



Technical Assistance Report

Project Number: 34304
December 2006

Nepal: Preparing the Kathmandu Valley Water Distribution, Sewerage, and Urban Development Project

(Cofinanced by the Government of Denmark and the Cooperation
Fund for the Water Sector)

CURRENCY EQUIVALENTS

(as of 11 December 2006)

Currency Unit	–	Nepalese rupee/s (NRe/NRs)
NRe 1.00	=	\$0.0139
\$1.00	=	NRs71.56

ABBREVIATIONS

ADB	–	Asian Development Bank
CIAMP	–	capital investment and asset management program
DNI	–	distribution network improvement
KMC	–	Kathmandu Metropolitan City
KVWL	–	Kathmandu Valley Water Limited
KVWSSDP	–	Kathmandu Valley Water Services Sector Development Program
MOLD	–	Ministry of Local Development
MPPW	–	Ministry of Physical Planning and Works
MWSP	–	Melamchi Water Supply Project
TA	–	technical assistance
WSS	–	water supply and sanitation

TECHNICAL ASSISTANCE CLASSIFICATION

Targeting Classification	–	Targeted intervention
Sector	–	Water supply, sanitation, and waste management
Subsector	–	Water supply and sanitation
Themes	–	Sustainable economic growth, governance, private sector development

NOTES

- (i) The fiscal year (FY) of the Government of Nepal ends on 15 July. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2007 ends on 15 July 2007.
- (ii) In this report, "\$" refers to US dollars.

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I. INTRODUCTION

1. In 2004, the Government of Nepal (the Government) asked the Asian Development Bank (ADB) for technical assistance¹ (TA) to prepare the Kathmandu Valley Water Distribution, Sewerage, and Urban Development Project (the Project). The aim of the Project is to finance the additional investments required to meet the growing demand for urban services in the Kathmandu Valley, thereby complementing past and ongoing ADB projects. ADB's country strategy and program 2005–2009² for Nepal includes provision for such TA. The ADB Fact-Finding Mission visited Nepal from 1 to 10 November 2004 and reached preliminary understanding with the Government on the TA's goals, purpose, scope, implementation, financing arrangements, and terms of reference. The TA supports the Government in its efforts to implement its poverty reduction strategy and is consistent with ADB's strategic priorities as outlined in its country strategy and program 2005–2009 given its focus on (i) promoting pro-poor and broadly based economic growth, (ii) supporting inclusive social and human development, and (iii) promoting good governance. The design and monitoring framework is in Appendix 1.

II. ISSUES

2. The absence of a clearly defined policy for urban water supply and sanitation (WSS) and the sector's low institutional capacity have hampered sustainable development of the urban WSS sector in the Kathmandu Valley, resulting in chronic drinking water shortages and inefficient service delivery. As part of the ongoing institutional reforms under the Kathmandu Valley Water Services Sector Development Program (KVVSSDP),³ the Kathmandu Valley operations of the Nepal Water Supply Corporation, the public utility company, have been split into (i) an asset-holding entity, the Kathmandu Valley Water Supply Management Board; (ii) a service provider, the Kathmandu Valley Water Limited (KVWL), which has been established as a limited liability company with a majority of public shareholders; and (iii) a regulatory agency, the Water Supply Tariff Fixation Commission.⁴ Under the new institutional framework, private sector participation is introduced in the form of a performance-based management contract whereby a competitively selected management contractor will be engaged to manage the KVWL.

3. Rapid growth of the urban population, coupled with the Government's inability to meet the increasing demand for urban services, has led to a number of urban environmental concerns in the Kathmandu Valley, and the burdens associated with poor environmental conditions are disproportionately borne by the poor, especially women and children. Inadequate access to basic urban infrastructure and services is posing serious health risks for the urban population. In addition, haphazard urban sprawl is resulting in inefficient land use and many unserved plots. Physical investment works to be commissioned under the Melamchi Water Supply Project (MWSP)⁵ are expected to relieve pressure on the strained urban infrastructure, but additional financial resources will still be needed to meet the growing demand for urban services in the Kathmandu Valley while keeping the existing urban infrastructure and services functioning. The main objectives of the proposed Project are to enhance basic urban infrastructure further by focusing on distribution

¹ The TA first appeared in *ADB Business Opportunities* on 15 December 2004.

² ADB. 2004. *Country Strategy and Program (2005–2009): Nepal*. Manila.

³ ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Kathmandu Valley Water Services Sector Development Program*. Manila.

⁴ The commission is responsible for economic regulation of urban water supply operations not only in the Kathmandu Valley, but also in all other urban areas of Nepal.

⁵ ADB. 2000. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Melamchi Water Supply Project*. Manila.

network improvement (DNI) of the water supply,⁶ wastewater system improvement, and solid waste management and on implementing an urban development strategy to contain urban sprawl and promote orderly urban expansion in the Kathmandu Valley.

4. **Water Supply DNI.** The water supply DNI works are expected to enhance efficiency in the distribution of (i) existing water resources in the Kathmandu Valley before completion of the Melamchi Diversion Scheme, and (ii) existing water resources from Melamchi once the Melamchi Diversion Scheme has been commissioned. The KVWL is expected to carry out the DNI works in a properly sequenced manner and on an area-by-area basis.

5. Implementation of the DNI works is expected to encounter difficulties, in particular, with respect to traffic, environmental, and safety management during excavation, which would require coordination among the KVWL, the operators of other underground utilities, the municipal public works departments, and the local police.⁷ Furthermore, the difficulties will be compounded by the lack of accurate records on the alignment and depth of not only existing water supply pipes, and sewer and drainage pipes, but also of other underground utilities, such as telephone and electricity cables.

6. By the time the consultants under this TA will have been mobilized, the KVWL will already have started the DNI works under the MWSP and the KVWSSDP. The KVWL will implement a demonstration scheme in the distribution zone served by the Min Bhawan elevated reservoir, whose water availability is among the most secure in the city, because it has a dedicated transmission main with no connecting pipelines along its length from the Manohara water treatment plant, all of which were recently constructed as an integral package with funding from the Japan International Cooperation Agency. The demonstration scheme is expected to provide the KVWL with valuable lessons on operational procedures during excavation and on coordination among relevant public entities that would subsequently be applied to other parts of the Kathmandu Valley.

7. **Wastewater System Improvement.** With the additional water supply available from ongoing projects, the amount of wastewater generated will increase substantially from its current level. Without adequate infrastructure to handle wastewater, the urban population of the Kathmandu Valley would be exposed to pollution of water bodies and environmental deterioration. Existing sewage treatment plants and sewers are being rehabilitated under the MWSP. However, further improvement and expansion of the wastewater management infrastructure, including additional sewers and a new sewage treatment plant or plants, will be required to collect and treat the increased amount of wastewater after the water supply augmentation scheme has been commissioned.

8. Given the substantial investment requirements for WSS systems in the Kathmandu Valley, proper planning is required, including the phasing of investment and financing plans. The KVWL is responsible for such planning in the Kathmandu Valley. As the KVWL is still in an early stage of taking up its functions, it requires assistance from and extensive interactions with relevant government agencies and public entities for its first planning exercise, which will be developed into the initial 5-year, rolling capital investment and assets management program (CIAMP) whose preparation is one of the responsibilities of the management contractor. However, having a well-thought-out and practical CIAMP is in the best interest of all the parties concerned.

9. **Solid Waste Management.** Municipalities in the Kathmandu Valley currently do not have sanitary landfill sites and mostly dispose of solid waste by dumping it into nearby rivers or open fields. This poor management of solid waste poses serious environmental and health risks to the

⁶ Water supply DNI is included in the MWSP, but its scope is insufficient to meet increasing needs in the Kathmandu Valley. Thus, the proposed project includes DNI works additional to those under the MWSP.

⁷ Heavy traffic congestion, narrow streets, limited availability of detours, significant number of religious places and festivals, occasional general strikes called by political parties, nighttime traffic controls imposed by the security forces, and frequent floods during the rainy season are some of the factors likely to hamper implementation of the DNI works.

population of the Kathmandu Valley. Since the closure of the Gokarna landfill site in 1999, Kathmandu Metropolitan City (KMC) and Lalitpur Submetropolitan City have been continuously dumping some of their waste in the Bagmati River. Initially, waste was dumped at Teku Dobhan, but now it has reached Sundarighat, triggering protests from local residents and environmentalists. In an attempt to diffuse the protests, KMC and Lalitpur Submetropolitan City have been shifting their dumping sites from one place to another along the banks of the Bagmati River. In 1996, the Government endorsed a plan to develop a new 41-hectare landfill site in Okharpauwa. Even though the landfill site in Okharpauwa has been in operation since June 2005, residents living around the landfill site and along the access road have been strongly opposed to it. In addition, experts have argued that the site is technically and environmentally unsuitable and is extremely expensive. The Ministry of Local Development (MOLD) has started to explore alternative sites.

10. A recent survey indicated that more than 80 percent of Kathmandu's solid waste originates from households. Household solid waste is highly organic, dense, and has a high moisture content. Its organic nature may be an advantage for composting, and a large potential market for compost appears to exist. Currently, however, only one composting facility is operating in Kathmandu on an experimental basis. Thus, there is a need to examine the possibility of engaging the private sector to operate and manage a large-scale composting plant or plants on a commercial basis in Kathmandu. The Japan International Cooperation Agency is currently conducting the "Clean Kathmandu Valley Study"⁸ to formulate an action plan to improve solid waste management service in the valley. The action plan is expected to include preliminary designs, cost estimates, and financing plans for the development of waste management infrastructure.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

11. The impact of this project preparatory TA will be to improve the urban environment and urban service provision for the population of the Kathmandu Valley. Its outcome will be to provide support for the Government in preparing the proposed Project to a standard suitable for ADB financing. The TA's outputs will consist of (i) a project preparation report for the ensuing loan, including the design and monitoring framework, components, implementation arrangements, cost estimates and financing plan, and comprehensive feasibility studies in conformity with ADB requirements; (ii) an implementation manual for smooth and efficient execution of the DNI works, including a traffic, environmental, and safety management strategy, such as temporary detouring arrangements during excavation, and an effective coordination mechanism with operators of other underground utilities, municipal public works departments, and local police; (iii) an initial 5-year, rolling CIAMP for the KVWL; and (iv) an urban sector review and long-term urban development strategy based on an assessment of growth scenarios in the Kathmandu Valley and other emerging urban areas in Nepal.

B. Methodology and Key Activities

12. The proposed Project will build on existing and past ADB projects, in particular, the MWSP, the KVVSSDP, the Kathmandu Urban Development Project,⁹ and the Urban and Environment Improvement Project,¹⁰ by topping up physical investment in key urban sectors (water supply DNI, wastewater system improvement, and solid waste management). The project preparation report will use the results of the urban sector review, the urban development strategy, and the CIAMP for

⁸ The study is also called Study on the Solid Waste Management for the Kathmandu Valley.

⁹ ADB. 1994. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Kathmandu Urban Development Project*. Manila.

¹⁰ ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Nepal for the Urban and Environment Improvement Project*. Manila.

the KVWL that will be conducted under the TA and be consistent with their results and frameworks. However, the review, strategy, and CIAMP should be produced as stand-alone products. Throughout the TA, emphasis will be placed on extensive consultations with stakeholders to analyze needs, expectations, preferences, and beneficiaries' willingness to pay for urban services and to establish effective coordination mechanisms among the parties involved in the construction of urban infrastructure and/or the provision of urban services, in particular, in relation to excavation, construction safety, environmental impact mitigation, traffic management, and road resurfacing.

13. The key activities of the TA will include (i) reviewing existing studies, documents, and policies with a view to integrating them into the TA's outputs; (ii) collecting data on urban services in the Kathmandu Valley and other emerging urban areas in Nepal; (iii) reviewing and evaluating capital investment and non-capital investment works in urban development that are being undertaken in the Kathmandu Valley; (iv) conducting a socioeconomic survey or surveys in the study areas; (v) mapping and analyzing poverty data, slum conditions, and disadvantaged and/or vulnerable groups; (vi) undertaking field surveys to assess the current conditions of urban infrastructure and collect base data for future urban infrastructure development; (vii) summarizing the existing levels of urban services, including WSS, solid waste management, drainage, urban transportation, and slum upgrading; (viii) making demand projections for urban services; (ix) selecting and refining the components of and investments for the ensuing Project, the CIAMP, and the long-term urban development strategy; (x) exploring alternatives and technical options for the proposed investments; (xi) conducting economic and financial feasibility studies, environmental and social studies, and other documentation required by ADB guidelines for the ensuing Project; and (xii) assessing the capacities of the institutions, departments, and utilities involved in urban service delivery with a view to recommending reforms and capacity-strengthening programs. Initial Poverty and Social Analysis is provided as Appendix 2. The CIAMP should be supported by a financial sustainability analysis of the KVWL to demonstrate its financial capacity to implement the CIAMP and maintain the additional assets. The TA consultants are also expected to organize capacity-building activities, including a study tour and local training programs,¹¹ as necessary to spearhead the main activities under the TA.

C. Cost and Financing

14. The total cost of the TA is estimated at \$1,160,000 equivalent. ADB will finance \$400,000 equivalent. The Government of Denmark and the Cooperation Fund for the Water Sector will provide \$400,000 and \$160,000 equivalent, respectively, on a grant basis to be administered by ADB. The remaining \$200,000 equivalent will be contributed by the Government and will cover office accommodation and transport, counterpart staff, taxes and duties, and other miscellaneous costs. Detailed cost estimates and the financing plan are provided in Appendix 3. The Government has been informed that approval of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

15. The Ministry of Physical Planning and Works (MPPW) will be the Executing Agency and the KVWL will be the Implementing Agency for the TA and be responsible for overall management and coordination. The KVWL will appoint a TA coordinator and provide office space, furniture, equipment, and technical and support counterpart staff for the TA as necessary. The Department of Urban Development and Building Construction (especially for components related to urban transport and the long-term urban development strategy), the KMC, the four municipalities,¹² and MOLD (especially for components related to solid waste management) will also provide inputs to

¹¹ A 2-week study tour on best-practice management of excavation work for pipe laying will be organized for about 10 participants. A 1-week local training program will also be organized for around 30 participants.

¹² These are Bhaktapur, Kirtipur, Lalitpur, and Madhyapur-Thimi.

the TA in terms of counterpart staff and information. In particular, MOLD staff should be involved in the development of the Project throughout the TA, as MOLD is implementing solid waste management projects in the Kathmandu Valley. Overall guidance for TA implementation will be provided by the TA Steering Committee, which will be headed by the secretary of MPPW, and will include senior officials from the Department of Urban Development and Building Construction, the Kathmandu Valley Water Supply Management Board, MOLD, MPPW, municipalities, the National Planning Commission, and the KVWL. The Steering Committee will meet at least on a quarterly basis, or as frequently as required, to review TA progress and provide direction.

16. The TA will be implemented over 12 months from April 2007 to March 2008. A team of international and national experts will be selected and recruited through a firm using the quality-and-cost-based selection method to provide a total of 98 person-months of consulting services (23 person-months of international consultants and 75 person-months of national consultants). The international consultants will include experts in water supply, sewerage, solid waste management, urban planning, and social and financial issues. The national consultants will include experts in water supply engineering, sewerage engineering, solid waste management, urban planning, social, financial and economic issues, and computer-aided design. ADB will select and engage the consultants in accordance with its *Guidelines on the Use of Consultants* (2006, as amended from time to time). Outline terms of reference for TA consultants are presented in Appendix 4. ADB's full technical proposal will be used in selecting consultants. Extensive workshops and consultations will be conducted under the TA. Equipment will be procured by the consultants in accordance with ADB's *Procurement Guidelines* (2006, as amended from time to time). The equipment will be handed over to the KVWL upon completion of the TA.

17. The consultants will submit five reports for the project preparation, including (i) an inception report within 2 weeks of the commencement of services, (ii) the first interim report within 3 months, (iii) the second interim report within 7 months, (iv) a draft final report within 10 months, and (v) a final report within 4 weeks of receiving comments on the draft report from the Government and ADB. They will also submit two reports (draft within 4 months, and final within 6 months) for the preparation of implementation manual for DNI, two reports (draft within 5 months, and final within 7 months) for the preparation of CIAMP, and two reports (draft within 4 months, and final within 6 months) for the preparation of urban sector review and long-term urban development strategy. In addition, the consultants will submit short monthly progress notes summarizing TA activities, issues, constraints, and proposed solutions. The team leader will be responsible for consolidating all the reports produced by the consultants and organizing regular consultations and workshops for municipal and other government officials, nongovernment organizations, and local communities, and a study tour and local training programs for relevant government officials. Tripartite meetings will be held among ADB, Government representatives, and the TA consultants to review the inception, interim, and draft final project preparation reports and verify accomplishments. All reports shall be submitted in hard copy (10 copies) and electronic form in a format satisfactory to and suitable for use by the recipients. The implementing agency will comment on all reports within 2 weeks of receipt.

IV. THE PRESIDENT'S DECISION

18. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$160,000 to be financed on a grant basis by the Cooperation Fund for the Water Sector, (ii) ADB administering a portion of technical assistance not exceeding the equivalent of \$400,000 to be financed on a grant basis by the Government of Denmark, and (iii) ADB providing the balance not exceeding the equivalent of \$400,000 on a grant basis to the Government of Nepal for preparing the Kathmandu Valley Water Distribution, Sewerage, and Urban Development Project, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>Impact Improved urban environment and urban service provision for the population of the Kathmandu Valley</p>	<p>Increase in households with access to improved water supply and sanitation</p> <p>Reduction in monthly medical expenditures per household</p> <p>Decrease in traffic congestion</p> <p>Increase in amount of solid waste collected and properly disposed of</p>	<p>Baseline surveys at the beginning and end of the Project</p> <p>Annual Nepal Resident Mission report on the Nepal economic update</p> <p>ADB country strategy and program and updates</p> <p>Annual reports by the Water Supply Tariff Fixation Commission</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Political conditions remain stable • Government is committed to institutional reforms and timely implementation of ongoing projects
<p>Outcome The proposed Kathmandu Valley Water Distribution, Sewerage, and Urban Development Project</p>	<p>An agreement between ADB and the Government on the proposed Project</p> <p>The design of the proposed loan is fully endorsed by the Government</p> <p>Recommended policies and measures are accepted or endorsed by stakeholders</p> <p>A memorandum of understanding is signed by the Government, ADB, and cofinancing agencies during the Appraisal Mission</p>	<p>Consultants' reports</p> <p>ADB review mission reports</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Counterpart funding is available according to the loan disbursement schedule • Cooperation of the main stakeholders
<p>Outputs</p> <ol style="list-style-type: none"> 1. A project preparation report with comprehensive feasibility assessments 2. An implementation manual for smooth and efficient implementation of DNI 3. The initial 5-year rolling capital investment and asset management program (CIAMP) for the Kathmandu Valley Water Limited (KVWL) 4. An urban sector review and long-term urban sector development strategy 	<p>Consultants' reports submitted to the parties for comments according to agreed timeline</p> <p>Effective coordination mechanism agreed to by public entities to facilitate DNI</p> <p>Consultations held according to agreed timeline</p> <p>Study tour and training programs organized according to agreed timeline</p>	<p>ADB TA review missions reports</p> <p>Feedback on study tour and training programs</p> <p>Inception report</p> <p>Interim reports</p> <p>Draft final and final reports</p> <p>Tripartite meetings</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Valuable lessons from the Kathmandu Valley water supply demonstration project are applied to improve DNI implementation in other parts of Kathmandu Valley • Ongoing "Clean Kathmandu Valley Study" formulates an action plan to improve solid waste management in the Kathmandu Valley <p>Risk</p> <ul style="list-style-type: none"> • Lack of accurate information on underground facilities may delay preparation of the implementation manual

Activities with Milestones	Inputs
<p>1.1 Review the existing studies and reports related to the proposed Project within 2 weeks of commencement of the TA.</p> <p>1.2 Assess the current situation in the urban sector related to the proposed Project within 1 month of commencement of the TA.</p> <p>1.3 Conduct field surveys and socioeconomic surveys, and review exiting poverty mapping within 2 months of commencement of the TA.</p> <p>1.4 Complete preliminary designs for each component under the proposed Project within 6 months of commencement of the TA.</p> <p>1.5 Complete economic and financial analyses, and environmental and safeguard assessments within 8 month of commencement of the TA.</p> <p>1.6 Submit a final report within 12 months of commencement of the TA.</p> <p>2.1 Review the status of the Kathmandu Valley water supply demonstration project within 2 weeks of commencement of the TA.</p> <p>2.2 Organize a study tour to Japan within 1 month of commencement of the TA.</p> <p>2.3 Organize workshops and consultations with public entities throughout the TA.</p> <p>2.4 Submit a final implementation manual for DNI within 6 months of commencement of the TA.</p> <p>3.1 Review the existing proposals for DNI in consultation with the management contractor within 2 weeks of commencement of the TA.</p> <p>3.2 Complete conceptual design of the water supply system envisaged under the CIAMP within 1 month of commencement of the TA.</p> <p>3.3 Complete rehabilitation programs proposed under the CIAMP within 2 months of commencement of the TA.</p> <p>3.4 Complete conceptual design of the wastewater management system envisaged under the CIAMP within 3 months of commencement of the TA.</p> <p>3.5 Complete cost estimates and a work program for the capital investments within 4 months of commencement of the TA.</p> <p>3.6 Complete a procurement strategy and plan for the CIAMP within 5 months of commencement of the TA.</p> <p>3.7 Update the financial model based on the CIAMP within 6 months of commencement of the TA.</p> <p>3.8 Submit the final CIAMP within 7 months of commencement of the TA.</p> <p>4.1 Review existing urban sector strategies and reports within 2 weeks of commencement of the TA.</p> <p>4.2 Conduct growth scenario assessments within 2 months of commencement of the TA.</p> <p>4.3 Identify future urban development needs within 4 months of commencement of the TA.</p> <p>4.4 Submit a final report on the urban sector review and the long-term urban development strategy within 7 months of commencement of the TA.</p>	<ul style="list-style-type: none"> • ADB: \$400,000 • Government: \$200,000 • Cooperation Fund for the Water Sector: \$160,000 • Government of Denmark: \$400,000

ADB = Asian Development Bank, CIAMP = capital investment and asset management program, DNI = distribution network improvement, KVWL = Kathmandu Valley Water Limited, TA = technical assistance.

INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the sector identified as a national priority in country poverty partnership agreement?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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Contribution of the sector or subsector to poverty reduction in Nepal:
 Poverty reduction is the overriding goal of the Government's 10th Plan (fiscal year 2002–fiscal year 2007). The 10th Plan aims to reduce the incidence of poverty from the recent estimate of 42% to 30% by 2007 and 10% by 2017. Central to the national strategy for poverty reduction is the provision of basic economic and physical infrastructure, including water supply and sanitation.

Access to a reliable water supply is a problem for most low-income communities in the Kathmandu Valley. Reliance on public supplies from the Nepal Water Supply Corporation is minimal, and most urban poor depend on private or traditional sources of supply. Shallow wells are a popular source, but these are usually contaminated and are responsible for a variety of waterborne diseases. The hardships involved in accessing water in the Kathmandu Valley are severe. With piped water supplies limited to 2 hours every other day, most consumers, particularly the poor, rely on secondary sources. Although the time the poor spend to access water for domestic use varies, approximately 1 hour is required each day. A number of domestic functions are undertaken at the water point to minimize the volume of water to be carried home. Women are the predominant carriers of water. Residents of low-income areas carry home only about 10 liters per person of water every day. This is insufficient to maintain basic hygiene and sanitation standards and is a prime cause of the high levels of morbidity and mortality.

International experience shows that the provision of safe water supply and basic sanitation services in urban areas can have a significant impact on the quality of life of the urban poor, both indirectly and directly, by stimulating economic activities that would otherwise be impossible, improving hygiene conditions, decreasing the incidence of waterborne diseases, and empowering poor women. The ensuing Project aims to improve the urban environment and urban service provision for the population of the Kathmandu Valley by improving the water supply distribution network, the wastewater system, solid waste management, and urban transport. The ensuing Project will contribute to the achievement of Millennium Development Goal 7.

B. Poverty Analysis Targeting Classification: Targeted intervention (TI-M [Millennium Development Goal])

What type of poverty analysis is needed?
 In coordination with the social development specialists of the consulting team for the Kathmandu Valley Water Services Sector Development Program (KVVSSDP), the technical assistance (TA) will include a poverty and social analysis to determine the socioeconomic profile of the population, the incidence of urban poverty, the nature and characteristics of poverty, and the perceived priorities of the poor. Secondary data from the poverty and social analysis for the KVVSSDP; from the Melamchi Water Supply Project; and from other sources, including, but not limited to, the Nepal living standards survey, will be supplemented by transect walks, focus group discussions, and key informant interviews. A socioeconomic survey will provide information on poverty, slum conditions, and disadvantaged and vulnerable groups.

The poverty and social analysis will review options to eliminate negative impacts on the poor and vulnerable through design changes or to mitigate them by means of specific measures to be included in the project design and costed as part of the total project cost. The poverty analysis will also review options to extend or enhance the benefits for the poor and excluded through design changes in the scope of the policy conditions and/or the pace at which they are met.

C. Participation Process

Is there a stakeholder analysis? Yes No

A stakeholder analysis will be undertaken to identify key project stakeholders, their interests, and the way they affect project risks and viability. The stakeholders are likely to include beneficiaries, adversely affected people, municipality officials and representatives, ministries, the private sector, external funding agencies, nongovernment organizations, and consultants.

Is there a participation strategy? Yes No

Based on the stakeholder analysis, and using participation strategies developed for the Melamchi Water Supply Project and the KVVSSDP, the ensuing Project will be prepared with the participation of stakeholders. In particular, a water user committee representing all beneficiaries of the proposed Project will be established and will be fully involved in project

design. The ensuing Project will also undertake consensus building at all levels on issues such as water supply and sanitation services, environmental and social impact mitigation, compensation, and employment.

D. Gender and Development

Strategy to maximize impact on women:

Given the likely scope of the ensuing Project and the dominant role of women in water collection, women are expected to be the primary recipients of the benefits of urban environmental and infrastructure improvements. Women's commitment to and ownership of the Project will influence the viability and sustainability of project outputs. The TA, consistent with the gender strategy prepared for the KVVSSDP, will design specific measures to ensure that (i) women actively participate in the project design and identification of options as well as project implementation, (ii) women and men benefit equally from the Project, and (iii) the Project addresses differential gender needs.

Has an output been prepared? Yes No

E. Social Safeguards and Other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	The TA will prepare a resettlement plan covering components involving land acquisition and involuntary resettlement.	<input type="checkbox"/> Full <input checked="" type="checkbox"/> Short <input type="checkbox"/> None
Affordability	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	A survey for the KVVSSDP indicates that there is significant willingness to pay among Kathmandu Valley residents ranging from \$0.43 per cubic meter (poor and upgraded from unconnected to shared connection) to \$0.86 per cubic meter (nonpoor and already connected).	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Labor	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	No significant labor implications are expected. Labor issues will be examined during the TA for the proposed project activities. Specific mitigation measures will be proposed consistent with strategies developed under the KVVSSDP and the Melamchi Water Supply Project, if necessary.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Indigenous Peoples	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	The Project will not adversely impact a specific ethnic or caste group. The TA will assess the need to prepare an indigenous people's development plan.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Other Risks and/or Vulnerabilities	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	The political situation may remain unstable. Close monitoring of the situation will be undertaken. A monitoring plan will be developed.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Total Cost
A. Asian Development Bank (ADB) Financing^a	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	166.7
ii. National Consultants	104.2
b. International and Local Travel	41.6
c. Reports and Communications	4.2
2. Equipment (computer, printer, etc.) ^b	6.3
3. Training, Seminars, and Conferences ^c	
a. Facilitators	5.0
b. Training Program	5.0
4. Study Tour ^d	15.8
5. Vehicle ^e	2.1
6. Surveys	8.3
7. Miscellaneous Administration and Support Costs	8.3
8. Representative for Contract Negotiations	2.9
9. Contingencies	29.6
Subtotal (A)	400.0
B. Cooperation Fund for the Water Sector and Government of Denmark Financing^f	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	233.3
ii. National Consultants	145.8
b. International and Local Travel	58.4
c. Reports and Communications	5.8
2. Equipment ^a	8.7
3. Training, Seminars, and Conferences ^b	
a. Facilitators	7.0
b. Training Program	7.0
4. Study Tour ^c	22.2
5. Vehicle ^d	2.9
6. Surveys	11.7
7. Miscellaneous Administration and Support Costs	11.7
8. Representative for Contract Negotiations	4.1
9. Contingencies	41.4
Subtotal (B)	560.0
C. Government Financing	
1. Office Accommodation and Transport	30.0
2. Remuneration and Per Diem of Counterpart Staff	140.0
3. Others	30.0
Subtotal (C)	200.0
Total	1,160.0

^a Financed by ADB's technical assistance funding program.

^b Five computers and two printers will be purchased by the consultants in accordance with ADB's *Procurement Guidelines* (2006, as amended from time to time).

^c Workshops will be held regularly with the main stakeholders to ensure effective coordination. A 1- week training course will also be organized for around 30 participants.

^d A 2-week study tour on best-practice management of excavation work for pipe laying will be organized for 10 participants.

^e One vehicle will be leased for 12 months to facilitate travel by the consultant team.

^f Administered by ADB.

Source: ADB estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Scope of Work

1. Water Supply Distribution Network Improvement

1. The management contractor will supervise work on this component on behalf of the Kathmandu Valley Water Limited (KVWL). The consultant's specific activities will include the following:

- (i) Review the status of the Kathmandu Valley water supply demonstration scheme paying particular attention to (a) permissions required for road excavation and resurfacing, and pipeline construction; (b) coordination mechanisms among the public entities involved, including the municipal public works department, the local police, the ward offices, the power company, the telephone company, and the fire department; (c) restrictions imposed by relevant entities; (d) safety precautions during excavation and construction; (e) mechanisms for dealing with accidents, damage to existing utilities and private properties, and other emergency situations; (f) mechanisms for addressing claims and complaints from the public and relevant entities; and (g) mechanisms for keeping the public satisfactorily informed of the progress of work and the schedule.
- (ii) Organize and convene workshops with relevant public entities on (a) the extent, scale, schedule and sequence of the distribution network improvement (DNI); (b) the status of the Kathmandu Valley water supply demonstration scheme; and (c) operational restrictions and conditions that would have to be imposed in other parts of the Kathmandu Valley.
- (iii) Organize a study tour for 10 high-level Nepalese officials to present best-practice examples in the implementation of DNI in highly congested parts of metropolitan areas.
- (iv) Develop an implementation manual for DNI for the KVWL, covering all operational procedures to facilitate efficient implementation of the DNI component, including procedures for traffic control and detours during excavation, road restoration and resurfacing, safety precautions, appropriate mechanisms for dealing with emergency situations, claims, and complaints, and efficient mechanisms for coordination among relevant public entities.

2. Capital Investment and Asset Management Program

2. The management contractor will supervise work on this component on behalf of the KVWL. The objectives of the capital investment and asset management program (CIAMP) include (i) increasing the availability of water supply until all registered KVWL customers have access to water 24 hours per day; (ii) facilitating the distribution of water from the water treatment plant to be constructed under the Melamchi Water Supply Project; and (iii) promoting appropriate wastewater services, including septic tanks and other forms of on-site sanitation, as appropriate, for all registered KVWL customers, including the provision of sewerage services where doing so is economic. The specific activities covered by the CIAMP will be the rehabilitation and extension of water supply systems and wastewater management systems in the KVWL operation areas.

3. The CIAMP should include (i) a description of the proposed capital investment program required to achieve the objectives, including (a) a review of the Japan Bank for International Cooperation's Special Assistance for Project Implementation I & II proposals for DNI, including details of and justification for where the management contractor proposes to vary the proposals; (b) conceptual design of the bulk distribution system, the skeletal and primary distribution network, service reservoir locations and capacities, and pressure zoning of the distribution network; (c) approach to rehabilitation of the secondary and tertiary distribution network; (d) conceptual design of the wastewater system improvements; and (e) capital cost estimates and work program for the full capital investment program; (ii) a detailed set of cost estimates for the first 5 years of the

CIAMP; (iii) a detailed procurement strategy for the CIAMP that complies with the external funding agencies' procurement requirements; and (iv) a detailed procurement program for the first 5 years of the CIAMP.

3. Solid Waste Management

4. The consultant shall report directly to Kathmandu Metropolitan City (KMC), which will be responsible for implementing this component of the proposed Project on behalf of the Solid Waste Management and Resource Mobilization Center and the Ministry of Local Development (MOLD). Based on the action plan proposed under the "Clean Kathmandu Valley Study" conducted by the Japan International Cooperation Agency, the scope of work for this component may be reviewed and revised as necessary.

- (i) Review the KMC's existing solid waste management systems and identify key problems and constraints pertaining to the collection, transportation, and disposal of solid waste.
- (ii) Review studies and projects that are directly or indirectly related to solid waste management in the KMC, including the Japan International Cooperation Agency's "Clean Kathmandu Valley Study" and ADB's *Promoting Reduce, Reuse, and Recycle in South Asia* report.
- (iii) Review the existing legal and institutional framework for solid waste management operations in the KMC.
- (iv) Conduct sampling surveys covering approximately 1,000 households selected at random among the 35 wards of the KMC to understand and estimate (a) the per capita and per household generation of domestic solid waste; (b) the ways and means households usually use to dispose of waste; (c) the willingness to separate compostable materials from the rest of waste; (d) the total weight of compostable materials in each kilogram of domestic waste; (e) the willingness to pay for collection, transportation, and/or treatment of compostable materials; (f) the moisture content and initial carbon to nitrogen ratio of compostable materials; and (g) the physical conditions of houses and the existence of quantifiable major household items.
- (v) Estimate, by means of interviews with farmers, agricultural cooperatives, and relevant government agencies, (a) the operational costs currently incurred by the KMC for collecting, transporting, and dumping waste along the Bagmati River; (b) the size, geographical distribution, and seasonal variation of the demand for compost in and around the Kathmandu Valley; (c) the price elasticity of compost; and (d) the price competitiveness of compost as compared with that of artificial fertilizers.
- (vi) Estimate, based on the outcome of the foregoing studies, (a) the total generation of domestic waste and compostable materials in each of the 35 wards of the KMC, and (b) the total weight of compost that could potentially be produced from compostable materials generated in each ward.
- (vii) Design an aerobic composting process that can satisfy the following criteria: (a) make it aesthetically acceptable; (b) minimize the production of offensive odors; (c) avoid the propagation of insects or odors; (d) destroy pathogenic organisms present in the original waste; (e) destroy weed seeds; (f) retain the maximum nutrient content (nitrogen, phosphorus, potassium); (g) minimize the time required to complete the process; (h) have adequate storage capacity to meet seasonal variations in demand; and (i) minimize the land area required for the process.
- (viii) Develop several options each of which involve having a different number of compost plants at different locations based on the geographical distribution of demand for compost and the potential source of its supply, the availability of land for construction of compost plants, the accessibility to plants, and the costs of transportation.

- (ix) Evaluate the economic, social, environmental, and financial viability of each option.
- (x) Assess the scope for private sector participation in operating and managing large-scale composting in the Kathmandu Valley and identify an action plan for making it possible.

4. Urban Sector Review and Long-Term Urban Sector Development Strategy

5. The Ministry of Physical Planning and Works (MPPW) will supervise work on this component. The consultant's specific activities will include the following:

- (i) Review various existing urban sector strategies or reports.
- (ii) Project population growth and density by ward and map out urban infrastructure and services with respect to current status and future needs.
- (iii) Analyze and link the projected future growth scenario to existing water supply and sewerage service coverage, solid waste management coverage, and road network coverage.
- (iv) Assess the future growth scenario of the housing stock and the required volume of construction. Project the risk of urban sprawl and identify potential areas for future road expansion and orderly urban expansion.
- (v) Identify future urban growth corridors or nodes in the Kathmandu Valley and plan potential traffic management, including needs for an improved urban transport network by means of public and private bus services and other modes of transport.
- (vi) Analyze the poverty, social, and gender implications of the current problems and of the long-term strategy.

5. Feasibility Study for the Project

6. The management contractor, on behalf of KVWL, will supervise work on this component in consultation with MPPW, MOLD and the KMC. The consultant's specific activities will include the following:

- (i) Review existing studies, reports, data, and related information, including lessons from past urban development projects in Nepal.
- (ii) Describe, map, and quantify the condition of basic urban services in the Project areas, highlighting needs and deficiencies in water supply and sanitation, solid waste management, and urban transport.
- (iii) Discuss institutional arrangements to invest in, operate, and maintain basic urban services to be assisted under the Project and identify related issues.
- (iv) Describe existing relevant operation and maintenance procedures and cost recovery mechanisms for basic urban services subsectors to be assisted under the Project and identify related problems and constraints.
- (v) Conduct a socioeconomic survey or surveys of households in the project areas, including a willingness to pay survey.
- (vi) Make demand projections for urban services to be assisted under the Project.
- (vii) Screen all viable technical options and provide the least-cost analysis for each component of the Project, review and define design criteria and standards, and prepare a preliminary engineering design for each component under the Project.
- (viii) Develop project monitoring and evaluation arrangements, including a design and monitoring framework, in accordance with the Asian Development Bank's (ADB's) requirements for project performance management systems.
- (ix) Estimate detailed project cost estimates and a financing plan and prepare related tables in a format acceptable to ADB.
- (x) Design fund flow, disbursement mechanisms, and audit arrangements, and in conducting financial management assessments of MPPW and the implementing agency (including internal control and accounting), recommend necessary measures.

- (xi) Prepare a procurement plan including all the contract packages to be financed under the Project.
- (xii) Conduct project economic and financial analyses in accordance with the relevant ADB guidelines, including its *Handbook on Financial Management and Analysis of Projects*.¹
- (xiii) Conduct financial management assessments of MPPW and implementing agency for the Project.
- (xiv) Conduct public consultations and workshops in the project areas throughout the various stages of the Project.

6. Poverty and Social Analysis, and Safeguards Compliance

a. Social Safeguards and Social, Poverty and Gender Analysis

7. The management contractor, on behalf of KVWL, will supervise work on this component in consultation with MPPW, MOLD and the KMC. The consultant's specific activities will include the following:

- (i) Carry out social due diligence.
- (ii) Identify the Project's land acquisition and resettlement requirements.
- (iii) Conduct all preparatory surveys and studies needed to prepare the resettlement plan for the Project.
- (iv) Finalize the resettlement plan for the Project in accordance with relevant Government policies and guidelines and ADB's policy document on *Involuntary Resettlement* (1995) and Operations Manual Section F2 on involuntary resettlement. The consultant will use the *Handbook on Resettlement*² as a guide.
- (v) Ensure that MPPW is staffed with persons responsible for resettlement and provide training to familiarize them with ADB policies and procedures to be adopted in the Project and advise on preparatory activities for land acquisition and resettlement under the Project, including awareness campaigns and consultations, land surveys, development of specific packages for identified groups of people, and budgeting.
- (vi) Review the application of the indigenous people's checklist, and prepare a development plan for indigenous peoples, if necessary, in accordance with ADB's *Policy on Indigenous Peoples* (1998) and Operations Manual Section F3 on indigenous peoples.
- (vii) Conduct a poverty and social impact analysis, including required socioeconomic surveys, in accordance with ADB's *Handbook on Poverty and Social Analysis*.³
- (viii) Conduct a stakeholder analysis and prepare a participation strategy or plan outlining how to involve stakeholders at different stages of the project cycle.
- (ix) Conduct a gender assessment and prepare a gender development strategy or gender action plan.
- (x) Examine potential social or poverty risks that might arise during project implementation.
- (xi) Assist the economist with the affordability analysis, particularly with regard to survey work, if required.
- (xii) Participate in review and loan processing missions for the Project, as necessary, to help the ADB project officer prepare and process the Project.

¹ ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

² ADB. 1998. *Handbook on Resettlement: A Guide to Good Practice*. Manila.

³ ADB. 2001. *Handbook on Poverty and Social Analysis*. Manila.

b. Environmental Safeguards

8. The management contractor, on behalf of KVWL, will supervise work on this component in consultation with MPPW, MOLD and the KMC. The consultant's specific activities will include the following:

- (i) Review the categorization of the Project and help MPPW prepare an overall initial environmental examination or environmental impact assessment report that documents the comprehensive appraisal of the Project's environmental impacts, including the design of appropriate mitigation measures and the monitoring costs, in accordance with ADB's *Environment Policy (2002)* and *Environmental Assessment Guidelines*.⁴
- (ii) Conduct all preparatory surveys and studies, and gather information, in order to prepare environmental assessment reports for the Project.
- (iii) Prepare an environmental management plan or plans developed for environmentally sensitive components covering project-specific environmental mitigation measures, monitoring indicators, monitoring plans, and organizational and institutional arrangements for implementing the mitigation program, if necessary.
- (iv) Ensure that MPPW has adequate resources to conduct environmental assessment and monitoring and help the ministry develop a public consultation and information disclosure program, develop a monitoring plan, and prepare cost estimates and institutional arrangements for implementing mitigating measures for identified potential environmental impacts.
- (v) Conduct a preliminary assessment of the potential for applying the clean development mechanism based on findings by the solid waste management specialist and draft terms of reference for specialists to conduct a technical assessment of the Project's potential to reduce emissions of greenhouse gases and utilize the clean development mechanism to generate additional financial revenues.
- (vi) Assist ADB loan processing missions with preparing relevant documents and processing the Project.

B. Staffing

9. A total of 98 person-months of consulting services is required for the TA. Seven international experts (total of 23 person-months) will include (i) a team leader-cum-water supply engineer (11 person-months), (ii) a sewerage engineer (3 person-months), (iii) a solid waste management specialist (1 person-month), (iv) an urban planner-cum-urban transport specialist (2 person-months), (v) an environment specialist (3 person-months), (vi) a social development specialist (2 person-months), and (vii) a financial analyst (1 person-month). Eleven national experts (total of 75 person-months) will include (i) a deputy team leader-cum-water supply engineer (12 person-months), (ii) two water supply engineers (10 person-months each), (iii) a sewerage engineer (12 person-months), (iv) a solid waste management specialist (6 person-months), (v) a town planner-cum-demographic specialist (8 person-months), (vi) a financial analyst-cum-economist (8 person-months), (vii) an environment specialist (3 person-months), (viii) a social development specialist (2 person-months), (ix) a resettlement specialist (2 person-months), and (x) a computer-aided design technicians (2 person-months).

⁴ ADB. 2003. *ADB Environmental Assessment Guidelines*. Manila.