								
10	Gadag-Betigeri CMC	-	-	-	2	-	-	2
11	Gulbarga M.Corp.	n.a.	n.a.	121	-	-	-	121
12	Mysore M.Corp.	-	-	-	-	187	-	187
13	Shimoga CMC	n.a.	n.a.	2,080	-	-	-	2,080
14	Tumkur M	n.a.	n.a.	693	-	-	-	693
Madhya Pradesh								
15	Burhanpur M.Corp.	-	-	-	103	-	-	103
16	Guna M	-	-	-	5	-	-	5
17	Jabalpur M.Corp.	Rs./year	180	1,489	-	-	2,595	4,084
18	Khandwa M	0	0	-	48	-	-	48
19	Morena M	Rs./year	150	384	-	-	-	384
20	Murwara-Katni M.Corp.	n.a.	n.a.	70	-	16	628	714
21	Satna M.Corp.	-	-	-	-	2	-	2
Maharashtra								
22	Amravati M.Corp.	% of arv	24	36	7	-	-	43
23	Aurangabad M.Corp.	% of arv	1	6,481	-	-	-	6,481
24	Bhusawal M.Cl.	n.a.	n.a.	2,366	-	-	-	2,366
25	Ichalkaranji MCI	-	-	-	18	-	-	18
26	Kolhapur M.Corp.	% of arv	30	16,507	-	-	-	16,507
27	Nanded Waghala M.Corp.	n.a.	n.a.	845	-	-	-	845
28	Nashik M.Corp.	% of arv	5	7,049	-	-	-	7,049
29	Parbhani MCI	-	-	-	-	27	-	27
30	Solapur M.Corp.	n.a.	n.a.	14,662	204	-	-	14,866
Tamil Nadu								
31	Dindigul M	-	-	-	-	113	-	113

Sl. No.	City/Town	Rates of sanitation		Revenue Receipts (Rs. in '000)				
		Unit	Rate (%)	Sanitation tax/ cess	Sale of compost	Sale of rubbish	Others	Total
1		2	3	4	5	6	7	8
32	Kanchipuram M	n.a.	n.a.	1,657	-	-	2,558	4,215
33	Salem M.Corp.	% of arv	1	4,126	-	-	-	4,126
34	Thanjavur M	-	-	-	146	-	-	146
35	Tiruchirapalli M.Corp.	% of arv	2	7,811	-	-	-	7,811
36	Tirunelveli M.Corp.	-	-	-	-	6	-	6
37	Tiruvannamalai M	-	-	-	2	-	-	2
38	Tiruppur M	% of arv	2	2,737	-	-	-	2,737
39	Tuticorin M	-	-	-	-	1	-	1
Uttar Pradesh								
40	Agra M.Corp.	-	-	-	-	-	99	99
41	Bareilly M.Corp.	-	-	-	-	300	-	300
42	Etawah MB	-	-	-	21	-	-	21
43	Haldwani-cum-Kathgodam MB	% of arv	10	3,000	-	n.a.	-	3,000
44	Jhansi MB	-	-	-	11	26	-	37
45	Rampur MB	-	-	-	21	-	-	21
46	Saharanpur MB	n.a.	n.a.	1,005	-	-	-	1,005
West Bengal								
47	Balurghat M	-	-	-	4	-	-	4
48	Baharampur M	-	-	-	5	-	-	5
49	Krishna Nagar M	-	-	-	-	-	34	34
50	Midnapur M	-	-	-	38	-	-	38
51	North Barrackpur M	-	-	-	-	-	86	86
52	Santipur M	-	-	-	12	-	-	12
Small States								
Assam								
53	Guwahati M.Corp.	*% of arv	3	4,962	-	-	-	4,962

Sl. No.	City/Town	Rates of sanitation		Revenue Receipts (Rs. in '000)				
		Unit	Rate (%)	Sanitation tax/ cess	Sale of compost	Sale of rubbish	Others	Total
1		2	3	4	5	6	7	8
Meghalaya								
54	Shillong MB	% of arv	variable	1,674	-	-	-	1,674
Tripura								
55	Agartala MCI	% of arv	3	90	-	-	-	90
Union Territories								
56	Pondicherry M	-	-	-	20	-	-	20
<i>arv = Annual rateable value</i>								
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>								
CLASS II								
Andhra Pradesh								
1	Dharmavaram M	-	-	0	57	0	0	57
2	Gudur MCI	-	-	0	0	0	12	12
3	Kapra M	*% of arv	2	548	0	0	0	548
4	Kavali MCI	-	-	0	27	0	0	27
5	Suryapet MCI	% of arv	2	493	0	0	0	493
Karnataka								
6	Chikmagalur CMC	n.a.	n.a.	1,050	0	0	0	1,050
7	Rabkavi-Banhatti CMC	% of arv	10	130	166	0	0	296
8	Ramanagaram CMC	n.a.	n.a.	173	0	0	0	173
Kerala								
9	Payyanur M	n.a.	n.a.	745	0	0	0	745
10	Taliparamba M	% of arv	3	110	0	0	0	110
Madhya Pradesh								
11	Hoshangabad M	Rs./year	150	97	0	0	0	97
12	Itarsi M	Rs./year	150	331	0	0	0	331
13	Khargone M	0	0	0	17	0	0	17

Sl. No.	City/Town	Rates of sanitation		Revenue Receipts (Rs. in '000)				
		Unit	Rate (%)	Sanitation tax/ cess	Sale of compost	Sale of rubbish	Others	Total
1		2	3	4	5	6	7	8
14	Mandsaur M	Rs./year	150	705	3	0	0	708
15	Neemuch M	Rs./year	50	n.a.	51	0	0	51
Tamil Nadu								
16	Attur M	0	0	0	0	3	0	3
17	Cumbum M	0	0	0	9	0	0	9
Uttar Pradesh								
18	Etah MB	0	0	0	0	0	20	20
19	Lalitpur MB	0	0	0	5	0	0	5
20	Roorkee MB	0	0	0	1	0	0	1
West Bengal								
21	Darjeeling M	n.a.	n.a.	194	0	0	0	194
22	Raniganj M	0	0	0	0	280	0	280

arv = Annual rateable value
Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

C-11

REVENUE EXPENDITURE ON SOLID WASTE
MANAGEMENT, 1997-98

C-11 : Revenue Expenditure on Solid Waste Management, 1997-98

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
Metropolitan Cities							
1	Ahmedabad M.Corp.	316,242	10,707	17	0	19,188	346,154
2	Bangalore M.Corp.	279,700	8,778	124,112	0	9,800	422,390
3	Bhopal M.Corp.	13,005	n.a.	0	0	0	13,005
4	Calcutta M.Corp.	Break-up not available					794,309
5	Chennai M.Corp.	455,467	37,270	39,071	28,983	32,895	593,686
6	Coimbatore M.Corp.	168,515	4,606	0	0	0	173,121
7	Delhi M.Corp.	1,392,200	0	0	11,935	66,720	1,470,855
8	Greater Mumbai M.Corp.	2,750,000	50,000	200,000	750,000	0	3,750,000
9	Hyderabad M.Corp.	250,000	0	0	25,000	0	275,000
10	Indore M.Corp.			n.a.			
11	Jaipur M.Corp.	257,241	25,782	0	0	54,000	337,023
12	Kanpur M.Corp.	227,326	43,515	0	0	0	270,841
13	Kochi M.Corp.	18,770	2,420	0	0	0	21,190
14	Lucknow M.Corp.	21,000	12,000	4,000	0	0	37,000
15	Ludhiana M.Corp.	132,773	380	0	0	0	133,153
16	Madurai M.Corp.	101,751	14	378	10,027	0	112,170
17	Nagpur M.Corp.	158,755	8,755	3,266	0	0	170,776
18	Pune M.Corp.	233,314	n.a.	0	224	0	233,538
19	Surat M.Corp.	11,855	55,617	0	0	0	67,472
20	Vadodara M.Corp.	4,112	718	1,354	13	0	6,197
21	Varanasi M.Corp.	234,293	10,463	6,126	0	0	250,883
22	Visakhapatnam M.Corp.	144,370	0	0	0	17,630	162,000

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total	
		Salary and wages	Consumables	Vehicle repair	Contingency	Others		
1		2	3	4	5	6	7	
CLASS I								
Andhra Pradesh								
1	Anantapur MCI	8,998	950	230	1,030	0	11,208	
2	Chittoor M	950	500	39	0	600	2,089	
3	Cuddapah MCI	9,000	300	384	120	0	9,804	
4	Eluru M	11,853	260	300	2,036	1,080	15,529	
5	Guntur MCI	30,100	0	0	0	2,948	33,048	
6	Hindupur M	5,224	200	150	0	60	5,634	
7	Kakinada M	9,443	600	300	0	732	11,075	
8	Kurnool MCI	9,256	0	0	0	973	10,229	
9	Machilipatnam M	14,400	250	0	0	0	14,650	
10	Nandyal MCI	700	325	100	400	500	2,025	
11	Nellore MCI	24,868	1,311	471	1,994	0	28,643	
12	Nizamabad M	20,400	0	0	0	0	20,400	
13	Ongole MCI	8,697	200	169	2,170	0	11,236	
14	Qutubullapur M	150	50	30	500	2,400	3,130	
15	Rajahmundry M.Corp.	20,897	514	130	0	6,300	27,841	
16	Tenali M	3,671	0	90	1,516	0	5,277	
17	Tirupati MCI	9,333	3,806	0	0	0	13,139	
18	Vijaywada M.Corp.	62,147	6,500	1,300	1,300	6,400	77,647	
19	Warangal M.Corp.	2,073	0	182	3,262	0	5,517	
Bihar								
20	Bihar Sharif M	6,121	136	150	10	0	6,417	
21	Chhapra M	Break-up not available						14,660
22	Gaya M.Corp.	150	0	0	0	0	150	
23	Katihar M	8,113	109	121	6	0	8,349	
24	Munger M			n.a.				
25	Ranchi M.Corp.	30,000	800	200	0	0	31,000	

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
Gujarat							
26	Anand M			n.a.			
27	Bharuch M	23,346	1,410	875	477	567	26,675
28	Bhavnagar M.Corp.	60,000	500	200	0	3,500	64,200
29	Bhuj M	7,426	0	372	0	2,698	10,495
30	Jamnagar M.Corp.	45,421	0	0	335	0	45,756
31	Junagadh M	11,888	0	0	0	1,560	13,448
32	Nadiad M	13,780	413	187	0	0	14,380
33	Navsari M	6,636	4,244	0	0	0	10,881
34	Porbandar M	11,503	0	0	434	0	11,937
35	Rajkot M.Corp.	81,376	9,201	0	0	1,773	92,350
36	Surendranagar M	11,506	0	10	0	0	11,516
Haryana							
37	Ambala MCI	12,741	199	53	48	0	13,041
38	Faridabad M.Corp.	249,890	4,574	2,243	0	0	256,707
39	Gurgaon MCI	17,815	552	0	0	0	18,367
40	Hissar MCI	1,239	247	493	0	0	1,979
41	Karnal MCI	20,380	612	0	0	0	20,992
42	Rohtak MCI	18,926	411	298	425	0	20,060
Jammu & Kashmir							
43	Jammu M.Corp.			n.a.			
44	Srinagar M.Corp.	14,500	130	2,000	2,000	0	18,630
Karnataka							
45	Belgaum M.Corp.	30,483	1,237	437	1,126	2,881	36,164
46	Bellary CMC	14,721	1,486	559	2,710	138	19,614
47	Davangere MCI	20,478	1,010	260	249	0	21,997
48	Gadag-Betigeri CMC	10,733	344	40	0	0	11,117

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
49	Gulbarga M.Corp.	16,188	703	124	2,230	3,163	22,408
50	Hubli-Dharwad M.Corp.	55,776	1,945	876	2,112	2,182	62,891
51	Mandya M	12,417	261	56	76	30	12,840
52	Mangalore M.Corp.	12,246	1,787	1,538	45	5,575	21,191
53	Mysore M.Corp.	42,729	3,468	1,064	2,214	475	49,950
54	Shimoga CMC	30,240	1,262	868	0	475	32,845
55	Tumkur M	3,547	57	40	0	0	3,644
Kerala							
56	Alappuzha MC	11,761	265	0	1,087	0	13,113
57	Kollam MC	15,655	0	0	162	0	15,817
58	Kozhikode M.Corp.	34,737	1,530	0	2,541	0	38,808
59	Thalaserry M	8,841	419	768	0	0	10,028
60	Thiruvananthapuram M.Corp.	47,198	8,313	0	688	0	56,199
Madhya Pradesh							
61	Bhind M*	5,612	202	168	3	116	6,101
62	Burhanpur M.Corp.	14,062	1,224	0	0	0	15,286
63	Dewas M.Corp.	16,390	449	0	121	1,005	17,964
64	Guna M	4,800	3,300	125	450	0	8,675
65	Gwalior M.Corp.	5,984	1,899	625	0	0	8,508
66	Jabalpur M.Corp.	75,716	0	257	625	8,784	85,383
67	Khandwa M	16,938	256	96	0	0	17,290
68	Morena M			n.a.			
69	Murwara-Katni M.Corp.	14,954	327	220	135	55	15,691
70	Ratlam M.Corp.	14,750	203	0	99	0	15,051
71	Rewa M.Corp.	12,700	420	50	50	0	13,220
72	Satna M.Corp.	7,112	706	210	0	0	8,028
73	Shivpuri M	5,700	360	312	120	0	6,492

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
Maharashtra							
74	Amravati M.Corp.	34,760	0	0	0	1,050	35,810
75	Aurangabad M.Corp.	54,678	3,041	5,631	644	542	64,536
76	Bhusawal M.CI.	10,498	701	194	1,482	0	12,875
77	Chandrapur MCI	18,007	2,003	0	1,471	1,007	22,487
78	Dhule MCI	21,091	780	100	10	60	22,041
79	Ichalkaranji MCI	1,263	149	171	0	0	1,583
80	Jalgaon MCI	26,469	0	808	0	5,292	32,569
81	Kolhapur M.Corp.	43,865	1,279	0	0	3,158	48,301
82	Nanded Waghala M.Corp.	22,737	642	1,019	491	1,326	26,215
83	Nashik M.Corp.	8,857	0	0	120	0	8,977
84	Parbhani MCI	8,801	406	403	116	80	9,806
85	Solapur M.Corp.	10,076	2,465	2,438	187	844	16,010
86	Wardha M	10,987	164	901	682	0	12,735
87	Yavatmal MCI	7,404	271	283	2,984	0	10,942
Orissa							
88	Bhubaneswar M.Corp.			n.a			
89	Cuttack M.Corp.			n.a			
90	Puri M			n.a			
91	Rourkela M			n.a			
92	Sambalpur M			n.a			
<i>(* Figures for Bhand are for 1996-97)</i>							
Punjab							
93	Amritsar M.Corp.	96,770	9,400	2,471	1,533	0	110,174
94	Bathinda MCI	2,700	730	600	500	0	4,530
95	Hoshiarpur MCI	12,726	95	102	332	0	13,255
96	Jalandhar M. Corp.	107,320	9,125	2,250	0	0	118,695

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
97	Moga MCI	4,500	600	100	200	0	5,400
98	Pathankot MCI	12,157	350	350	77	0	12,934
99	Patiala M.Corp.	22,500	1,650	0	0	0	24,150
Rajasthan							
100	Ajmer MCI	127,000	140,000	0	0	0	267,000
101	Alwar M	16,652	0	0	5,555	525	22,731
102	Beawar M	13,230	285	325	278	940	15,058
103	Bhilwara M	47,595	5,041	0	0	41,024	93,660
104	Bikaner M	48,607	761	407	6,678	0	56,453
105	Jodhpur M.Corp.	118,046	3,755	0	0	5,784	127,585
106	Kota M.Corp.			n.a.			
107	Sriganganagar M	18,793	12	796	0	0	19,601
Tamil Nadu							
108	Cuddalore M	10,577	0	0	751	0	11,328
109	Dindigul M	16,053	0	0	601	0	16,654
110	Erode M	18,464	0	0	3,014	0	21,478
111	Kanchipuram M	965	0	0	1,735	5,595	8,295
112	Kumbakonam M	12,635	0	1,594	0	0	14,229
113	Nagercoil M	14,592	0	0	39	0	14,631
114	Rajapalayam M	11,670	1,016	0	0	0	12,686
115	Salem M.Corp.	49,690	10,993	7,207	3,472	0	71,362
116	Thanjavur M	17,298	0	0	38	0	17,336
117	Tiruchirapalli M.Corp.	64,792	4,721	0	0	0	69,513
118	Tirunelveli M.Corp.	28,905	0	0	218	0	29,123
119	Tirunvannamalai M	9,972	1,184	0	805	0	11,961
120	Tiruppur M	26,901	4,890	0	0	0	31,791
121	Tuticorin M	21,952	0	0	1,144	0	23,096
122	Vellore M	13,576	0	0	824	0	14,400

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total	
		Salary and wages	Consumables	Vehicle repair	Contingency	Others		
1		2	3	4	5	6	7	
Uttar Pradesh								
123	Agra M.Corp.	120,368	9,966	0	0	0	130,334	
124	Aligarh M.Corp.	7,000	600	400	0	0	8,000	
125	Allahabad M.Corp.	119,651	16,643	0	0	0	136,294	
126	Bareilly M.Corp.	60,000	2,448	830	0	0	63,278	
127	Etawah MB	2,200	2,400	25	0	0	4,625	
128	Faizabad MB	20,400	240	50	0	0	20,690	
129	Firozabad MB	21,869	7,150	0	0	96	29,114	
130	Ghaziabad M.Corp.	61,511	0	0	0	19,580	81,090	
131	Gorakhpur M.Corp.	34,658	4,517	0	0	0	39,174	
132	Haldwani-cum-Kathgodam MB	25,200	0	100	50	0	25,350	
133	Hapur MB	11,869	0	548	0	0	12,417	
134	Hardwar MB	36,408	1,572	0	0	0	37,980	
135	Jhansi MB	22,567	1,081	287	51	62	24,048	
136	Mathura MB	28,174	641	29	121	0	28,965	
137	Meerut M.Corp.	81,029	12,150	0	0	13,064	106,243	
138	Mirzapur MB	36,473	Expenditure on other heads not available					36,473
139	Moradabad M.Corp.			n.a.				
140	Muzaffarnagar MB	36,631	688	252	1,762	0	39,333	
141	Rae Bareli MB		Break-up not available					31,280
142	Rampur MB	16,707	3,098	0	0	0	19,805	
143	Saharanpur MB	40,355	6,748	0	0	0	47,103	
144	Sitapur MB	596	0	0	0	11,824	12,419	
145	Unnao MB		Break-up not available					5,079
West Bengal								
146	Asansol M.Corp.	7,192	0	0	0	6,534	13,726	
147	Baharampur M	14,236	174	120	0	0	14,531	

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
148	Balurghat M	1,620	565	100	15	0	2,300
149	Bankura M	12,927	232	105	48	0	13,312
146	Barasat M	3,893	0	435	0	0	4,327
150	Burdwan M			n.a.			
151	Halisahar M			n.a.			
152	Krishna Nagar M	11,613	329	0	321	66	12,328
153	Midnapur M	11,000	250	80	2,000	675	14,005
154	North Barrackpur M	3,955	155	58	14	290	4,472
155	Santipur M	4,337	144	141	2	0	4,624
156	Siliguri M.Corp.	20,417	0	0	0	5,333	25,749
Small States							
Assam							
157	Guwahati M.Corp.	15,600	3,600	4,320	1,200	0	24,720
158	Jorhat MB			n.a.			
Manipur							
159	Imphal MCI	4,662	378	631	0	0	5,670
160	Meghalaya						
161	Shillong MB	7,780	467	99	149	137	8,632
Tripura							
162	Agartala MCI	7,875	1,150	1,100	300	0	10,425
Union Territories							
163	Chandigarh M.Corp.	97,004	4,007	2,410	9,593	0	113,014
164	Pondicherry M	22,469	238	694	94	0	23,495

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
CLASS II							
Andhra Pradesh							
1	Anakapalle M	300	120	60	0	0	480
2	Dharmavaram M			n.a.			
3	Gudur MCI	3,000	96	90	0	0	3,186
4	Kapra M	5,577	89	131	0	0	5,797
5	Kavali MCI	3,943	165	135	64	0	4,307
6	Madanapalle M	5,199	450	0	800	0	6,449
7	Narasaraopet M	2,722	90	50	30	559	3,451
8	Rajendra Nagar MCI			n.a.			
9	Sangareddy MCI	2,686	112	54	0	485	3,337
10	Srikakulam MCI			n.a.			
11	Srikalahasti M			Break-up not available			4,177
12	Suryapet MCI	3,844	166	53	338	973	5,374
Bihar							
13	Buxar M			n.a.			
14	Deoghar M	88	94	14	0	0	197
15	Hajipur M	3,153	45	20	0	91	3,309
16	Hazaribagh M	n.a.					
17	Jehanabad M	1,771	30	25	15	0	1,842
18	Madhubani M	1,721	19	20	11	0	1,772
19	Mokama M			n.a.			
Gujarat							
20	Amreli M	714	87	299	0	0	1,100
21	Ankleswar M	3,575	87	443	0	32	4,137
22	Dabhoi M	2,854	0	0	0	156	3,010
23	Dohad M			n.a.			
24	Gondal M	8,581	290	0	0	0	8,872

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
25	Jetpur M	7,118	153	822	18	0	8,111
26	Mahesana M	4,743	345	656	358	0	6,103
27	Palanpur M	10,363	564	124	26	0	11,077
Haryana							
28	Jind MCI	8,176	63	109	68	0	8,416
29	Kaithal MCI	8,352	85	50	24	0	8,511
30	Rewari MCI	12,199	99	25	180	0	12,504
31	Thanesar MCI	7,973	81	74	305	0	8,433
Karnataka							
32	Bagalkot CMC	4,473	258	97	486	0	5,314
33	Chikmagalur CMC	4,685	0	0	0	600	5,285
34	Gokak CMC	1,973	89	133	0	0	2,195
35	Hospet CMC			n.a			
36	Kolar CMC	4,284	2,275	1,806	0	2,000	10,365
37	Rabkavi-Banhatti CMC	2,629	308	8	0	0	2,945
38	Ramanagaram CMC	2,199	0	0	0	647	2,846
Kerala							
39	Changanessary MC	5,948	268	0	0	470	6,686
40	Payyanur M	1,070	12	40	2	0	1,124
41	Taliparamba M	428	0	100	0	0	528
42	Thrissur MC	13,356	1,133	0	0	0	14,489
Madhya Pradesh							
43	Hoshangabad M	1,528	311	197	267	1,762	4,065
44	Itarsi M	5,147	576	46	0	0	5,769
45	Khargone M	4,468	0	1,429	0	0	5,897
46	Mandsaur M	8,826	532	164	2,510	23	12,055
47	Nagda M	4,290	154	491	72	0	5,007
48	Neemuch M	7,945	848	0	239	212	9,243

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
49	Sehore M	5,655	417	22	24	0	6,119
50	Shahdol M	2,636	116	179	0	0	2,932
51	Vidisha M	7,109	243	203	0	92	7,648
Maharashtra							
52	Amalner MCI			n.a.			
53	Ballarpur MCI	9,265	170	292	62	44	9,833
54	Bhandara M	5,448	125	172	1,124	0	6,869
55	Kamptee MCI	7,362	47	50	14	0	7,473
56	Manmad MCI	8,800	1,200	350	0	0	10,350
57	Ratnagiri MCI	4,352	105	164	1,420	0	6,040
58	Satara MCI	6,805	1,017	200	0	0	8,021
59	Virar MCI			n.a.			
Punjab							
60	Ferozepur MCI	4,800	216	54	32	0	5,102
61	Kapurthala M	8,367	265	95	290	0	9,017
62	Mansa MCI	13,469	307	80	70	0	13,926
63	Phagwara MCI	8,403	500	80	320	0	9,303
64	Sangrur MCI	6,138	0	200	300	167	6,805
Rajasthan							
65	Banswara M	1,600	240	120	40	0	2,000
66	Barmer M	8,705	147	130	775	0	9,756
67	Bundi M	1,500	250	50	0	0	1,800
68	Churu M	8,362	415	0	0	10	8,787
69	Hanumangarh M	13,787	935	0	0	0	14,722
70	Sawai Madhopur M			n.a.			
Tamil Nadu							
71	Ambur M	5,510	0	106	0	0	5,616
72	Arakkonam M	4,307	0	192	0	0	4,499

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
73	Attur M	4,952	0	0	147	0	5,099
74	Cumbum M		Break-up not available				427
75	Dharmapuri M	7,471	211	0	1,070	867	9,619
76	Gudiyatham M	4,907	0	0	35	0	4,942
77	Nagapattinam M	7,501	0	0	182	0	7,683
78	Pudukkottai M	12,888	0	1,447	0	0	14,335
79	Sivakasi M	7,996	n.a.	n.a.	69	n.a.	8,065
80	Srivilliputtur M	6,122	86	0	0	0	6,208
81	Tindivanam M	5,913	0	0	498	0	6,411
82	Udhagamandalam M	10,956	0	0	59	0	11,015
Uttar Pradesh							
83	Auraiya MB	4,145	37	59	0	0	4,241
84	Balrampur MB		Break-up not available				5,407
85	Basti MB	5,686	767	0	0	0	6,453
86	Bhadohi MB	6,742	64	39	0	4,235	11,080
87	Chandpur MB	7,437	52	19	0	0	7,508
88	Etah MB	10,033	2,372	0	5,528	0	17,933
89	Ghazipur MB	8,960	2,660	0	0	0	11,620
90	Gonda MB	1,010	432	98	0	0	1,540
91	Lakhimpur MB	9,398	29	110	0	0	9,537
92	Lalitpur MB	5,948	71	21	3	35	6,078
93	Mughalsarai MB	13,756	40,946	0	0	0	54,703
94	Nawabganj-Barabanki MB	8,350	200	495	0	0	9,045
95	Orai MB	8,926	171	0	0	0	9,097
96	Roorkee MB	498	254	51	0	0	803

Sl. No.	City/Town	Revenue Expenditure (Rs. in '000)					Total
		Salary and wages	Consumables	Vehicle repair	Contingency	Others	
1		2	3	4	5	6	7
West Bengal							
97	Bishnupur M	4,058	365	180	0	0	4,603
98	Chakdaha M	980	30	18	0	0	1,028
99	Contai M	2,809	24	33	24	0	2,889
100	Cooch Behar M	7,053	392	334	33	0	7,811
101	Darjeeling M	9,829	327	0	0	0	10,156
102	Jalpaiguri M	9,530	486	386	28	0	10,430
103	Jangipur M	540	26	10	0	0	576
104	Katwa M	3,791	152	146	70	0	4,159
105	Raniganj M	3,239	133	221	27	0	3,619
Small States							
Himachal Pradesh							
106	Shimla M.Corp.	25,415	1,042	648	0	20,986	48,091
Nagaland							
107	Kohima TC			n.a.			
Union Territories							
108	Port Blair MCI			n.a.			
Others(Smaller than Class II towns)							
Small States							
Goa							
109	Panaji MCI	14,529	719	494	0	0	15,741
Sikkim							
110	Gangtok (Greater Gangtok) NTAC	1,100	400	0	0	0	1,500
Union Territories							
111	Daman MCI	2,378	107	576	0	0	3,060
112	Silvassa CT			n.a.			

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

C-12

CAPITAL WORKS UNDERTAKEN BETWEEN 1994
AND 1999

C-12 : Capital Works Undertaken between 1994 and 1999

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding
				started	completed		
1		2	3	4	5	6	7
Metropolitan Cities							
1	Ahmedabad M.Corp.	Purchase of equipment	Waste collection	1996	1998	11,901	Self financed
2	Delhi M.Corp.	Purchase of vehicles/ equipment	Improving transportation	1994	1999	530,300	State govt.
3	Greater Mumbai M.Corp.	Purchase of vehicles/ equipment	Waste collection	1997	1999	30,000	n.a.
4	Kochi M.Corp.	Acquiring land Purchase of vehicles	Treatment of waste Waste disposal	1998 1995	- 1995	n.a. n.a.	HUDCO Self/ State govt.
5	Ludhiana M.Corp.	n.a.	-	-	-	-	-
6	Nagpur M.Corp.	Purchase of equipment	Waste collection	1997	ongoing	30,000	State govt.
7	Pune M.Corp.	Purchase of equipment	Waste collection	n.a.	-	n.a.	n.a.
CLASS I							
Gujarat							
1	Anand M	Purchase of vehicles	Improving transportation	1996	-	1,000	Self financed
		Purchase of vehicles	Improving transportation	1996	1996	240	Self financed
2	Bharuch M	Purchase of vehicles	Improving transportation	1996	1998	538	Self financed
		Purchase of equipment	Waste collection	1996	1998	878	Self financed
3	Bhuj M	Purchase of vehicles	Improving transportation	1998	-	400	State govt.
		Purchase of vehicles	Improving transportation	1998	1999	100	GMFB
4	Jamnagar M.Corp.	Purchase of vehicles	Improving transportation	1997	-	250	Self financed
		Purchase of vehicles	Improving transportation	1997	1999	2	Self financed
5	Junagadh M	Purchase of vehicles	Improving transportation	1994	1995	n.a.	n.a.
6	Nadiad M	Purchase of vehicles	Improving transportation	1996	-	19,754	Self financed
		Purchase of vehicles	Improving transportation	1997	1997	1,847	Self financed

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding
				started	completed		
1	2	3	4	5	6	7	
7	Navsari M	Purchase of vehicles	Improving transportation	1995	ongoing	550	Self financed
8	Porbandar M	Purchase of vehicles	Improving transportation	1995	-	153	Self financed
		Purchase of vehicles	Improving transportation	1996	1996	831	Self financed
9	Rajkot M.Corp.	Purchase of vehicles	Improving transportation	1993	-	3,400	Self financed
10	Surendranagar M	Purchase of vehicles	Improving transportation	1994	-	1,750	GMFB
Haryana							
11	Ambala MCI	Purchase of vehicles	Improving transportation	1994	-	149	State govt.
		Purchase of vehicles	Improving transportation	1995	1999	610	Self/ State govt.
12	Karnal MCI	Purchase of vehicles	Improving transportation	n.a.	n.a.	1,392	Self financed
Jammu & Kashmir							
13	Srinagar M.Corp.	Earth filling / fencing	Landfill	1997	ongoing	15,000	State govt.
Karnataka							
14	Tumkur M	n.a.	Waste disposal	1998	ongoing	5,000	
Kerala							
15	Kozhikode M.Corp.	Compost plant	Treatment of waste	1998	2000	n.a.	State govt. (KUDFC)
16	Thalaserry M	Compost plant	Treatment of waste	1998	1998	150	Self financed
		Purchase of vehicles	Improving transportation	1996	1997	810	World Bank
Maharashtra							
17	Nashik M.Corp.	Compost plant	Treatment of waste	1999	2000	600	Self financed
Punjab							
18	Moga MCI	Purchase of vehicles	Improving transportation	1996	-	800	Self financed
		Purchase of vehicles	Improving transportation	1997	1997	570	Self financed
Rajasthan							
19	Ajmer MCI	n.a.	Improving transportation	1998	-	544	Self financed
		n.a.	Improving transportation	1998	-	211	Self financed
20	Beawar M	Purchase of equipment	Waste collection	1997	-	853	Self financed
		Purchase of vehicles	Improving transportation	1996	-	1,006	Self financed

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding
				started	completed		
	1	2	3	4	5	6	7
21	Sriganganagar M	Purchase of vehicles	Improving transportation	1996	-	1,453	State govt.
Tamil Nadu							
22	Rajapalayam M	Purchase of vehicles	Improving transportation	1995	1995	800	Self financed
23	Salem M.Corp.	Acquiring land	Waste disposal	1996	1997	15,709	State govt.
24	Tiruvannamalai M	Purchase of vehicles	Improving transportation	1997	-	1,382	Self financed
West Bengal							
25	Santipur M	Purchase of vehicles	Improving transportation	n.a.	n.a.	235	n.a.
Small States							
Tripura							
26	Agartala MCI	Purchase of vehicles	Improving transportation	1997	-	9,700	Central govt.
		Compost plant	Treatment of waste	n.a.	n.a.	3,260	Central govt.
CLASS II							
Gujarat							
1	Amreli M	Purchase of vehicles	Improving transportation	n.a.	n.a.	n.a.	Self financed
2	Dohad M	Purchase of vehicles	Improving transportation	1994	-	350	Self financed
		Purchase of vehicles	Improving transportation	1996	1996	400	Self financed
3	Gondal M	Purchase of vehicles	Improving transportation	1997	-	700	Self financed
		Purchase of vehicles	Improving transportation	1997	1997	210	Self financed
4	Jetpur M	Purchase of vehicles	Improving transportation	1994	-	500	Self financed
		Purchase of vehicles	Improving transportation	1997	1998	200	State govt.
Haryana							
5	Kaithal MCI	n.a.	Waste collection	1998	1998	100	Self financed
Karnataka							
6	Ramanagaram CMC	Purchase of vehicles	Improving transportation	1999	-	n.a.	Self financed

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding
				started	completed		
1		2	3	4	5	6	7
Kerala							
7	Changanessary MC	Compost plant	n.a.	n.a.	n.a.	n.a.	n.a.
8	Taliparamba M	Acquiring land	Waste disposal	1998	1998	1,200	People's plan campaign fund
		Purchase of vehicles	Improving transportation	1997	1997	680	Self financed
Madhya Pradesh							
9	Neemuch M	Purchase of vehicles	Improving transportation	1994	-	735	State govt.
10	Vidisha M	Purchase of equipment	Waste collection	1995	1996	n.a.	Central/ State govt.
		Trenching ground devt.	Waste treatment	1995	n.a.	n.a.	Central/ State govt.
Tamil Nadu							
11	Arakkonam M	Purchase of vehicles	Improving transportation	1996	-	800	Self financed
12	Sivakasi M	Purchase of vehicles					
13	Srivilliputtur M	Purchase of vehicles	Improving transportation	1998	-	495	Self financed
14	Tindivanam M	Purchase of vehicles	Improving transportation	1995	-	n.a.	n.a.
West Bengal							
15	Chakdaha M	Acquiring land	Develop land fill	1997	1998	780	10th Finance Commission Award
Small States							
Himachal Pradesh							
16	Shimla M.Corp.	Purchase of vehicles	Improving transportation	1999	-	6,082	NORAD
Nagaland							
17	Kohima TC	Purchase of equipment	Waste disposal	1994	-	100	Self financed
Union Territories							
18	Port Blair MCI						

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding
				started	completed		
1		2	3	4	5	6	7
Others (Smaller than Class II towns)							
Small States							
Goa							
19	Panaji MCI	n.a.	n.a.	1994	n.a.	n.a.	HUDCO
Sikkim							
20	Gangtok (Greater Gangtok) NTAC	Compost plant	Acquiring land	1997	1999	1,500	State govt.
		Compost plant	Treatment of waste	1999	1999	4,900	State govt.
Union Territories							
21	Daman MCI	Purchase of vehicles	Improving transportation	1996	-	329	State govt.
22	Silvassa CT						
<i>Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.</i>							

C-13

CAPITAL WORKS TO BE UNDERTAKEN IN
FUTURE

C-13 : Capital Works to be Undertaken in Future

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding	Per capita cost (Rs.)
				started	completed			
1		2	3	4	5	6	7	8
Metropolitan Cities								
1	Bangalore M.Corp.	Purchase of vehicles	Improving transportation	2000	2001	250000	HUDCO	n.a.
2	Delhi M.Corp.	Purchase of vehicles/ Land fill	Improving collection Disposal/ treatment of waste	2000	2005 2010	600000 580000	State govt. State govt.	n.a. n.a.
3	Surat M.Corp.	Compost plant	Treatment of waste	2000	2002	118550	n.a.	47
4	Vadodara M.Corp.	Purchase of vehicles	Improving transportation	1999	2001	1500	Self financed	n.a.
CLASS I								
Andhra Pradesh								
1	Guntur MCI	Pelletisation plant	Treatment of waste	1999	1999	n.a.	HUDCO	n.a.
2	Rajahmundry M.Corp.	Bio fertilizer plant	Treatment of waste	1999	2000	400000	State govt.	105
3	Tirupati MCI	Compost plant	Treatment of waste	1999	n.a.	10000	Self financed	n.a.
Gujarat								
5	Anand M	Purchase of vehicles Purchase of vehicles	Improving transportation Improving transportation	1998 1998	1999 1999	200 300	Self financed Self financed	n.a. n.a.
6	Bhuj M	Purchase of vehicles	Improving transportation	1998	1999	2000	GMFB	17
7	Jamnagar M.Corp.	Purchase of vehicles Purchase of vehicles	Improving transportation Waste collection	1999 1999	1999 1999	1463 1220	Self financed Self financed	n.a. n.a.
8	Junagadh M	Purchase of vehicles	Improving transportation	1999	2000	800	District Development Board	n.a.
9	Porbandar M	Purchase of vehicles	Improving transportation	2000		1706	Self financed	
Haryana								
10	Karnal MCI	Purchase of vehicles	Improving transportation	2000	2000	n.a.	Self financed	n.a.
Jammu & Kashmir								
11	Srinagar M.Corp.	Compost plant Plastic Recycling Unit	Treatment of waste in pipeline in pipeline				not decided n.a.	n.a.
Kerala								
12	Kollam MC	Compost plant	Treatment of waste	1999	2001	35000	Central/ State govt.	n.a.
13	Thalaserry M	Compost plant	Treatment of waste	2000	-	n.a.	HUDCO	n.a.

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding	Per capita cost (Rs.)
				started	completed			
1		2	3	4	5	6	7	8
Madhya Pradesh								
14	Guna M	Compost plant	Treatment of waste	n.a.	n.a.	n.a.	n.a.	n.a.
15	Murwara-Katni M.Corp.	Compost plant	Treatment of waste	n.a.	n.a.	n.a.	n.a.	n.a.
16	Satna M.Corp.	Purchase of vehicles	Improving transportation	2000	n.a.	n.a.	State govt.	n.a.
Maharashtra								
17	Wardha M	Compost plant	Treatment of waste	n.a.	n.a.		HUDCO	n.a.
Punjab								
18	Jalandhar M. Corp.	Compost plant	Treatment of waste	1999	2000	n.a.	n.a.	n.a.
19	Moga MCI	Acquiring land Purchase of vehicles/ equipment	Develop land fill Improving collection	2000 1999	2001 2000	1600 1000	Self financed Self financed	11 n.a.
Rajasthan								
20	Ajmer MCI	n.a.	Improving transportation	1999	2000	379	n.a.	n.a.
		n.a.	Improving transportation	1999	2000	151	n.a.	n.a.
21	Bhilwara M	n.a.	Waste disposal	2000	2001	50000	State govt. / HUDCO	222
22	Bikaner M	Compost plant	Treatment of waste	2001	n.a.	12000	Central govt.	20
23	Sriganganagar M	Purchase of vehicles	Improving transportation	2001	n.a.	240	State govt.	n.a.
Tamil Nadu								
24	Tirunelveli M.Corp.	Compost plant Purchase of vehicles/ equipment	Treatment of waste Improving collection	n.a. 1999	n.a. n.a.	n.a. 41400	TNUDF TNUDF/ loan/self	n.a. n.a.
25	Tiruvannamalai M	Compost plant equipment	Treatment of waste	2000	2000	54	Self financed	n.a.
Uttar Pradesh								
26	Hardwar MB	n.a.	Waste disposal	n.a.	n.a.	77700	State govt.	n.a.
Small States								
Assam								
27	Guwahati M.Corp.	Dumping ground devt.	Waste disposal	n.a.	n.a.	n.a.	n.a.	n.a.
Tripura								
28	Agartala MCI	Compost plant	Treatment of waste	2000	2002	235	State govt.	117

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding	Per capita cost (Rs.)
				started	completed			
1		2	3	4	5	6	7	8
CLASS II								
Gujarat								
1	Gondal M	Purchase of vehicles	Improving transportation	1999	2000	500	Self financed	n.a.
2	Jetpur M	Purchase of vehicles	Improving transportation	1997	1999	400	State govt.	n.a.
3	Palanpur M	Purchase of vehicles	Improving transportation	1999	2000	300	State govt.	n.a.
Karnataka								
4	Gokak CMC	Compost yard	Treatment of waste	2000	2001	300	Self financed	n.a.
5	Rabkavi-Banhatti CMC	Purchase of vehicles	Improving transportation	n.a.	n.a.	n.a.	Central govt.	n.a.
6	Ramanagaram CMC	Treatment facility	Treatment of waste	1999		9980	International loan	n.a.
Kerala								
7	Changanessary MC	Compost plant	Treatment of waste	n.a.	n.a.	n.a.	State govt.	n.a.
8	Payyanur M	Acquiring land	Treatment of waste	2004	2005	16000	State govt.	n.a.
9	Taliparamba M	Compost plant	Treatment of waste	2000	2000	1000	People plan campaign fund	n.a.
Madhya Pradesh								
10	Shahdol M	Acquiring land	Treatment facility	n.a.	n.a.	n.a.	n.a.	n.a.
Tamil Nadu								
11	Sivakasi M	Purchase of vehicles	Waste disposal	1999	2000	1200	Self financed	n.a.
12	Srivilliputtur M	Acquiring land	Treatment of waste	2000	2001	25	Self financed	n.a.
West Bengal								
13	Jalpaiguri M	Compost plant	Treatment of waste	2000	2000	1500	International assistance	15
Small States								
Himachal Pradesh								
14	Shimla M.Corp.	Waste recycling plant	Waste treatment	n.a.	n.a.	n.a.	n.a.	n.a.
Nagaland								
15	Kohima TC	Purchase of equipment	Waste disposal	2000	2001	20000	Central govt./ HUDCO	210

Sl. No.	City/Town	Component	Purpose	Year		Total Cost (Rs. in '000)	Source of funding	Per capita cost (Rs.)
				started	completed			
1		2	3	4	5	6	7	8
Others (Smaller than Class II towns)								
Small States								
Sikkim								
16	Gangtok (Greater Gangtok) NTAC	Compost plant	Waste treatment	2001	2005	25000000	n.a.	230
Union Territories								
17	Silvassa CT	Purchase of vehicles	Improving transportation	1998	1999	1000000	State govt.	n.a.

Source: Respective urban local governments/relevant agencies, NIUA Survey, 1999.

ANNEX 1

QUESTIONNAIRE

**A SURVEY OF STATUS OF WATER SUPPLY AND SANITATION
IN SELECTED URBAN AREAS OF INDIA**

Sponsored by

The Ministry of Urban Development
Government of India

WATER SUPPLY & SEWERAGE

Name and Designation of respondent(s) _____

Name of the responding agency _____

Address of the agency _____

Phone nos. _____

Fax. No _____

Stamp of the responding agency

Date: _____

Signature _____

STATUS OF WATER SUPPLY

Name of city/ town _____ District _____ State/ U.T. _____

1. General

	For the city/ town		Within agency's jurisdiction (as on 31-3-99)	
	1991	1999	Total	Covered
	Census	Projected (as on 31-3-99)		
a) Population (in '000)	_____	_____	_____	_____
b) Area (in sq. km.)	_____	_____	_____	_____
c) No. of wards	_____	_____	_____	_____
d) Population living in slums	_____	_____	_____	_____

2. Institutional Arrangements for Water Supply (Please see instruction no. 1)

Agency responsible for:

- a) Planning, designing and execution of capital works: _____
- b) Operation and maintenance: _____
- c) Collection of revenue (water tax, charges, connection fees etc.): _____
- d) If bulk water is purchased, agency responsible for bulk water supply: _____

3. Quantity of Water

	1997-98	1998-99
a) Installed capacity of the system(mld)	_____	_____
b) Quantity of water produced (mld)	_____	_____
c) Quantity of water supplied (mld)		
i) Raw	_____	_____
ii) Treated	_____	_____

d) Quantity of piped water supplied by uses(mld):

	Domestic	Industrial	Commer- cial	Institu- post	Stand- post	Public uses	Total
1997-98	_____	_____	_____	_____	_____	_____	_____
1998-99	_____	_____	_____	_____	_____	_____	_____

- e) Water losses due to system losses, leakages, theft etc. (mld): _____
- f) Total hours of supply per day: _____
- g) Number of times supplied daily: _____
- h) Quantity of water supplied through tankers daily: _____
- i) Present demand for water (mld): _____
- j) Demand - supply gap (mld): _____
- k) Per capita norm for water supply for the town/city (lpcd): _____

4. No. of Connections

	As in 1997-98			As in 1998-99		
	Metered	Unmetered	Total	Metered	Unmetered	Total
a) Domestic	_____	_____	_____	_____	_____	_____
b) Industrial & Commercial	_____	_____	_____	_____	_____	_____
c) Others (specify)	_____	_____	_____	_____	_____	_____
d) Total	_____	_____	_____	_____	_____	_____
e) Standpost	_____	_____	_____	_____	_____	_____

5. Source Conveying main and Distribution network 1998-99

	(i)	(ii)	(iii)
a) No. of head works	_____	_____	_____
b) Total raw water pumping head (m)	_____	_____	_____
c) Length of raw water conveying main (km.)	_____	_____	_____
	1997-98	1998-99	
d) Length of distribution network (km.)	_____	_____	
e) No. of reservoirs	_____	_____	
f) Storage capacity of reservoirs (ml)	_____	_____	

6. Source of Water

a) Present

Source of water supply	Type of source: Surface/ground	Designed/Installed capacity (mld)	Present quantity obtained (mld)	Distance to source (km)
i) _____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____
iv) _____	_____	_____	_____	_____

b) Future

Are there any proposals for obtaining water from new sources? Yes/No _____ If yes,

Name of source	Quantity to be obtained (mld)	Distance to source (km)	Anticipated year of obtaining water
i) _____	_____	_____	_____
ii) _____	_____	_____	_____
iii) _____	_____	_____	_____

7. Quality of Water

- a) Type of treatment provided i) Alum ii) Chlorine iii) Others (specify): _____
- b) Agency responsible for water quality monitoring: _____
 - i) Whether laboratory facilities are adequate? Yes/No
 - ii) If no, future plans for improving such facilities: _____
- c) Periodicity of monitoring water quality:
 - i) Raw _____
 - ii) Treated - At treatment plant _____ At distribution network _____

8. Treatment plants

- a) No. of treatment plants: _____
- b) Total installed capacity (mld): _____
- c) Total present production (mld): _____

9. Water Tariff (Rs./ kl) (Please also attach the latest schedule of tariff)

	Domestic	Industrial	Commercial	Institutional	Others (specify)
a) Metered	_____	_____	_____	_____	_____
b) Unmetered	_____	_____	_____	_____	_____
c) One-time water connection charge	_____	_____	_____	_____	_____
d) In which year was water tariff last revised :	_____				
e) Are stand posts charged for? Yes/No If yes, what is the charge (Rs.):	_____				
f) Is water tax levied? Yes/ No If yes, rate of water tax	_____				
g) Rate of bulk water purchase:	_____				

10. Revenue Income and Expenditure on Water Supply (Actuals)

(Attach separate sheet if necessary)

(Rs. in _____)

a) Heads of Revenue	1996 - 97	1997 - 98
i) Water tax	_____	_____
ii) Water cess	_____	_____
iii) Water charges	_____	_____
iv) Connection charges	_____	_____
v) Bulk supply charges	_____	_____
vi)	_____	_____
vii)	_____	_____
Total	_____	_____

- b) Heads of Expenditure 1996 - 97 1997 - 98
- i) Salary & Wages _____
 - ii) Consumables _____
 - iii) Electricity _____
 - iv) Repairs/ replacements _____
 - v) Interest _____
 - vi) Debt servicing _____
 - vii) Depreciation _____
 - viii) _____
 - ix) _____
 - Total _____
- c) Total revenue demand _____
 - d) Total revenue collection _____
 - e) Cost of production of water per kl. _____

11. Staff Position

- a) No. of managerial staff: _____
- b) No. of technical staff: _____
- c) No. of staff allocated for O & M: _____
- d) Total staff of the department: _____

12. Privatisation - Water Supply (Please see instruction no. 2)

Has any part of the water supply system been privatised? Yes/ No If yes, give details:

Activity*	Specific area(s) covered	Privatisation mode used	Year in which privatised	No. of contractors	Costs (Rs.)	
					Before Privatisation	After Privatisation
i) _____	_____	_____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____	_____	_____

(* such as maintenance of pipe lines, treatment plants, pumping stations, meter reading, billing, collection etc.)

- Please provide a copy of the contract documents.

13. Capital Works (including treatment) related to Water Supply undertaken since 1994
(Attach separate sheet if necessary)

	(i)	(ii)	(iii)
Name of the scheme			
Purpose			
Components			
Designed pop. ('000)			
Designed capacity (mld)			
Year: Started			
Completed/ ongoing			
Total Cost (Rs. in lakh)			
Source of funding			
Per capita cost (Rs.)			

14. Future Schemes for Water Supply (Attach separate sheet if necessary)

	(i)	(ii)	iii)
Name of the scheme			
Purpose			
Components			
Designed pop. ('000)			
Designed capacity (mld)			
Expected year of:			
Starting			
Completion			
Total Cost (Rs. in lakh)			
Source of funding			
Per capita cost (Rs.)			

15. Per capita cost of schemes

- a) Per capita cost of water supply scheme (including water treatment) executed in the recent past (prior to 1999) Rs. _____
- b) Per capita cost of water supply scheme (including water treatment) to be executed in the future Rs. _____

Stamp of the Agency

STATUS OF SEWERAGE AND SEWAGE TREATMENT

Name of city/ town: _____ District: _____ State/ U.T.: _____

1. Sewerage

- a) Does the city/ town have a sewerage system? Yes/No If yes, type of system -
- i) Separate
- ii) Combined with drainage

1998 - 99

- b) Population covered by sewer system ('000) _____
- c) Area covered with sewer system (sq. km.) _____
- d) Total length of sewer lines (km.) _____

2. Sewage

1997-98

1998-99

- a) Total installed capacity (mld) _____
- b) Total quantity of sewage generated (mld) _____
- c) Total quantity of sewage collected (mld) _____

- d) Quantity of sewage (mld) treated through:

Primary	Secondary	Primary & Secondary	Tertiary	Total
_____	_____	_____	_____	_____

- e) Sewage treatment process adopted:

- i) Extended aeration (oxidation ditch, aerated lagoon etc.)
- ii) Trickling filters
- iii) Activated sludge process iv) Up-flow anaerobic sludge blanket (UASB)
- v) Others like stabilisation pond, duckweed pond etc.

- f) Disposal of sewage (mld):

	Land	Water body	Sea	Total
i) Treated sewage	_____	_____	_____	_____
ii) Untreated sewage	_____	_____	_____	_____
Total	_____	_____	_____	_____

3. Sewage Treatment Plants

- a) No. of treatment plants: _____
- b) Total installed capacity (mld): _____
- c) Total sewage treated (mld): _____

4. Recycle & Reuse

- Quantity of sewage (mld) used for: a) Agriculture and horticulture: _____
b) Industrial cooling: _____ c) Air conditioning cooling etc. : _____
d) Flushing toilets etc. _____ e) Others (specify): _____

5. Sewage gas & manure

Is gas produced from sewage: Yes/No If yes,

- a) Total quantity of sewage gas (cu.m) produced per day : _____
b) Total quantity of sewage gas (cu.m) sold to consumers : _____
c) Total quantity of sewage gas (cu.m) flared up : _____
d) Quantity of manure generated from sewage sludge (MT) : _____
e) Quantity of sewage sludge sold as manure (MT) : _____

6. Sewer Connection Charge

One-time sewer connection charge for different type of connections (in Rs.):

- a) Domestic: _____ b) Industrial: _____
c) Commercial: _____ d) Others: _____

7. Sewage Cess/ Sewer Charges

- a) Is sewage cess levied? Yes / No
b) If yes, rate at what levied: _____

8. Revenue Income and Expenditure related to Sewerage & Sewage (Actuals)

(Attach separate sheet if necessary)

(Rs. in)

a) Heads of Revenue	1996 - 97	1997 - 98
i) Recycled effluent	_____	_____
ii) Sewage gas	_____	_____
iii) Manure	_____	_____
iv) Connection charge	_____	_____
v) Sewage cess	_____	_____
vi) _____	_____	_____
vii) _____	_____	_____
Total	_____	_____

b) Heads of Expenditure	1996 - 97	1997 - 98
i) Salary & Wages	_____	_____
ii) Consumables	_____	_____
iii) Electricity	_____	_____
iv) Repairs/ replacements	_____	_____
v) Interest	_____	_____
vi) Debt servicing	_____	_____
vii) Depreciation	_____	_____
viii) _____	_____	_____
ix) _____	_____	_____
Total	_____	_____

9. Staff Position

- a) Agency responsible for O&M of sewer system: _____
- b) No. of managerial staff: _____
- c) No. of technical staff: _____
- d) No. of staff allocated for maintenance of sewerlines: _____
- e) Staff allocated for overall O&M of the system and treatment plants: _____
- f) Total staff of the department: _____

10. Privatisation - Sewerage system (Please see instruction no. 2)

Has any part of the sewerage system/ treatment been privatised? If yes, give details:

Activity*	Specific area(s) covered	Privatisation mode used	Year in which privatised	No. of contractors	Costs (Rs.)	
					Before Privatisation	After Privatisation
i) _____	_____	_____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____	_____	_____
iv) _____	_____	_____	_____	_____	_____	_____

(* such as maintenance of pipelines, pumping stations, treatment plants, etc.)

- Please provide a copy of the contract documents.

11. Capital Works related to Sewerage schemes (including treatment & disposal) undertaken since 1994 (Attach separate sheet if necessary)

	(i)	(ii)	(iii)
Name of the scheme			
Purpose			
Components			
Designed pop. ('000)			
Designed capacity (mld)			
Year: Started			
Completed/ ongoing			
Total Cost (Rs. in lakh)			
Source of funding			
Per capita cost (Rs.)			

12. Future Schemes for Improving Sewerage Facilities:

	(i)	(ii)	iii)
Name of the scheme			
Purpose			
Components			
Designed pop. ('000)			
Designed capacity (mld)			
Expected year of:			
Starting			
Completion			
Total Cost (Rs. in lakh)			
Source of funding			
Per capita cost (Rs.)			

13. Per capita cost of schemes

- c) Per capita cost of sewerage scheme (including treatment & disposal) executed in the recent past (prior to 1999) Rs. _____
- d) Per capita cost of sewerage scheme (including treatment & disposal) to be executed in the future Rs. _____

Please provide the following:

13. Map of the city.

14. Latest Annual Report.

15. Annual Budget (should have actuals for 1997-98) of the local body.

Stamp & Signature of the Agency

LOW COST SANITATION (LCS) AND SEPTIC TANK

1998-99

- 1. Population covered by LCS & septic tanks ('000): _____
- 2. No. of individual pour flush latrines: _____
- 3. No. of community latrines: _____
- 4. No. of dry latrines if any, needing conversion: _____

Stamp of the Agency

**A SURVEY OF STATUS OF WATER SUPPLY AND SANITATION
IN SELECTED URBAN AREAS OF INDIA**

Sponsored by

The Ministry of Urban Development
Government of India

STATUS OF SOLID WASTE MANAGEMENT

Name and Designation of respondent(s) _____

Name of the responding agency _____

Address of the agency _____

Phone nos. _____

Fax. No _____

Stamp of the responding agency

Date: _____

Signature _____

NATIONAL INSTITUTE OF URBAN AFFAIRS
Core 4 B, India Habitat Centre, Lodhi Road, New Delhi

STATUS OF SOLID WASTE MANAGEMENT

Name of city/ town _____ District _____ State/ U.T _____

1. General

	For the city/ town		Within agency's jurisdiction (as on 31-3-99)	
	1991 Census	1999 Projected (as on 31-3-99)	Total	Served
a) Population ('000)	_____	_____	_____	_____
b) Area (in sq. km.)	_____	_____	_____	_____
c) No. of wards/zones	_____	_____	_____	_____
d) Total no. of households	_____	_____	_____	_____
e) Slum population ('000)	_____	_____	_____	_____

2. Quantity of waste generated and collected

a) Quantity of solid waste generated per capita/day (gm) :

b) Quantity of solid waste generated per day (MT):

c) Solid waste generation by source (MT per day):

Domestic	Commercial	Industrial	Institutional	Medical	Others	Total
_____	_____	_____	_____	_____	_____	_____

d) Quantity of solid waste collected per day (MT) : _____

e) Frequency of solid waste collection per day: _____

f) Total no. of dustbins : _____

g) No. of intermediate collection centres: _____

h) Frequency of waste collection in slums: _____

3. Transportation of waste

a) Details of vehicles used for transportation of waste:

Type*	Number	Capacity (MT)	Avg. no. of trips per day	Total waste transported daily (MT)
i) _____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____
iv) _____	_____	_____	_____	_____
v) _____	_____	_____	_____	_____

(* such as handcarts, trucks, tractors-trolleys, tippers etc.)

b) Percentage of vehicles going out of order at any point of time: _____

- c) Does the local govt. have a vehicle maintenance workshop: Yes / No
 If no, how are the vehicles repaired: _____

4. Disposal of waste

Quantity of solid waste (MT- average per day) treated/ disposed by:

- a) Composting: _____ b) Controlled tipping: _____
 c) Sanitary land fill: _____ d) Crude/ open dumping: _____
 e) Incineration: _____ f) Other methods (specify): _____

5. Hospital/ medical waste

- a) How is hospital/ medical waste collected: Separate / Combined with other waste
 b) Is hospital/ medical waste treated: Yes / No
 If yes, treatment process used : _____

6. Land fill

- a) Existing

Name of site	Area (hectares)	Capacity of site (tonnes per day)	In use since (year)	Future life (years)
i) _____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____
iv) _____	_____	_____	_____	_____

- b) Future

Name of site	Area (hectares)	Capacity of site (tonnes per day)	Life (years)
i) _____	_____	_____	_____
ii) _____	_____	_____	_____
iii) _____	_____	_____	_____
iv) _____	_____	_____	_____

7. Composting

- a) Method used (in tonnes) i) Pit composting: _____
 ii) Vermi composting: _____ iii) Mechanical composting: _____
 iv) Wind Rows: _____ v) Others (specify): _____

- b) Whether the compost is sold or not: Yes / No If yes, rate at which sold (Rs.): _____

8. Methane gas

a) Whether methane gas is produced from land fill site: Yes/No

If yes, quantity (in cu. m.) produced per year _____

b) Is the gas sold: Yes/No If yes, rate at which gas is sold (Rs.): _____

9. Staff position

a) Total no. of supervisory staff (including sanitary inspectors) : _____

b) Total no. of subordinate staff including sweepers etc.: _____

c) Average area/ length of road covered per sweeper: _____

10. Privatisation in solid waste management

a) Has any part of solid waste management been privatised? Yes/No

b) If yes, give details:

Activity*	Specific area(s) covered	Privatisation mode used	Year in which privatised	No. of contractors	Costs (Rs.)	
					Before Privatisation	After Privatisation
i) _____	_____	_____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____	_____	_____
<ul style="list-style-type: none"> Please provide a copy of the contract documents. 						

c) If not, any future plans for privatisation?: Yes / No / Not sure

If yes, which aspects: _____

11. Revenue Income and Expenditure (Actuals) related to Solid Waste Management

(Use separate sheet if necessary)

(Rs. in)

a) Heads of Revenue	1996-97	1997-98
i) Sanitation tax/ cess*	_____	_____
ii) Sale of compost	_____	_____
iii) Sale of gas	_____	_____
iv) _____	_____	_____
v) _____	_____	_____
Total	_____	_____

* Rate of sanitation tax/ cess:

b) Heads of Expenditure	1996-97	1997-98
i) Salary and wages	_____	_____
ii) Consumables (petrol, diesel etc.)	_____	_____
iii) Vehicle repair	_____	_____
iv) Contingency	_____	_____
v) _____	_____	_____
vi) _____	_____	_____
Total	_____	_____

12. Capital Expenditure incurred on Solid Waste Management since 1994

(Use separate sheet if necessary)

Name of the scheme/ Expenditure Head	Purpose	Year		Total Cost (Rs.)	Source of funding	Per capita cost of scheme (Rs.)
		Started	Completed/ ongoing			
i) _____	_____	_____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____	_____	_____
<ul style="list-style-type: none"> • Please provide project proposal/ report. 						

13. Future schemes

Name of the scheme/ Expenditure Head	Purpose	Expected year of		Total Cost (Rs.)	Source of funding	Per capita cost of scheme (Rs.)
		Starting	Comple- tion			
i) _____	_____	_____	_____	_____	_____	_____
ii) _____	_____	_____	_____	_____	_____	_____
iii) _____	_____	_____	_____	_____	_____	_____
<ul style="list-style-type: none"> • Please provide project proposal/ report. 						

SANITATION

Septic Tank and Low Cost Sanitation (LCS)

1998-99

1. Population covered by septic tanks ('000): _____
2. Population covered by LCS ('000): _____
3. No. of individual pour flush latrines:
 - a) Existing _____
 - b) Under construction _____
 - c) To be constructed _____
4. No. of community latrines:
 - a) Existing _____
 - b) Under construction _____
 - c) To be constructed _____
5. No. of dry latrines:
 - a) Existing _____
 - b) Under conversion _____
 - c) To be converted _____
6. Population using dry latrines: _____
7. Population provided with LCS facility, but not using the same: _____
8. No. of scavengers:
 - a) Public _____
 - b) Private _____

Stamp of the agency

ANNEX 2

LIST OF COLLABORATING AGENCIES

LIST OF COLLABORATING AGENCIES

Agency

States Covered

Centre for Research in Rural & Industrial Development

Chandigarh

Mr. J.P. Gupta (Senior Advisor)

Haryana, Punjab, Himachal Pradesh and Chandigarh

MaMista, Centre for Organizational Research & Development

Ghaziabad

Mr. Pankaj Bhargava (President)

Uttar Pradesh and Bihar

National Centre for Human Settlement & Environment

Bhopal

Mr. Ashok Gupta (Director Projects)

Madhya Pradesh

Institute of Local Government and Urban Studies

Calcutta

Mrs. Chhanda Sarcar (Joint Director)

West Bengal, Orissa and all North-Eastern states

ORG Consultants

Baroda

Dr. S. Rama Rao
(Senior Research Director)

Gujarat, Maharashtra, Rajasthan, Goa, Daman and Silassa

INDEP

Bangalore

Mr. Prashant Karkare (Consultant)

Andhra Pradesh, Karnataka, Kerala, Tamil Nadu and Pondicherry