



Annual Subsidies Report for the Thane Municipal Corporation, India

Volume 2: Budget Based Assessment of Subsidies in Water Supply and Sewerage Service

Final Report

Indo-USAID Financial Institutions Reform and Expansion Project—
Debt & Infrastructure Component (FIRE-D Project)

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Report 2

Budget Based Assessment of Subsidies in Water Supply and Sewerage Service (Budget C) in the Thane Municipal Corporation

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New Delhi**

**Indo-US Financial Institutions Reform and Expansion (FIRE) Project
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Table of Content

Acknowledgement.....	iii
Preface.....	iv
I Context and Purpose of the Assignment.....	iv
II Annual Subsidy Report for Thane Municipal Corporation.....	ix
INTRODUCTION TO REPORT 2.....	1
Budget Based Assessment of Subsidies in Water Supply and Sewerage Service (Budget C) in the Thane Municipal Corporation.....	1
SECTION A.....	4
Water Supply and Sewerage Services in Thane - The Scheme.....	4
1.1 Water Supply System.....	5
1.2 Sewerage System.....	12
Annexure A.1	14
SECTION B.....	17
Water Supply and Sewerage Budget (Budget C)	17
Introduction Budget C (Water Supply and Sewerage) Statement.....	18
2.1 Budget C (Water Supply and Sewerage) Statement (Actuals and RE)	19
2.1.1 Water Supply	27
Operating Income.....	27
Operating Expenditure	35
2.1.2 Sewerage.....	39
Operating Income.....	39
Operating Expenditure	40
2.1.3 Water Supply and Sewerage.....	41
Capital Facilities Planning and Budgeting	41
Capital Works Planning.....	41
2.1.4 Water Supply and Sewerage.....	43
Loans and Other Liabilities	43
Grants and Transfers	46
3.1 Budget C (Water Supply and Sewerage) Statement - Future Projections.....	47
4.1 Operating Ratio	54
SECTION C.....	55
Subsidy in Water Supply and Sewerage Service - Budget Based Assessment	55
5.1 Methodology	56
5.2 Assessment of Subsidy in WSS Services (Year 2000-2001)	57
5.3 Subsidies – Discussion, Linked Issues and Efficiencies.....	59
5.4 Recommendations and Action Plan.....	64

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We are grateful to Mr. K.P. Bakshi, Municipal Commissioner, Thane Municipal Corporation, for taking the initiative to do the first comprehensive ASR in the State for Thane and providing constant direction and guidance throughout the report preparation. This report has benefited much from the time and energy invested by him in this exercise. During this study the FIRE team benefited from the extensive discussions with the TMCs officers. We would like place on record our appreciation of the valuable inputs and support provided by: Mr. Ajit More, Mr. K.D. Lalla, Mr. Kelkar, Mr. Girase, Dr. Kendre, Mr. Nipurte, Mr. Mehendale, Mr. Varyani, Mr. Vikas Dhole, Mr. Kalal, Mr. B.L. Bhiwapurkar, Mr. Rajesh Kotekar, Ms. Sangeeta Naik, Mr. Gupta, Mr. Wagh, Mr. Deshmukh. We take this opportunity to particularly thank Ms. Neha Chavan of the accounts department for her support in collecting information and coordinating amongst the various departments.

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Carrying out a review of issues linked to subsidies was a challenging opportunity and an invaluable experience. We are particularly excited as the Thane Municipal Corporation moves into the implementation stage of rationalizing and targeting of subsidies. We believe that ASRs in several cities will contribute to a meaningful debate on tariffs and appropriate targeting of subsidies, leading to a sustainable provision of urban infrastructure.

Kirti Devi

V. Satyanarayana

Preface

I Context and Purpose of the Assignment

Subsidies - A Discussion

Reforms are necessitating that governments move toward rational, market-based approaches in performing their functions. If governments are to access funds from financial institutions, capital markets, and private sector, it is important that services be delivered on a sustainable basis. Central to this is the need for defining true cost of service provision and existing efficiency levels, within the context of the government's social policy objectives.

“Subsidies are advocated as correctives for market failures, and for aligning market costs and benefits with social costs and benefits. Well-designed subsidies are a powerful safeguard available to the government. Subsidies alter relative prices and budget constraints, thereby affecting decisions concerning production, consumption, and allocation of resources” (Srivastava, D.K., Sen, T.K., et al. 1997). By extension of these characteristics, ill-designed subsidies send out incorrect messages regarding the value of a resource and distort consumption. This results in misallocation of resources and has environmental implications. Another concern is the very exclusion of target groups, an example being: tariff subsidies in the name of the poor where the poor have limited access to formal service delivery mechanisms. Other fallouts include: resulting budgetary implications on other public goods such as education, environment etc (possible crowding out of other high priority investment and justifiable subsidies).

Given this context it becomes critical to identify existing subsidies (explicit and hidden) and system efficiencies (operational, financial and administrative), to arrive at decisions regarding service costs and benefits. “A well-designed subsidy must promote maximum enhancement of welfare within the overall budgetary constraints of the government. It must be transparent, quantified, of finite duration, meet economic objectives, and be easy to deliver and administer” (Srivastava, D.K., Sen, T.K., et al. 1997).

Rationale for Studying Subsidies

1. Make informed decisions to facilitate policy formulation and better design subsidies
 - a. Rational basis for determining pricing or recovery rates of government services
 - Tariff subsidies - decisions on the percentage of the true cost of services to be passed on to the beneficiaries.
 - Cross subsidies - decisions on cross subsidization within the beneficiary group
 - One time connection subsidy etc
 - b. Designing targeted and explicit subsidy programs to safeguard vulnerable groups
 - Service levels, technology options and implications

- Varied service management options (tailored billing cycle, alternative charging mechanism etc)
 - Subsidy quantum, time frame, program implementation and monitoring
 - Other support (micro credit, training to banks and groups etc)
 - Creating feedback loop for monitoring of subsidy program
2. Benchmarking/comparison across cities and states
 3. Media advocacy, informed debate, incorporation of findings in form of rational decisions reflected in budget process

Concepts and Definitions¹

Public goods and quasi-public goods or merit goods

Government expenditures in India are broadly classified into two categories: non-developmental and development. In the non-developmental category, expenditure heads like organs of state, fiscal and administrative services are included. These services are in the nature of public goods. They are not supplied by the market. Nor can they be charged to individuals according to the extent of their consumption. They are appropriately paid for by taxation. The issue of subsidization is not relevant in these cases.

Public goods are identified by the twin characteristics of rivalry (consumption by one user reduces the quantity available for another) and excludability (consumption by one can be distinguished from consumption by another). In modern economics, there are many goods/services that do not clearly fall into the exclusive categories of purely public or purely private goods.

Governments in India, both central and of states, however, actively participate in the provision of a range of private goods under the head of social and economic services. Budgetary subsidies arise when the budgetary cost of providing the good/service is more than the recovery made by the user/beneficiary of the service, the difference being financed by taxpayers. Clearly, some subsidies are less justified than others.

The criterion of ‘externalities’ determines whether the concerned service should also be subsidized and to what extent. In the earlier DP a classification of subsidies into merit and non-merit categories was proposed. Many goods fell into the non-merit side, and since budgetary subsidies have continued on these items for a long time, it has been difficult to reduce them. As part of the phasing out strategy, it may be desirable to have an intermediate category, which can distinguish between such expenditure categories as elementary education and higher education. While both may require subsidization, the degree of subsidization may be much higher for elementary education. With more

¹ This section is taken from the following documents: (1) Srivastava,D.K., Sen,T.K., et.al. (1997), Government Subsidies in India, National Institute of Public Finance and Policy, New Delhi. (2) Srivastava, D.K., Amar Nath, H.K. (2001), Central Budgetary Subsidies in India, National Institute of Public Finance and Policy, New Delhi.

disaggregated information being used, subsidies and related service categories may be divided into three categories: Merit 1, Merit 2, and Non-merit.

Classification of service groups (relevant to this study)

Sectors	Major	Merit 1	Merit 2	Non-merit
Education, Sports, Arts and Culture	General education	Elementary education	Secondary education University and higher education Adult education Language development General	
			Technical education Sports and youth welfare Art and culture	
Medical & Public Health & Family	Medical & Public Health	Primary health centers Prevention and control of diseases		Urban health services Rural health services Medical education, training and research
			Family welfare	
	Water Supply & Sanitation	Rural water supply programmes	Sanitation services	Urban water supply programmes

Source: Srivastava, D.K., Amar Nath, H.K. (2001), Central Budgetary Subsidies in India, National Institute of Public Finance and Policy, New Delhi, pg.30.

Forms of subsidies

A cash payment to producers or consumers is an easily recognizable form of a subsidy. But, it also has many invisible forms. Thus, it may be hidden in reduced tax liabilities, low interest government loans or government equity participation. An important form of a subsidy, viz. a regulatory subsidy emerges in the context of government regulation or control of prices and/or quantities. These subsidies operate off the budget, implying a transfer, such as one from the producers to the consumers, without going through the budgetary process. Some important forms of subsidies are indicated below:

- Cash subsidies (e.g. food, fertilizer, export)
- Interest or credit subsidies (loans given at lower than market rates)
- Tax subsidies (e.g. tax exemption of medical expenses, deducting mortgage interest payment from taxable income, postponing collection of tax arrears)
- In-kind subsidies (provision of free medical services through government dispensaries, provision of goods to target population in physical form)
- Equity subsidies (investment in equity in state enterprises giving low dividends)

- Procurement subsidies (e.g. purchase of foodgrains at assured higher than market prices)
- Regulatory subsidies (fixation of price/quantity in the case of goods produced by public/private sector)
- Tariff subsidies: Unduly low user prices, reflected in correspondingly low recovery rates, lead to excessive demand for scarce resources. Thus, while power and water may be overused, or even wasted in some sectors, other sectors remain starved of such vital resources leading to supply side bottlenecks and a reduction in the overall efficiency of the system. Tariff subsidies result in the:
 - distortion of consumption patterns due to subsidies; and,
 - impact the quality of environment and ecology, and other resources
- Cross-Subsidies: Inter-sectoral financing of a subsidy, across user groups involves cross-subsidization. In such cases, if a net subsidy is still left after cross subsidization, it will be on charged on the general budget.

Budget based subsidy and off-budget subsidy

It is useful to distinguish between (i) budget-based subsidies; (ii) off-budget subsidies; and (iii) subsidies that are initially off budget but which find their way ultimately into the budget. Budgetary subsidies arise when the government fails to recover the cost of providing the service from the users by means as fees, tariffs, and user charges. Subsidies also arise when government procures a commodity from the sellers, and sells it at prices that do not cover the procurement price and the cost if storage, handling, transmission, etc.

Input subsidy and final consumption subsidy

In general, subsidies that are administered to final consumption or production are considered to be more desirable since they accrue to the target beneficiaries directly. Subsidies on inputs are easily dispersed to the non-target population, instead. Even on final consumption subsidies the issue of targeting subsidies and plugging leakages remain important. These factors make it difficult to ensure equity objectives. In such a context (indirect taxes and subsidies), an effective grip on distributional objectives is weakened and the productive efficiency of the system is compromised due to allocative distortions.

Reforming Subsidies: Some Critical Issues

- a) Inefficiency and Costs: Inefficiency leads to a higher cost of production. This creates a wedge between subsidies that are actually received by the user of the service, and subsidies that are borne by the budget. The difference between the two only subsidizes inefficiency. Government's participation in providing services is attended by several types of inefficiencies. Apart from direct costs like those due to overstaffing, poor maintenance of assets, procedural delays, delays in taking critical decisions, there are systemic inefficiencies. Subsidy interventions by the government

distort market prices and often lead to sub-optimal use of inputs in the economy, thereby raising overall costs in the system. As a result of these and other inefficiencies, the costs associated with the governmental provision of services tend to be high.

- b) Targeting subsidies: Untargeted subsidies waste scarce resources. Properly targeted subsidies achieve the desired results with a limited draft on the budgetary resources. The beneficiary of a subsidy must ultimately be a person rather than a commodity or sector.
- c) Reversing the dynamics of subsidy growth: From any given starting point, the degree and volume of subsidies have an inherent tendency to increase because of the different ways in which costs and receipts grow over time. Input costs, determined as a result of diffused and multiple market processes, increase in the normal course. User charges, on the other hand, being more exposed to public scrutiny, and upward revisions in them being processed through public bodies and authorities (executive and legislative), tend to remain glued to old nominal levels. The gap between costs and receipts associated with publicly provided goods thus keep widening. The recognition and reversal of this process is vital for keeping the subsidy volume in check.
- d) Dealing with harmful subsidies: Excess subsidization is not just an unwarranted fiscal cost. It can do significant damage. For example, excess subsidization of water causes drying up of rivers, declining water tables and soil erosion.

II Annual Subsidy Report for Thane Municipal Corporation

Introduction and Background

The Maharashtra state legislation mandates all municipal corporations to submit an Annual Subsidies Report at the time of presenting the municipal budget. This is to serve as a tool available to decision makers and enable rational decision-making regarding service levels and tariffs. As of December 2001 no city had prepared this report.

Provisions In The Maharashtra Amendment Act

Section 95A inserted by Maharashtra Act 41 of 1994 s. 71, has emphasized on the need of reporting on the extent of subsidies involved in the provision of service. The act provides for the following:

- 1 The commissioner or, as the case may be, the Transport Manager, shall while submitting the budget estimates to the Standing Committee, append thereto a report indicating whether the following services were provided in the last preceding year in a subsidized manner and, if so, the extent of the subsidy, the source from which the subsidy was met and the sections or categories of the local population who were the beneficiaries of such subsidy, namely:
 - (a) water supply and disposal of sewage
 - (b) scavenging, transporting and disposal of wastes
 - (c) municipal transport, and
 - (d) street lighting
- 2 The standing committee or, as the case may be, the Transport Committee shall examine the report and place it before the Corporation with its recommendations, if any.

Explanation: Service shall be construed as being provided in a subsidized manner if its total cost, comprising the expenditure on operation and maintenance and adequate provision for depreciation of assets and for debt servicing, exceeds the income relatable to the rendering of that service.

In year 2001 the State Government, Urban Development Department, initiated a number of actions to direct cities toward complying with this provision of the act. Mr. R. Tiwari, Secretary Urban Development Department, requested the FIRE project to provide support in developing a framework for cities to quantify subsidies in service delivery.

Meanwhile Mr. K.P. Bakshi, Municipal Commissioner, Thane Municipal Corporation, approached the FIRE project to support the preparation of the first Annual Subsidies Report for the city. This was undertaken with the dual objective of meeting the state legislative mandate and serving as a case for providing inputs for the preparation of the framework being developed at the state level.

Objectives

Interestingly, in addition to being responsive to the state legislative mandate, the commissioner hoped to achieve the following objectives through this exercise:

1. Quantify magnitude and incidence of subsidies (explicit and implicit) in the delivery of below mentioned services:
 - a. Water Supply;
 - b. Sewerage;
 - c. Solid waste (including medical waste);
 - d. Health (clinics, hospitals, medical colleges etc); and,
 - e. Education

To identify the burden of the above subsidies on city finances, and their implications in terms of investment in other municipal services.

2. Development of a plan (including policy initiatives) to reduce subsidies to acceptable limits: The commissioner hopes to initiate a debate regarding level of subsidies and tariffs, vis-à-vis service levels, with the aim of eventually phasing out of subsidies over a suitable time frame, while still safeguarding the most vulnerable sections. The plan for phasing out subsidies is proposed to be drawn-out upfront (with inputs from the elected and administrative representative) and once finalized and agreed upon, is to be made binding.

The above study is presented as two separate reports for Budget A and Budget C. Report 2 presents a budget based assessment of subsidies in the delivery of water and sewerage (Budget C) services provided by Thane Municipal Corporation.

INTRODUCTION TO REPORT 2

Budget Based Assessment of Subsidies in Water Supply and Sewerage Service (Budget C) in the Thane Municipal Corporation

Budget Based Assessment of Subsidies in Water Supply and Sewerage Service (Budget C) in the Thane Municipal Corporation

Study Scope

This report sets out the findings of a study that examined the budget-based² subsidies in the delivery of water and sewerage (Budget C) services provided by Thane Municipal Corporation. The objective of this assessment was to quantify the magnitude and incidence of subsidies (explicit and implicit), their burden on the TMCs finances and the resulting implications in terms of investment in other public goods. Also included is a review, based on available data, of system practices and efficiencies (financial and administrative).

Approach/Structure of the Report

This report is organized in three Sections (A, B and C) and is structured along the lines in which the analysis was approached.

Section A

(Review of existing information, costs and ownership of assets, ongoing and planned works)

This section outlines the existing Water Supply and Sewerage (WSS) scheme in the Thane municipal corporation and discusses the planning and budgeting of the corporation regarding ongoing and proposed (capital) projects. The costs and ownership of the WSS assets are established here. This section also includes the underlying premise for appropriation of project costs to Thane in the case of works related to shared facilities.

Section B

(Assessment of fiscal condition of the WSS budget, and review of systems and practices)

This section presents the assessment of the fiscal condition of water supply and sewerage budget. The assessment was carried out by first organizing income-expenditure heads under appropriate classifications and then reading the tables to review emerging trends (eight year period), shortfalls and key ratios. This information has been reviewed vis-à-vis current policies and practices in place to identify lacunae and/or shortfalls that have a bearing on operational efficiencies.

² While most subsidies emanate from the budget, there are others, which may be completely off budget such as those arising out of: price administration, government concessions available to the sector, interest subsidies, regulations (or the lack thereof) etc. For instance subsidies arising due to non-payment of environmental disruption costs or due to a disregard of existing regulations concerning service standards have not been quantified. We do refer to some of these in the discussion on subsidies in the TMC, presented in the final section.

This section also includes a projection of the income and expenditure (as per current trends) to review the impact of the ongoing and planned capital works, and the fiscal implications. .

Section C

(Explanation of methodology used, quantification of subsidy, discussion of key issues linked to the subsidy in WSS in TMC, recommendations)

This section includes a discussion of the methodology used and the limitations therein, and presents the total subsidy in water supply and sewerage services, occurring on the TMC budget. Also included is a brief discussion of linked issues and efficiencies.

This section also includes recommendations (including policy initiatives) for the immediate and medium term, to reduce the subsidy level to acceptable limits and identifies further areas of study (where information was found to be limited or unstructured) to be included in future ASRs.

It is important that Section B and Section C be read in conjunction to understand implications of the current level of subsidy in both financial and economic terms.

SECTION A

Water Supply and Sewerage Services in Thane - The Scheme

1.1 Water Supply System

Bulk Water Supply

The Thane Municipal Corporation currently purchases water from the following three sources:

1. STEM water authority (joint committee constituted on the basis of an MOU between Thane Municipal Corporation, Mira-Bhayandar Municipal Council and Bhiwandi Municipal Council, to operate and maintain the Shahad-Temghar Water Works),
2. Maharashtra Industrial Development Corporation (MIDC), and
3. Municipal Corporation of Greater Mumbai (MCGM).

The total water supply to the Thane Municipal Corporation from the above three agencies is approximately 250 MLD.

Table: Total Water Quantity Purchased by TMC

	Agency from which water is purchased	Quantity purchased (mld)	Supplied water
1	STEM Water Authority – Water taken through Shahdad through Temghar water purification center	125	Existing
2	Maharashtra Industrial Development Corporation – Water taken through Barvi through Jambhulpada purification center	75	Existing
3	Municipal Corporation of Greater Mumbai (Tansa and Bhatsa)	60	Existing (To be reduced to 30 mld once the 100 mld scheme is commissioned)
	TOTAL CURRENT	250	
4	New Bhatsa Project for TMC – 100 mld own scheme	100	50 mld was commissioned on 1 May 2001 and trial runs are on. The TMC expects to commission the entire 100 mld by April 2002. (The water will be supplied into the existing distribution network).

Source: Water Supply Department, TMC, as reported in the Environmental Status Report

MWSSP I (STEM Owned Shahad-Temghar Water Supply Scheme)

On May 1, 1987 the Maharashtra Water Supply and Sewerage Board (Maharashtra Jeevan Pradhikaran) commissioned a project called MWSSP-I. This project was executed under a world bank project and covered 6 municipal towns³ namely: Thane, Bhiwandi,

³ At the time of construction the six towns covered under this project had individual municipal councils. Subsequently: the Thane and Kalyan Municipal Corporations were set up; the Bhiwandi Municipal Council limits extended; and, the Bhayander Village Panchayat upgraded to Municipal Council status.

Dombivali, Kalyan, Ulhasnagar and Ambarnath and 104 villages in the Mumbai Metropolitan Region, with Ulhas river as a source.

Since 1987 this project been supplying bulk water to the Thane Municipal Corporation and its surrounding 32 villages (within the corporation limit). The total capacity of the water works is 210 mld of which 127 mld is marked for TMC. The project also installed components of water distribution network and sewerage system (components currently operated and maintained by TMC). The total estimated cost of the project was Rs.16200 lakh (1984 rates), of which amount approximately 47 percent (Rs.7590 lakh) was to be received as grant-in-aid from the GOM. The loan component incurred for this project was appropriated and passed-on by the MWSSB (MJP) to the three local bodies. The cost appropriations used in this analysis are presented in the box below.

Box 1.1

MWSSP-I Bulk Water Scheme

Costs Appropriated to Thane Municipal Corporation

(Refer Annexure A.1 for Details)

Table: Costs Appropriated to Thane

	Component	Construction Period	Commissioning Year	Rs. lakh (1984)
1	Water Supply	1980-Sept.1986	1987	5980.00
2	Sewerage	1980-year end 1987	1988	550.00
	Total project cost			6530.00

Table: Assumed Financing Plan

	Sources of fund	Assumed percentage share	Rs. lakh (1984)
i	TMC own contribution	10.0	653.00
ii	Grant-in-aid by Govt. of Maharashtra	23.3	1521.00
iii	Loans	66.7	*4354.00
		100.0	6530.00

Note:

1. The Thane council was made a corporation during the execution of the project. Therefore, as per discussions with MJP officials, the analysis assumes that being a "corporation" the TMC was eligible for only 23.3 percent grant (approximately Rs.1521 lakh), whereas the other two councils were eligible for 100 percent grant.

2. The available information regarding loans from the World Bank (routed through MJP), which are seen to be approximately Rs.2943 lakh (much lower than our figure of Rs.4354 lakh). The mismatch could have occurred due to the following:

- assumed cost appropriations may be inaccurate, or/and;
- information on loans from other agencies may have been missed, or/and;
- the grant component to TMC may have been larger (a possibility since a number of villages were included within the corporation limit).

In the absence of financial details, this assessment will stop at qualifying that the grant-in-aid from GOM toward this project was at a minimum Rs.1521 lakh at 1984 costs (actual grant amount may have been higher).

At the time of commissioning, offices of the Maharashtra Jeevan Pradhikaran were made responsible for the maintenance and repair works of the MWSSP scheme upto the bulk supply points (tapping points) of the local authorities.

On April 1, 2000 the Maharashtra Jeevan Pradhikaran (MJP) handed this water supply scheme to the newly constituted water authority called Shahad-Temghar water authority (STEM). The authority has been constituted on the basis of a Memorandum Of Understanding (MOU) between Thane Municipal Corporation, Mira-Bhayandar Municipal Council and Bhiwandi Municipal Council.

Box 1.2

Shahad-Temghar (STEM) Water Authority

The Government of Maharashtra Water Supply and Sanitation Department, through a resolution passed on 29.02.2000 approved the formation of a Joint Committee and the handing over of the Shahad-Temghar water works to the consortium of the Thane Municipal Corporation (TMC), Bhiwandi-Nijampur Municipal Council (BNMC) and Mira-Bhayander Municipal Council (MBMC). Subsequently the STEM water authority came into effect on 23.03.2000. The authority has been formed on the basis of a Memorandum of Understanding.

The TMC, BNMC and MBMC jointly own the assets of the Shahad Temghar Water Works. As per the understanding the Joint committee took over the assets i.e. Shahad Temghar Water Works from the custodian MJP, and is responsible for operating and maintaining the same. All costs of STEM, including: employee salary, cost of purchase of raw water, and bulk supply costs are drawn out of the earnings from the sale of water.

The operation and maintenance of the water distribution system, within its own limits, is the responsibility of the Thane Municipal Corporation.

Tappings

Central Zone

Central zone, which largely represents the Thane municipal town, gets its water supply from: STEM through the Majiwade tapping from where it is distributed through a number of elevated service reservoirs; and, from MCGM through the seven tappings on the MCGM main.

Eastern Zone

The MIDC has a long length of pipeline route from Jambhul to Wagle Estate in Thane and towards Navi Mumbai. There are many tappings and consumers on this line. A major portion of eastern zone namely: Mumbra, Kausa, Shil and Kalwa, are currently served from the MIDC water.

The water is directly supplied through the distribution network to consumers, except in Mumbra. There is a lot of pressure fluctuation, which leads to unbalanced water supply.

In Mumbra the water is taken to the existing sump and ground reservoir on the hill slope, from where it is pumped to the higher zone of Mumbra. The pipeline is close to Mumbra in its initial reaches and therefore the pressure fluctuations here are comparatively low.

The eastern zone has developed at a fast pace and hence the water available does not meet the demand. Some areas like Mumbra and Kausa have a supply rate of 60-70 lpcd. The present distribution system is also considered inadequate. Hence part of the eastern zone comprising Kharigaon, Vitawa, Kalwa, Parsik, Mumbra, and Shil are to be taken up immediately under phase I of the distribution project.

Northern Zone

Part of the area in this zone near the Majiwade point is served by elevated service reservoirs in the city and the remaining area to the north is served directly from various tapplings on MIDC and MCGM lines through a distribution network to consumers. For the Gandhinagar area, water is taken to an ESR.

Reservoirs and Distribution Networks

While the supply to the central zone is largely through the service reservoirs, large areas in eastern and northern zone have no service storage and the water from the tapplings on MIDC and MCGM mains is admitted directly in the distribution system. There are in all 21 existing service reservoirs in TMC, located mainly in the central part. (Note: 26 new reservoirs are currently under construction)

A distribution network exists in all parts of the central zone. Most of this pipeline is cast iron with diameters ranging from 80 mm to 400 mm in the more developed parts. While only some parts in the eastern zone (such as Kalwa, Vitava, Kharigaon, Parsik and Mumbra) and the northern zone (such as Surkarpada, Shastrinagar, Gandhinagar, Balkum, Majiwade and Dhokali) have distribution lines that were laid in the past. The total length of the entire distribution network is 450 km.

The operation and maintenance of the water distribution system is with the Thane Municipal Corporation.

MAP

Service Quality and Standards

Approximately 98 percent of the total population has access to piped water supply (about 2 percent population collect water from natural wells and bore wells, however the ground water is saline and is used for domestic purposes other than drinking).

As reported in the Environmental Status Report there exist approximately 501 bore wells within TMC (91 in zone A, 70 in zone B, and 350 in zone C). There are an estimated 115 dugwells within TMC.

Table: Water Supply in TMC

Area	Duration	Pressure
TMC	Intermittent supply <ul style="list-style-type: none">80 percent area receives water for a total of 8 hours per day (two timings of supply through the day)20 percent area receives water for less than 4 hours per day	“Generally adequate” (As reported in the ESR)

Source: Water Supply Department, TMC. As reported in the Environment Status Report

Interestingly the budgeted amount against borewell construction has increased in years 2000-01 and 2001-02 (note: ground water is saline). Similarly expenditure against tanker water supply has also increased during this period. The corporation explains this by citing “inadequate supply pressures” in certain areas, such as pockets within Mumbra that could not be fed from the sump house mentioned in the section on tapping for the eastern zone. (Note: This situation is stated to have been corrected, since new lines were laid in the area under the 100 mld water works scheme.)

Water Quality: TMC’s pollution control cell analyses water samples from various regions for Physiochemical and bacteriological quality of water supplies. 95 percent samples are potable and conform to WHO norms. (Note: No information exists regarding the variation in water quality, however the corporation highlights that the abovementioned are random samples and include all three bulk water suppliers.)

Water Losses: As reported by the TMC in the Environmental Status Report, approximately 20 percent of total water supplied is lost due to leakage, supply duration and pressure. No ground assessment has been carried out to support this claim. Interestingly the 2000-01 RE and 2001-02 BE provide some amount for expenses against “reduction of leakages”. (Note: The TMC proposes to undertake a leak detection study in year 2002-03).

Ongoing/Proposed Capital Works

a. 100 MLD Independent Water Supply Scheme (ongoing)

The Bhatsa dam, a multi-purpose project provides (earmarked) 1800 MLD water, for drinking purpose to MCGM and remaining 460 MLD water for irrigation purpose to the

land in Shahapur and Bhiwandi Taluka. Of the total earmarked quantity, the MCGM currently utilizes approximately 1365 MLD. In 1997 the TMC obtained permission from the irrigation department and the State Water and Sanitation Department (following technical and feasibility studies and a scrutiny of the detailed project report and plans) to execute an “independent water supply scheme” to make use of 100 MLD of surplus water (water currently not utilized by MCGM) available at the Bhatsa Dam. The General Body resolution for sanctioning the project, was passed vide R.No. 59 Dt. 18.6.97. and works commenced in October 1998. The MJP executed the construction works. The drawal of 50 mld was commissioned on May 1, 2001 and trial runs are currently on. The TMC expects to commission the entire 100 mld by April 2002. (The water will be supplied into the existing distribution network). The TMC proposes to operate this scheme on a contract basis and administrative approval has been obtained for the same. Tenders were issued to this effect in October 2001. This contract includes maintenance, repair works, providing staff for technical and administration work, security services.

The total cost of this scheme was approximately Rs.10200 lakh. For this project the state grants of 23.3 percent of scheme cost were availed, equivalent to Rs.2320 lakh. These were drawn on a pro-rata basis (as of October 2001 the actual grants released were approximately Rs.1900 lakh). The GOM released the grant to MJP directly. Further TMC borrowed approximately Rs. 6800 lakh from MMRDA in the form of loan and the remaining Rs.1020 lakh (10 percent) came in as own contribution.

Since approximately 98 percent of the TMC population has access to water supply, the improvement from this project in terms of service delivery will essentially be in terms of increased per capita supply (to achieve equitable water distribution in TMC areas) as well as supply to new connections (growth in number of connections in TMC - the project is planned for the 2011 population estimates.)

b. Water Distribution Project

The TMC will lay a distribution network to distribute the additional 100 MLD of water in Thane city. The city has been divided into three zones for the purpose, viz. East, North and Central zone. For distribution purposes each zone will be divided into several water districts (total 45 water districts) with their own storage reservoir.

The project will be implemented in two phases, with a total cost of Rs.13800 lakh. Phase I is estimated to cost Rs.6600 lakh and will be executed during September 2001 to March 2003. This phase is designed for water scarce areas such as Kalwa, Mumbra, Vitava, Kharegaon, Parsik, Wagle Estate. The works include strengthening of existing distribution supply, laying of additional 94 km distribution system, and setting up of 15 water tanks. In October 2001 tenders were invited for execution of Phase I. Phase II is estimated to cost Rs.7200 lakh and will be executed during Dec. 2001 - March 2003.

1.2 Sewerage System

Existing System

Sewerage Collection Network

The TMC has an underground system of sewerage. Part of the network was first laid in 1977-78 by the MWSSB and subsequently expanded in 1987 under the MWSSP project. The length of the existing sewerage network is approximately 68 km, covering a total area of approximately 30sq.km (approximately 1/3rd of the city area). The following areas are served by a sewerage network: old city of Thane (particularly the areas of Kopri, Panchpakhadi, Jogila Market and Shahu Market) Agra road, railway line, western part of Thane creek, eastern part of Thane city, Phokran road no.1 and 2, Shreerang society.

Approximately 40 percent of the total population is covered. An additional 20 km of sewerage network has been laid by the MIDC, in the area of Wagle Estate, but this is not operational because of technical problems. Sewerage facilities are absent in the suburbs of Thane and buildings in these areas depend upon septic tanks.

The domestic sewage generation is estimated to be 160 MLD. The existing sewerage system collects only 56 MLD (35 percent of estimated generation) for treatment at the STP. The remaining quantity finds way into the nallas draining the city. In Thane there are around 60 nallas traversing through Thane city to collect all wastes and drain into Thane Creek. The total length of these nallah is around 110 km.

Pumping Stations

The MWSSB handed over these plants to TMC in 1995. There are a total of 8 sewage-pumping stations; their details are tabulated as below:

Table 1.2: Pumping Stations

	Pumping Station, Area	Number of pumps		
1	No.1 Kopari east Kanniya nagar	2 nos.75HP	2nos.80HP	1no.40HP
2	PS No.2 Kopari railway bridge	2 nos.75HP		
3	PS No.3 Rangayatan	1no.30HP	1no.15HP	
4	PS No.4 Cassel mill	Not commissioned by MWSSB		
5	PS No.5 Dadaji Kondev stadium	1no.100HP	2nos.90HP	
6	PS No.6 Shreerang society	Not connected to the main grid. Water pumped into nallahs		
7	PS No.7 and 8	Handing over, trials on.		

Source: Sewerage Department, TMC

At present only sewage from pumping stations 1,2,3 and 5 comes into treatment plant. Sewage from pumping station 3 is pumped into pumping station 5 and from this pumping station to the STP pumping station no.4 is bypassed and was never commissioned by

MWSSB. Pumping station no.6 is currently not connected to the main grid and water from this station is pumped into the nalla. Pumping stations 7 and 8 have recently been connected to the STP. Currently (march 2002) the TMC is in the process of taking these over from the MJP (trials on).

Sewerage Treatment Plant

Constructed in 1967 by the MWSSB, the primary treatment plant at Kopari (Thane east) has a treatment capacity of 18 MLD and includes: screen chamber, grit chamber, sedimentation, digester, sludge beds, and chlorination. Another similarly designed, 36 MLD capacity primary treatment plant was built in 1982 by MWSSB. The treated sewerage is disposed into the Thane creek. Against this total STP capacity of 54 MLD the estimated generation of domestic sewage is 160 MLD. The untreated domestic sewage and partially treated industrial waste finds its way into the creek through nallas, thereby causing pollution.

Proposed Project

Rehabilitation of Old Pumping Stations and Treatment Facility

In 1998 TMC replaced all the old pumps with new pumps with submersible technology (at a total cost of Rs.150 lakh) so that the Kopari Plant could be used. The STP at Kopari has also been revived.

Extension of Existing Sewerage System

TMC intends to extend its existing sewerage system and the proposal is at the advanced feasibility stage. The estimated project cost is approximately Rs.15000 lakh. The plan is to start the survey work soon and to commission the project by 2006.

Public Toilets

There are approximately 1010 public toilets within TMC limits. Of these 67 Sulabh Shauchalaya (under construction) are paid toilets, while 943 are unpaid toilets.

- Sulabh Shauchalay: Under this scheme the TMC will build 67 toilets in the corporation area. These will be operated on a “pay and use” basis. Work has started on this scheme.
- Easy Shauchalay: There are 32 small villages within the corporation’s limits. For this rural population the TMC proposes to undertake a Government of Maharashtra scheme called “Easy Shauchalaya.” The scheme will be financed in the following manner: 39 percent grant from GOM, 42 percent loan from GOM, and the beneficiary will contribute 19 percent. This scheme is planned to be initiated in year 2001-2002 and will be started in Diva, Dativali, Agasan, Betawade. The TMC has made a provision of Rs.45 lakh in the budget (against “individual toilets construction”).

Annexure A.1

MWSSP – I

The Shahad-Temghar Water Supply Scheme executed under a World Bank project was commissioned in 1987. Since then it has been operating and supplying water to the TMC, Bhiwandi, Mira-Bhayandar and some rural areas in Thane district. The total capacity of the water works is 210 mld of which 127 mld is marked for TMC.

Project Components

a. Water Supply and Distribution System

Construction of intake and pumping station at Shahad on Ulhas river (capacity 210 mld), a water treatment plant at Temghar (210 mld), 228 km long pumping/gravity transmission mains, raw and pure water pumps (10 nos. installed capacity 5000 HP + standby), 2 Master Balancing Reservoirs (capacity 18 ML), 4 bridges across Ulhas creek and Waldhuni river to carry transmission mains, distribution reservoirs (30 for towns and 95 in rural areas), an 800 km. long distribution network.

b. Sewerage, Sewage Treatment and Disposal Work

Expansion of the sewerage system in the towns of Thane and Bhiwandi (48 km), new sewage collection system in the towns of Dombivli, Ulhasnagar and Ambarnath (208 km), necessary sewage pumping stations, pumps sewage pumping mains, 5 primary sewage treatment plants (capacity 117 mld), effluent mains, 22500 road side chambers termed as property connections, along with a storm water drain (1.3 km) in Dombivli.

Total Project Cost

Estimated cost - Rs.16200 lakh (1984 rates)

Actual cost upon completion - Rs.11890 lakh (year 1986)

Table: Project Financing

	Sources of fund	Rs. lakh (1984)	Percentage of total
i.	Beneficiary contribution	1620.00	10.0
ii.	IDA credit through Government of India	4930.00	30.4
iii.	Contribution by Government of Maharashtra		
	a. Grant in Aid	7580.70	46.8
	b. Loan component	2060.30	12.7
	Total	16200.00	100.0

Source: Project Completion Report, Maharashtra Water Supply and Sewerage Project, August 1986, MWSSB.

**Table: Cost Appropriation to Thane Municipal Corporation
MWSSP 1**

		Total Cost	Cost Appropriated to Thane (Assumption)
		Rs. Million	Rs. Million
A	Water Supply Northern Area		
1	Civil works		
	Intake, transmission and treatment		
	Temghar intake, bridges, pumping station and transmission main	77.00	77.00
	Temghar Treatment Plant and Pumping Station	51.85	51.85
	Transmission mains, bridges, pumping stations, reservoirs and bulk meters	144.33	144.33
	Distribution syetem improvements, Thane	40.97	40.97
	Bhiwandi	5.33	
	Villages (55) (32 villages included in Thane)	21.57	12.55
	Sub total	341.04	326.70
2	Equipment and materials supply		
	Intake, transmission and treatment		
	Temghar intake, bridges, pumping station and transmission main	40.92	40.92
	Temghar Treatment Plant and Pumping Station	45.42	45.42
	Transmission mains, bridges, pumping stations, reservoirs and bulk meters	133.18	133.18
	Distribution syetem improvements, Thane	44.12	44.12
	Bhiwandi	8.94	
	Villages (55) (32 villages included in Thane)	23.19	13.49
	Sub total	295.77	277.13
B	Water Supply Southern Area		
1	Civil works		
	Treatment and transmission		
	Badalapur treatment plant extension and improvement	5.25	
	Transmission mains, reservoirs and bulk meters	26.56	
	Distribution system improvements		
	Kalyan	9.18	
	Dombivli	13.90	
	Ulhasnagar	6.09	
	Ambarnath	9.72	
	Villages (49)	7.90	
	Sub total	78.60	
2	Equipment and Materials Suupply		
	Treatment and transmission		
	Badalapur treatment plant extension and improvement	5.67	
	Transmission mains, reservoirs and bulk meters	42.52	
	Distribution system improvements		
	Kalyan	10.62	
	Dombivli	7.43	
	Ulhasnagar	11.66	
	Ambarnath	13.18	
	Villages (49)	18.98	
	Sub total	110.05	
C	Sewerage Northern Region		
1	Civil works		
a	Thane		
	Collection and conveyance system, extensions and improvements	21.98	21.98
	Property connections	5.50	5.50
	Treatment and disposal	17.27	17.27
b	Bhiwandi		
	Collection and conveyance, extensions and improvements	8.15	
	Property connections	3.78	
	Treatment and disposal	7.56	
	Sub total	64.24	44.76

continued

a	2 Equipment and Materials Supply		
	Thane		
	Collection and conveyance system, extensions and improvements	17.64	17.64
	Property connections	2.50	2.50
b	Sewage treatment and disposal	10.18	10.18
	Bhiwandi		
	Collection and conveyance system, extensions and improvements	11.52	
	Property connections	1.65	
	Treatment and disposal	2.04	
	Sub total	45.54	30.32
D	Sewerage Southern Area		
1	Civil works		
	Kalyan Property Connections	1.80	
	Dombivli collection and conveyance system	20.93	
	Property connections	7.05	
	Treatment and disposal	5.87	
	Storm water drainage	3.17	
	Ulhasnagar collection and conveyance system	59.23	
	Property connections	21.60	
	Treatment and disposal	8.71	
	Ambarnath collection and conveyance system	12.80	
	Property connections	8.49	
	Treatment and disposal	13.16	
	Sub total	162.80	
2	Equipment and materials supply		
	Dombivli collection and conveyance system	12.26	
	Treatment and disposal	5.12	
	Storm water drainage	1.21	
	Ulhasnagar collection and conveyance system	37.00	
	Property connections		
	Treatment and disposal	6.62	
	Ambarnath collection and conveyance system	9.89	
	Property connections		
	Treatment and disposal	11.59	
	Sub total	83.70	
	TOTAL A TO D	1192.85	678.91
E	Common Services		
	Stores, workshops, depots and associate buildings	Included in vehicles	Included in vehicles
	Vehicles and tools	18.70	6.23
	Sub total	18.70	6.23
F	Others		
	Engineering consultants	21.20	21.20
	Maharashtra water supply and sewerage board	100.00	100.00
	Training	2.00	2.00
	Land acquisition	18.00	18.00
	Sub total	141.20	141.20
	TOTAL A TO F	1352.75	755.74
G	Contingencies		
	Physical	84.87	84.87
	Price	121.89	121.89
	TOTAL A TO G	1559.51	859.12
H	Customs Duty	36.47	18.24
I	Taxes	24.02	12.01
	PROJECT TOTAL (AS ESTIMATED)	1620.00	889.36
	PROJECT TOTAL (ACTUAL AT COMPLETION)	1189.00	
	COST APPROPRIATED TO THANE		653.00

SECTION B

Water Supply and Sewerage Budget (Budget C)

Introduction Budget C (Water Supply and Sewerage) Statement

In accordance with requirements of the Maharashtra State legislation the TMC maintains a separate budget, called Budget C, for its Water Supply and Sewerage (WSS) services.

Box 2.1

Note: The Separate Budget is maintained only on books and the corporation does not maintain a separate bank account against the same. The income expenditure provisions are made in the month of March, in the budget. However, there are no corresponding money transactions between accounts since no separate account exists. In order to meet the expenditures under the WSS budget, the corporation withdraws from its account as required. Daily deposits against WSS income are made into this account.

Meanwhile as per section 91B of the BPMC act, the TMC is required to establish and set apart a separate fund called the “Water and Sewage Fund” and to maintain an account against the same called “the Account of the Water and Sewerage Fund”. The corporation is in the process of establishing such an account. Further, Section 91A mandates that the corporation establish a “Consolidated Water Supply and Sewage Disposal Loan Fund”.

Administratively the Public Health Engineering department manages these services and the Property Tax department is responsible for the billing and collection of taxes and water charges (flat rate and metered).

**Table: Thane Municipal Corporation (established October 1, 1982)
Area: 127 sq.km.**

	1994	1995	1996	1997	1998	1999	2000	2001
Population (estimated)								
Thane M.C. (total - urban & rural)	931793	981776	1034440	1089930	1148396	1209998	1274905	1261517 census
Assumed slum population (30%)	279538	294533	310332	326979	344519	362999	382471	378455
Assumed household size (people/HH)	4	4	4	4	4	4	4	3.3
Assumed number of households	232948	245444	258610	272482	287099	302499	318726	383636 census
Serviced population (people)								
- water supply	98%	98%	98%	98%	98%	98%	98%	98%
- sewerage	40%	40%	40%	40%	40%	40%	40%	40%
Average household income (Rs./year)	<i>Not Available</i>							