

Delivering Water to the Poor

NGO Forum
Urban Water & Sanitation

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Delivering Water to the Poor

**A Case Study of The Kathmandu Valley
Urban Water Supply Reforms
with a Special Focus on the Melamchi Project**

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NGO Forum for Urban Water and Sanitation

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Preface

This case study is an update to the case study entitled 'Preparing for Private Sector Management of Kathmandu Urban Water Supply' prepared in 2001. We decided to publish this updated version now to provide an informed perspective on the development of Kathmandu Valley Urban Water Supply Reform initiatives since then.

The major water supply project of Kathmandu is the Kathmandu Valley Water Management Support Project (KVWMSP) and Melamchi Water Supply Project (MWSP). Concerns about the MWSP's cost, around US\$ 500 million and duration, 17 years, motivated the leaders of NGO Forum, which comprises of 144 NGO members working on the thematic areas such as poverty, governance, natural resource management, urban development, environmental conservation, public health and water and sanitation in Nepal, to establish the NGO Forum in 2001. They wanted the NGO Forum to investigate the evolution and the progress of the MWSP while advocating for the concerns of the poor. The NGO Forum can confidently proclaim it represents Nepal's civil society in the Kathmandu Valley Urban Water Supply Reform initiatives and MWSP.

Research and analysis of twenty years of reforms, proposals, ordinances and contracts up to the end of 2004 represent the basis of this case study. Volunteers, staff and consultants spent thousands of hours to gather this information in order to give to you, the reader, this comprehensive case study.

Since the preparation of the report, there have been a number of important developments regarding the project. The Water Supply Management Board Act and NWSC Act have been passed by ordinances. The deadline for submission of bids for the Management Contractor has been delayed until September 2005, while the current political instability in the country continues to be key challenge for the urban water reform initiatives.

To date, the MWSP remains far from completion and the NGO Forum will continue to monitor the project. The people of the Kathmandu Valley, especially the poor, face a dire situation with their water supply. The NGO Forum and its members will carry on to provide information on the development of the project and to assist Kathmandu's residents to relieve their water stress by promoting alternative water technologies and management practices, while the story of MWSP unfolds.

Thank you for taking the time to read the following document. We welcome any suggestions or comments.

Dr. Roshan Shrestha
Chairperson

Acknowledgements

The NGO Forum would first like to thank WaterAid Nepal for its continued support towards the vision and objectives of the NGO Forum. Without WaterAid Nepal support, this research would not have been possible.

The member NGOs give the NGO Forum its focus and civil society voice. Their commitment to enhancing civil society's voices ensures that the NGO Forum will continue to speak for the interest of the public. The NGO Forum would like to thank the core group members who regularly attend our meetings, Lumanti, ENPHO, NEWAH, CIUD, MRMG, and Pro-Public.

The NGO Forum also extends its gratitude to the research team who contributed in the preparation of the study, and made this case study possible. Guided by Dr. Roshan Shrestha, Chairperson NGO Forum and Prakash Amatya, Secretary General NGO Forum, the research team accomplished this research product logically and creatively. The NGO Forum Research team of Nilu Puri Basnet, Ram Charitra Sah, Steve FitzGerald, Brent Willey, and George Fowler did their best to provide the most complete picture of the case study. We sincerely thank WaterAid Nepal especially Sanjaya Adhikary, Country Representative, Rabin Lal Shrestha, Research and Advocacy Manager, and James Wicken, Research Coordinator and Bushan Tuladhar, Executive Director, ENPHO for their inputs to bring this publication into a shape. The case study entitled "Preparing for Private Sector Management of Kathmandu Urban Water Supply" was prepared first in 2001 by WaterAid Nepal team comprising of Alan Etherington, the then Country Representative, James Wicken and Dinesh Bajracharya.

Volunteers and their coordinating staff contributed in gathering the vital information about the current status of water stress in the Kathmandu Valley. This information allowed the NGO Forum to comment on, discuss and take a pro-poor position on the institutional and tariff reforms of the MWSP.

The NGO Forum thanks the Kathmandu Valley Water Supply Management Committee (KVWMSC), the Melamchi Water Supply Project (MWSP) and the Nepal Water Supply Corporation (NWSC) for their sharing of information. The staff of the Ministry of Physical Planning and Works (MPWW) gave their time to listen to our information requests as well. The KVWMSC and MWSP, and MPPW are the crucial link between civil society and government institutions. This link needs to remain open to ensure that the urban reform initiatives underway in the country include pro-poor and environment friendly elements.

Other organizations have also played an important role in the exchange of information. We would like to recognize the staff and consultants at the Asian Development Bank, World Bank, and JBIC for assisting the NGO Forum in its quest of better understanding the MWSP and associated reforms.

We would also like to thank you for taking the time to read the case study.

Acronyms and Abbreviations

ADB	- Asian Development Bank
BDS	- Bulk Distribution System
BSBA	- Bagmati Sub Basin Authority
BWR	- Basic Water Requirement
CBO	- Community Based Organization
CBS	- Central Bureau of Statistics
DDC	- District Development Committee
DFID	- Department for International Development
DNI	- Distribution Network Improvement
DWSS	- Department of Water Supply and Sewerage
EIA	- Environmental Impact Assessment
ENPHO	- Environment and Public Health Organisation
EoI	- Expression of Interest
GDP	- Gross Domestic Product
HFUDA	- Halcrow Fox's Urban Development Area
HGMN	- His Majesty's Government of Nepal
IDA	- International Development Association
IGCD	- Income Generation & Community Development
JBIC	- Japanese Bank for International Cooperation
KPI	- Key Performance Indicator
JICA	- Japanese International Cooperation Agency
KVAA	- Kathmandu Valley Authority Act
KVWA	- Kathmandu Valley Water Authority
KVWMSC	- Kathmandu Valley Water Management Support Committee
KVWMSP	- Kathmandu Valley Water Management Support Project
LICSU	- Low Income Consumer Support Unit
LIPA	- Low Income Priority Area
MC	- Management Contractor
MDS	- Melamchi Diversion Scheme
MLD	- Million Litres per Day

MOWR	- Ministry of Water Resources
MPPW	- Ministry of Physical Planning and Works
MSSDB	- Melamchi Water Supply Development Board
MWSA	- Municipal Water Services Act
MWSP	- Melamchi Water Supply Project
MuAN	- Municipalities Association of Nepal
NDF	- Nordic Development Fund
NEWAH	- Nepal Water for Health
NORAD	- Norwegian Agency for Development
NWSC	- Nepal Water Supply Corporation
NWSRC	- National Water Supply Regulatory Commission
NWSRB	- National Water Supply Regulatory Board
O&M	- Operation and Maintenance
OPEC	- Organisation of Petroleum Exporting Countries
PMC	- Project Management Consultants
PSPC	- Private Sector Participation Committee
PRF	- Poverty Reduction Fund
RFP	- Request For Proposals
SAPI	- Special Assistance for Project Implementation
SDS	- Skeletal Distribution System
SIDA	- Swedish International Development Agency
SUP	- Social Uplift Program
TA	- Technical Assistance
UFW	- Unaccounted for Water
WA	- Water Authority
WB	- World Bank
WECS	- Water Energy Secretariat Commission
WSMB	- Water Supply Management Board
WSP – SA	- Water and Sanitation Programme – South Asia
WTP	- Willingness to Pay
WUG	- Water User Group
WUO	- Water Utility Operator
WWTP	- Wastewater Treatment Plant

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PART C REFORMING THE SUPPLY SYSTEM

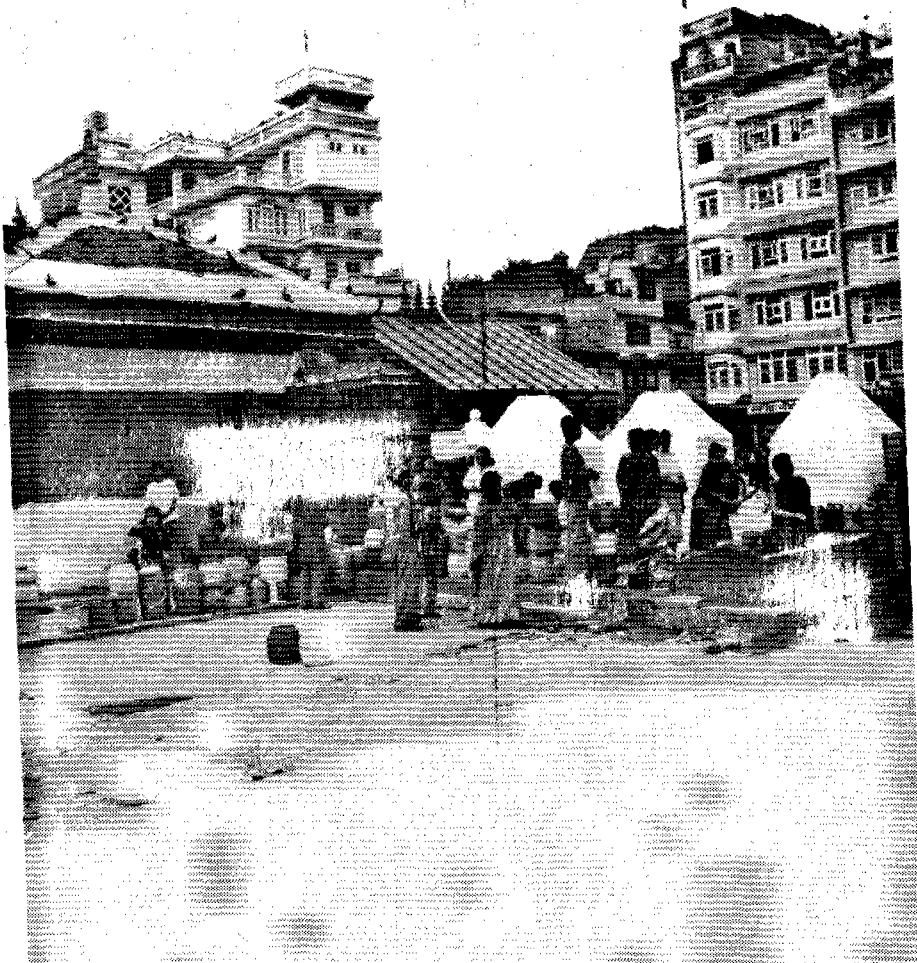
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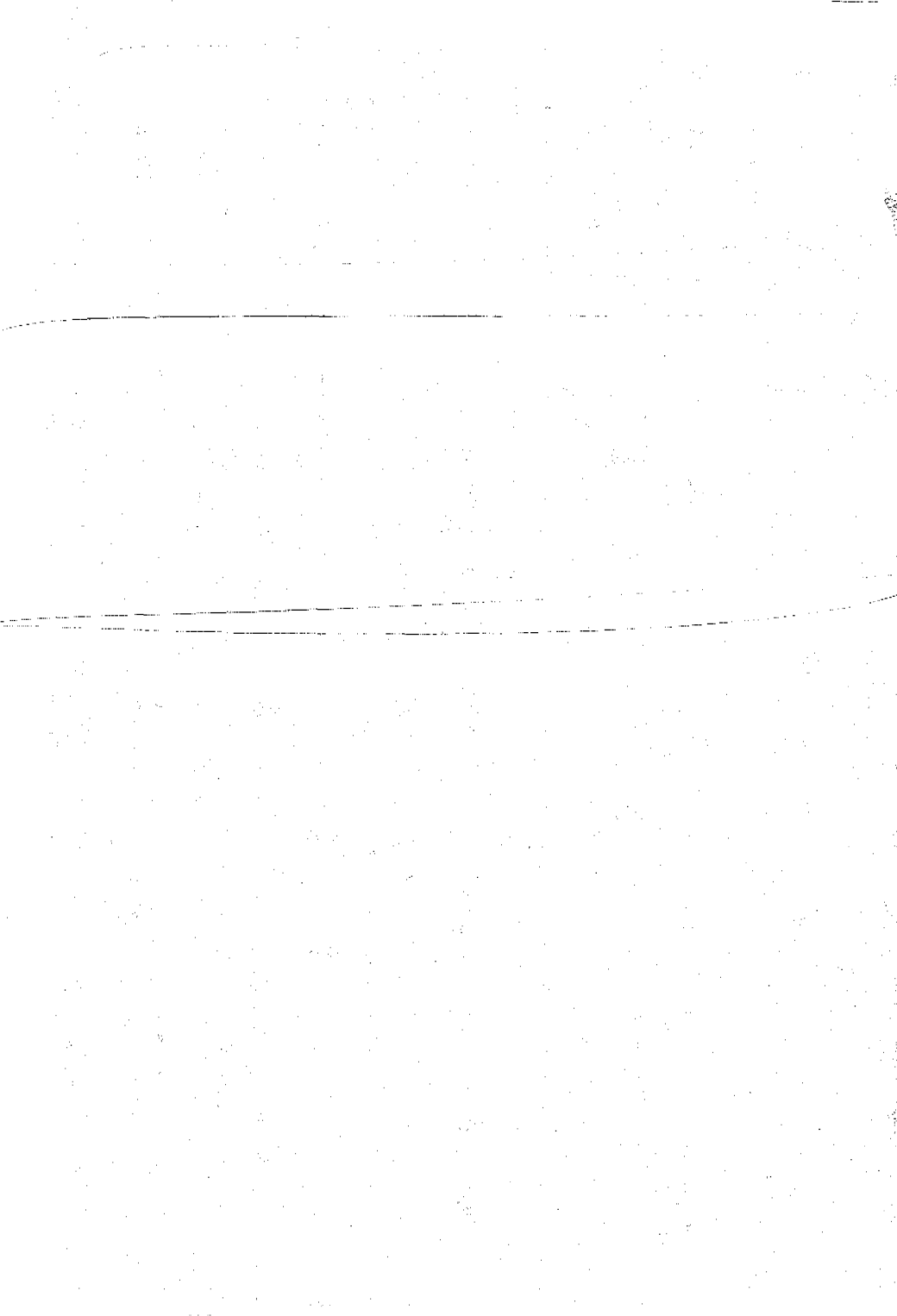
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Queue of buckets at Tebahal, Kathmandu

PART A
INTRODUCING THE ISSUE



Why this Study?

The Kathmandu Valley water supply has had to fulfill the daily needs of over a million habitants living in nearly two hundred and fifty thousand households. More than a century old water supply system today survives as a patch-work of old and new pipes of various sizes and quality and suffers from chronic leaks, contaminations and insufficient supply. While this network has continually deteriorated, the population in the Valley has a drastic increase. Resultantly, users have suffered acute shortages and inequitable and unhygienic distribution.

In the last two decades, a series of reforms were introduced to improve the Valley's water supply, but they could not properly address the chronic problem. Finally Melamchi Project was started to divert water from the neighbouring Melamchi River through a 26.5 km tunnel and into the Kathmandu Valley. Along with this intensive infrastructure development have come plans for the rehabilitation and expansion of the current distribution network, institutional and legal reforms and tariff revisions.

During the last four years, a process has been underway for bringing adequacy and equity in the Valley water supply. Civil society groups have paid vigorous interest to expensive reforms the government has negotiated with donors and foreign consultants. They have also taken steps to ensure that water stress on poor people is reduced and attention paid to the wider environmental conditions of the Kathmandu Valley.

NGO Forum's Involvement in the Water Supply Reforms

The NGO Forum for Urban Water and Sanitation (NGO Forum) was formed in 2001, with support from WaterAid Nepal, by a group of NGOs working on poverty issues, governance, natural resource management, urban development, environmental conservation, public health and water and sanitation. The intention in founding the Forum has been of

harnessing the decades of experience of its members for helping the poor gain access to clean, affordable water.

In total, 144 different organizations have participated in NGO Forum meetings. They comprise 45 NGOs, 10 INGOs, 5 central and 38 local government bodies, 5 donors, 25 media outfits, 6 academic institutions and 10 consultants. A core group of 7 NGOs have been involved throughout the process. They are Lumanti- Support Group for Shelter, Nepal Water for Health (NEWAH), Environmental and Public Health Organisation (ENPHO), Pro-Public, Centre for Integrated Urban Development (CIUD), Mountain Resources Management Group (MRMG) and WaterAid Nepal.

The Forum's involvement in the Kathmandu Valley water supply reforms began following a need felt by various NGOs for a thorough investigation of the evolution and progress of the MWSP. The NGO leaders were concerned about the staggering price tag of the project and its tediously long projected work duration. They were also mindful of the lack of a platform for advocating the water concerns of the civil society in general, and specifically the poor.

Donors and governments often seek inputs from civil society when designing and implementing development projects. Professional associations, NGOs, CBOs and others are seen as important means of including the perspectives of stakeholder and beneficiaries. But in the case of the Kathmandu urban water supply, civil society inputs have until recently been minimal, and inputs have come mainly from professional associations like those of engineers.

The Melamchi Water Supply Project (MWSP) has been a challenging case for NGOs wanting to get involved in its study. Firstly, it merits the attention and involvement of civil society because of the high stakes involved for Nepali society. However, the project and its associated reforms have together been a complex process, and the possible cost of civil society's involvement in it appears high in terms of the time and energy required to both understand the existing situation, the proposed reforms, and their possible implications for poor communities, and then develop alternative proposals or adjustments. Thirdly, for most NGOs,

the issues involved do not cleanly fit within their mandates. Many of the issues are new and complicated, and much of the data is either non-existent or ambiguous and incomplete.

The NGO Forum's approach has been to reconstruct the recent history of water supply in the Valley; prepare an inventory of past studies; analyze, summarize and simplify the information; and, finally, disseminate it to the public for a wider discussion among stakeholders. Perhaps most importantly, we have begun to translate the summaries into Nepali, a major breakthrough for a debate that has till now taken place almost entirely in English and without a sufficient involvement of users and local government bodies.

This publication is the result of comprehensive research and analysis of twenty years of reforms, proposals, ordinances and contracts up to the end of 2004. It is also the product of the thousands of hours of work done by the NGO Forum staff, consultants and volunteers in gathering information for this comprehensive case study. It is too early to know exactly what this study will ultimately achieve, but we are confident it will enable the poor to stay informed and listened to by the government and donors on issues affecting them.

During this study, the NGO Forum encountered a number of obstacles to overcome which, it had to adapt, and innovate ways of tackling difficulties. The table below shows these obstacles and the remedial steps civil society adopted. Our experience will no doubt be of use to other civil groups wanting to engage in future reform processes.

Table 1.1 Obstacles to Civil Society Involvement in the Debate and Remedial Measures

Obstacles to wider civil society involvement	Civil society action	Results from the Forum activities since September 2002
A mandate vacuum—no civil society group had a mandate to become involved in the reform proposals.	Coming together in the form of the NGO Forum for Urban Water and Sanitation.	Participated in monthly NGO coordination meetings at the Melamchi Office organized by the Melamchi Water Supply Development Board.

		<p>Prepared an M&E model for monitoring and evaluating urban water and sanitation reforms in Kathmandu Valley.</p> <p>Disseminated NGO Forum research findings via NGO Forum newsletters, website, list-serve, emails, publications, community consultations, etc.</p>
<p>A policy analysis gap – NGOs in Nepal have till date mostly been service providers and have only had limited experience in analyzing their knowledge and translating this into policy development or ideas on resource allocation.</p>	<p>Becoming informed about the various studies and discussing within their own forums.</p> <p>Actively networking with additional NGOs and with others such as visiting researchers.</p>	<p>Wider knowledge about the proposals - especially among the 6 NGOs at the core of the Forum, and to a lesser extent among another 15 or so NGOs.</p> <p>Provision of the opportunity for visiting consultants and others to share the intent and results of different studies, and more importantly, to receive some feedback on their ideas and how they would be received by communities.</p>
<p>As a young democracy Nepal has a very limited tradition of opening up its information and discussions to those outside the civil service and government politicians; moreover,</p>	<p>Taking initiatives to invite government and donors to meet and present their ideas for discussion.</p> <p>Opening up its meetings to all – government,</p>	<p>Reviewed and provided feedback to government and stakeholders on the:</p> <ul style="list-style-type: none"> • Original Draft RFP • Draft WTP study • Draft tariff reform proposal

<p>its mechanisms for incorporating outside opinions are still being developed.</p>	<p>donors, INGOs and NGOs.</p> <p>Submitting Forum comments on documents and proposals for the government to use as it sees fit.</p>	<ul style="list-style-type: none"> • Institutional Reform proposal • Poverty Reduction Fund (PRF) proposal
<p>No mechanism for communities to make their voices heard. Most documents are lengthy and all have been produced in English.</p>	<p>Implementation of community consultation process (initially in slum and squatter communities) to raise awareness of the proposed reforms and to enable communities to engage in the process. Identification of key documents, production of summaries and translation.</p>	<p>Preparation of a summary of proposals in English and Nepali, with questions for discussion, suitable for community consultations.</p> <p>Training of 30 community leaders in how to use these notes and lead discussion groups.</p> <p>Preparation of a summary of proposals in English and Nepali.</p>
<p>Most documents are lengthy and all have been produced in English.</p>	<p>Identification of key documents, production of summaries and translation.</p>	<p>Preparation of a summary of proposals in English and Nepali.</p>

While the table above may give the impression of the Forum having a structured plan and set of objectives at the outset, this was not the case. The Forum began with a loose set of principles – to be open to all; to seek to learn and understand diverse perspectives; and to intervene in order to ensure the process and contract were pro-poor. Its activities and the subsequent results have evolved as opportunities arose.

Methodology

This publication is our attempt to share our experience in the hope that other cities elsewhere will benefit from it.

The methodology we've used to study the reform process may be best described as participant observation and is based on our engagement in the actual reform process. We cannot therefore claim to be dispassionate researchers; we have had a larger purpose of building civil society engagement as one way of helping to ensure that these reforms serve the poor.

The research is based on the activities of the NGO Forum; donor and government presentations and reports; interviews with Mayors of the five municipalities in the Kathmandu Valley, personnel from the Melamchi Water Supply Project and Kathmandu Valley Water Management Support Project, and the staff at the Nepal Water Supply Corporation; and community consultations with unconnected residents in slum and squatter communities as well as poor renters and their landlords.

The Kathmandu Valley Water Supply

The total population of Nepal in 2004 was estimated to be 24.7 million, growing at 2.3 percent per annum, of which 3.9 million people (16 percent) were believed to be living in urban areas.¹ It has been estimated that by 2021, the country's population will reach 34 million, of which 27 percent (9.2 million) will be urban (see Annex B1 Table 1).

The urban population is increasing at 6.6 percent per annum, reflecting both an increase in migration to towns as an escape from rural poverty and the on-going conflict and the reclassification of emerging towns from villages to municipalities. Almost all observers agree that Nepal's population growth is far greater than what the country can afford to have and is a major obstacle to the alleviation of poverty. The Kathmandu Valley endures a significant portion of the country's urban growth. The 2001 census has put the urban Kathmandu Valley population at almost a million (see Annex B1 Table 2).

The Valley has 5 Municipalities (Kathmandu, Lalitpur, Bhaktapur, Kirtipur and Madhyapur Thimi) and a number of Village Development Committees. In 2004, it was estimated that 1.8 million people lived in the rural and urban areas of the valley, with the urban population and households totalling 1.1 million and 240,000 (average household size put at 4.4 people).

Water Demand and Supply Coverage

Water demand inevitably increases with population growth. By 2004, the estimated water need of the valley reached 147 MLD and is projected to touch 268 MLD (82 percent increase) by 2016. These estimates are based on average per capita consumption rates of 74 to 92 lpcd.

These rates are consistent with the findings of the Household Water Use Survey and Research Study in Urban Kathmandu Valley conducted by the NGO Forum for SAPI Phase II in 2003 (see Annex B2 Table 4). The survey was conducted among 300 households plus an additional

¹ Estimates based on National Census, Central Bureau of Statistics, 2001

50 households where 24 hours supply was recorded. The average domestic water demand under intermittent supply was 80 lpcd and 112 lpcd for the 24-hour supply area.

NWSC reports 132,803 legal connections, of which 86% are metered, including 809 community taps (see Annex B2 Table 5). We calculate that this means that the proportion of households in the valley without a legal NWSC connection is around 45% (based on estimate of 240,000 households in the urban Valley).

The 2001 census reported 17% of households without access to tap/piped water (41,000 households in 2004). The reason for a discrepancy between this figure and the proportion of households without legal NWSC connections (45 percent) is likely due to a combination of illegal connections and use of community stand posts.

The WTP study estimates that 34 percent of households are poor and 63 percent of unconnected households are poor. Therefore we estimate the number of poor households in the urban valley to be 82,000 (34 percent of 240,000) and the number of unconnected poor households to be around 26,000 (63 percent of 41,000).

Regardless of whether or not a household has a connection, the water supply situation for almost all urban residents of Kathmandu valley is desperate for most of the year. Most of those with such a connection receive an intermittent service of an hour or so a day, on alternate days in many areas, at very low pressure. Households that can afford to use electric pumps often 'suck' water from the pipes during the few hours when water flows in each locality, thus resulting in inequitable allocation that penalizes the poor. Households not connected to the official water supply network rely on a variety of sources, including shallow tube wells of uncertain quality.

Status of the Water Supply Network

The water supply network has been installed over the past five decades and is a mixture of pipes of various sizes and ages. Kathmandu Valley has 9 major supply systems, 15 water treatment plants, 9 branch offices and a complicated distribution network that has grown unplanned over the years (some pipes are more than 100 years old) to meet the increasing water demand. The volume of water available depends on the time of

year and is greatest during the four-month long wet season. The table below describes the carrying capacity of the major supply systems.

Table 2.1 Capacity of the Major Supply Systems

S.N.	System	Capacity (MLD)		Area Served
		Dry Season	Wet Season	
1	Sundarijal	35	51	Northeastern, Eastern and Central Kathmandu and VDCs along the transmission pipelines
2	Bansbari	13	29	Northern and Central Kathmandu and VDCs along the transmission pipelines
3	Balaju	7	10	Northern, Northwestern and Central Kathmandu and VDCs along the transmission pipelines
4	Sundarighat	3.5	3.5	Southwestern Kathmandu
5	Kirtipur	3.2	3.5	Kirtipur and VDCs along the transmission pipelines
6	Lalitpur	16.8	18	Lalitpur and VDCs along the transmission pipeline
7	Bhaktapur-Thimi	8	8.5	Bhaktapur and Thimi and VDCs along the transmission pipelines
8	Kalanki	0.5	0.5	Western and Southwestern Kathmandu
Total*		87	124	

*SAPI on Melamchi Water Supply Project, February 2003. *Not including the estimated 20 MLD from the Manohara project.*

With the addition of the new Manohara supply, while running at a 100% capacity level and taking into consideration leakage rates of around 32%, the systems provide 73 MLD in the dry season and 98 MLD in the wet season. This is less than half the average daily demand during the dry season.

Due to a combination of old and corroding pipes, an unknown number of illegal and poorly installed household connections and ineffective leak repair procedures, it is estimated that 32% of water that enters the supply system is lost through leaks. An increase in water supply pressure could significantly increase leakages and could disable large parts of the supply system. Even in the best-constructed water distribution networks, there is a certain amount of leakage due to the difficulty of installing a watertight pipeline. In addition to reducing system efficiency, leakages are also the cause of water supply contamination. Systems generally prevent contamination from entering leaks in the pipe network by maintaining constant 24-hour week-long water pressure. The Kathmandu Valley water has an extremely porous water system coupled with an intermittent supply, thus making it very vulnerable to water contamination.

Between 14% and 33% of connections are unmetered and the vast majority of billings are not computerized.² Total Unaccounted-for-Water (water produced less the water paid for) is estimated at 35 to 52 per cent and is a result of both technical (leaks) and administrative losses (unpaid bills, incorrect amounts charged). Illegal connections are currently not considered a serious problem, although the Management Contractor (MC) is likely to consider them both a technical problem – poor quality of connections result in more leakages, and an administrative problem – no revenue is collected from illegal connections.

² Gordon Hughes, ERM Consultant in a presentation to NGO Forum, March 8, 2004 entitled, "Proposal for Adjusting Water Tariffs in Kathmandu" and Van Gastel, "Kathmandu Valley Town Baseline Review of Water Distribution Network Performance in terms of Unaccounted for Water," Draft Final Report prepared for HMG/NMPPW, Private Sector Participation High Level Committee, June 18, 2002

The causes of these problems are a matter of some debate. There is widespread acknowledgement that the performance of the Nepal Water Supply Corporation (NWSC) is not adequate but it is unclear if this is due to excessive political interference, poor management, inadequate investment or a combination of all three. Similarly, some feel that there is insufficient water available from existing sources while others argue that there is enough water but that it is poorly managed.

Drinking Water Quality and Wastewater Services

Only four of the Valley's fifteen water treatment plants are equipped with modern facilities. The other systems use only reservoirs and simple chlorination. There is limited monitoring of water quality and HMGN has not established water quality standards. Poor quality of drinking water supply usually results in an epidemic of water-borne diseases in the summer. Recently in Kathmandu, an outbreak of diarrhoea was attributed to contaminated water that was supplied by NWSC's distribution system. During the latter stage of the outbreak, from May 24th to 27th, 2004, testing of 54 water samples from different parts of the valley found that 57% of samples were contaminated with excess levels of faecal coliform.

The study also revealed that water distributed in Patan and Bhaktapur municipalities was relatively safe compared to water distributed in Kathmandu. The study confirmed that sewage was responsible for the contamination while insufficient levels of chlorine residuals in the system were to blame for the lack of a process of counterbalancing of the effects of the sewage. It should be noted that it is common for water and sewage pipes to be placed side by side and when leaks are present, contamination is inevitable. The report categorized various parts of the city from Boudha in the east to the neighbouring municipality of Kirtipur in the west as high risk zones due to the presence of excessive levels of faecal coliform bacteria. Approximately 1,360 patients were admitted to the Sukraraj Tropical Infectious Disease Hospital between May 2nd and 21st, 2004, with cases of diarrhoea.

Four out of the five major wastewater treatment plants in Kathmandu Valley are not fully operational (see Annex B3 Table 6), mainly due to poor maintenance, with the result that untreated sewerage is discharged into Kathmandu's rivers.

An Environment in Decline

By 2000, 15% of the valleys land was classified as urban area as compared to 5% in 1984 (see Annex B1 Table 3).³ Almost all aspects of the environment of the Kathmandu Valley are under pressure from urbanization. The air and water are polluted, much of the forest canopy has been lost, and much of the rich cultural heritage has been neglected. Within the past thirty years, residents have had to abandon their traditional practice of using the river for bathing or religious purposes. Tons of household and commercial solid waste that is often dumped on streets get washed into sewers and rivers, and even the municipalities dump waste directly into the rivers. These become clogged and monsoon rains flood low-lying areas of the city.

The Bagmati River and its tributaries form the main river system in the Valley. In the past, river water was used purposes such as drinking and irrigation as well as for religious and cultural practices. In recent years, however, the river, particularly at the stretches within urban areas and its immediate downstream, has been extremely polluted due to the dumping of solid waste, discharge of untreated domestic and industrial wastewater and the haphazard mining of sand.

Ground water is extracted in an unregulated manner by the use of deep tube wells by big hotels, large-scale industrial and commercial establishments and small diameter shallow tube wells by thousands of households. There is no licensing or monitoring of groundwater usage to ensure adequate recharge although a more comprehensive Water Resource Act is being formulated. There is considerable stress on the finite ground water potential of the valley and signs of over extraction are becoming

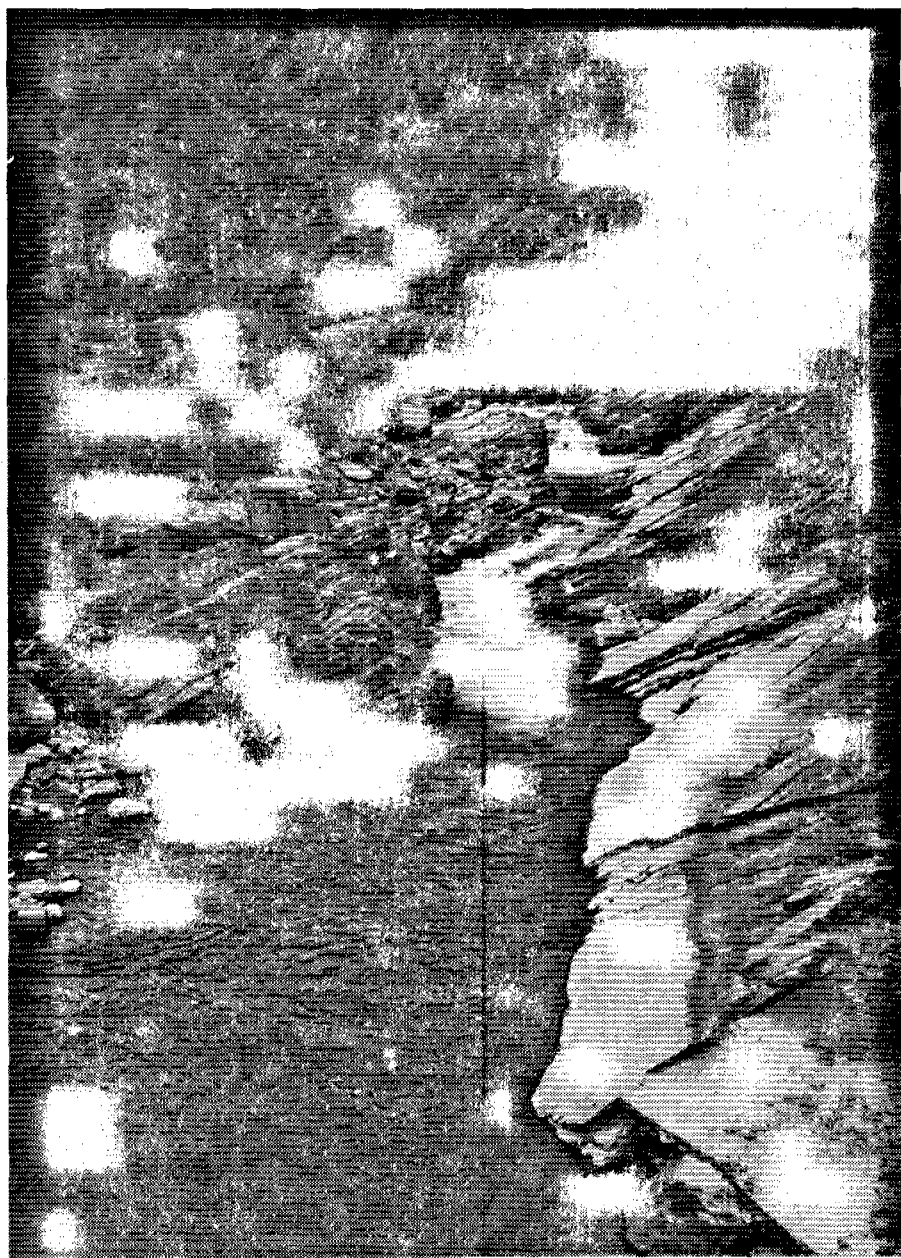
³ *Optimizing Water Use In Kathmandu Valley (ADB-TA) Project, June 2004*

evident – falling water levels (see Annex B3 Table 7) and reduced supply and caving. Sustainable withdrawal from the aquifer is estimated at 26.3 MLD compared to current ground water abstraction rates of 58.6 MLD.⁴

The shallow aquifer, from which drinking water is drawn from shallow tube wells and dug wells, is becoming increasingly polluted due to disposal of untreated domestic sewage and industrial effluent, leaking septic tanks and highly polluted rivers.

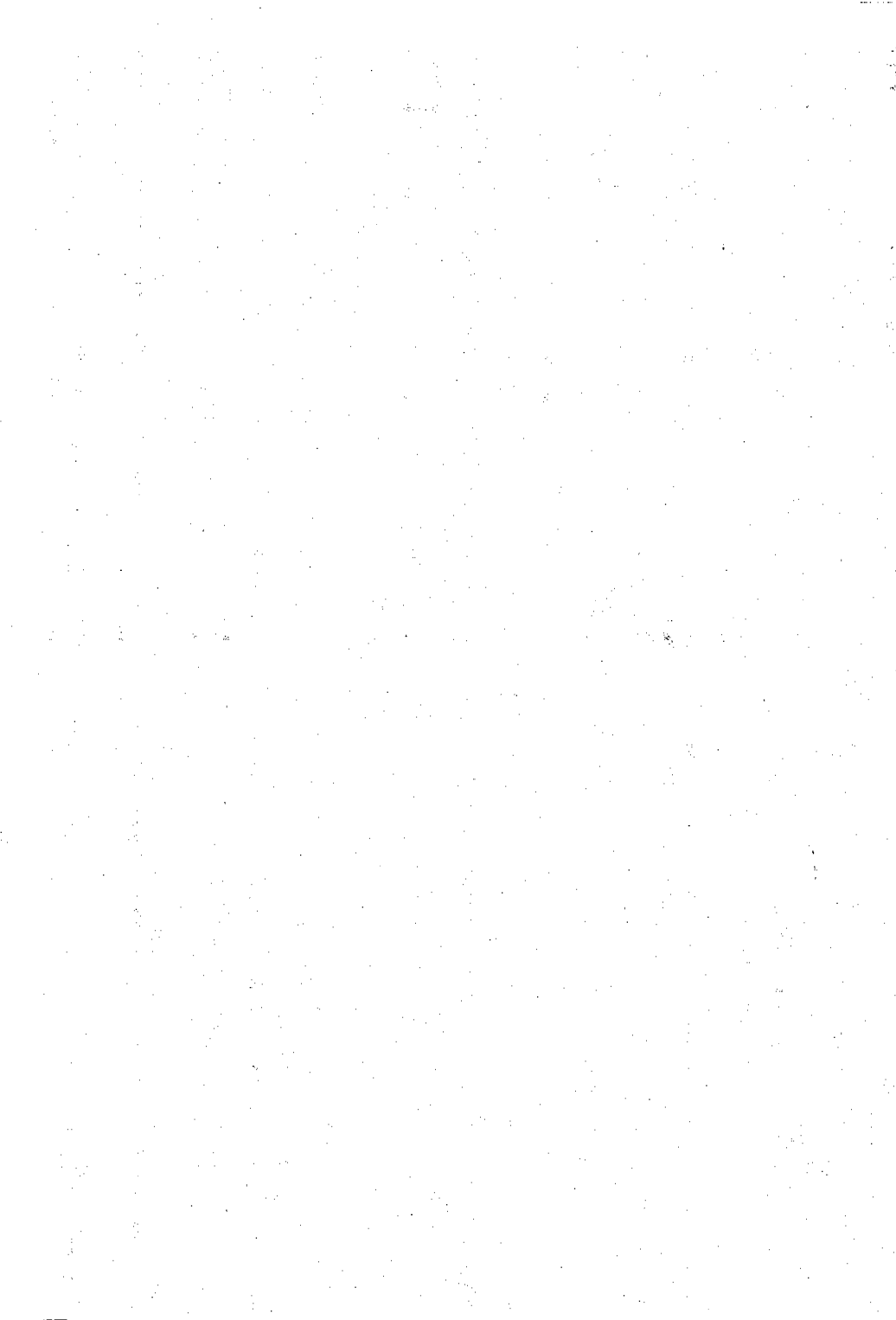
The dire environmental conditions disproportionately impact on the poor as slum and squatter communities are often located on river banks next to effluent discharge pipes and solid waste dumping sites; and the poor often rely on free traditional water sources, i.e. stone spouts, which are becoming increasingly contaminated.

⁴ Stanley, 1994 and Metcalf and Eddy, 2000



Melamchi River

PART B
THE MELAMCHI WATER SUPPLY
PROJECT



The Project at a Glance

The Melamchi Water Supply Project traces its starting point back to a consultant report in 1988 in which Binnies UK recommended an inter-basin tunnel from the Melamchi Valley to the Kathmandu valley to address Kathmandu's water shortage.

The main objective of the Melamchi project is to solve the chronic water supply shortage in the Kathmandu Valley by diverting 170 MLD of water from the headwaters of the Melamchi River via a 26.5 km long tunnel to a water treatment plant and distribution facilities to be constructed in the Kathmandu Valley. The existing water supply network and associated equipment will also be rehabilitated and/or replaced and management of the water utility assets will be contracted out to a performance-based Management Contractor (MC).

The project consists of five major components⁵:

1. Melamchi Diversion Scheme
2. Water Treatment Plants
3. Bulk Distribution System
4. Distribution Networks Improvement
5. Wastewater System Improvement.

The first phase of the Melamchi project will provide an additional 170 MLD (assuming zero leakage rates), 2.3 times more than currently available in the dry season. The combination of current sources and the addition of first phase Melamchi water will provide 287 MLD (assuming zero leakage rates) during the dry season and is estimated to satisfy average water demand until 2014. In addition, the project has a provision to triple the original volume of water (e.g. pre-Melamchi) with diversions

⁵ *Melamchi Water Supply Development Board, "Annual Progress Report, Melamchi Water Supply Project, Fiscal year 2060/2061 (2003-2004)*

from the Yangri and Larke rivers which run parallel to the Melamchi river to the northeast and from which water can be diverted to the tunnel at a later date.

Donor support for the Melamchi Water Supply Project is conditional on a series of institutional reforms, including the introduction of a foreign private sector Management Contractor. In addition, reforms in the current tariff structure have also been made a condition for financial support to come in for the project. A major overhaul of the institutional structure of the Nepal Water Supply Corporation looks likely if the requirements as laid out by the donor are to be met. This would entail a breaking up of the NWSC and the creation of five different agencies for fulfilling the various functions delineated. In addition, legal provisions for accommodating the proposed reforms will also be necessary. Details of the various reforms proposed as part of the MWSP are discussed in later chapters.

The Melamchi project, however, won't be the first major reform attempted to address the water supply problem of Kathmandu. Major reforms in the Kathmandu Valley Water Supply System started in the late 1980's. The Nepal Water Supply Corporation was established in 1989 to manage water supply in 14 urban areas (five in the Kathmandu valley and nine outside). Previously all water systems had been managed by the Department of Water Supply and Sewerage (DWSS), which would now focus on the remaining small towns and rural communities.

In 1991, a World Bank/International Development Association loan was approved for US\$71 million of which US\$52 million was to upgrade the distribution network and increase supply in Kathmandu. At the end of the project (1998) only US\$8.5 million had been spent (i.e. 21 percent of the adjusted loan amount of US\$41 million) in Kathmandu. On almost all counts the performance of the credit is judged by the WB to have been "unsatisfactory"; the single greatest failure by both Bank and borrower was the neglect of ensuring autonomy. The project completion report criticizes HMGN for "extensive and tight controls" over NWSC, including appointment of senior staff, inadequate tariff increases and weak NWSC management and operational capabilities.

The World Bank (WB) criticized itself for an inadequate project design and an unreasonable reliance on twinning with a UK water utility as a process of capacity development. It had failed to take “the tough decision of sequencing institutional strengthening and autonomy before major investments”. The results of this loan are as follows:

- Average daily hours of service had declined from 6 hours at project inception to 4.5 hours at completion. In the dry season month of March, water was provided only on alternate days
- Unaccounted-for-Water (UFW) is not known, but estimated at 40%
- Average debt collection period increased from 148 days in 1992 to over 200 days in 1998
- The average tenure for the NWSC Chairman and General Manager was 12 months and 8 months respectively, making consistent policy and operations impossible;

This judgment galvanized donor opinion on the need to introduce a private Management Contractor to ensure autonomy in NWSC and this was made a precondition to the loans for the Melamchi tunnel.

The first round of contracting a Private Operator (PO) in 1999 failed when only three companies were short-listed and two of those companies withdrew their bid. Under World Bank bidding regulations, one bidder, does not constitute a competition and hence the process started again.

The response to the second attempt at hiring a PO in 2001/02 was again low, only three bids were received, and the World Bank withdrew its financial support (June 2002). At this juncture the Asian Development Bank became the lead donor for the Melamchi Water Supply Project.

Chapter 4

Parties Involved

This chapter deals with all the parties that have been involved in the conception, formulation, debate and implementation of the MWSP. Of particular interest to NGO Forum are the end-users of the water that the project aims to deliver. The primary reason for the involvement of the NGO Forum in the process of debate has also been to enable the voice of the users, particularly the poor, to be carried to the Nepali government, consultants and the donors.

His Majesty's Government of Nepal

HMGN manages the urban water supply system through the Nepal Water Supply Corporation (NWSC), located within the Ministry of Physical Planning and Works (MPPW). NWSC has 1,722 staff (2003) of which 1,308 work in the Kathmandu Valley, suggesting a high staff ratio of 10.6 staff per 1,000 connections.

Local government in the Valley constitutes five municipalities, which are subdivided into 110 wards. Under the Local Self Governance Act (1998), municipalities were given responsibility for water and sanitation, however, currently they do not have the capacity to manage the water and sanitation systems and it is unclear at what stage they will assume this responsibility. Local government is highly politicized and the concept of a foreign MC managing a public service is not easily compatible with the socialist orientation of a number of the Mayors. In 2002 the term of elected local bodies expired and elections have not been held. Since then local government has been run by bureaucrats.

The Melamchi Water Supply Development Board (MWSDB) is a government body established to execute the Melamchi Water Supply Project and the associated reforms. In 1997, HMGN also established the high level Private Sector Participation Committee (PSPC) that was responsible for managing the process of selecting a Private Operator to

manage NWSC's corporate assets in the Kathmandu Valley. The PSPC was replaced by Kathmandu Valley Water Management Support Committee (KVWMSC) in early 2003.

Donors

Donors have been involved in financing and providing technical support to projects that have attempted to improve water supply in the Valley. Until 2002 these efforts were led by the World Bank, which had placed much of its effort on the contract and selection process for the Private Operator (at that time, the Management Contractor's position was envisioned differently and was known as the Private Operator or PO).

All this changed in mid 2002 with the departure of IDA from the reforms. This decision, based on delays in selecting a PO and a lack of competitive bids, left a funding gap and removed the donor with the most experience in Private Sector Participation. The Asian Development Bank, which had taken the lead among the donors for the Melamchi tunnel, has now, after IDA's withdrawal, become the lead donor for the whole package. Its loan of US\$135 million will cover over one quarter of the total cost of the Melamchi Water Supply Project. Japan, Norway, Sweden, OPEC and others will provide additional funds.

Civil Society

Until recently, reform of the water supply sector has been largely a donor – HMGN negotiation. Loans have been made available to HMGN departments, particularly NWSC, in exchange for agreed upon targets and certain conditions. Recently, civil society has begun to engage in the reform process. Early in 2001, a small group of NGOs began to meet informally to discuss the proposed water supply reforms and other relevant issues. This group, whose meetings are open to government, donors, municipalities and indeed any individual interested in urban water and sanitation, has continued to meet approximately once a month to hear updates on the proposed reforms and to discuss new developments. In 2005 the group formally registered itself as the NGO Forum for Urban Water and Sanitation (NGO Forum).

The NGO Forum has served as a mechanism by which NGOs can interact with both HMG, donors and the Kathmandu Valley Water Management Support Committee (KVWMSC) regarding the reforms. For example, recently this has entailed sharing details of draft tariff reform proposals. Numerous meetings were held and presentations given over the spring months of 2004 between KVWMSC consultants and civil society to discuss reform items including tariff structure and charges, connection costs, meters and standpipe organizational arrangements. While this discourse has opened up an important means of communication, there is a lingering suspicion that civil society groups, and the NGO Forum in particular, are consulted not so much for their expertise and opinions but for the key lenders like the ADB, as well as the KVWMSC, to be able to say that they consulted with civil society.

Users

User participation in the debate surrounding the reforms has been minimal (although the Willingness to Pay study indicated that 36 percent of users were aware of the proposed reforms). The complexity of the issues and the fact that all documents and the majority of debate has been in English have been barriers to user participation. Recently, the NGO Forum has sought to address this issue through community consultations with various groups including slum dwellers, squatters, poor renters and landlords. Community consultations were held in June 2004 to elicit feedback on the draft tariff reform proposal and to gather basic information on water use in Kathmandu Valley and the results disseminated to policy makers.

Media

The Nepali and English news media have also begun to give increased coverage to the proposed reforms, particularly the Melamchi tunnel and the proposed tariff adjustment, mostly by reporting upon various workshops and meetings, combined with occasional analysis or opinion article. The problem with most media reports is that they are often

ill-informed or distorted and do not serve as a good source of information on the complex water reform process.

Consulting Groups Working with Melamchi Water Supply Project

International and Nepali consultants have been intimately involved in both developing Valley-wide policies for water reform and making major infrastructure design decisions for the Melamchi Diversion Scheme. Most of the major proposals regarding this project have been developed by international consultants.

- **Metcalf and Eddy Engineering-** Heads the Project Management Consultants (PMC) and has assisted in developing organizational structures and policies for the MWSDB.
- **NORPLAN-** A Norwegian development consultant, has been influential in issues relating to the project in the Melamchi Valley ranging from the Social Uplift Program (SUP) to supervision and design of the roads and tunnel.
- **ERM Consortium-** These consultants have written the water policy reforms proposed by the Kathmandu Valley Water Management Support Committee, which await HMGN approval. Tariff structures, legislative proposals for the National Water Supply Regulatory Commission and the Request for Proposal document for the Management Contractor are some examples of ERM input.
- **Special Assistance for Project Implementation (SAPI)-** This consulting team made major recommendations on the Distribution Network Improvements and Bulk Distribution System, which are also awaiting approval from the government.

There is no doubt that consultants have had, and will continue to have, a strong voice in the direction of the Melamchi Project and subsequent reforms. To date, they have been paid over US\$6 million dollars for their services.

Financial

Trade Unions

There are three principal employee unions at NWSC that are affiliated with each of the three major political parties (Nepali Congress, UML and RPP). Due to a lack of information among the rank and file, the majority of union members are not fully informed about the impending arrival of a Management Contractor (MC) and what that will mean for their jobs.

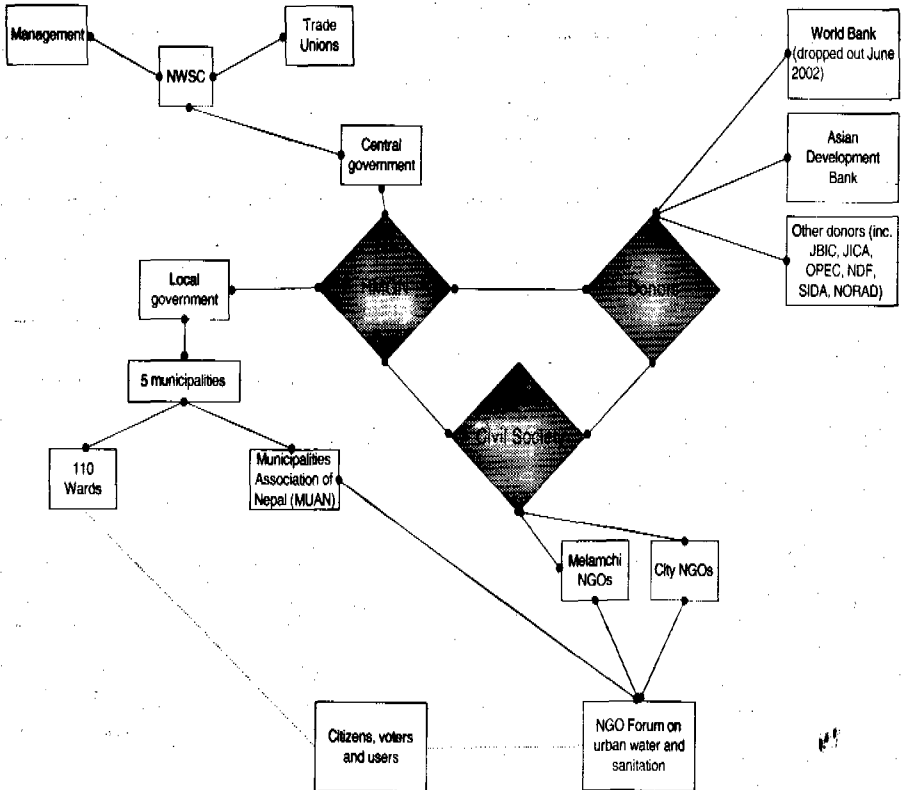
The NWSC Trade Unions, which represent non-management staff, are still suspicious of introducing a WUO with a private MC. A vote on the Private Operator issue in 2001 revealed that 86 percent of union members were against privatization. The unions have, perhaps, not understood the nature of the proposed private sector participation and may have confused the process with the sale of assets to the private sector, especially common for State Owned Enterprises in the water sector internationally. Despite the proposed institutional arrangement for bringing in a Private Operator being replaced by a private Management Contractor, the unions still think that the system will lead to privatization. Almost certainly, there is some fear of job losses, no matter how NWSC is reformed. Management and professional staff are reported to be more open to a MC, feeling that this will reduce or remove political interference, increase salaries, improve the workplace and allow them to demonstrate their capabilities.

The KVWMSD and donors such as the ADB have initiated talks with NWSC trade union staff through the Ministry of Physical Planning and Works (MPPW) about the reform process in an effort to inform them about relevant reform details. Despite discussions between NWSC trade union representatives and KVWMSD staff the trade unions are not in agreement with the proposed reform of splitting NWSC into two sections, one which will be transformed into the WUO serving Kathmandu Valley and another which will retain the title of NWSC and serve towns outside of the Valley.

While the unions are not in favour of splitting up NWSC, they are in favour of converting NWSC into a single water company, which would

then be responsible for coordinating different Management Contractors and municipalities for the management of water supplies in various urban areas throughout Nepal. On July 9, 2004 the three trade union representatives presented an alternative proposal for restructuring the NWSC to the KVWMS. The proposal, which was forwarded to the ADB, proposes formation, structure, objectives and responsibilities of a new organizational entity, the Nepal Urban Water Utility Operator, which would replace the NWSC. The proposal also envisions urban water reform occurring nationwide simultaneously as opposed to waiting for water reform to take place in the Kathmandu Valley first.

Figure 4.1 Map of Parties in the Debate



Chapter 5

Financing the Project

Originally, the total cost of these reforms was estimated at US\$464 million, a figure that is still being cited as the Melamchi Water Supply Development Board's Project Funded Cost. The most recent adjusted cost estimate, however, is US\$490 million. The original and adjusted total costs are divided as follows:

Table 5.1 Melamchi Water Supply Project Cost Description

Component	Original estimate ⁶	%	Adjusted estimate ⁷	%
Main distribution system	107.4	23%	120.6	25%
Distribution network improvement	95.2	21%	101.1	21%
Bulk distribution	67.9	15%	61.7	13%
Water treatment plant	56.1	12%	58.6	12%
Project implementation support	46.9	10%	64.5	13%
Access road	29.5	6%	21.6	4%
Kathmandu valley water service	20.3	4%	20.5	4%
Waste water system improvement	19.4	4%	19.2	4%
Social and environmental support	17.6	4%	18.2	4%
Institutional reforms	3.7	1%	3.7	1%
Total	464.0		489.6	

⁶ RRP (Project Base Cost): First Trimester Progress Report, Melamchi Water Supply Project (17/07/04-15/11/04)

⁷ EPC (Estimated Projected Costs): Annual Progress Report, Melamchi Water Supply Project (17/07/03-15/07/04)

The following table is a percentage breakdown of the major components of the MWSP using the original project costs.

Table 5.2 Financing the Reforms – Source, Component and Loan/Grant Status

Source	Melamchi			Total Upgrading		Rehab &			Total		Management		Total		Institutional Reform		Total		Total	
	L	G	HMG	\$ (m)	%	L	G	HMG	\$ (m)	%	L	HMG	\$ (m)	%	L	HMG	\$ (m)	%	\$ (m)	%
HMG			50	50	33%			64	64	30%		4	4	22%		5	5	25%	123	27%
ADB	30			30	20%	76			76	35%	14		14	78%	15		15	75%	135	29%
JBIC						52			52	24%									52	11%
NORAD		28		28	19%														28	6%
SIDA	12.5	12.5		25	17%														25	5%
JAPAN							18		18	8%									18	4%
OPEC	8.4			8.4	6%	5.6			5.6	3%									14	3%
NDF	9			9	6%														9	2%
Total	59.9	40.5	50	150.4		134	18	64	215.6		14	4	18	1	15	5	20		404	
%	13%	9%	11%	32%		29%	4%	14%	46%		3%	1%	4%		3%	1%	4%		87%	

NGO Forum, 2004. L=loan; G=grant

Analysis of the costs reveals the following allocations:

- Rehabilitation of the network - 46 percent
- Construction of the Melamchi tunnel - 32 percent
- The Management Contractor - 4 percent
- Institutional reform - 4 percent

Such a large project has required many lenders and donors, assembled with considerable effort by the government. Our analysis of the available data on funding sources shows that:

- The ADB is the single largest source, contributing 29 percent
- 27 percent of total funding is supplied by HMG
- 48 percent of the total consists of loans
- Only 13 percent is grant financing
- 13 percent of the total budget remains to be funded

A large project with many lenders/donors makes the project vulnerable to one or more changing their minds in the light of new circumstances. For example, IDA had more stringent requirements for competitive bidding for the private operator contract than the ADB. When the private operator contracting process produced only one bidder in 2001, a major difference of opinion between the two largest lenders resulted in IDA's exit from the project.

By Nepali standards this is a very lucrative set of reforms (US\$464 million is approximately 8 percent of annual GDP). In a country where corruption is perceived to be rife, the political, bureaucratic and commercial elites are keen to see these investments materialize.

Investment Inequities - Kathmandu Compared with the Rest of the Country

The reform process has begun to consider equity issues for the poor households in the urban Kathmandu Valley, but it is also important to contrast Kathmandu with the rest of Nepal. Reflecting both historical prosperity and continuing rural-urban disparities, per capita incomes are

significantly higher in Kathmandu than in rural areas although so are living costs. The Kathmandu Valley urban population is water-stressed, but so are many rural areas of Nepal.

The new Kathmandu Valley investments will dominate all water and sanitation sector investments for this decade. Kathmandu Valley, currently with about 6 percent of the population and expected to grow to perhaps 12 percent over the next decade, will benefit from about two thirds of all water and sanitation sector investments during this time. This is largely due to the high per capita costs of the Melamchi project, which are between 7 and 30 times the costs required to provide water in rural areas, where lower cost technologies can be used.

Table 5.3 Per capita cost of different water supply technologies

Region	Water Technology Zone	Per Capita Technology Cost in US\$
Rural	Shallow Tube Well	10
	Deep Tube Well	45
Rural/Sub Urban	Gravity Flow	45
Urban	Small Towns	40
	Kathmandu	490

WaterAid Nepal, 2004

For reasons of equity, we believe that Kathmandu tariffs should be set at a level that covers the total cost of servicing these loans as well as their repayment. It would be highly inequitable if the high costs of these loans were to be met by rural citizens who themselves have low levels of water services. A related concern is the source of government funding support to Melamchi, US\$123 million, not including the estimated US\$8.3 million for project site security in the Melamchi Valley also to be borne by the government. If this money is taken from rural water and sanitation budgets, it would delay expansion of services to many millions of poor rural residents.

Chapter 6

Selecting a Management Contractor

Although various assets of some State-Owned Enterprises have been sold to private sector businesses, replacing a service provider with a private manager is new territory for the government. The initial thinking on the part of the government was to bring in an experienced and capable private company under a lease contract that would:

- (a) manage the operation and maintenance of water supply and wastewater services and
- (b) invest in the maintenance of the distribution network to maintain the system.

'Expressions of interest' (EOI) were first invited in July 1999 and three companies were short-listed. In June 2001, after 2 of the short listed companies (Azurix and Lyonnaise des Eaux) withdrew (leaving only Vivendi), the Private Sector Participation Committee re-opened the process again by requesting Expressions of Interest.

During the summer of 2001, 18 companies from 11 countries submitted expressions of interest for the management lease contract in the second attempt at selecting a Private Operator. At a bidders meeting in September 2001, two issues emerged in discussions between some of these companies and the government:

1. The duration of the contract – ten years was felt to be too short by some companies to be commercially viable.
2. The criteria for the selection – should bidders demonstrate comparable experience in two countries or in one? The former means that a bidder has experience in a country other than his own while the latter would allow more companies to bid.

Of the 18 companies, which submitted expressions of interest, only four of the companies were private operators. There were also 3 manufacturers, 3 consulting firms, 5 engineering/construction firms,

1 water/waste water treatment firm, 1 association and one other. These 14 companies were probably not seriously interested in becoming the Private Operator and were merely fishing for information on the transaction and the water market in Nepal.

In December 2001, the government issued an invitation for companies to pre-qualify. By the closing date, February 2002, only one company (Vivendi) had submitted and PSPC extended the period in an unsuccessful attempt to obtain more bids. After the second failed attempt to find a private operator, the World Bank's International Development Association withdrew their loan.

HMGN and donors, led by the Asian Development Bank, decided to choose another mode of private sector participation after the first two attempts ended in failure and opted for a performance-based management contract. In this form of contract, the private sector does not lease the water utility system and is not responsible for any capital investment of its own.

The third attempt to incorporate private sector participation in the management of the Kathmandu Valley water and wastewater system, this time under a Management Contract, was initiated with an invitation for the Expression of Interest in the first week of January, 2004. By February 20, 2004, the final submission date, only five foreign companies had submitted the EOI. They included two from Britain (Severn Trent and Biwater), one from France (SAUR), one from Germany (Gelsenwasser AG) and one from Bangladesh (Techno Consultant). The Bangladeshi consultant did not meet the minimum requirements for the management contract and is no longer under consideration for the Management Contractor position.

According to the MC selection schedule, short listed candidates will be notified and a list will be published, and they will be required to submit a financial and technical bid proposal based on the Request for Proposal (RFP). Initially, the KVWMSD had hoped to have the MC in place by the end of 2004 but now it is expected that the MC will not be on the scene until at least April 2005.

Considering that this was such a new exercise for the government, donors' support to PSPC appears to have been inadequate during the first round of private contractor bids with the result that some of PSPC's efforts to attract bidders seem to have been flawed. For example, the Invitation for Pre-Qualification in December 2001 was published in Kathmandu daily newspapers and faxed to embassies – a tactic unlikely to reach all potential bidders. Thus, there was no direct communication to those 18 companies that had earlier submitted Expressions of Interest.

One of the reasons for the weak performance of the PSPC may lie in the lack of a cohesive team of transaction advisors. Donors provided the PSPC with the services of a number of advisors (World Bank – Procurement, Technical, Institutional, Pro-poor; ADB – Institutional). However, the advisors worked in isolation and at times even made contradictory and conflicting proposals resulting in significant differences amongst donors and an absence of clear guidance to the PSPC.

While the PSPC has been disbanded and replaced by the Kathmandu Valley Water Management Support Committee, the result remains that after eight years, there is no company selected for the contract, and the process is still not completed. Consequently, in our opinion, the reasons for this delay can be found in the following:

- government inexperience and absence of a “political champion”
- binding of the reform process to government ordinances which have lengthy delays in ratification
- imposition of advice on the government by non-Nepali agencies; not a “Made in Nepal” solution
- conflicting advice from different consultants working for different agencies on many of the most important issues - the contract, tariff levels, regulation, metering
- long periods when no consultant was locally available for quick and frequent advice

- too many lengthy reports written in the English language, some of which have no summary

Contract type

A private company will be contracted through a financially binding performance-based Management Contract. The Management Contractor will be rewarded by a combination of an annual fixed cost fee plus a performance fee calculated according to a pre-specified formula linked to achievement on a limited number of easily measurable Achievement Indicators the baseline levels of which will be determined during the first year of operation.

Chapter 7

The Request For Proposals Document

The KVWMSC released the Request for Proposals (RFP) to the NGO Forum in early November, 2004. It describes the binding agreements of the MC's performance-based contract. The KVWMSC did not release the entire General Condition contract to the NGO Forum.

The performance-based contract consists of two payment mechanisms - a Fixed Fee and an Incentive Fee. All potential MCs bid on a fixed fee, which encompasses the projected costs involved in providing staff to perform the required managerial functions. The MC must provide three "key" staff members who reside in Kathmandu throughout the project and also provide the necessary international and local consultants required to fulfil the MC's duties.

In order to receive the full amount of the fixed fee, the MC is required to produce specific planning documents and perform a standard minimum amount of work in an agreed timeframe. Failure to adhere to these deadlines will result in a penalty of either deficiency points, and/or a withholding of a set monetary value deducted from the quarterly fixed payment. A certain amount of deficiency points accumulated in a specific time period can lead to the termination of the contract.

The Performance Standard Appendix

This section includes the planning documents outlining how the MC intends to provide the required services. The NGO Forum recommends the inclusion of pro-poor components in the following documents:

1. Connection Policy
2. LICSU (Low Income Customers Support Unit)
3. Demarcation of Low Income Priority Area (LIPA)
4. Coverage Plan within LIPA
5. Community Tap Agreement
6. Network Extension

The RFP's Performance Standards consist of a minimal Performance Level of Services. Beginning in the third contract year, the RFP requires the MC to reach a standard minimal level of output in the delivery of three services. Failure to reach the stated minimal level of outputs will result in deficiency points. The three services are as follows:

1. Hours of Supply - Producing and publishing the hours of supply and supplying in accordance with the schedule.
2. Quality of Water in System - Improving bacteriological water quality within the distribution system.
3. Wastewater Treatment - Rehabilitating wastewater treatment plants and improving effluent quality from these plants.

The Incentive Fee

The second payment mechanism, the Incentive Fee, utilizes four Achievement Indicators (AI) to calculate this fee's value (a performance multiplier * the net operating income). The four AIs will be monitored during the first year to develop a baseline value from which the subsequent years' performance will be evaluated. Beginning with the second year, work conducted towards these four AIs, will be monitored and then calculated into a monetary value. The AIs are assigned different constant values they are to be multiplied by.

The incentive fee will be payable at the start of the second year. The MC and an independent accountant will measure the AIs' level of performance. The four AIs and their multiplying values are as follows:

1. Hours of Supply, *HS* (.6).
2. Quality of Water in System, *QWS* (.1).
3. Wastewater Treatment, *WT* (.1).
4. Increasing Coverage to Unconnected Poor, *ICUP* (.2)

The formula for calculating the performance value is as follows:

$$HS*.6 + WT*.1 + QWS*.1 + ICUP*.2 = \text{performance multiplier}$$

Three of these Achievement Indicators are also conditions under the Performance Standard Appendix. A listing in both Appendices gives the MC an additional incentive to meet the targets in these service areas.

The Achievement Indicator for Increasing Coverage to Unconnected Poor is not a condition of the Performance Standard Appendix for reasons unknown.

The Achievement Indicator for Increasing Coverage to Unconnected Poor

The maximum value for the Increasing Coverage to Unconnected Poor Achievement Indicator can be achieved by accomplishing defined measurable indicators in the delivery of two services. The first service's maximum achievement requires all community taps (formerly known as standpipes) to have a community tap agreement with a Water User Group (WUG), in order to qualify for measurement. After the finalization of the agreement, the taps need to meet certain design conditions in order for credit towards the AI to be assessed. Each week thirty community taps will be counted and assessed to see if they reach the requirements, which include: 5m³ tank, water meter installed, adequate drainage, WUG present.

The second service's maximum achievement requires the MC to construct a tertiary distribution system within 50 meters of all households within LIPA areas. The total area covered by households within all of the Low Income Priority Area (LIPA HH) areas will be calculated. After network expansion work progresses, the area (in km²) in which all households are within 50 meters of the distribution system (WI HH) will be measured.

Table 7.1 Increasing Coverage to Unconnected Poor

Calculation Period (quarters)	Community Tap Constant	LIPA km ² HH Constant
1-4	1.0	.0
5-8	.4	.6
9-12	.4	.6
13-16	.4	.6
17-20	.4	.6

Request for Proposal Appendices, KVWMS C

A ratio from each delivery of service will be calculated and then multiplied by a constant value. The constants' value varies with time.

During the first year of the AIs, the community tap ratio will be multiplied by a constant of one. The km² of HH ratio will be multiplied by zero. During subsequent years, the constants will change in value and the new constants calculated will be .4 and .6 for community taps and km² HH, respectively. The weighted importance of functioning community taps (CTs) decreases over time.

Example: Quarter #6 = $.4 * (\text{number of credited CTs} / 30\text{CTs}) + .6 * (\text{WI HH} / \text{LIPA HH})$



A girl fetching the water from the stone spout

PART C
REFORMING THE SUPPLY
SYSTEM

Legal and Institutional Reforms

Institutional Reforms

As mentioned earlier, donors to the Melamchi Water Supply Project have made conditional a series of institutional reforms to be made to the government agency currently managing water supply to the Valley. Included in the proposed institutional overhaul is the introduction of a foreign, private-sector Management Contractor. To separate the functions of policy formulation, planning, operations and regulation it is envisaged that NWSC will be broken up and up to five responsible agencies created:

- The *Water Supply Management Board (WSMB)* will own the assets and be responsible for investment planning and water supply development, licensing, policy and performance reporting. The WSMB will be governed by an 11-member board, including representatives of HMGN, the five municipalities of Kathmandu Valley, the three DDCs in Kathmandu Valley, professional associations, the business community and civil society.
- The *Water Utility Operator (WUO)* will be established as a limited liability company under the Company Act of 1996/97 and will be responsible for the delivery of water and wastewater services in Kathmandu Valley in accordance with a license issued by the WSMB. The four shareholders of the WUO Company will include HMGN, the municipalities, civil society, and a trust representing the interests of employees. HMGN will have an initial shareholding of less than 30% of the voting share but will, in addition, also hold convertible preference shares reflecting the value of the assets transferred from NWSC to WUO.
- The *Management Contractor (MC)* will be responsible for providing services to manage the staff and physical assets of the WUO for

six years (initial term of four years with a likely extension of two years) and for operating the system to meet contractually defined standards. Donors have made their support to the Melamchi tunnel conditional on the Management Contractor being in place before construction of the tunnel commences as a means of ensuring the good management of the new water supply system.

- The *National Water Supply Regulatory Commission* (NWSRC) will undertake economic regulation - approve tariffs proposed by WSMB, enforce service levels, supervise the MC's contract and regulate the water market for maintaining competition by allowing Small Scale Independent Providers.
- The *Bagmati Sub Basin Authority* will take responsibility for Water Resource Management in Kathmandu Valley (environmental regulation).
- The government through the *Ministry of Physical Planning and Works* (MPPW) will be responsible for the overall policy of urban water supply.

Bringing in a Management Contractor, establishing a new institutional framework and using a contract to ensure autonomy are probably requirements for the institutional autonomy that an effective utility requires, but it should be recognized that this comes at a cost of fees for the performance-based Management Contractor, an acceptable price so long as efficiency gained exceed these fees.

All revenue-generating or employment-creating organizations are a temptation for political interference. There is a widespread sentiment that NWSC could have performed considerably better with more discretion to hire and fire on meritocratic and performance criteria, to pay market salaries, and with more control over tariffs, revenues and investments.

Legal reforms

In order for the proposed institutional reforms to take effect, legal reforms must first be introduced.

Some of the main legal reforms include:

Water Supply Management Board Act. This is required to form the WSMB and has not yet been approved. This Act will allow for the legal transfer of institutional authority from NWSC to the WSMB, the WUO and the NWSRC for water resources management and use in the Kathmandu Valley.

Nepal Water Supply Corporation Act. This is being amended to authorize the government to contract out the water supply system within the Kathmandu Valley to the performance based Management Contractor and allow for the retrenchment of employees not required by the MC.

Water Tariff Regulation Commission Act. This will allow for the regulation of water uses and tariff fixation in the Valley and is pending due to the absence of Parliament.

An important aspect not addressed by these legal reforms are the institutional responsibilities for such areas as inter-basin level water management and ground water licensing that are entailed in the MWSP.

Chapter 9

Tariff Reforms

The present tariffs are in urgent need of reform as they cover only a small fraction of the actual cost and penalize the unconnected poor, who have no connection and receive none of the subsidy advantages taken by connected households.

Until the recent tariff reforms, most domestic consumers with metered connections were paying an increasing block tariff that began by charging Rs. 50 (US\$0.68) per month for the first 10,000 litres (US\$0.07/m³) and then Rs. 11.9 (US\$0.16) per cubic metre for additional supplies. Both levels were significantly below actual costs. It should be kept in mind that a large share of the connections is unmetered (13 percent as per NWSC data). These customers pay a higher block tariff, though they likely also consume a greater amount of water than metered customers, thus, effectively receiving their own subsidy.

The inequitable situation of poor unconnected households is clearly demonstrated by comparing three different households receiving respectively 20 m³, 10 m³ and zero water a month. The unconnected household has high water stress and no subsidy.

Table 9.1 Costs, Tariffs and Subsidies for Different Consumption Amounts

Consumption of NWSC water (litres per month)	O& M Costs @ 30 NRs / m ³	Payment by household to NWSC	Monthly subsidy	Water stress
20,000	Rs. 600	Rs. 170	Rs. 430	Low
10,000	Rs. 300	Rs. 50	Rs. 250	Medium
0	0	0 to NWSC, but large coping cost	0	High

WaterAid Nepal/NGO Forum, 2004

Note: Payment excludes a sewerage charge of 50 percent of water bill if within 30 m of a sewer line. The current sewerage charge is below the O&M costs of the system and is currently subsidized by the water tariffs.

Future tariff levels will depend on:

1. The costs of operations and maintenance, predicted to be around Rs 30 (US\$ 0.41) per cubic metre; (based on NWSC figures for 2002-2003, O&M expenditure was about Rs. 10 m³ though O&M expenditure was drastically slashed that year)
2. The capital cost of the reform project, currently estimated at around US\$445 per person served (i.e. US\$490 million for 1.1 million urban users, if all households are connected) or US\$810 per person (at the current legal connection rate of 55 percent)
3. The level of service received – standpipe, yard tap or fully plumbed
4. Users' ability and willingness to pay for improved services.

The magnitude of the gap between tariff and actual cost as well as the huge capital requirement for the reforms is indicated by the estimate made by consultants that tariffs need to increase *thirteen fold* in real terms between 1999 – 2009 to eliminate the operating subsidy and achieve financial equilibrium (Jeffrey, 2000).

The setting of the tariff levels requires a balance of financial need and political judgment. There are pressures for both a low tariff and a high tariff that must be weighed. In Kathmandu we identify the following pressures:

Table 9.2 Balancing the Tariff Equation

To keep tariffs low	To raise tariffs
<p>To allow poor people to meet their basic water requirements at a non-exorbitant cost – say, at a maximum of 3 percent of their income.</p> <p>For increasing block tariff. Not to penalize poor families that share a connection with neighbours</p>	<p>To allow the utility to function without subsidy from the government and thus have autonomy in its operations.</p> <p>To raise revenues to pay for maintenance, rehabilitation and expansion of the network.</p> <p>To discourage waste of water, especially in a situation of water shortage for many households.</p> <p>To ensure that people from other parts of Nepal are not penalized.</p>

One model discussed by the NGO Forum has been to combine principles from both the “water as a human right” argument as well as the “Dublin philosophy – water as a social and economic good”.

- Water priced as a basic water requirement (lifeline amount) – 33 L/person/day or 6 cubic m/household/month (6 person household) provided at 100% of the operating and maintenance (O&M) costs. At current costs of approximately Rs. 30/m³, this would suggest a bill of Rs. 180/month/household (US\$2.45) – equivalent to 5% of the mean income of poor households (i.e. Rs. 3,500 per month – figure from WTP study).
- Water priced as an economic good – at its full cost – O&M costs, plus loan financing, plus capital repayment, plus cross subsidy for the basic water requirement tariff, plus levy to Melamchi Valley residents, plus the cost of a regulatory body – for all consumption in excess of 6m³ of metered supply per month. For example, for a household of six people each consuming 78 L /day⁸ at a price of Rs. 80 per cubic meter, the total monthly cost would be Rs. 820 (US\$11.24).

Such a tariff structure would attempt to meet the objectives of social equity – some water for all - and utility effectiveness – ensuring adequate revenues to run an efficient and effective service. By providing the basic water requirement for five percent of average incomes, it should be reasonably pro-poor, especially if the system is supplemented by public standpipes.

One objection to multiple tariffs is that they make billing more complex and increase the potential for corruption. However, at present there are as many as 60 different tariffs (depending on class of consumer, size of pipe, total volume consumed) so a two-level tariff for domestic users would be a considerable simplification.

A further objection is that by charging only O&M costs, any operator that is trying to make a profit, whether private or public, is going to be loath to supply to those households where the connection and other

⁸ Average consumption rate reported in SAPII report

charges cannot be reclaimed through the higher tariff. Unless a subsidy is provided by the government or other incentives given, the operator will not be inclined to serve those who cannot afford to pay for more than the initial six cubic metres.

Tariff Reform Details

Donor support for the MWSP is conditional upon tariff reform. A draft reform proposal for cost recovery and tariff recommendations, "Proposal for Increasing Water Tariffs in Kathmandu Valley," was sent by the Kathmandu Valley Water Management Support Committee to the Ministry of Finance and Ministry of Physical Planning and Works in April 2004. The draft reform was approved and took effect in September 2004.

Table 9.3 Monthly Drinking Water Tariff Rate⁹

S.N.	Size of pipe	Minimum water consumption (litres)	Minimum tariff rate (Rs.)	Rate per 1,000 litres above minimum consumption (Rs.)	Monthly charge for unmetered connections (Rs.)
1	½"	10,000	50	15	360
2	¾"	27,000	810	30	1,950
3	1"	56,000	1,680	30	4,050
4	1½"	155,000	4,650	30	11,160
5	2"	320,000	9,600	30	23,040
6	3"	881,000	26,430	30	63,450
7	4"	1,810,000	54,300	30	130,320

The draft tariff reform document proposes a new system of tariffs with the following provisions for 1/2 inch-pipe connections:

- No change in the minimum volume of 10 m³ per month for the first three years, e.g. mid-2004 to mid-2007;

⁹ *The Himalayan Times*, 17 September, 2004



- No increase in the minimum volume charge of Rs. 50 per month for the first three years;
- A standard volumetric charge for metered residences of Rs. 15 for 2004-2005, Rs. 19 for 2005-2006 and Rs. 23 for 2006-2007. The latter two increases will likely be subject to review and potentially modified by the NWSRC;
- An increase in the basic un-metered tariff for residential customers of Rs. 360 per month for 2004-2005; Rs. 456 per month for 2005-2006; and Rs. 552 per month for 2006-2007. The volume of water on which these charges is based is 24,000 litres, making the volumetric charge for metered and unmetered customers the same. The principal difference in tariff for unmetered customers is that they do not receive a subsidy in the form of the minimum volume rate. Higher tariffs for unmetered customers are intended to motivate them to request meters.
- Corresponding changes to the minimum charges and un-metered tariffs for non-residential customers and larger pipe sizes - the recommendation is for a uniform volumetric tariff of Rs.30 m³ to be held until the residential volumetric tariff catches up.

Although not stated explicitly in the draft tariff reform proposal, KVWMS officials have stated that the following tariff changes will inevitably occur:

- Residential minimum volume tariff as well as the volumetric tariff will increase after 2007;
- The minimum block will eventually decrease to 5m³ as service improvements are made;
- As service improvements are made to specific sectors, as defined by increased water pressure delivered on a fixed schedule for at least four hours per day, the tariff will be applied at 150% of the volumetric charge for the basic service.

Reforming Connection Charges

The major barrier to poor households having a NWSC connection is the connection charge, which is currently in the range of Rs. 10,000 - Rs. 18,000 (US\$136 - US\$245), depending on the distance from the main pipeline. Moreover, the charge, which is equivalent to 2 or 3 months income for a poor household, has to be paid in advance.

Currently, there is a suspicion that connection charges are set high to suppress demand and subsidize consumption tariffs. Lowering the connection cost is the prime means of reducing the number of unconnected households. It should be noted that the WUO will be responsible for making connections and presently there is no provision for allowing consumers a choice between licensed contractors and the WUO.

Under the reforms, a much reduced connection charge has been proposed which should facilitate private water delivery to a much higher proportion of households in the Kathmandu Valley and, in the process, improve access by poor households to the water supply. While the KVWMSMC will not ultimately be responsible for establishing connection costs, which will be left to the WUO/MC, they will make recommendations in the RFP. To date, the proposals made by the KVWMSMC include:

- A standard charge, not in excess of Rs. 2,000 (about US\$27), for any new connection up to 30 metres from the main line. This charge will cover all costs other than the meter rental/purchase and the customer deposit, which is currently set at Rs. 1,000 (about US\$14). The customer will not be responsible for any aspect of the connection implementation process other than the payment of the relevant charge(s).
- The entire deposit and a percentage of the connection charge, likely about Rs. 500 (about US\$7), will be required up front while there is a provision for the remainder to be paid in monthly instalments over a one-year period.

- Beginning July 16, 2005, the WUO will require new customers to pay an initial deposit of not more than three months' consumption for 20m³ per month at the standard residential tariff - this comes out to Rs. 720 (about US\$9.78) based on the volumetric tariff of Rs. 19m³ which has been proposed for 2005 and the minimum volume charge of Rs. 50.
- The charge for connections more than 30 metres from the main line will be based on the standard charge plus a per meter charge for the length of the connection in excess of 30 metres but less than 50 metres from the main line. Currently the per meter charge is estimated at about Rs. 100 for connections which lie underneath paved roads and less for connections which lie underneath non-paved roads.
- Beyond 50 metres from the main line, the Management Contractor will not be obliged to provide a connection unless a cluster of houses organize themselves and present a petition for connections to the MC which makes it financially worthwhile for the MC to extend the tertiary network. In such circumstances, consumers will be responsible for the full connection costs while the WUO will be responsible for making the connection to the distribution network and the installation of meters at the customers' premises.
- The WUO will establish a working group and undertake consultations with NGOs and other interested parties to review the level and structure of connection charges. This working group should submit a proposal for the reduction and restructuring of connection charges no later than July 15, 2005 for consideration by the NWSRC. The proposal shall come into immediate effect on approval by the NWSRC.

Measuring Consumption

One of the main objectives of the Management Contractor will be to streamline the billing process and bring in more revenue through computerized billing and accurate reading of water consumption via meters. All connections will be required to have working meters in place. Consumers without meters will face much higher tariffs. Following are details regarding meters as presented in the draft tariff reform and in meetings with the consultants working on the tariff reform.

- No change in the charge for existing meters.
- Meters will be made available on both a rental and purchase basis. The cost of rented meters will be added to the tariff and the monthly meter rental cannot exceed 1.5 percent of the list price of the meter.
- There will be a choice of meters including a European-style displacement meter that will cost between US\$15 - US\$20 to purchase and an electronic "smart meter" which will cost approximately US\$35. Estimated working lifetime of a European-style displacement meter is about 6 years. Smart meters are expected to last longer and typically come with a limited warranty of 12 months with additional warranties available for purchase, i.e. usually for 3, 5 or 10 years. This last warranty option may imply a meter lifespan of as much as 10 years. Warranties are not normally offered on displacement meters.
- Rented meters are the property and responsibility of the WUO while purchased meters are the property of the consumer.
- The WUO will be the only distributor of meters and will publish a price list for the meters including an allowance for up to a 10% mark-up on the bulk procurement cost.
- The purchase price of a meter may be paid in monthly instalments over a one-year period.

Towards the Management of Standpipes

The reforms currently envisage two levels of domestic service:

1. A private connection used by one household or dwelling, with a meter and a monthly bill;
2. A metered standpipe used by community members and managed by a Water User's Group (WUG). The Community Tap agreement, which has yet to be released, will determine the minimum number of people required to form and maintain a WUG.

The Willingness to Pay study found the following support for option 2:

Table 9.4 Willing to Share a Connection - Survey Results

Flat monthly fee (Rs.)	Percentage of households who would share
25	88%
50	83%
75	67%

Source: WA Summary of data extracted from Tribhuvan University, Central Department of Population Studies; University of North Carolina, School of Public Health; Research Triangle Institute, Health, Social and Economics Research (August 2001), Final Report: Willingness to Pay for Improved Water Supply in Kathmandu Valley, Nepal

NWSC reports around 800 standpipes in the valley, many of which are used by the poor. Currently, the vast majority of people in Kathmandu Valley who collect water from NWSC supplied by standpipes do not pay for the water. The KVWMSK envisions standpipes as an intermediate solution only and ultimately all households will have a private connection. As part of the Kathmandu Valley urban water reforms, the KVWMSK has proposed a number of changes to existing standpipe practices including the following:

- Standpipe water will be free the first year. The stand pipe users have to pay 35 percent of the volumetric tariff in the second year

and 70 percent of the volumetric tariff in the third. Communities will be required to form Water User Groups otherwise standpipes will be shut down after 15 months.

- The WSMB will pay the cost of community taps in year 1, about Rs. 20 million, offset against payments from the WUO to the WSMB and may possibly subsidize water in years two and three in the same way.
- The creation of a Low Income Consumer Support Unit (LICSU), under the new Management Contractor, has been proposed to deal with consumer complaints that might otherwise not receive attention and to facilitate the rehabilitation and construction of a limited number of new standpipes. By the end of 2005, the LICSU will also review the issue of multiple connections in a single house (such connections are not currently permitted by NWSC) and, if “appropriate,” produce proposals for the modification of the WUO’s standard terms and conditions concerning the supply of water to multi-occupancy houses. This review and any associated proposals will be submitted for approval by the National Water Supply Regulation Commission (NWSRC).

The tariff proposed above means that people using standpipes would ultimately end up paying more for a minimum lifeline amount of water (6 m³ per household per month)¹⁰. This is illustrated in the example below.

Table 9.5 Comparison of Costs of Minimum Amount of Water at Standpipe and Private Connections

Year	Monthly consumption	Minimum Subsidy Block	Cost per m ³ (Rs)	Total Bill/month (Rs)
Private connection	6,000	10,000	8.33	50
Standpipe Year 1	6,000	0	0	0
Standpipe Year 2	6,000	0	6.65	40
Standpipe Year 2	6,000	0	16.1	96.6

It should be noted that while the tariff reform proposal has been developed with connections costs, standpipe and meter arrangements in mind, only the provision concerning tariff adjustment has been approved by the appropriate government agencies which means that tariff increases have come into effect while implementation of proposed connection costs, new meters etc. will be delayed until the Management Contractor takes over in 2005. This also means that it will be the WUO/MC's responsibility to determine the structure of non-tariff items such as connection cost, deposit and meter arrangement. What remains unclear is the degree of influence that the KVWMS and the lead donor will have in guiding the reforms and the access of the poor to the water system.

The reforms to tariffs, connection charges, meters and standpipe arrangements are important because, as a whole, they represent a shift towards more equitable distribution of water and greater access for the poor. We believe that it is service levels, tariff costs and connection charges that are of most importance to the poor. Their basic question is as simple as "do we get enough water, close to our homes, at the right time and at a reasonable cost?" The proposed lower connection costs, and streamlined system for connections, if incorporated, will ensure that those consumers who have traditionally been excluded from the in-home NWSC delivery process (because of cost-prohibitive connection rates and a Byzantine application system) will finally have a chance to get water in their residences. And for the next three years, at least, the reasonable minimum volume tariff of Rs. 50 will remain, with no increase in the rate, ensuring access to a basic amount of water. For the unconnected, the proposed changes in the management of standpipes should result in a more reliable supply of water, i.e. consistent volume supplied at scheduled times.

¹⁰ First Year=Free; Second Year=35% of volumetric rate of Rs. 19/cubic meter=6.65; Third Year=70% of volumetric rate of Rs. 23/cubic meter=16.1. This does not include the additional 150% tariff increase after the improved service level has been reached nor does it include the 50% sewage charge.

Willingness to Pay

The Willingness To Pay survey (conducted in April 2001, at the height of the dry season and the time when people are water-stressed) estimated that:

- 71 percent of households are connected to the NWSC system
- 75 percent of households with a private connection had a meter (though status of meter is not mentioned, i.e. whether working or not)
- Mean current payment was Rs. 158 (US\$2.15) per month
- For an imputed monthly consumption of 1) 17,000 litres for those within 30 m of a sewerage line and 2) 22,000 litres for those without access to sewerage disposal
- At an average cost per cubic metre of Rs. 7.20 (US\$0.10) to Rs. 9.30 (US\$0.13)

The study asked about householder's Willingness To Pay for a safe, reliable, round-the-clock water supply system and reported the following results:

Table 9.6 Mean Estimates of Maximum Willingness to Pay (WTP)

Current Status /option	All respondents / poor	Mean WTP Rs. / US\$ per month	Equivalent per m ³ Rs. / US\$
Currently with private connection	All	Rs. 1,030 / \$14	Rs. 69 / \$0.94
	Poor	Rs. 800 / \$10.87	Rs. 53 / \$0.72
Currently unconnected			
Private connection	All	Rs. 840 / \$11.41	Rs. 56 / \$0.76
Shared connection	All	Rs. 230 / \$3.13	Rs. 31 / \$0.42
Private connection	Poor	Rs. 630 / \$8.56	Rs. 42 / \$0.57
Shared connection	Poor	Rs. 240 / \$3.26	Rs. 32 / \$0.43

Source: WVA Summary Of Data Extracted From Tribhuvan University, Central Department of Population Studies; University of North Carolina, School of Public Health; Research Triangle Institute, Health, Social and Economics Research (August 2001), Final Report: Willingness to Pay for Improved Water Supply in Kathmandu Valley, Nepal

Note: Mean estimates of maximum Willingness to Pay (WTP) for (1) private connection providing 500 l/hh/day, 24 hrs a day of safe water or (2) a shared connection providing 250 l/hh/day

While maximum Willingness To Pay is related, but not equivalent, to demand, these data suggest that households are willing to pay substantially more than the current tariffs, once improved service levels have been achieved. Although not conclusive yet, anecdotal evidence from recent community consultations on the draft tariff reform proposal organized by NGO Forum also indicate that some residents of Kathmandu are willing to pay more for a properly functioning water delivery system.

For example, one woman who participated in the consultations and is a resident of Kathmandu gets her water from a tanker service which charges approximately Rs. 1,000 for 10m³. She is happy about the proposed minimum volume charge (Rs. 50) for an equivalent amount of water. She also thinks that an increased charge for better service is fine. Ultimately this woman knows that, under the reformed water service, she will pay less for water provided by the WUO than by a tanker service. The fact that this individual can afford tanker water says something about her finances. Other people who participated in the consultations, and whose incomes would not justify the purchase of tanker water, were vehemently opposed to increases in water tariffs. These people were content with using the minimum volume and paying the associated charge thus avoiding increased tariffs in the volumetric band.

Some of the participants in the community consultations included poor renters. These consumers will suffer the most from the proposed reforms as they will not benefit from reduced connection charges nor will they be able to take advantage of lower tariffs in the first block.

Levy to Melamchi Valley Residents

The MWSDB is responsible for fixing the water levy for 14 affected Village Development Committees in the Melamchi Valley.

Two consultative groups, one composed of local elected officials in the Melamchi Valley and one of elected officials in Kathmandu Valley first need to be formed. Once these groups have been established, they will hold discussions on the levy issue and make a recommendation to the MWSDB. Currently there are no local elected officials in Melamchi and thus no consultative group there. It is important that an equitable levy is worked out so that local people in affected areas will be properly compensated for reduced water availability.

Chapter 10

Network Densification and Rehabilitation

In many cities, networks need to be extended to serve new communities that have developed on the edges of existing settlements. In Kathmandu the situation is different due to the fact that the non-serviced parts of the city where the poor live are scattered throughout areas where a network already exists. In this situation densification of the network, to 'fill in' currently unserved areas, is required rather than extension to a different geographical location.

The unconnected poor fall into three categories:

1. Those who live within close proximity of the network but have not been able to connect due to the high connection fees;
2. Those who live near the secondary network but cannot afford to lay the missing tertiary network;
3. Those who are not within reach of the network at all (i.e. squatters on the riverbanks).

Due to the mix of housing patterns, geographically defined coverage targets (which require the operator to serve all people in a certain area by a defined date) may be of limited use. However, it may be possible to identify smaller areas in the city with high numbers of poor un-connected consumers using such sources as the 2003 Mapping and Enumerating the Unconnected Urban Poor in Kathmandu Valley study carried out by the NGO Forum; the 1995 NWSC Consumer Survey carried out by SILT Engineering¹¹; the 1998 map prepared by the Kathmandu Valley Mapping Project and local knowledge from NGOs, local government officials and community groups.

¹¹This survey enumerated 127,938 households, and identified 42,343 (33%) unconnected households. The enumerated areas were mapped and the unconnected households marked. By studying these maps it should be possible to identify areas where the unconnected are concentrated. Unfortunately, the Consumer Survey did not explore the reasons that these households were unconnected and whether or not there was a relation to poverty.

The maps generated in the Mapping and Enumerating Study have been utilized by Kathmandu Valley Water Management Support Committee to identify unconnected probable poor houses in Kathmandu Valley as the basis for identifying some 'high priority areas' for new tertiary networks and connections. One of the Achievement Indicators used to measure the MCs performance and determine its fee is 'Increasing Coverage to Unconnected Poor'. However, it should be noted that this achievement indicator is increasing coverage but not necessarily increasing connection. The MC does not receive credit for increasing the amount of connections to the poor, only expanding the utility infrastructure in poor areas.

Financing Rehabilitation and Densification

The responsibility for major rehabilitation and densification lies with the government. It had originally been proposed that major rehabilitation would be funded by a performance based IDA loan, with the initial tranche of US\$10 million. After the exit of IDA the new funding sources for Distribution Network Improvement (DNI) are yet to be finalized. ADB and JBIC have indicated that they will facilitate to resolve the funding issues and have come up with separate TA packages. JBIC undertook a Special Assistance for the Project Implementation (SAPI) study (TA of about US\$1 million) to formulate basic strategies for DNI.

Proposed Distribution Network Improvement and Bulk Distribution System Programs

The current detailed design for the BDS, which includes 10 reservoirs serving 24 zones, is based upon Halcrow Fox's "Urban Development Area" (HFUDA) Study. The BDS design envisaged that almost half of the total water demand in the HFUDA would fall outside the municipalities of Kathmandu and Lalitpur. Based on the HFUDA study, the BDS design proposed a large-scale bulk distribution system, aiming to transport water to all corners of the HFUDA. In reality, however, this BDS is not compatible with the current distribution of water demand in HFUDA. The spatial distribution of water demand in Kathmandu Valley suggests that the two municipalities, Kathmandu and Lalitpur, together

make up for 75% of the total demand for water, since a significant concentration of the population of the Valley lives within the Ring Road area of these municipalities.

The SAPI Phase II study, which started in July 2003, has now been finalized and a clearer development strategy for the Bulk Distribution System and Distribution Network Improvement implementation has emerged. The draft Final Report of SAPI Phase II study was submitted, and presented to the Ministry of Physical Planning and Works, MWSDB and Project Management Consultants in December 2003, at which time the scope and financing of the DNI were given as:

- The total cost of the BDS was reduced to US\$33.1 million from the previous estimate of US\$43.5 million with two service reservoirs of total capacity 40,000 cu. m and a smaller diameter transmission pipes of 1,200 mm.
- The cost of the Skeletal Distribution System (SDS) was estimated at US\$21.6 million
- DNI for 6 priority areas was estimated at US\$101 million.
- Total cost of US\$155.7 for BDS, SDS and DNI.

HMGN, the donors and MWSDB have yet to decide on the recommendations of the SAPI Phase II report.

Balancing Rehabilitation and Densification

While extensions of the network are desirable in order to connect new customers, many of whom will be the poor, any investment in expansion means less investment in repairing leaks. Given the limited number of new sources of bulk water in the Kathmandu Valley, the leaks must be repaired in order to reduce losses and make available water for distribution. There has to be a balance, therefore, between densification and rehabilitation. The NGO Forum's opinion has been to see both rehabilitation and densification as important and to argue that both should occur in parallel, within a holistic approach that would also encourage demand management and a more equitable distribution.



Ensuring the Reforms reach the Poor

In 2001 a Willingness To Pay (WTP) study was conducted to gather information for informing the reform process.¹² In this study households were categorized as poor if they met two or more of the following criteria:

- a monthly household income of less than NRs. 3,500 (US\$47)
- living in a house with mud floors or walls or with a roof not made of concrete
- cooking with wood or dung
- self-description as poor or destitute.

The study estimated the proportion of poor people in the valley at 34%.

Kathmandu has a high renter population, estimated at 53% of the population (CBS, 2001). Many of the urban poor live in rented accommodation. These include day labourers, working on building sites and in factories, or hawkers, selling vegetables and fruit from bicycles. Many are migrants from the hills, the Terai or the North Indian state of Bihar. Their water and sanitation situation is usually negotiated within their rental agreement with the landlord, but when the water and sanitation situation is stressed, it is they who have to find alternative arrangements.

World Bank Consultant Recommendations

In 2000 the IDA requested the Water and Sanitation Program (WSP) – South Asia to provide a consultant to address the issues of ensuring the needs of the poor.

¹² *Tribhuvan University, Central Department of Population Studies; University of North Carolina, School of Public Health; Research Triangle Institute, Health, Social and Economics Research, (August 2001).*

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The consultant brought experiences of addressing this issue elsewhere in South Asia, along with WSP's beliefs that:

- poor can be responsible and commercially valuable consumers of water;
- tariffs should be cost-based;
- competition is healthy in the water market;
- water is an economic and social good.

After WSP severed contact with the project the consultant continued to work on this assignment and after some half-dozen or more visits to Kathmandu and extensive discussions with the NGO Forum, the PSPC, and others, her proposals were submitted as follows:

1. Use poverty mapping to identify high-priority geographical areas in which there are large numbers of unconnected poor, and use this as the basis for targeting assistance for the poor such as improvements in tertiary networks, new connections, and new or rehabilitated standpipes.
2. Make general provisions, such as improving the tertiary network and re-structuring connection charges, to make private and shared water connections more affordable and accessible to the poor.
3. Set as a long term goal full connectivity of all households through private connections.
4. Provide a system of metered, managed standpipes until funds are available to connect all the poor through subsidized private connections.
5. Require the operator to prepare an annual plan for improving service to the poor and disbursing the funds earmarked for this purpose.
6. Require the operator to carry out community level, participatory planning in priority neighbourhoods to determine the type and mix of services.
7. Ensure entry to the market for small scale independent providers.
8. When evaluating proposals, ensure that the operator's proposed service to the poor includes administrative arrangements such as

frequent billing, decentralized service centres, easy fault reporting, and payment for connection charges in installments.

9. Avoid consumption subsidies in the tariff, and introduce a flat volumetric tariff for private connections.
10. Establish a bulk, discounted tariff for standpipes and water vendors.
11. Make the regulatory process more transparent by requiring the regulator to hold public hearings and publishing the management/lease contract.
12. Build the capacity of the regulator to interpret the contract and legislation in a way that benefits the poor, including the way small scale independent providers and shallow tubewells are regulated.
13. Ensure the concerns of the poor are brought to the attention of the regulator by establishing a forum of advocates for the poor which provides regular advice to the regulator, appointing dedicated staff within the regulatory body to deal with issues relating to the poor, and having the regulator commission an independent audit every three years of the operator's performance with respect to service to the poor.
14. Develop a program of on-site sanitation and hygiene promotion, funded from government and donor sources, separate from the lease contract.
15. Develop suitable designs for on-site sanitation options for the poor in Kathmandu.
16. Design a program of NGO and local government capacity building as part of urban water sector reform, and provide funding.

We agree that these are a useful set of proposals that would produce substantial benefits to poor households. But, we believe that proposal number three sets an expensive and difficult precedent for other urban areas and we have a counter proposal for proposal number nine – a two

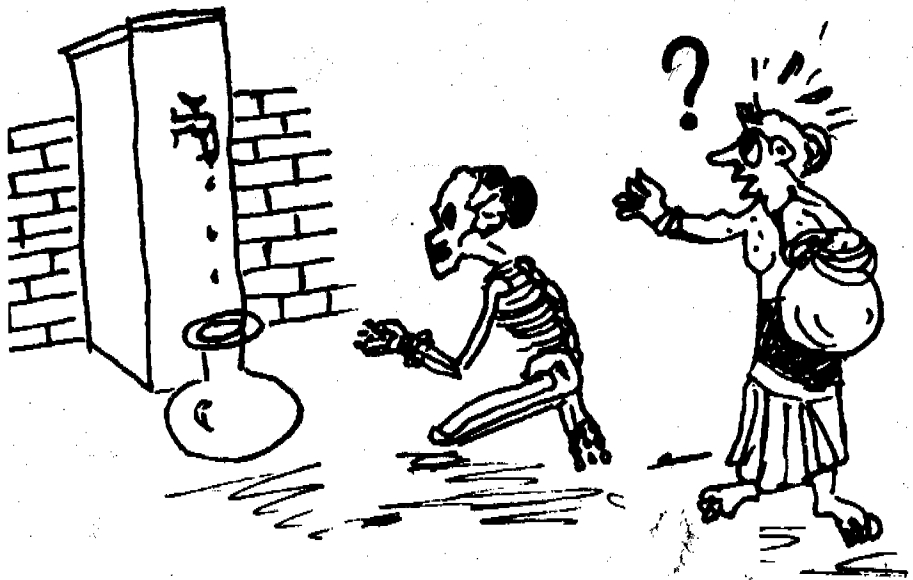
level tariff providing a basic water requirement of 33l/person/day provided at 100 percent of the O&M cost and additional consumption charged at full cost, supplemented by public standpipes - which we believe would be more acceptable to the public.

In effect, the KVWMS C decided to accept the majority of the consultant's pro-poor recommendations and of these proposals, numbers 1,2,3,4,7,8,10,11 and 14 have been incorporated into current Kathmandu Valley urban water reform proposals. Specific Achievement Indicators for the MC, in particular Increasing Coverage to the Unconnected Poor, have also been designed (though not yet finalized) as institutional financial incentives to motivate the MC to look after the interests of the urban poor.

Low Income Consumer Support Unit (LICSU)

In addition to the pro-poor proposals outlined above, a Low Income Consumer Support Unit (LICSU) has been proposed as an institutional complaint mechanism to address the needs and concerns of poor consumers who are typically ignored or underserved by NWSC. The LICSU is envisioned as a dual-purpose agency or unit. Besides serving as a poor-consumer watchdog, it will help finance pro-poor activities largely focused on standpipes, such as the proposed rehabilitation of 500 existing standpipes and construction of 100 new ones. The LICSU will also provide advisory services to Water User Groups to help them manage standpipes so as to facilitate a smooth interface between the MC and the WUGs. LICSU will also guide the MC on the demarcation of Low Income Priority Areas (LIPA) and assist in the creation of the plan to increase the coverage to the residents of LIPA areas. The KVWMS C has applied for funding for the LICSU through DFID's Poverty Reduction Fund and hopes to secure approximately US\$900,000 to jumpstart the work.

PART D
MELAMCHI AND BEYOND



Have you been waiting long ?

While Waiting for Melamchi

The latest plans are for the Melamchi tunnel to be completed by 2010 at the earliest. Therefore, inhabitants of the Kathmandu Valley face a period of at least 4 years of continued water stress.

Low tariff charges combined with a low level of awareness about the need for, and methods of, water recycling and re-use mean that some users waste significant amounts of water while other consumers struggle to obtain their basic water requirements. This will become increasingly significant in the pre- Melamchi period, as tariff increases motivate user interest in efficient use of water.

Government, NGOs and citizens are undertaking a number of initiatives to increase water supply from sources other than Melamchi. In addition, more attention must be given to the 'optimal use of water' in the Kathmandu Valley through increased awareness of the need to reduce wastage of water, to recycle and to re-use.

Improving Water Supply Before the Melamchi Waters Arrive

Various groups have begun initiatives to improve the water supply in the Valley immediately.

Nepal Water Supply Corporation Projects

In May 2004, NWSC put the Manohara Water Supply Scheme on-line adding another 14 MLD to the Valley-wide supply with 42% of this water being directed to the municipalities of Bhaktapur and Thimi. Manohara, however, is currently supplying only 70% of its total design capacity of the treatment plant of 20 MLD. There are several minor on-going infrastructure construction projects in the works such as tube wells and pipeline repair but major supply projects are not progressing because of the promise of Melamchi water and DNI money.

NWSC has developed a pilot program that aims to develop the Kamaladi Branch Office as a Model Branch. This program is intended to demonstrate to the donors and the MWSDB that given a “favourable environment” (i.e. proper equipment, computers and financial backing) the branches can be managed by NWSC as efficiently as by a Management Contractor. The Kamaladi Branch Office management has set improvement goals that address some of the shortcomings of the system. For example, NWSC management seeks to reduce the Unaccounted For Water rate from an estimated 30% to 15% over the next 10 years by metering all unmetered connections, regularizing or plugging illegal connections and repairing leaking joints, defective ferrules and old corroded pipes. In addition, improvement goals have been set for better customer service, revenue collection and staff efficiency. Information as to whether these goals are presently being met was not available at the time of this report’s compilation but computers have been installed in the office and detailed connection status reports for the entire service area are now being produced.

Kathmandu Valley Water Management Support Committee (KVWMSC)

The KVWMSC is coordinating an ongoing demonstration project in one area of the city to show best practice in service delivery (leakage control, hours of supply) and gauge consumer demand and reaction to the new service.

It is also coordinating a project to improve efficiency of water supplies involving the computerization of five model branches in the Valley including three from Kathmandu, and one each from Lalitpur and Bhaktapur municipalities.

NGOs and Community Initiated Low Cost Water Supply Options

Some NGOs and projects with municipal, ward and community involvement are supporting ‘in-fill’ projects to improve the water supply

in unserved areas by constructing community shallow tube wells and rehabilitating hand dug wells and traditional stone spouts. For example, WaterAid has supported its partners in such projects including the rehabilitation of 21 wells and construction of 29 water points (tube wells and NWSC standpipes) in low-income communities of Kathmandu Valley between 2001 and 2004.

Private Initiatives

Many households and businesses continue to invest substantial amounts to build their own water supply system of shallow tube well, underground storage tank, electric pump and rooftop tank. There is no data available on the number of shallow tube wells or deep tube wells in the Valley but we estimate there to be 15,000 and 500 respectively. There is a small but growing interest in various management optimization practices such as rainwater harvesting, ECOSAN (ecological sanitation) toilets, waste water treatment through constructed wetlands, etc. Rainwater harvesting utilizes free water hence it is economical. It also recharges groundwater and promotes water conservation. ECOSAN toilets do not use water thus promoting water conservation. This system recycles both the solid and liquid human excreta thereby minimizing wastewater. Constructed wetlands recycle wastewater thus reducing the need for governments to make large investments in treatment plants and reducing water consumption. The investment in these alternative water sources and systems is substantial. While the pressure for such small initiatives to continue and expand is intense, their existence undermines the demand for the bulk water supply when Melamchi is operational.

Tankers

According to a case study of private water service in Kathmandu commissioned by the ADB, there are 35 private tanker operators in the Kathmandu Valley who operate a combined total of 65 tankers which have carrying capacities ranging from 8,000 -12,000 litres. Private residences account for 24 percent of the tanker customer base.

It is estimated that on average 2.12 MLD is supplied by private tankers and an additional 0.35 MLD is supplied by 30 non-commercial tankers operated by embassies, the police, the Department of Roads, the army and municipalities for their own use. Demand for tanker services is highly seasonal with each truck making 4.6 trips a day in the dry season and 2.5 a day in the wet season. Typically, water delivered via tankers costs about Rs. 100 or more per 1,000 litres that is high especially considering the varying quality. Thus tanker services are used mostly by businesses, embassies and affluent households.

Private tankers are unregulated and draw water from springs and wells around the periphery of the Valley. A Tanker Association was established in 2000 as a means of negotiating with authorities over permits to drive in the city and to provide some minimal set of standards on water quality.

NWSC has a few tankers that are used for delivery, at no charge, to highly water-stressed communities.

Commencing to Reduce Unaccounted for Water

Until a few years ago, it was thought that repairs to the water supply network would have to wait for the MC to be in place and to have gained a good understanding of the complete system – a process that sometimes take up to two years. Now, the concept of a “grace period” has been dropped and replaced with a new proposal that the MC prioritise reducing UFW. It is required to move quickly to reduce technical losses by installing meters and computerization of billing. As per the proposal, it would have to begin a major program of leak detection and repair major leaks urgently. It is calculated that the MC can reduce UFW from 52 per cent to 35 per cent over a period of approximately five years.¹³

This is not a sophisticated exercise and will mostly be achieved by repairs close to the consumers. It will create a significant amount of employment for unskilled and semi skilled labour. The expected added value from

¹³ The UFW reduction calculations refer only to KVWMS/ERM figures for UFW

the MC is a perspective that will make this rather humdrum activity an urgent priority, driven by the contract and the payment structure.

Optimising the Use of the Lower Aquifer

A water optimization study that was carried out in 2001 on the size of the lower aquifer of the Kathmandu Valley estimates that the level is approximately 15 billion cubic metres, of which 2 or 3 billion cubic metres could be responsibly drawn. As this is equivalent to 10 or 15 years of total current water demand this is a resource that could play a significant part in mitigating current water shortages, particularly if this was complemented with ground water recharge, for example, through a series of infiltration dams.

The 1988 study that selected the Melamchi tunnel as the best water supply option is reported to have rejected ground water extraction on the grounds of managerial complexity. When the MC is in place, with state-of-the-art management capacity, this argument should no longer be valid.

Regulating Groundwater Extraction

A consequence of waiting for Melamchi will be increased use of groundwater. Many factories, hotels, embassies and others have invested in deep tube wells that allow them to have sufficient water without depending upon NWSC supplies. Currently, there is no licensing or regulation of these 500 systems. There is an emerging consensus that these sources should not only be licensed but that this water should be paid for. Eventually the price of this water should exceed that of the new Melamchi supplies, to encourage a switch in source. While at least two Acts are being drafted to address the licensing issue, actual regulation will depend on the scope of the law that is passed.

The Future Agenda of the NGO Forum for Urban Water & Sanitation

As we have reached the penultimate stage of this report, we think it apt to change mode and look ahead into the future, charting the possible trajectories in which we may likely be working. The Melamchi debate and our study of the Kathmandu Valley water supply reforms have been valuable learning experiences. We shall benefit from them in our continued involvement in the Melamchi project as well as other related involvements. As of this moment, we have identified the following agenda for our future engagements:

Continuing to raise the issues of the poor in the reform process

- Work to ensure that the Management Contractor's contract is pro-poor. Ensuring, for example, that the work of the LICSU is not marginalized or under-financed.
- If and when the contract is signed, it is envisaged that the focus of the NGO Forum's activities will shift from influencing the design of the contract to supporting the Management Contractor and influencing the behaviour of the regulatory body – in this sense the Forum has a moving target. This change of target will be a new challenge for the Forum and will involve building a strong relationship with the new institution.
- If and when the management contract is signed, the NGO Forum's activities will shift from influencing contract design to influencing the activities of the Management Contractor and the regulatory body so as to ensure that pro-poor measures in the contract are implemented. In this sense, the Forum has a moving target.

This change of target will be a new challenge for the Forum and will involve building a strong relationship with the new institution to influence its behaviour, while remaining sufficiently independent to act as a watch-dog.

- **Further community consultations on the proposed reforms.** Issues to be discussed include the current water situation in the communities; future tariff structures, proposed connection costs, standpipe management, situation of poor renters, meter details, complaint mechanisms and how to cope in the pre Melamchi period. The NGO Forum will continue to coordinate this activity and support communities in feeding their ideas and opinions into the decision-making process.
- Help facilitate capacity development of journalists covering the water and sanitation sectors in Kathmandu so that they become informed and write responsibly about relevant issues.
- Begin to address pertinent Water and Sanitation issues in areas outside of Kathmandu Valley.

Water Optimization and Quality Control

- Further development of a pre-Melamchi plan of action – how to relieve water stress *now*, by reducing Unaccounted for Water, by demand management from user education and higher tariffs, from new sources – and perhaps eventually posing the question of *is Melamchi required and, if so when?* Is it possible to achieve reasonable results, earlier, at a fraction of Melamchi costs with a package of small activities rather than waiting many years for the high risk, mega project of Melamchi?
- **Continue research and promotion of pro-poor decentralized water and sanitation technologies** such as SODIS, rainwater harvesting and ECOSAN toilets. Promote wastewater recycling and treatment practices through simple technologies such as constructed wetlands at individual, community and municipality levels.

- Formulate a proposal for mapping, quality survey and rehabilitation of stone spouts. Regularly monitor quality of NWSC supplied water.
- Promote value-based water education that focuses on instilling awareness in school-age children and teenagers about the importance of environmentally-friendly practices in the context of water use and conservation.

Research

- Second phase of poverty mapping - to produce a refined list of priority wards and neighbourhoods with a high number of unconnected probable poor households and to enumerate, map and report on the status of all standpipes in Kathmandu Valley for inclusion in the contract.
- An exploratory study on renters as a sub-part of poverty mapping phase II: who they are, where they live, how they manage their water and sanitation needs and estimates of their numbers.
- Further refinement of the profile of Kathmandu – bringing together the different data on the population size, NWSC connections, revenues, and, most importantly, the number of unconnected poor.

Conclusions and Recommendations

Conclusions

Our investigation of the water supply situation in poor communities in the Kathmandu Valley shows that the current water supply situation is highly inequitable to the economically disadvantaged. To reduce the water stress on these communities and address other problems such as the Unaccounted for Water and operating losses, the state water utility and the political context it operates in need also to be reformed.

Reforms in NWSC have been attempted in the past but have been unsuccessful, and a Private Sector Participation (PSP) based reform is the latest model being proposed, which is also a condition for donor support to the Melamchi Water Supply Project. A lease contract was the initial form of the PSP proposal. However, due to a lack of sufficient interest shown by international Private Operators and the World Bank's (WB) stringent criteria for the procurement of services, this approach failed and after two bidding attempts, the WB withdrew its financial support. The Asian Development Bank (ADB) became the lead donor for MWSP and the associated reforms and proposed a different form of private sector involvement – a performance-based management contract.

PSP is merely a tool, although a costly one, and it is only as good as those who use it. If used judiciously, the tool can lead to a reduction in water stress throughout the Valley, including in poor communities, and an improvement in overall utility performance. The success of the performance-based management contract will depend upon:

- 1) establishment of a clear and enforceable legal framework,
- 2) establishment of a robust regulatory framework to achieve a balance between all parties: private sector, government and civil society,
- 3) creation of an appropriate institutional framework that reduces political interference in the utility and ensures autonomy,

- 4) long-term commitment by the centers of political power,
- 5) mutual trust between government and the Management Contractor
- 6) transparency in all processes (including the tendering process) and
- 7) a pro-poor design.

Since 2001, civil society has been engaged in the debate, advocating for the urban poor and against their inequitable access to water, an issue that did not form part of past reform discussions. After four years, has the involvement of civil society had any impact in the MWSP debate? We think so, although attribution is always problematic in advocacy. The inequity of an investment of almost US\$500 million for a single urban area has been debated but not resolved. Some progress has been made and the proposed urban water reforms now contain pro-poor provisions. We can point to specific results, including a poverty mapping study conducted by the NGO Forum, that have influenced the design of the management contract. Priority has been given to network densification for areas with a high number of unconnected poor people. The latest reform proposals also contain a number of pro-poor provisions such as affordable minimum tariffs; reductions in the cost of connections and provisions for payments to be made in instalments; management arrangements for standpipes; and the establishment of a Low Income Consumer Support Unit. However the impact of the proposals on the poor will not be known until the government approves the reforms and the MWSP begins to deliver water to Kathmandu Valley. In the meantime, civil society will continue to engage in the debate and document the process to try to ensure that the reform process, whatever form it may ultimately take, meets the needs of the poor.

Through this process of engagement, NGOs have increased their understanding of Private Sector Participation, experienced participating in sector reform, and have had gained more knowledge of what it takes to try to influence the design of a contract. All of this may be useful in the future. The fact that civil society and again, the NGO Forum in

particular, have raised the visibility of civil society's monitoring of the reforms is significant as policy makers have sought to consult with civil society in reviewing proposals including the draft tariff reform document and discussing the connection costs and standpipe management arrangements.

On a possibly less positive side, however, the formation of a forum of NGOs may have made it easier for donors and the government to insincerely 'consult with the poor' and thus remove one more hurdle in a process that may ultimately serve the commercial, bureaucratic and political elites and middle class water users.

Our involvement in this process leads us to conclude that the following basic model is appropriate for provision of urban water and sanitation services:

- public ownership of the assets;
- a business-like management of the water supply system which may be done by either the public or private sector, so long as the utility has significant autonomy;
- independent regulation;
- a well-informed and engaged civil society, able to independently and critically scrutinize the policies and actions of the other parties, to ensure the system is pro-poor and environmentally sound.

The Melamchi Water Supply Project and the ADB Water Policy

The NGO Forum's main objective in engaging in the Melamchi Water Supply Project and associated reforms has been to ensure that the poor in the Valley benefit from the project and that the project improves the environmental conditions in the valley. These two themes, serving the poor and the environment, feature prominently in the ADB Water Policy, Water for All.

Based on our experience of engaging in the Melamchi Water Supply Project and Kathmandu reforms over the last 4 years, we have examined whether the ADB Water Policy is being implemented at all and what impact it is having on the poor. Our positions are presented below and

are addressed to the Review Panel, a body commissioned by the ADB to assess policy implementation.

We feel that the concerns of the poor are being addressed in important areas of the project such as:

- Ensuring of the availability of a minimum amount of water at an affordable price
- Reducing of connection charges to a level the poor can afford and inclusion of provisions for payment to be made on an installment basis
- Institutionalisation of the arrangement for standpipes
- Establishment of a Low Income Customers Support Unit
- Inclusion of an Achievement Indicator for 'increasing coverage to unserved poor' that will determine part of the fees paid to the Management Contractor to encourage it to manage and construct standpipes and prioritise expansion of the network in Low Income Priority Areas.

Whether all these provisions will materialise and ultimately benefit the poor remains to be seen as many of them are in the draft form. However the fact that they are being proposed is itself a step in the right direction. These provisions make good many of the commitments made in the ADB Water Policy, such as the provision of affordable lifeline tariffs during tariff reform and ensuring of equitable access for the poor. In dialoguing with the NGO Forum and sharing information, the ADB has also made progress on its commitment to ensuring the participation of civil society in the process of project design and implementation.

There are also a number of areas where ADB needs to give greater effort if the true spirit of the Water Policy is to be followed.

Transparency - transparency must be absolute. While some documents are shared with civil society, others are kept secret. This gives the impression that there is something to hide, and this creates mistrust.

Civil society participation - must be genuine. Interaction between the ADB and civil society has taken place during the project but there is a



sense that this has normally been done on ADB's terms, i.e. only when it wants to consult.

Integrated Water Resource Management – greater priority needs to be given to sewerage and waste water management. Currently, only 4 percent of the budget is allocated for wastewater management and plans for environmental regulation are receiving low priority.

Recommendations

Based on the research findings we make the following recommendations:

Financial

- Future tariffs should reflect the principles of both “water as a human right” as well as the “Dublin philosophy – water as a social and economic good” in order to meet the objectives of social equity – some water for all – and utility effectiveness, ensuring adequate revenues to run an efficient and effective service. This could be achieved, for example by introducing a two-level tariff providing a Basic Water Requirement subsidy of 33 litres/person/day provided at 100% of the O&M cost and additional consumption charged at full cost, supplemented by public standpipes.
- Connection charges should be reformed and fixed at no more than Rs. 2,000 to improve access by poor households to the NWSC supply.
- A policy should also be formulated to detail the conditions under which households lying in excess of 50 metres from the main pipeline can obtain a connection.
- Since O&M items such as pipe maintenance, meter reading and billing for one standpipe (i.e. which serves 40 households) are significantly less than O&M costs for an equivalent number of separate private connections, there should be a provision for a more equitable wholesale rate than the one proposed. This rate should be capped so that the per capita standpipe tariff at least does not exceed the minimum volume amount that is being paid by private connection customers.

Institutional

- The Water Supply Management Board, The Water Utility Operator and the National Water Supply Regulatory Commission should be given a mandate to scrutinize the performance of the Management Contractor in meeting social equity measures, to ensure arrangements are pro-poor.
- Strong Civil Society representation should be included in the organizational structure of both the WUO and the NWSRC.
- Ensure that the Low Income Consumer Support Unit is funded in a sustainable manner and that community representation is included in the unit's organizational structure and function.

Infrastructure

- Network rehabilitation and densification should occur in parallel, within a holistic approach that also encourages demand management and a more equitable distribution.
- Greater priority in planning and financial allocations should be given to addressing the current sewerage situation in the Kathmandu Valley and dealing with the increased wastewater that will result from the increased Melamchi supply.

Other

- Policies need to be formulated to ensure equitable access for poor renters with shared connections and enable them to take advantage of the proposed minimum volume subsidy.
- It is suggested that a conference be organized with all the short-listed MC candidates and the NGO Forum to present the perspective of civil society on the reforms and the economic advantages of providing appropriate services to the poor.

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Appendix A

Chronology of Kathmandu Urban Water Supply Development from 1971 to 2004

1971

- World Bank appraisal of a Water Supply and Sewerage Project carried out between 1971 and 1973.

1972

- The Department of Water Supply and Sewerage (DWSS) becomes a full fledged Department under Ministry of Water Resources.

1974

- The first Water Supply and Sewerage Project was conceived in 1974 Study entitled “Master Plan for Water Supply and Sewerage for Greater Kathmandu and Bhaktapur” prepared by UK Consulting firm Binnie and Partners.

1977

- Approval of the Second Water Supply and Sewerage Project by the World Bank.

1988

- Consultant (Binnies, UK) review of 20 options to improve the water supply volume for Kathmandu’s growing urban population (then estimated at about 700,000 - 900,000). An inter-basin tunnel from the Melamchi valley, about 26.5 kms north, is identified as the best option.

1989

- Nepal Water Supply Corporation (NWSC) established to manage water supply in 14 urban areas (5 in Kathmandu valley and 9 outside). Previously Nepal Water Supply and Sewerage Board

had managed all water systems. Department of Water Supply and Sewerage to focus on the remaining small towns and rural communities.

July 1991

- WB / IDA 8 years project loan to the NWSC for \$71 million approved of which \$52 million is to upgrade distribution network and increase supply in Kathmandu.

1992

- Water Resources Act vests ownership of water resources to HMGN and places drinking water as the first priority.

November 1996

- Mid term appraisal of IDA loan indicates significant shortfall in achieving objectives, fuelling a growing belief by donors that NWSC will never be able to provide a reasonable service level without more autonomy from HMGN.

1997

- Donors express the opinion that HMGN should bring in a Private Operator (PO) to manage the water system assets and make this a condition for loans and grants to support the Melamchi investment.
- HMGN establishes a High Level Private Sector Participation Committee (PSPC) to lead the process of selection of a PO by March 1999.
- 9th Five year Plan (1997 –2002) lays out certain important principles for water supply and sanitation, of which the most relevant are:
 - More emphasis on water quality
 - Public agencies responsible for policy formulation, technical support, monitoring and evaluation
 - Local agencies, NGOs and social organisations responsible for construction and operational aspects of projects serving 500 users or less
 - More encouragement for private sector involvement

1998

- Using WB / IDA funds, a consultant (Binnie Thames Water - BTW) is selected to advise HMGN on PO selection process and assist in preparing the bidding documents and PO contract.
- The Melamchi Water Supply Development Board is created to manage the development of the Melamchi Water Supply Project's infrastructure.

March 1999

- At the end of the WB / IDA project only \$8.5 million has been spent in Kathmandu (i.e. 21% of the adjusted loan amount of \$41 million and 12% of the initial allocation of \$71 million). Project Completion report criticises HMGN for "extensive and tight controls" over NWSC, including appointment of senior staff, inadequate tariff increases and weak NWSC management and operational capabilities.

July 1999

- PSPC invites expressions of interest and shortlists 3 companies – Lyonnaise des Eaux, Vivendi and ENRON / Azurix.

July 2000

- 3 NGOs (Lumanti, NEWAH and WaterAid Nepal) and WSP-SA complete a study on the water and sanitation situation of residents in 12 slum and squatter communities – showing that few (6%) have a NWSC connection due to a barrier of high connection charges (estimated at about Rs. 14,000 = \$200) and that the consumption subsidy is captured by non-poor; it also challenged the increasing block tariff for punishing poor households that can only afford a shared connection.

November 2000

- Urban Water Supply and Wastewater Sector Strategy for Kathmandu Valley released.

December 2000

- ADB announces a likely tariff of Rs 24 per m³ after Melamchi water is available – about 3 times current tariff.
- ADB approves a loan of US\$120 million for Melamchi.
- Almost all the loan / grant / HMGN financing package of US\$470 million for MWSP is now reported to be assembled including a US\$10 million loan from WB / IDA for network system upgrading and expansion – “a performance based loan” – more available once this is disbursed well.

Late 2000 /early 2001

- Creation of an informal NGO Forum for Kathmandu Valley Urban Water and Sanitation to become informed of proposals and consider how to ensure the interests of the poor are protected.

April 2001

- HMGN announces that Melamchi tunnel construction is scheduled to be completed in 2007, a one year delay.

Dry season 2001

- Widespread hardship and complaints about shortages of water within Kathmandu.

May 2001

- The construction of access roads for the Melamchi tunnel delayed by security ban on the use of dynamite for fear that it may be stolen by Maoist insurgents.
- Winter session of Parliament ends with no legislation passed due to all business being blocked by opposition parties calling for the resignation of the Prime Minister over corruption allegations; among the bills blocked are those amending the NWSC Act to allow a PO to manage the assets and another establishing a Kathmandu Valley Water Authority to regulate the PO and set tariffs.

June 2001

- PSPC re-issues invitation to prospective POs after 2 short listed companies withdraw leaving only Vivendi.
- PSPC announces that PO scheduled to be in place by late 2002 / mid 2003.
- IDA Project Preparation Facility is released to allow Binnie Thames Water to be paid and the draft contract to be given to HMGN / PSPC.

August 2001

- Draft Request for Proposals (RFP) for the Management Lease Contract released to the NGO Forum.
- Final Report on Willingness to Pay released.

September 2001

- Meeting of 12 companies (out of 18) that have submitted an EOI.

November 2001

- ADB consultant (Nancy Barnes) reports on the establishment of the National Water Supply Regulatory Board (NWRSB) and the Kathmandu Valley Water Authority (KVWA).

December 2001

- PSPC advertisement asking for companies to be pre-qualified as private operators.
- World Bank consultant (Environmental Resources Management / Sophie Tremolet) to advice on Institutional Framework.
- The total fixed asset of the NWSC has reached value of Rs. 3.12 billion.

January 2002

- Tariff paper proposes tariffs set to provide full cost recovery on grounds of ensuring autonomy for NWSC, providing an incentive for minimising waste and social equity.

- PSPC informs NGO Forum that only five companies have requested pre-qualification documents. Explains that the notice was not sent to the 18 companies that had submitted EoIs, but had been sent to all embassies and advertisement carried in local newspapers and Development Business Newsletter of the World Bank.

February 2002

- Rastriya Banijya Bank handed over to private sector consultants from the USA for 2 years of management at a fee of \$5.8 million – suggesting, perhaps, that the indicative budget of \$4 million for the PO for ten years may not be sufficient.

March 2002

- Notice in local newspapers extends closing date for Pre Qualification as PO to March 31, only 3 bids received to date.

March, April, May 2002

- Community consultation process is finalized.
- Recommendation for Serving the Poor in Kathmandu – WB consultant report released.
- Inception of Water Optimization project in the Kathmandu Valley under ADB Technical Assistance to HMGN.

June 2002

- The World Bank withdraws from the donor consortium due to a lack of enough bidders for the post of Private Operator, among other reasons.

October 2002

- Study Project on Urban Poverty Mapping test phase started.

December 2002

- NGO Forum decided to make an agreement with JBIC for handling the Urban Poverty Mapping for the Kathmandu Valley .



January 2003

- Presentation from the consultants on the interim report of Poverty Mapping Study project and submission of the Interim Report to JBIC.

March 2003.

- The World Water Development Report presented by UNESCO stated that Nepal ranks 78th in water quality.

April 2003

- ADB TA grant of US\$1.4 million to prepare a project to improve the water supply and sanitation sectors in Kathmandu Valley.

June 2003

- US\$0.5m of Technical Assistance for NGOs approved by ADB.
- WAFED registered a concern letter with ADB Headquarter raising concerns of environment degradation, land compensation, and implementation of the Social Uplift Programme in the Melamchi valley.

July 2003

- An NGO Forum meeting with Mr. Kausal Nath Bhattraï, General Manager of NWSC and his members was held to explore how civil society can assist in NWSC plan to reform Kamladi Branch launched to serve regular supply to 5,500 resident of Ward no. 1, 2 and 31.
- ADB responds to the WAFED concern letter by asking if it should be treated as an initial complaint.

August 2003

- JBIC award contract for the study on "Domestic Water Consumption Survey" to NGO Forum.

September 2003

- NGO Forum finalizes Poverty Mapping report with changed name as "Mapping and Enumerating the Unconnected Urban Poor in the Kathmandu Valley".

- ADB gives a threat to cut off aid based on the slow progress of the ADB funded projects through a formal letter (date 11 September 2003) from country director to Finance Secretary Mr. Bhanu Prasad Acharya.

October 2003

- Donor review meeting expressed dissatisfaction with road progress. NORPLAN Project advisor reported irresponsibility of contracted company KONECO HANIL. Main reason behind this is the award of contract to company bidding 45% below actual project cost (17 Oct. 2003).

December 2003

- ADB has approved two loans totalling approximately US\$ 15 million to finance the Kathmandu Valley Water Service Sectors Development Program (KVWSSDP), MC and Voluntary retirement package of NWSC (ADB loans 2058 and 2059-NEP).
- ADB agreed to provide concessional credit of Rs. 1.7 billion for the Community Based Water Supply and Sanitation Project for a 6 years period (2004 to 2009) to benefit 1,200 communities in 21 districts.
- NGO Forum completed Household Water Consumption study and submitted the report to JBIC.

January 2004

- Performance Based Management Contract for Kathmandu Valley advertised (January 5th) asking companies to be pre-qualified as performance-based Management Contractors.

February 2004

- Notification (HMG/N/MWSDB) for Short-Listing of Consultants for the Proposed Kathmandu Water Supply Demonstration Project.



- By MC submission deadline only **five** foreign firms has submitted their EOI. These are SAUR, Severn Trent, Techno Consultant, Biwater and Gylston.
- World Bank claims non-cooperation from HMGN and expresses dissatisfaction with the progress of financial performance of the two banks supported with its funds.

March 2004

- The Korean company's work on access road construction stops on 17th February and resumes on 25th March 2004.

April 2004

- The contract with KONECO HANIL for the Audit Access Road (AAR) is terminated due to lack of performance as per the schedule. At this stage progress in the Melamchi Valley was reported as:
 - Melamchi Valley Main Access Road – 75% completed.
 - Adit and Portal Access Roads - Work resumed in November but progress was exceedingly slow.
 - Upgrading of Approach Roads - Bids evaluation ongoing, redesign of road ongoing, resulting in substantial changes in work volume. Pegging of road alignment up to 14 km.
 - Power Transmission Line Construction - Technical bid evaluation submitted to ADB for approval on 29 May 2003. Notice for land acquisition published. ROW compensation rates are being fixed. Financial opened for one bidder; other bidders did not extend bid validity.
 - Melamchi Diversion Tunnel - Technical proposals evaluated and under consideration by the MWSDB, PQ evaluation of construction contractors submitted to the MWSDB.

May 2004

- The Government/MWSRB formally terminated the AAR contract on 21st May 2004 and captured the advance money to secure the compensation.

June 2004

- The ADB inspection panel Special Project Facilitator (SPF) holds meetings with NGOs regarding the initial complaint filed by WAFED to resolve the problem and look for the opportunity of immediate dispute resolution.

July 2004

- The NWSRB announces invitation of bid for the supply of Standard Water Meters.

September 2004

- HMGN/NWSC raises the water tariff by 15 percent effective from 1st Asoj (September 17). The volumetric charge up to 10,000 liters remains Rs. 50.

October 2004

- The RFP for the MC interested parties is given out in the first week of October. MC has to submit the technical and financial proposal by January 2005.

November 2004

- The institutional reform ordinance submitted by KVWMS to MPPW.

December 2004

- MWSDB selects China Civil Engineering Construction Corporation (CCECC) for the construction of the 23 km access road from Melamchi Bridge to Helambu region. The cost, Rs. 960 million rupees, is double the original price.
- The bidding deadline for MCs has been extended to accommodate the Christmas and New Year Holiday.

Annex B1

Table 1 Population Projections for Nepal

Year	Total Pop. (m)	Urban Pop. (m)	Rural Pop. (m)
2004	24.7	3.9	20.8
2021	34.0	9.2	24.8
Annual growth	2.3%	6.6%	1.7%

Estimation based on Census 2001 by the Central Bureau of Statistics

Table 2 Population of the Urban Kathmandu Valley, 2001

Municipality	Households	Population
Kathmandu	152,155	671,846
Lalitpur	34,996	162,991
Bhaktapur	12,133	72,543
Madhyapur Thimi	9,551	47,751
Kirtipur	9,487	40,835
KTM Valley Total Urban	218,322	995,966

National Census, Central Bureau of Statistics, 2001

Table 3 Land Use in the Kathmandu Valley

Broad Land Use Types	1984 ¹ (%)	1996 ² (%)	2000 ³ (%)
Agricultural Land	40,950.3 (64.0)	33,308.3 (52.1)	27,570 (41.4)
Forest	19,438.7 (30.4)	20,945.2 (32.7)	20,677 (31.0)
Non Agricultural Land	3,574.7 (5.6)	9,710.2 (15.2)	18,408 (27.6)
Total	63,963.7 (100)	63,963.7 (100)	66,655 (100)
Urban Area	3,095.5 (4.8)	8,377.6 (13.1)	9,745 (14.6)

Optimizing Water Use In Kathmandu Valley (ADB-TA) Project, June 2004

¹ LRMP, 1984

² Aerial Photo (1992) and Land use Map 1996, Dept. of Topography

³ NVTDC, 2001 (Note that the total area is taken to be more than in 1984 and 1996)

Table 4 Demand for Water in the Kathmandu Valley

	2001	2006	2011	2016
Average daily per capita consumption (lpcd)	74	78	86	92
Average daily demand (MLD)	146.6	183.9	207.8	268.3

SAPI II on Melamchi Water Supply Project, February 2004

Table 5 NWSC Connections in the Kathmandu Valley

NWSC Branch office	Total no. of connect's	% of total connect's	No. of metered connect's	% of metered connect's	Non metered connect's	% of non metered connect's
Jawalshkel	27,461	21%	22,651	82%	4,596	17%
Maharajgunj	19,358	15%	16,905	87%	2,181	11%
Mahakalchour	18,933	14%	15,466	82%	3,467	18%
Baneswor	18,493	14%	16,689	90%	1,776	10%
Tripureswor	17,333	13%	14,418	83%	2,914	17%
Chhetrapati	11,907	9%	9,975	84%	1,758	15%
Bhaktapur/Madhyapur	9,802	7%	9,329	95%	214	2%
Kamaladi	5,496	4%	5,209	95%	287	5%
Kirtipur	4,020	3%	3,862	96%	158	4%
Total	132,803		114,504	86%	17,351	13%

NGO Forum, 2004

Annex B3

Table 6 Operational Status of Wastewater Treatment Plants

Treatment Plant	Capacity (m ³ /day)	Treatment Method	Operation Status
Guhyeswori	17,300	Oxidation Ditch	Functioning properly as it was completed only a few years ago. High power costs required for the operation of the plant, however, is becoming an enormous financial burden for the operators.
Sallaghari	2,000	Lagoon	Barely functioning due to inadequate maintenance. As a result, the wastewater generated in the core areas of Bhaktapur is discharged directly into nearby tributaries of the Hanumante River.
Kodku	1,100	Lagoon	Not functioning properly due to poor maintenance. As a result, wastewater generated in the northeastern part of Lalitpur municipality is discharged nearly untreated into the Bagmati River.
Dhobighat & Sundarighat Pumping Station	15,400	Lagoon	The interceptor leading to the plant is completely clogged and the Sundarighat Pumping Station is not functioning either. As a result, wastewater generated in the old core areas of Kathmandu is discharged directly into the Tukucha, Bishnumati and Bagmati Rivers.
Hanumanghat	500	Lagoon	This treatment plant has been abandoned.

Table 7 Dry Season Deep Aquifer Depletion at Selected Locations in the Kathmandu Valley

Location	Previous water level (m)			1999 Water level (m)		Decline (m)	
	Base year	SWL	PWL	SWL	PWL	SWL	PWL
Bansbari	1997	48.08	67.60	80.63	136.14	32.55	68.54
Baluwatar	1996	FW	21.00	22.4	30.00	22.41	9.00
Pharping	1996	FW	25.00	13.00	44.00	13.00	19.00

PWL = pumping water level, SWL = static water level, FW = flowing well

State of the Environment, Nepal, 2001, MOPE, ICIMOD, SACEP, NORAD, UNEP

