Infopack

EDITORIAL

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Popular Information Centre

World Bank and DJB Connive To Deprive

- Piyush Pant

Deceit, manipulation and blatant lies! What else can you say about Delhi Jal Board (DJB) appointing a multinational firm Price Waterhouse Coopers (PWC) as consultant for preparing project study report for water reforms in Delhi. Despite DJB's oft-repeated 'open bidding' rhetoric, the facts speak otherwise. Going through the plethora of media reports and the official correspondence exchanged between the World Bank and Delhi Jal Board, one comes across the startling revelation that all through its endeavour to improve Delhi's water supply and sewerage systems the DJB has been dancing on the tunes set by the mighty World Bank. The relevant documents reveal that in 1999, a loan of $ 2.5 million was given by World Bank to the DJB for preparing a roadmap for 'water reforms'. The way DJB was forced by World Bank to utilize this loan amply showed that the loan was granted with strings attached i.e. draw the 'roadmap' of reforms as per the World Bank's agenda. Hence, a part of the $ 2.5 million was utilised to privatise the Sonia Vihar plant by handing it over to Suez Degremont, a multinational. What is shocking is the revelation that this loan was even used as a weapon by World Bank by intervening to award the consultancy contract to Price Waterhouse Coopers (PWC) for doing project preparation study. The available documents reveal that the contract was awarded to PWC in November 2001 at the behest of World Bank by surpassing the claims of two other consultants who occupied top two positions among the six shortlisted by the evaluation committee of DJB.

The letter dated 6.10.1999 written by Dr. Ranbir Singh, Additional Chief Executive Officer of DJB to Shri Shyamal Sarkar, Sr. Sanitary Engineer of the World Bank shows that on the basis of evaluation of Technical proposals, Deloitte Touche Tohmatsu (Emerging Markets) of USA stood first by scoring 77.58 points (well above the qualifying marks and TAHAL Consulting Engineers Ltd. Of Israel stood second by scoring 76 points (also above the qualifying marks) while Price Waterhouse Coopers Ltd. India stood fifth with a score of 68.68 points. It is clearly written in the letter that 'it is recommended to open the financial proposals of these two firms only'. But World Bank shamelessly rejected this recommendation. A message dated 6.12.1999 sent by the World Bank Group's New Delhi office to Dr. Ranbir Singh says, 'we have reviewed your evaluation and regret to inform you that we are not able to convey Bank's no-objection to your recommendation. We have observed that the sub-division of points as developed by the Evaluation Committee of the Delhi Jal Board are not fully responsive to the requirement of the Terms of Reference (ToR). These need to be modified to make them appropriate for evaluation of this proposed assignment…..' It is said that PWC lost in the normal bidding process not only once but thrice. Yet every time the World Bank intervened so that Price Waterhouse Coopers gets the contract. In fact World Bank often misused the "inconsitent with the provisions of Request For Proposals" clause to browbeat the DJB. After the failure of PWC to qualify even in the second bidding, the World Bank even forced the DJB to remove the evaluation of one of the members of the evaluation committee. Thus it is clear that the World Bank has been dictating the terms to the DJB and the purpose has been to arm-twist it to follow the path of privatisation whereby Corporates dear to it could rake off unlimited profits. On the other hand such meek has been DJB's surrender to the World Bank driven process of privatisation that the part of the World Bank loan given to the DJB was even used to hand over the constitutional legislative function of law making to private sector by allowing Price Waterhouse Coopers to draft the 'Delhi Water and Waste Water Reforms Bill 2003' thus subverting our constitution. It may be said that the World Bank is not only privatising the water sector in India but also privatising the country's governance.

But in this game of reaping profits out of people's woes, the World Bank is not alone, the DJB officials are said to be hand in glove with the officials of the World Bank. Media reports say

that after the World Bank sponsored 24 x 7 scheme was put on hold under the public pressure, a number of senior officials of the Delhi Jal Board have come under a scanner and are facing a probe by the Central Vigilance Commission (CVC) for going out of the way to oblige a private company for approving a consultancy project under the Yamuna Action Plan Project Phase II. The reports further point out that Jal Mal Kamgar Sangharsh Morcha, a union of Jal Board Workers, alleged that outgoing Chief Engineer Subhas Phull, one of the brains behind the controversial 24 x 7 scheme, had managed to get a job for his son in Price Waterhouse Coopers when he was DJB's Chief Engineer and main member of the committee on privatisation. Another official Praveen Bhargava, former SE (South) and a close confidant of Mr. Phull, is also said to be under scanner of CVC. He has already been charge-sheeted.

Thanks to the resistance put up by the people of Delhi, NGO Parivartan and the Residents Welfare Associations of Delhi, in September 2005, the Delhi Government had to put the 24 x 7 project on hold. Subsequently on November 23, 2005 Delhi government wrote to Centre that they were withdrawing the World Bank loan application.

Observers feel that this withdrawing is only for the "time-being" and sooner or later DJB will embark upon the road to privatisation. As one government official said - "The reforms are on course and are not being derailed."

DJB - watchers refer to the World Bank report on Water and Sanitation Programme, South Asia as an eye-opener and indicative of the manner in which a roadmap had been quietly drawn up to privatise the DJB *a la* Delhi Vidyut Board (DVB).

In this issue of **Infopack**, we focus on the existing nexus between World Bank and DJB for privatising the water and sanitation services of Delhi.

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Delhi Water Supply & Sewerage Project: Project Preparation Delhi Water Board Final Report, Part A Volume I (Main Report)

Submitted By

Price Waterhouse Coopers In association with DHV Consultants, The Netherlands

And

TCE Consulting Engineers Ltd.

July 2005

Bird's Eye View

The document prepared by multinational consultant PriceWaterHouseCoopers is full of invectives for the existing institutional infrastructure and service delivery system of Delhi Jal(Water)Board. It increasingly talks about the need for comprehensive reforms so that the focus of DWB could be changed from service-oriented to the commerce oriented. No doubt, certain observations made in the report do hold the truth yet what is at question are the motives behind preparing the report, that too by a company well- known for preparing blue-prints for successful market –access for the multinational companies in the developing countries at the cost of the poor and middle-class people of these countries.

This report is quite a thick report containing around 175 pages. The very first chapter of the report titled “Summary of Institutional Situation and Reform Initiatives” amply makes clear what the report is all about. It talks about the Delhi Water Board’s affairs in a nutshell and the need for reforms, objective of the reform programme, scope of the reform programme and creation of a commercial environment and private sector participation. The report begins with the statement that though the Delhi Water Board is the primary service provider of water supply and sewerage services in Delhi, in the current institutional structure the Urban Water Supply and Sewerage (UBSS) sector suffers from institutional, financial and fiscal deficiencies which need to be addressed. It further says that given the limited resources of the government of NCT of Delhi and competing needs for investments in other sectors of economy, the Government recognizes the need for comprehensive reforms in the UWSS sector to ensure the sustainability.

This chapter covers the recommendations on institutional restructuring of the UWSS sector in Delhi as well as the roadmap for the implementation of the same. The report says that these recommendations have been made after assessing comprehensively DWB’s needs, studying the national and international precedents as well as discussions with various stakeholders. It further says that workshops were held for developing the Vision and Reform

Implementation Strategy for the sector. The participants in the workshops included the representatives from DWB management and staff, Central and State Government, Resident Welfare Associations, multilateral and bilateral development agencies, NGOs and experts from progressive water utilities. The report asserts that the recommendations of the study as well as the deliberations during both the workshops have stressed on the need for the urgent interventions.

Next, the report says that the current level of service in the sector suffers from serious deficiencies, which necessitate the need for reforms, and the areas identified for reform are water supply, sewerage and the institution. As far as water supply and sewerage are concerned, the report talks about gaps in service delivery in both. It says that despite concerted efforts the demand – supply gap is on the rise. It further points out that this imbalance is exacerbated by the high level of Non – Revenue Water – including both technical and commercial losses. It also says that the present zoning arrangements are not conducive for effective monitoring and control. Customer metering is ineffective under the prevailing condition of intermittent supply. It says that under these conditions there is little incentive to economise on the use and wastage of water. The intermittent supply further leads to increased health risks from possible contamination of leaking pipes. It says that even though positive initiatives are being taken by DWB to augment water supply, these are not enough in bridging the demand-supply gap. Therefore much of the gap will have to be met by giving priority to improved management of water distribution, resulting in reduced losses, rather than capacity augmentation. Similarly in the field of sewerage, the report claims that the sewerage-covering network is inadequate with only 73% 0f the population connected to the sewer network. It says that with 80% of the water consumed discharged as wastewater, presently the wastewater generated is 406 MGD. But it points out that out of this, only 321MGD of wastewater is collected for treatment due to the problem of large un-sewered areas, silted sewer lines and inefficient pumping. Also there is overflow of sewer lines and storm water drains. In addition, the configuration of some pumping stations causes sewer surcharging that results in continuous overflow of crude sewage to the environment. Hence, to reduce the unsafe disposal of the wastewater in the environment as well as to meet the future water demand, it will be necessary to give immediate priority to rehabilitate the existing pipelines, to reduce the infiltration, to improve pumping station operation and ensure conveyance of the collected wastewater to the treatment plants.

Talking about the institutional arrangements, the report says that they are not geared to promote managerial autonomy and accountability. It says that management responsibility is diffused leading to lack of accountability. The report also points out that the annual performance appraisal system does not explicitly recognize Key Result Areas and hence absence of monitoring performance against them. It also points out that human resource development in the organization needs particular attention, wherein there is a clearly defined incentive structure for effective training programmes for skill set enhancement of employees at various levels including training on modern management and leadership skills. It says that the customer interface is a clear weak link. The customer has limited options for bill payment, is not aware of existing service standards and there is no effective grievance redressal mechanism. It further says that poor people residing in the resettlement colonies, urban villages, rural villages, J J clusters and unauthorized colonies are only partially covered by the water distribution system. Therefore institutional mechanism is required to improve the organizational efficiency and alter the ethos of the organization from being supply oriented to customer oriented.

Next, talking about the financial sustainability the report says that there has been a persistent deficit on the revenue account over the years. There has been a substantial increase in the revenue expenditure on account of operations and maintenance of the installations, increase in power tariffs etc. while on the receipts side DWB is not charging adequately on account of sewerage services being provided although there has been increasing expenditure on account of sewage disposal and treatment. It says that DWB funds its capital expenditure of around Rs. 700 crores per annum through loans from the Government. The current outstanding debt to Government stands at more than Rs. 6000 crores. Even though the revision of tariffs is expected to lead to substantial increase in revenue receipts, the same is not sufficient to meet the operating expenses thereby necessitating the need for support from Government of NCT of Delhi. Hence, a need for comprehensive reform of the UWSS sector, the report says.

The report talks about the objectives of the reform programme by underlying the Delhi Government's Vision i.e. "Provision of universal 24/7 safe water supply and sewerage services in an equitable, efficient and sustainable manner by a customer oriented and accountable service provider" and says that the strategy to achieve this Vision is to carry out a phased programme towards full service coverage and high quality service provision in an efficient and financially sustainable manner. The report further says that though the Vision document sets a time frame up to 2015, it is proposed to launch the reform process immediately with the objective of achieving visible and replicable improvements in various aspects of the WSS services in Delhi. The report highlightes the following objectives of the reform programme -

- Adoption of a phased implementation approach, incorporating experience from initial work for replication and scaling up.
- Implementation of an initial city wide service improvement programme for substantial improvement of reliability, sustainability and affordability of WSS services to benefit all citizens of Delhi including the poor.
- Implementation of comprehensive organisational measures for enhanced capacity building and internal efficiency.
- Specific pro-poor interventions to address the needs of the poor.
- Preparatory measures for the next phase of reform programme to roll out continuous water supply and sewerage services to the entire city.
- Effective Institutional Framework for implementation and sustenance of the reform programme

The report further says that the broad components of the reform programme include:

- Creation of a commercial incentive based environment.
- Phase wise comprehensive distribution improvements through harnessing of technical and managerial expertise.
- Establishment of an independent Regulatory Commission to regulate the functioning of the water and waste-water sector in the long run.

Stressing on the need for creating a commercial enviornment the report says that commercialization is an administrative reform which will aim to create a more commercial incentive based environment irrespective of the corporate structure of DWB.It will involve creating a framework which will be geared towards adopting measures to improve the viability of DWB and introduction of performance drivers that replicate the pressures that cause private business to operate efficiently and effectively.

The report also talks about many more institutional, organizational and financial reform measures in detail in subsequent chapters. These include financial restructuring, organizational strengthening, Human Resource development through training and performance orientation, enhancing

customer orientation, adoption of commercial accounting principles, and effective use of IT\ MIS etc. The report intimates us that Delhi Water Board has already initiated reforms on many of these aspects. It further says that for providing legal backing to the commercialization process, there is need to embrace the principles of corporate governance, which could be done by amendments in the existing DWB Act 1998. Or alternatively converting DWB (a statutory body) into a Corporation operating under the provisions of the Indian Companies Act, 1956 may also be considered. Under such arrangement the utility will operate under a Board of Directors with the entire share capital vesting with the Government of NCT of Delhi.

Now the report comes to World Bank's favourite theme of private sector participation in DWB for provision of water and sanitation services. It says that even though DWB has taken few initiatives for attracting private sector participation in the form of DBOT contract for WTP at Sonia Vihar, O & M of STP at Rithala, Service contract for billing, Annual contracts for O & M of few pumping stations etc., yet there is huge potential still to be tapped.

The report further points out that a phased implementation approach is proposed for gradual introduction of continuous supply systems. It says that DWB plans to undertake first phase of implementation of continuous supply as an essential part of comprehensive improvement in the distribution services in two of its own operational distribution zones. It points out that DWB has already initiated the process for procurement of specialist contractors on a competitive bidding basis for each zone. It says that the proposed Management Contracts for 5 years will cover the operation and maintenance of the water supply and sewerage services in both distribution zones as well as rehabilitation works required to bring about the changes necessary for the continuous supply. An independent monitoring of the performance of the contractor is also proposed.

The report also talks about the regulatory commission and says that it is proposed that in the long run , DWB may consider reviewing its institutional structure and may consider separating the regulatory function from the ownership and service provision function. It even talks about considering setting up of an independent regulator.

Next the report talks about various functions of the regulatory commission and some salient features of the regulatory framework and says that as part of the Project Preparation Study, a 'Delhi Water and Wastewater Reforms Act' for setting up of a regulatory body incorporating these features has been already drafted and submitted to DWB.

Talking about the management of the reform programme, the report says that the process of reforming the UWSS sector may be long drawn and it may take a few years before the full benefits of the reforms are experienced. Nevertheless the report asserts that attempts should be geared towards building a broad constituency for change by adopting a participatory approach, wide ranging consultations with involvement of all stakeholders to implement the reform measures. However the success of the reform programme would depend on the commitment of the various stakeholders.

The report adds that the overall nodal responsibility of the reform project will be that of Delhi Water Board whereas the role of international development agencies will be to support both the reform process and the potential future investments associated with it. The agencies active in this sector include World Bank, WSP South Asia, ADB, USAID and DFID. It points out that assistance sought will be both technical and financial. Here lies the rider.

Delhi Water Supply and Sewerage Project (DWSSP): Project Preparation Study

Final Report - Part B

Water Supply

Submitted By

Price Waterhouse Coopers

2005

Bird's Eye View

This Final Report has been prepared by a global consultant Price Waterhouse Coopers on behalf of Delhi Government for Delhi Water Supply and Sewerage Project (DWSSP). The report pinpoints the issues concerned with the water supply services provided by Delhi Jal Board (DJB). This report is basically a study report.

Besides preamble, this 25-page report contains five chapters and seven tables.

Chapter-I contains the introduction, which gives the structure of the report. This chapter also contains some background data of the project

Chapter-II presents a picture of the existing situation related to supply of water in Delhi, including the volumes of water, as well as condition assessments of current water networks, pumping stations and treatment works.

Chapter-III presents the goals of DJB related to water supply.

Chapter-IV describes the measures to overcome the main water supply bottlenecks.

Chapter-V relates to the assessment of immediate requirements and identification of the urgent investment programme, including costs.

In the **Background** the report points out that the National Capital Territory of Delhi (NCT) covers an area of 1486 sq.km. encompassing three local bodies such as the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Corporation (NDMC) and Delhi Cantonment Board (DCB). Of the total urban area, MCD governs 94% while NDMC and DCB govern 3% each.

The report says that for management of the water supply in the NCT, the Delhi Government reconstituted the Delhi Water Supply and Sewerage Disposal Undertaking into the Delhi Jal Board (DJB) in 1998, with the Chief Minister of NCT as Chairman of the Board. It says that the DJB supplies bulk of water to the small NDMC and DCB areas while for MCD area it undertakes the entire water supply services, including water resources management, monitoring pollution of its water and treatment and supply of potable water. The DJB is also responsible for all wastewater collection, conveyance, treatment and disposal facilities.

The report also says that with regard to the Terms of Reference (To R) for water supply, the emphasis of this study is on preparation of a programme of actions to be implemented over the next four years for immediate improvements in the water supply situation.

It further says that the data collected by the Consultant from the DJB shows absences, gaps and inconsistencies in the data. It says that data deficiency is the lack of accurate records of production and sales, a basic requirement to assess properly the performance of DJB.

In chapter –II, the report gives a picture of the present situation of water supply under DJB. The DJB serves a total population of nearly 14 million through 1.47 million water connections obtaining water from ground water resources and surface water resources like the Yamuna, Bhakra and the Ganga rivers, including 1,835 TCMD (404 MGD) from Upper Yamuna River Board, 1,213 TCMD (267 MGD) from the Bhakra-Beas Management Board, 1,223 TCMD (269 MGD) from the Ganga River. The water allocation in 2001-2002 from these three rivers for DJB was 940 MGD (million gallons per day) or 4272 TCMD (thousand cubic meters per day), which translates into an actual availability of 820 MGD or (3726 TCMD) due to losses from canal system and capacity limitation in the raw water transmission.

It also says that according to DJB data for 2001-2002, 1498 TCMD water was distributed and charged to various categories of customers. In addition, the following free, non-metered supplies are given by the DJB:

Standposts (11,533 no); 221 TMCD (49 MGD) (Consultant's estimation)

Water Tankers (493 no); 10 TMCD (2 MGD) (Consultant's estimation)

It follows that, in 2001-2002, 1413 TMCD (311 MGD), i.e. 49% of water

produced, was the amount of water not recorded as billed consumption and does not generate any revenue (non-revenue water or NRW).

The report further says that the DJB has indicated that in June 2005 the water allocation from these three rivers has decreased to a total of 745 MGD theoretically available, which translates into an actual availability of 586 MGD due to above mentioned reasons.

In order to augment water supplies groundwater is abstracted from the Yamuna river channel bed (the so-called Renny Wells) through 16 wells producing 22 MGD while some 2,760 tubewells (as per valuation of Fixed Assets report) spread all over Delhi add another 41 MGD to water supplies.

The report says that in 2001-2002 the DJB water production was about 640 MGD and in 2004, it was estimated at 613 MGD, despite the fact that main Water Treatment Plants (WTPs) continue producing water at rated capacities.

However, the report points out that all these water resources are not able to meet the demand of water in Delhi. It says there is a large deficit in the water supply system, partly alleviated by private alternative supplies. Delhi is continuously facing water shortages. The report says that the present situation of water supply in Delhi is not up to the mark. It is not being able to meet and produce the amount of water the city needs to cater its rapid growing population and industrial growth, because there is no improvement in the quantity of water supply. Another reason for poor water supply is the prevalence of small private booster pumps to enable customers to abstract more water at a high pressure than the system presently permits.

The report further says that water obtained from surface water and groundwater sources is treated at five water treatment plants such as Chandrwal, Wazirabad, Haiderpur, Bhagirathi and Nangloi, with a rated capacity of 550 MGD and its purity and quality is checked by the DJB as per Indian Standards reflecting the WHO standard.

The report says that while studying some of the general shortcomings and problems are noted by the Consultant for the five conventional water plants. These are:

- Erratic power supply and low voltages.
- Poor equipment condition and high-energy use.
- Low efficiency of pumps and motors (Haiderpur).
- Surge protection not working. (Bhagirathi).
- Filter rate controllers not working (Nangloi), or in poor condition (Bhagirathi).
- Alum system and chlorine dosing in poor condition or inadequate. (Haiderpur).
- Coagulation not efficient (Chandrawal I).
- Flow and pressure management absent or deficient.

The report also mentions that besides NDMC, DCB, the entire area of MCD and some of the area outside MCD are covered by the distribution system of water supply of DJB. But the exact areas served by the distribution system are not known due to lack of record drawings. DJB also supplies water to fire fighting, but the number of fire hydrants connected to the distribution system are not recorded. To the areas not covered by distribution system, DJB supplies water by tankers.

The report says that the transmission system mainly consists of 572km. of mains and the condition of the transmission system is generally good. However, the following shortcomings have been observed by the Consultant:

- Numerous authorized and unauthorized tappings directly on the mains.
- Leakage from joints due to movement caused by traffic loading, water hammer and suspected poor installation.
- Some places where accessibility is not adequate.
- Some air valves are not operational.
- History of busts for some places.

- No surge control devices.

There are about 550 pumping stations in the DJB water supply system. Out of these, only three are associated with the transmission system. An assessment of a sample of pumping stations revealed the following shortcomings:

- Actual operating head often significantly below the pump duty point, causing excessive energy consumption.
- Low power factors, leading to higher energy consumption than should be.
- Some pump/motor sets are old (more than 15 years).
- Some stations have renewed, higher capacity pump/motor sets but original pipe work.
- Ancillary equipment in most stations is in poor condition.

The report also says that an assessment of the condition of distribution system reveals leakage in the system. It says that 24% of water produced is lost from distribution system and customer connections.

Water metering by the DJB consists mainly of consumption metering at customer connections. There are no metering arrangements in places for the transmission and distribution systems. The report also points out that DJB records showed a total of 1,333,833 customer connections in December 2001, of which 95% are registered as domestic connections. However, the records showed that 23% of the total connections had no meter and 43% of the meters were out of order due to tampering, blockage, wear and corrosion. Majority of connections with no meter are mostly domestic connections. It also says that 32% of the total meters are owned by the customers and not by the DJB. The report further says that a significant number of non-domestic customers have registered their connection as domestic connection to avail themselves of lower charges offered to the domestic customers. This is the contravention of DJB's by laws.

However, the repot finally says that the present water supply system is not up to the mark. The supply does not earn much revenue. There is intermittent and low-pressure supply causing high-energy consumption. In the laboratories there is no quality control. There is no record of proper data and management assessment Existence of very old equipments and faulty meters are found plenty. No proper maintenance and repair of the equipments and meters are done. It says all these factors hamper proper supply of water to the residents of Delhi.

Chapter III presents the goals of DJB related to water supply. The report here says that the Consultant feels that the DJB should provide an efficient and effective water supply service to meet the demand and level of customer satisfaction. The supply should affordable and round-the-clock (24x7). The report further says that the Consultant is in favour of 24x7 supply. For its justification they put some peculiar arguments like discontinuous supply contaminates water causing health hazards and burdens the customers with unnecessary cost for intermittent supply. They also say that 24x7 supply would maximize health and cost benefits. It would also enable more economical sizing of pipes and pumps, and reduce maintenance and repair costs. Based on the above, the Consultant strongly recommends that the DJB should plan for a 24x7 water supply for its customers.

The report further says that to achieve 24x7 water supply, some measures against both the demand side and the supply side of the water service are required to be taken. It says what is important is the level of NWR, which needs controlling for reducing water being wasted. This can be achieved only with introduction of 24x7 supplies. According to the Consultant the demand side measures include a more efficient and strict customer water metering regime and tariff restructuring. They feel these would help to promote less waste and lower demands of water. They also say that the present goals of the DJB should be to reduce the water losses to 25% by 2011 and 20% by 2021. NRW could be targeted at 30% by 2011 and 25% by 2021, should replace 50% of customer connections by 2011 and 100% by 2021, and hand over all the connections to DJB ownership, complete metering of production and transmission, stand-post and tanker supplies by 2006, and should establish 100% of 24x7 supplies by 2015, with a 50% coverage by 2011.

In chapter IV the report points out the measures required to achieve the above-mentioned goals of the DJB. It says that in 2004 water demand in Delhi was estimated to be 2727 TCMD (600MGD), excluding real losses. The average domestic consumption for the entire population would be about 130 litre per capita per day (lcd), or 170lcd when taking into consideration non-domestic consumption as well. Assuming a modest growth in average domestic per capita consumption of 2% per annum, with a corresponding increase in non-domestic consumption, and no tariff effects on the level of demand, the total net water demands (excluding NRW) in 2011 and 2021 will be:

- 3623 TCMD (797 MGD) in the year 2011.
- 5321 TCMD (1170 MGD) in the year 2021.

It says the amount of water supplies required to meet the net demand at present situation is not possible unless any actions against real water losses are taken, and there is increase in augmentation of water supplies.

The report further says that recognizing the present shortage, the DJB has taken some steps to augment water supplies, including two more water treatment plants (WTP) like Sonia Vihar WTP with capacity of 636.4 TCMD (140 MGD), Bawana WTP with a capacity of 90.5 TCMD (20 MGD), additional tubewells producing 34.1 TCMD (7.5 MGD), recovery of water wastage of 186.4 TCMD (41 MGD) at four WTPs .

Besides these options, there are more possible options to augment water supplies from the following surface water sources:

- Proposed Kishau Dam on the Tons River in Uttar Pradesh.
- Proposed Renaku Dam in the Himachal Project.
- Proposed Lakhwar Vyasi Dam on the Yamuna River.
- Ganga river (increasing the capacity of the upper Ganga Canal).
- Increasing capacity of the raw water conveyance system for the water already allocated by the Bhakra-Beas Management Board.

But all these projects are only at an early stage of discussion and will take at least 10 years to be materialized.

It says options for increased groundwater abstraction are limited, as the level of groundwater table has already been depleted due to extraction of water. And the area in Delhi where ground water seems to be available in sufficient amount is the Trans-Yamuna. However, here the abstraction is restricted to nine months.

However, the report says that along with the steps to augment water supply, some other measures like tariff change, reduction of NWR must also be taken into consideration to reduce the demand of water in the city.

The report further says the present shortcomings of the transmissions systems, which needs rectification, are also the factors for crisis of water in the city. It says besides old equipments, there are many other factors affecting water supplies. These include faulty meters and leakages in the pipes, direct tappings, both authorized and unauthorized, which need to be disconnected from the transmission mains. The report also says that the distribution system of the DJB also needs to be reorganized by dividing the system into zones or District Metered Areas (DMAs) in order to provide efficient management. Each DMA will need bulk assessment of NRW and billing efficiency. A system of separate distribution zones is , in any case, the current practice of DJB.

It also says that erratic power supplies in Delhi need to be rectified in order to proceed with 24x7. The report further says that whenever 24x7 supplies are introduced, every connection needs to be metered and the ownership of connections must be in the hands of the DJB. The repair and testing of meters are recommended to be carried out by private companies. Supplies through standposts and by tankers must be metered. All the systems like production; transmission, distribution, the inputs and outputs of all water treatment systems (Ranney wells and tubewells) need be metered to provide basic data for monitoring and control of the system. The data from the production and transmission bulk meters to be installed under the project should be recorded

and held centrally for use as and when necessary.

Chapter V presents the assessment of immediate requirements and identification of the urgent investment programme, including costs. The report here says that the identified project consists of three main parts like Zoning Pilot Study including setting up the District Metered Areas (DMAs) in order to achieve reduction of NRW, Rehabilitation of selected water facilities, some new works and supply of some equipment, and A Water Supply Master Plan Study to set up the strategy for replication of the Zoning Pilot Study to the rest of Delhi.

The main objectives of the Zoning Pilot Study include establishment of pilot DMAs and reduce NRW in these areas, harness of technical expertise for efficiency improvement and reduction of losses, development of practical methodologies for DMA isolation, metering, detection of illegal connections, and leakages and repair, rehabilitation of the network and service connection, system maintenance.

For rehabilitation of selected assets and other physical works, according to terms of reforms (ToR) a set of measures has been identified which can be grouped in three categories like rehabilitation, new works and supply of equipment.

The report, in the end, says that a Water Supply Master Plan for Delhi need to be prepared to set the long-term goals for the water supply system. The main objectives of this Master Plan have been outlined as the following -

- Prepare a water resources augmentation plan for Delhi.
- Outline a water supply system to cope with expected future demand based on introduction of 24x7 supplies and a reorganized distribution system.
- Design a hydraulic model for the transmission and distribution systems and carry out network analysis to identify required improvement and extension.
- Take up the Action Plan and set the agenda for reduction of NRW through establishment of DMAs and for leak detection and repair.
- Identify strategic infrastructure investments needed to meet medium and long-term goals.
- Provide recommendations for improved demand management (reduce wastage of water and stimulate conscientious use of water). In this respect, propose adjustments of the tariff applied by the DJB.

The report finally talks about the project costs. It says that on 2002-2003 the basic cost of the project amounted to Rs. 2,505 million, which will now increase to 3,367 million if all the goals set froth for the DJB are to be met.

Delhi Water Supply and Sewerage Project (DWSSP)

Project Preparation Study

Final Report, Part C

Sewerage

Price Waterhouse Coopers

2005

Bird's Eye View

This Final Report - Part C- has been prepared by a global consultant Price Waterhouse Coopers on behalf of the Delhi Government for Delhi Water Supply and Sewerage Project (DWSSP) . The report addresses the issues concerned with the sewerage services provided by the Delhi Jal Board (DJB) in Delhi.

Besides preamble, this 25-page report is basically a study report containing five chapters and seven tables. In this report a range of projects has been identified to rehabilitate, upgrade and extend the existing systems related to sewerage services. These projects were priced and prioritized and were divided into two batches with Batch Batch II and I. From these two sets of projects, the Delhi Jal Board had considered some projects as urgent and for immediate implementation within the first two years. Detailed engineering design of projects to be executed in years 3rd and 4th of the project implementation is to be undertaken later.

The report talks about the current situation of water supply and sewerage services provided by DJB in Delhi. It says that in 2004 the total demand for water in Delhi was estimated to be 4,545 thousand cubic meters per day (TCMD), including 40% water losses. Therefore, the actual demand was estimated as 2,727 TCMD or 600million gallon per day (MGD). But the water production for 2004 was about 2,788 TCMD whereas for 2001-2002 it was 2,911TCMD. With 40% losses of water, the actual water supply for 2004 was about 1,673TCMD. It showed that there was a short of water supply by 1,o54 TCMD.

It has been indicated in the report that in order to augment the water supply, 200,000 tube wells have been installed to abstract ground water. The report says that 855 TCMD ground water is being abstracted by DJB and by some private companies. For 2004-2005 private ground water supplies has been estimated at 512 TCMD and the rest by DJB.

It says that in spite of all these efforts, water supply was still well short of the present overall deficit of 1,757 TCMD.

The report further estimates that the total water supplies in 2004 that led to wastewater production was the following:

- supplied by the DJB (60% water produced), 1673 TCMD
- supplied by private tube well, 512 TCMD

It is estimated that out of this supplied water, 80% is discharged as waste-water, the remaining 20% representing the losses such as human use, garden watering, water coolers, yard washing etc. In 2004 wastewater production can thus was estimated as 1,748 TCMD.

The report further says that about 200 TCMD industrial wastewater will be diverted to Common Effluent Treatment Plants without being discharged into the sewers of the DJB. Sewage from large parts of slums, unauthorized colonies and rural villages is estimated at 244 TCMD or 14% of the generated wastewater. After deduction of the above quantities, it was concluded that in 2004 only 75%. i.e. 1,304 TCMD of the sewage generated within Delhi would be collected for treatment by DJB.

The report also says that it is also not possible to estimate the actual volume of infiltration of water into the sewerage systems. However, there is an assumption that for 6000 km length sewer system the volume of infiltration is estimated to 518 TCMD. Thus the waste-water volumes for treatment is amounted to 1,822 TCMD, including the volumes of waste-water and infiltration.

The report points out that according to the study, the flows were measured at the Waste Water Treatment Plants (WWTPs) and observed that the dry weather flows in 2003 were estimated as 1,384 TCMD. While comparing this figure with the volumes of collected wastewater in 2004, it was observed that at least 438 TCMD did not reach the WWTP. Only 60% of the installed wastewater

treatment capacity was being utilized.

The report further says that the network of sewers, wastewater pumping stations and WWTPs now serve most of the urban areas in Delhi. The urban areas based on topography are divided into five main wastewater catchments like Okhla, Keshopur, Rithala-Rohini, Coronation Pillar and Shahdara. Besides these there are more catchments like Dwarka, Vasant Kunj, Sarita Vihar and Narela. The Total length of sewer under DJB is about 6000 km, which does not represent the total network of the city, because the sewer lengths in the NDMC, DCB, and DDA are not included into this.

The report says that in Delhi, the un-sewered areas cover about 40% of the total built up area. As part of the Government Policy, the DJB does not provide sewerage systems in unauthorized colonies, instead they are provided with septic tanks for wastewater disposal and the overflow goes into drains. The villagers and the inhabitants of JJ Colonies resort to indiscriminate defecation. So in order to improve public health and reduce river water being polluted, a separate low-cost sanitation component has been included in Yamuna Action Plan Phase I by constructing community toilets and holding awareness campaigns.

The report also says that the wastewater system in Delhi is not well equipped and well maintained. The existing system suffers from extensive siltation caused by following factors:

1. Surcharged conditions of sewers and consequent siltation due to the fact that the pumping stations are operated without maintaining the water level in the sewers so that free flow can occur.
2. Settled sewers leading to deposition of solids if slops become too flat or if downstream sections are higher due to differential settlement.
3. Intrusion of silt into sewers through open joints due to incorrect pipe material and improper execution of pipe laying, which causes subsequently also water settlement.
4. Absence of systematic and periodic sewer cleaning.

The report further says that the storage of wastewater within the wastewater system due to above-mentioned factors leads to septicity of the wastewater and consequently increased production of hydrogen sulphide causing damage to concrete pipes and structures.

It says that there are about 35 major and 75 minor pumping stations and 70 trolley pumps are installed in Delhi. Six pumping stations operated by Delhi Jal Board have severed operational problems due to incorrect positioning of the pumps. At many pumping stations the screens are worn out and urgently require replacing. It further says that the equipments at the pumping stations are not properly operated and maintained. Currently there is not a backup or alternative power supply at many treatment plants and pumping stations, resulting in pollution and settlement of silt in the sewers.

The report says that at present the water flowing in the Yamuna River is dilute wastewater and highly polluted with high coliform. Currently the annual average effluent quality at most treatment plants does not meet the current 20mg/ltr BOD and in a lesser extent, the 0mg/ltr SS effluent standard. The Honourable Supreme Court has recommended that more stringent effluent standard (BOD 10mg/ltr and SS 15mg) should be applied.

The report further says that in many WWTPs the screens and the grit chambers are not operating effectively due to lack of proper maintenance of the equipments. Often the screens and the grits are disposed of within the WWTP sites or adjacent to the WWTPs. As these grits are contaminated with faecal matter, viruses and helminth eggs, it is a health hazard to both the staff of the DJB and the general public. It requires a more sanitation disposal option. Scum removal devices are often overwhelmed by floating solid waste. The report points to another important problem of the treatment plants that is not currently

addressed in the build up of grit in the digesters causing damage to the mechanical mixers and reduces retention time in the digesters, reducing bio-gas production and the discharge of only partially digested sludge. In most cases the produced biogas is simply flared, as no facilities are available for power generation or direct combustion, except for Okhla WWTP where the produced biogas is distributed in the surrounding residential areas for domestic use. The recently commissioned WWTPs at Rithala Phase II and Nilothi are provided with single and dual fuel generator-sets respectively. Currently both digested and raw sludge is discharged onto drying beds for drying and disposal. Earlier the digested sludge used to be accepted by farmers as fertilizer at a small price. Undigested and partly digested sludge is however not acceptable as this is contaminated with faucal coliforms, viruses and helminthes eggs and causes health hazards and groundwater pollution. At present, the lifting of the sludge by farmers has decreased significantly due to the rapid urbanization of the surrounding areas and the decrease in the number of farms. The report points out that an approach to deal with the problem of sludge disposal is being investigated in this study.

The report further talks about Common Effluent Treatment Plants (CETPs) for industrial estates. The Delhi Industrial Development Corporation and DPCC engaged NEERI to study the wastewater collection, conveyance and treatment system of its industrial estates. According to the study, it has been observed that adequate operational collection and treatment systems exist only in seven out of 28 industrial estates. Wastewater discharges from remaining 21 industrial estates are to be treated at CETPs, constructed in 15 of this industrial estate.

The report further says that all shortcomings and deficiencies in the collection, transportation and treatment of sewage contribute to environmental deterioration in Delhi. Large amounts of untreated wastewater are flowing on or are being pumped into storm water drains and Nallahs, eventually discharging into the Yamuna River. Wastewater from unsewered areas like rural villages, slum settlements and JJ Colonies is directly discharged into drains.

Followings are some of the important shortcomings and problems indicated in the report in relation to discharge of wastewater into drains:

1. There are some sewers not connected to overall system, or pumping stations, resulting in direct discharge of wastewater into drains.
2. The sewer systems are interconnected, due to various reasons, with storm water systems, resulting in overflows during rainy seasons.
3. Quite often waste-water overflows into the drains, or is required to be pumped out by trolley pumps, mainly due to blockage of sewers caused by excessive deposition of solids, leading to decreased hydraulic discharge capacity and consequently to higher upstream water levels.

The report says that there are some factors that contribute to sewer blockage. These are:

- Deposition of solids in sewers because of too flat designed gradients.
- No proper operation of main pumping stations, resulting in deposition of solids and blockage.
- Deposition of solid is aggravated due to neglected and unsystematic operation and maintenance.
- Infiltration through open joints or leaking manholes causing intrusion and deposition of sand, clay and grit.
- Poor construction and the use of inferior materials and equipments. The corroded materials from the pipes are deposited at the bottom of the sewers.

4 Operational problems, lack of preventive measures, poor maintenance at some of the WWTPs lead to discharge of effluent with high concentrations.

The report further points out to some more important deficiencies and shortcomings related to discharge of wastewater. These are:

- Incomplete and inadequate records of sewers and O & M (Operation & Maintenance) of pumping stations and WWTPs, which are essential for assessing the performance.
- Intermittent water supply resulting in pollution loads
- Insufficient or non-treatment of sludge and consequent disposal of the same into the drains.
- Lack of proper public awareness to address solid waste and sanitation in especially un-sewered areas. Significant amounts of solid waste are directly discharged into the drains.
- Slow pace of disconnecting of industrial wastewater discharges into sewer system of DJB.

However, the report here talks about the services and goals of DJB, related to sewerage system. It says that the goals of DJB should be an efficient and effective sewerage services. It should move towards a much higher level of customer satisfaction, and should provide affordable and sustainable wastewater management. It must remove the blockage of the sewer system in order to stop discharge of wastewater into the drains. DJB must also ensure that all wastewater is collected and treated to the required standards and must maintain systematic registration of flows and other O & M data.

The report also indicates some of the important measures required to achieve these goals by DJB. The measures are as following:

i. Assuming a modest growth in average domestic per capita consumption of 2% per annum, with a corresponding increase in non-domestic consumption and with a current treatment capacity of 2,330 TCMD (512 mgd), it has been observed that overall an 18% increase in capacity will be required by 2011.
ii. Extension of Rothala WWTP has been proposed by constructing a third model of 137 TCMD. Alternatively, there is a proposal to construct this treatment works at Okhla.
iii. The major improvement required in the sewer network of Delhi in the removal of sediment and the elimination of settled sewer sections.
iv. Construction of new sewers should also take into account the correct slops designed with sufficient self-cleansing velocity.
v. The DJB should continue with expansion of the sewer network to un-sewered areas.

Industrial wastewater discharge into DJB sewers should be disconnected when the TETP for concerned industrial area becomes operational.

The report further says that the major steps must be taken to clear the blockage of maintenance and rehabilitation as soon as possible, to recycle sludge on a continuous basis, to operate the aerators continuously, to re-use gas for power generation at the WWTP to reduce electricity costs.

The report says that the directive issued by the Supreme Court is that the flows in the drain should be trapped near to their outfall into River Yamuna and treated by constructing treatment works on each drain. But in the conclusion of the study, it is said that the strategy is that pollutant water should be trapped at source and taken to treatment at existing wastewater treatment plants in two phases (short-medium-long term).

Phase I- High level of pollution in drains (short-medium-long

i. Reduce irrigation flows to minimum
ii. Stop diversion of sewage, including untreated industrial waste-water, from the sewer system to the drains
iii. Install trappings on combined sewers and major flows in storm water sewers.
iv. Divert wastewater treatment works effluent from the drains for reuse or recycling.

v. Divert residual flows in surface water drains to sewer system.
vi. Start programme of sewering in unsewered areas.

Phase II - low level of pollution in drains (medium and long term)

i. Increase irrigation flows to provide some dilution of polluting flows
ii. Discharge wastewater treatment works effluent to the drains.
iii. Continue programme of sewering un-sewered areas.

The report here points out that the first and the foremost task for DJB is to start the creation and implementation of an asset database for sewer management. Second, a study for the introduction of a Supervisory Control and Data Acquisition System (SCADA) for wastewater treatment plants and main pumping stations is needed. It also says that some more measures like rehabilitation of existing components and creation of new components of the sewerage systems (sewers, WWPSs and WWTPs) have been identified, which will be implemented in the next four years.

The report further says that the measures for which detailed designs will be prepared can be grouped into three categories like desilting, rehabilitation and new works.

The desilting projects are related to:

1. Two contracts for desilting and rehabilitation of trunk sewers (one for Okhla and Shahdara catchments and one for Keshopur, Rithala-Rohini and Coronation Pillar catchments).
2. Two contracts for desalting of secondary and internal sewers.

The rehabilitation measures are related to:

1. Three contracts for the replacement of pumping mains (Kilokri, Bharat Nagar and one contract for Azadpur, BP Colony and Mukherjee Nagar).
2. Five contracts for rehabilitation of pumping stations (Ring Road, Haiderpuri, Bharat Nagar, Mukherjee and Preet Vihar).
3. One contract for rehabilitation of pumping station and replacement of associated pumping main (Nigombodh WWPS).
4. One contract for rehabilitation of treatment works and inlet (Rithala WWTP).
5. One contract for automation of wastewater pumping stations.

The new construction works are related to:

1. Two contracts for new sewers (Jagriti and Mukherjee Nagar)
2. Four contracts for new wastewater pumping stations (Jeevan Park, Preet Vihar, Punjabi Bagh and Anand Vihar or Roshanara).
3. One contract for new wastewater plant with tertiary treatment (Rithala III).
4. Two contracts for new mini treatment plants in the outer area (Bawana and Barwala).
5. Two contracts for sewerage systems associated to the mini treatment plants in the outer area (Bawana and Barwala).
6. One term contract for reconstruction of settles sewers in Rithala-Rohini catchmen.

According to the report finally the estimated total basic cost for the financial year of 2002-2003 for the project amounted to Rupees 3,206 million (US$ 71.2 million). Adding contingencies, custom duties and VAT increased the basic cost to Rs. 4,385 million (US$ 97.4 million).

Delhi Water Supply & Sewerage Sector Reform Project

Delhi Jal Board
July, 2004

Bird's Eye View

The report related to the Delhi Water Supply and Sewerage Sector (WSSS) Reform Project has been prepared by Delhi Jal Board (DJB) in order to ensure a higher level of services in a sustainable manner.

The 41-page report is divided into eleven sections, including summary matrix of the Reform Project and four annexure.

In section-I, the report tells about the current situation of DJB that led to bring comprehensive reforms in WSSS. It says that DJB is primarily responsible for water supply and sewerage services in Delhi. In spite of having adequate water and waste water treatment capacity, the current service level of DJB in this sector suffers from serious deficiencies like poor reliability, increased health risks due to inadequate intermittent water supply, inefficient and poor management of waste water, huge coping costs, and low customer satisfaction.

The report says that the Government's Vision for the sector is Provision of Universal 24x7 safe water supply and sewerage services in an equitable, efficient and sustainable manner through customer oriented and accountable service provider. The DJB's Vision sets a 10-year time-frame upto 2015 for the implementation of the project. This reform project document has been prepared for phase-I of the reform process and gives details of the concrete plan for the next five years.

The report also points out the following components of the project:

1. First Phase of comprehensive distribution improvement, objective of which is to provide continuous water supply and sewerage service by out sourcing the services in two DJB operational zones covering about 12% of the connections, through management contracts for five years.
2. Bulk supply and sewerage infrastructure improvement, including rehabilitation of selected water supply and sewerage system, measures for collection of waste- water and conveyance to treatment plants and for improved water quality to promote environmental sustainability.
3. Consultancy studies for rationalization of trunk system for changeover to continuous supply and preparation of a system upgrade rollout plan.
4. Organizational strengthening measures to improve DJB's internal efficiency by focusing on enhancing performance orientation, training, staff rationalization, effective use of Management Information System (MIS) and Information Technology (IT).
5. Targeted interventions including pilot projects for improved services to the poor.
6. Roll out programme for scaling up of services and replication across the entire city based on the lessons learnt in the phase-I programme.

The report further says that it has been proposed to sign a Memorandum of Understanding on performance between the Government and the DJB, which will enable the reform programme to be implemented effectively. The objective will be to move from a resource plan to a reform plan with release of funds linked to performance by changing the present situation of general poor performance into sustainable high quality services for all.

In section II, the report gives a brief background of the function of DJB that led the Government to go for water reform in Delhi. Highlighting the Background the report points out that the National Capital Territory of Delhi (NCT) covers an area of 1486 sq.km. encompassing three local bodies such as the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Corporation (NDMC) and Delhi Cantonment Board (DCB). Of the total urban area, MCD governs 94% while NDMC and DCB govern 3% each.

The report also says that for management of the water supply in the NCT,

the Delhi Government reconstituted the Delhi Water Supply and Sewerage Disposal Undertaking into the Delhi Jal Board (DJB) in 1998, with the Chief Minister of NCT as Chairman of the Board. It says that the DJB supplies bulk of water to the small NDMC and DCB areas while for MCD area it undertakes the entire water supply services, including water resources management, monitoring pollution of its water and treatment and supply of potable water. The DJB is also responsible for all wastewater collection, conveyance, treatment and disposal facilities.

The report also says that with regard to the Terms of Reference (To R) for water supply, the emphasis of this study is on preparation of a programme of actions to be implemented over the next four years for immediate improvements in the water supply situation.

It further says that the data collected by the Consultant from the DJB shows absences, gaps and inconsistencies in the data. It says that data deficiency is the lack of accurate records of production and sales, a basic requirement to assess properly the performance of DJB.

The report says that though Delhi has access to adequate availability of water as well as sufficient treatment capacity, the actual service performance is quite poor. So in order to identify the core issues in this sector, the DJB had commissioned the Delhi Water Supply and Sewerage Project Preparation Study with funding from International Bank for Reconstruction and Development. A workshop was held in May 2004 to develop a Reform Implementation Strategy. The objective was to bring together various stakeholders to deliberate on the strategy and implementation mechanism and develop a concrete action-plan for undertaking reforms in the next five years.

In section III, the report talks about the present situation of the WSSS and about the need for reforms. It says the current service level of this sector suffers from some serious deficiencies. These are:

1. Intermittent water supply is not able to meet the demand of the residents of Delhi and also is causing increased health risk from contamination of leaking pipes. The demand-supply gap is being increased by the high-rise level of Non-Revenue Water (NRW).

   In order to augment the water supply, the DJB has set up Sonia Vihar Water and Nangloi Treatment Plants (WTP) with a capacity of 140MGD and 40 MGD respectively. WTPs at Dwarka and Okhla are planned for customers at the extremities of the system.
2. Gaps in service delivery - Sewerage: Only 73% of the population of Delhi is connected to the sewer network. Presently 406MGD waste-water is generated, but only 312MGD is collected for treatment due to various problems like large un-sewered areas, overflows from sewers into drains due to blocked sewers as well as interconnection of sewer lines and storm-water draining, sewer surcharging resulting in continuous overflow of crude sewage to the environment.

   In order to reduce the unsafe disposal of wastewater in-to environment, it will be necessary to rehabilitate the existing pipelines and improve pumping station operations.
3. Institutional: The DJB's appraisal system of the annual performance does not explicitly recognize Key Result Areas due to lack of monitoring the performance. There is a pressing need for institutional mechanism for enhanced autonomy, effective training programmes for the employees at various levels including training on modern management and leadership skill, on information technology and management Information System.

   The situation of water supply and sanitation services in the areas like resettlement colonies, urban and rural villages, JJ colonies and unauthorized colonies, where most of the poor reside need to be improved.

Their demand is met by private hand pumps. Tube-wells, private vendors costing these people beyond their capacity. Hence, there is a need for targeted interventions to cater to these people.

4. Operation and Maintenance of WSSS is inefficient and below the standard. There is a persistence deficit on the revenue side in this sector, which is being funded through loans from the Government amounting around Rs. 350-400 crore annually. Hence, there is a need to progressively revise water charges accompanied with improved services whilst gradually phasing out the Government subsidy, with the objective of achieving full recovery of costs of efficient O & M.

In section IV, the report talks about the need and objectives of the Proposed Reform Project. It says that the Government of Delhi realizes the need for a comprehensive reform in this sector to ensure higher quality of services in a sustainable manner by DJB. It points out the followings are some of the objectives of the reforms:

1. Adoption of a phased implementation approach.
2. Implementation of an initial city-wide service improvement programme for substantial improvement of reliability, sustainability and affordability of WSS services to benefit all citizens of Delhi including the poor.
3. Implementation of comprehensive organizational measures for enhanced capacity building and internal efficiency.
4. Specific pro-poor interventions to address the needs of the poor.
5. Preparatory measures for the next phase of the reform programme.
6. Effective Institutional Framework for implementation and sustenance of the reform.

In section V, the report points out that the proposed reform project is in consonance with 2002 Government of India's National Water Policy (NWP), on some principles of various policies. The NWP lays emphasis on effective management of water resources through recognition of water as an economic good with well-targeted and transparent subsidies for the poor, participatory approach to water sector management and encouraging private sector participation. The project would also contribute to achieve the Millennium Development Goals, which lay emphasis on provision of safe drinking water, improved sanitation services and sustainable environment management.

In section VI, the report talks about the proposed reform project components like Phase-I of Comprehensive Distribution Improvement, Bulk Supply and Sewerage Infrastructure Improvement, Organizational Improvement, Targeted Services to the poor.

The report says that in Phase-I, it is proposed to initiate distribution system improvements in two operational zones of DJB and one operational zone of NDMC. The principal objectives of the phase I work are: to use the project to demonstrate that 24x7 supply is achievable vision, to harness technical and managerial expertise to achieve efficiency improvements, to provide an on-the-job training ground in best water industry practices for the management and the staff, to become a proving ground for optional approaches for restructuring distribution system within the zones, bulk and customer metering, detection of leakages and repair, system rehabilitation and maintenance. Besides these a systematic programme of illegal connection detection and legalization for their incorporation into the system or their removal.

The objective of the component Bulk Supply and Sewerage Infrastructure Improvement is to focus on restructuring of the bulk transmission system and distribution networks combined with reduction of losses and equitability in bulk supply. The report says that attention will also be given to improving the utilization of existing wastewater plants including treatment and disposal

of sludge.

The report also talks about the metering the water supply including bulk and customer water supply which would reduce water losses and ensure transparency and accountability of water supplied to different parts of the city. It further says that in accordance with the DJB Project Preparation Study, a set of measures capable of being executed in the next two years have been identified for enhancing sewer carrying capacity and reducing the discharge of untreated wastewater into drains. A programme on laboratory upgradation, improvement in sampling technique and water quality analysis and reporting mechanism has been proposed to be launched.

In order to reduce energy consumption some measures including use of energy efficient motors, regular monitoring of pump efficiency, establishing a proper preventive maintenance programme for all types of pumping stations are proposed to be undertaken.

The report says that the objectives of the Organizational Improvement must be customer-oriented. It says that the under DJB Project Preparation Study, it is necessary to restructure the performance appraisal system. The objectives will be to institutionalize a performance-oriented culture that rewards and recognizes merit of the employees. The DJB has also proposed to determine staff rationalization for all levels at DJB in context of the proposed sector reforms through some measures for dealing with excess manpower, including Voluntary Retirement Scheme for DJB employees and redeployment through training.

The report lays importance on the Customer Services and says that in order to implement computerized Customer Services Centres (CSCs) for all key aspects of customer services, it has been proposed to outsource the work to a service provider on a Build-Own-Operate basis for a period of five years.

The report further says that the objective of the proposed reform in WSSS is to ensure clear public understanding of the reform measures and their benefits, encourage transparency, and build support for reform process. It says that in the present situation, the poor are badly affected by lack of inadequate access of water and huge coping costs. So the report emphasizes that the objective will be to ensure access to the economically weaker sections of the society through specific pro-poor measures. In order to obtain the requisite information for the improvement of the services to the poor, a rapid assessment including updating and integrating Community Based Information System (CBIS) with existing DJB, community mobilization aide by the NGOs shall be done.

The report further says that the objective of the reform is focused mainly to translate the vision of universal service coverage and 24X7 water supply into a reality, keeping in mind the affordability as well as social and environmental needs. The report also says that for justification of the reform, it has been said that for the phase I zones the reform will have a positive economic impact in terms of reduction of coping costs, increase in real estate, in employment and in income from tourism.

In section VIII, the report tells about Institutional Framework for Implementation of the reform process. For this, a Performance-based Memorandum of Understanding (PMoU) has been proposed to be signed between the Government of NCT of Delhi and the DJB, initially for a period of five years. The PMoU shall specify mutually agreed commitments during the transition period. Some of the commitments maintained are:

On behalf of the DJB-

1. it is committed to achieve with respect to quality of services and services to the poor;
2. Improving efficiencies to reduce costs.

On behalf of the Government---

1. initial tariff hike and the evolution of the DJB's tariff level and structure with improved services;
2. Financial support - for sustainability of DJB the Government may consider one time writing off the old debt and grant funding to meet the approved capital investment needs. The provision for subsidy for O & M expenditure should gradually decline based on improved performance.

The report says that the objective will be gradual phasing out of Government subsidies by end of the initial period of the PMoU and recovery of the costs of efficient O & M.

It also says that deep engagement and participation of DJB staff would be important to gain ownership of the reform project. A Project management Group will be constituted within DJB, which will facilitate coordination and procurement of various studies and activities under the reform project, prior approval and clearances from relevant authorities, and monitor through feedback from consumers and NGOs.

In the end the report says that the success of the reform programme will depend upon its acceptance by the DJB employees, consumers and potential private players. The risks, fears and doubt perceived by the stakeholders must be addressed and clarified, and the mitigation measures must be outlined in the programme. The report concludes with a concern for the social and environmental impacts of the proposed reforms and says that the major concerns include not only minimizing negative impacts especially displacement but also extending and enhancing positive impacts on the affected communities and large population of Delhi.