

PERIODIC FINANCING REQUEST

Date: 09 December 2013

To: Asian Development Bank
6 ADB Avenue
Mandaluyong City, Metro Manila

ATTENTION: Director General, EARD
Fax No. +63 2 636 2384

Sir:

**RE: Ulaanbaatar Urban Services and Ger Areas Development Investment Program:
Periodic Financing Request # 1**

Please refer to the Framework Financing Agreement (FFA) for Ulaanbaatar Urban Services and Ger Areas Development Investment Program dated 09 December 2013 between the Asian Development Bank (ADB) and Mongolia. Expressions defined in the FFA shall have the same meanings herein.

Pursuant to the provisions of the FFA, the Government of Mongolia requests ADB to process this periodic financing request (PFR) for a tranche, in the form of loans from its Special Funds Resources (i.e., the Asian Development Fund) and ordinary capital resources, and a grant from the Urban Environmental Infrastructure Fund. The proposed financing amounts, terms, conditions, and financing plan are specified in Attachment A hereto. Descriptions of the components for which financing is hereby requested are set out in Annex 1-3 of Attachment A hereto.

By: The Government of Mongolia

A handwritten signature in black ink, appearing to read 'Batbayar Nyamjav', is written over a horizontal line. To the right of the signature is a small, simple arrow-like mark pointing to the right.

Batbayar Nyamjav
Minister for Economic Development

Attachment A

- Project Description** The components proposed for financing under the requested PFR are:
- (i) **Sewerage network** extension from the nearest terminals of the existing city sewerage system: (a) 3.5 kilometers (km) collector main for Bayankhoshuu and 2.6 km for Selbe, (b) sewerage pumping station along with 2 km of sewer pipe extension and 0.9 km of sewer pressure pipe in Selbe, and (c) connection to the public facilities located along the road corridor and within each subcenter.
 - (ii) **Road and urban services:** (a) 15 km of combined priority roads; (b) 18.6 km of water supply, 20 km of wastewater, and 21 km of district heating network pipes; (c) sidewalks, drainage, flood protection, waste collection facilities, public space, lighting, and urban furniture; and (d) five heating facilities using most suitable state-of-the-art environmentally friendly technologies.
 - (iii) **Social and economic facilities.** Two kindergartens, 8–9 hectares (ha) of green areas and small squares; and two business incubator centers associated with two vocational training centers.
 - (iv) **Multi-interventions in the Ulaanbaatar Water Supply and Sewerage Authority (USUG)** to improve the central wastewater treatment plant and drinking water supply network, improve local control and central operational control systems (SCADA), improve water pumping system, implement a domestic and industrial water metering program, and install remote controlled flow-meters for nonrevenue water management.
 - (v) **Institutional strengthening and capacity development** for (a) detailed design and construction supervision for the water supply and wastewater collection systems, municipal infrastructure, and heating services; (b) community participation, awareness, and empowerment, and small- and medium- enterprises (SME) development; (c) capacity building and institutional strengthening for urban planning and subcenter development; (d) program management office (PMO) to strengthen program implementation capacities; and (e) service provider institutional and regulatory reforms.

The design and monitoring framework for this tranche is in Annex 1. Additional details are in Annex 2.

- Cost Estimates and Financing Plan** The total cost of project 1 is estimated at \$104.52 million, inclusive of taxes, duties, and interest and other charges on the loan during construction. The detailed cost estimates and financing plan are in Annex 3.

Loan, Grant, and Cofinancing¹ Amount and Terms	For project 1, ADB will finance \$53.70 million or 51.3% of the total investment requirement. About 26.3% or \$22.5 million will be financed from Asian Development Fund (ADF); \$27.5 million or 19.7% from ordinary capital resources (OCR); and \$3.7 million as a grant from the Urban Environmental Infrastructure Fund (UEIF) under the Urban Financing Partnership Facility. The proposed ADF loan for \$22.5 million will have a 25-year term, including a grace period of 5 years, a 2.0% annual interest rate, and payments in equal amortization. The proposed OCR loan for \$27.5 million will have a 20-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's London interbank offered rate-based lending facility, a commitment charge of 0.15% per year; and such other terms and conditions to be set forth in the relevant loan agreements. The European Investment Bank has expressed interest to provide parallel cofinancing up to the maximum amount of €50 million and such cofinancing, which will be limited to water supply and sanitation is tentatively included in the project 1 financing plan, subject to further processing and relevant approvals.
Period of Loan/Guarantee Utilization	The project is expected to be completed by 31 December 2017. Physical infrastructures are expected to be completed by 2016. The Loan and Grant closing date will be on 30 June 2018, as stipulated in the legal agreements.
Advance Contracting	Advance contracting is requested to complete preparation of bidding documents and bid invitation for strengthening service providers, heat distribution networks, and water and wastewater operation improvement packages. Subject to appropriate authorizations, the Municipality of Ulaanbaatar (MUB) will finance eligible expenses in advance from its own budget, to be reimbursed from the loan disbursements upon effectiveness of the loans.
Retroactive Financing	Expenditures for all consulting services except those pertaining to strengthening service providers incurred during the period not exceeding 12 months prior to signing of the ADB loan documents will be financed retroactively from the ADB loans and grant, as applicable, upon effectiveness, but not earlier than 12 months before the signing of the legal agreements.
Implementation Arrangements	The executing agency will be the MUB who is responsible for overall program implementation.
Procurement and Consulting Services	The procurement plan is attached as Annex 4. The terms of reference for the engagement of advisors under this tranche are attached as Annex 5.

¹ Amended, as appropriate for the conversion instrument, e.g., grant, guarantee, or administration of any cofinancing.

Confirmation of Continuing Validity of and Adherence to Provisions of FFA, Previous Agreements, and the Design and Monitoring Framework

The Government of Mongolia confirms that the understandings set out in the FFA have been adhered, and remain true to date.

Readiness of the Project for Implementation

The feasibility assessment of the project has been completed. Technical due diligence that included an assessment of the urban sector strategy and policy framework, roadmap, investment program, and the investment plan was performed for the project. The project is technically viable with technology choices based on efficient and proven designs.

Safeguards

The environment assessment and review framework, the initial environment examination, the land acquisition and resettlement plan, and the resettlement framework, are incorporated by reference to the FFA.

ANNEX I

DESIGN AND MONITORING FRAMEWORK FOR PROJECT 1

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Improved living conditions in Ulaanbaatar</p>	<p>By 2022: Poverty headcount index reduced by 20% (baseline: 23.5% in 2012)</p> <p>Incidence of water-borne diseases reduced by 20% (baseline: 90,310 in 2012)</p> <p>Air pollution in Ulaanbaatar reduced by 20% (baseline: 1.286 PM₁₀ concentration in 2012)</p>	<p>National Statistical Office reports</p> <p>Government public health statistics</p> <p>National Statistical Office reports</p>	<p>Assumption Policy environment supports urban development and increased investments in urban infrastructure.</p> <p>Risk Urban infrastructure investments constrained by fiscal and political factors</p>
<p>Outcome A network of livable, competitive, and inclusive subcenters in Ulaanbaatar's <i>ger</i>^a areas</p>	<p>By 2018: % of population with improved access to water, sanitation, and heating increased to 20% (baseline: 0% for water 0% and 0% for sanitation and 0% for heating in 2012) in targeted areas</p> <p>Average density in targeted subcenter increased to 75 persons per ha (average baseline: 50 persons per ha in 2010)</p> <p>Number of business establishments increased by 20% (baseline: 33,140 in 2012) in targeted areas</p> <p>Unit production cost of water reduced by 35% (baseline: MNT5,940 per m³ in 2011)</p>	<p>MUB report on urban construction and districts records</p> <p>MUB report on urban construction and districts records</p> <p>MUB report on urban construction and districts records</p> <p>USUG operation and financial reports</p>	<p>Assumptions Political support and investment in urban infrastructure continue throughout the program.</p> <p>Improved services and urban governance leads to sustained economic growth in the <i>ger</i> areas.</p> <p>Risks Insufficient time and resources devoted to community mobilization</p> <p>Lack of private sector participation</p>
<p>Outputs</p>			
<p>1. Roads and urban services are expanded within the targeted subcenters and connectivity between subcenters is improved.</p>	<p>By 2016: 18.6 km of water supply network, 20.0 km of sewer network and 6.0 km of collector mains constructed</p> <p>Five heating facilities, 21 km of heating network pipes and 2.4 km of heating service connections constructed</p> <p>15 km of carriageway and 7.9 ha of landscaping and public space including universal design features such as sidewalk, lighting, and sitting</p>	<p>PMO progress and completion reports</p>	<p>Assumption MUB complies with ADB's safeguards policies.</p> <p>Risk Rising world prices of energy and construction materials significantly increase the program's investment and operation and maintenance costs.</p>
<p>2. Economic and public services in subcenters are improved.</p>	<p>By 2016: One kindergarten facility each in Bayankhoshuu and Selbe with 1,800 m² of floor area of class rooms, administration and services and 500 playground (baseline: 0 in 2012)</p> <p>One business incubator and vocational training center each in Bayankhoshuu and Selbe with 1,800 m² floor area and</p>	<p>PMO progress and completion reports and District records</p>	<p>Assumption Investment in economic and social facilities leads to increased employment.</p> <p>Risks Inappropriate vocational training courses provided</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	500 m ² of open/green area (baseline: 0 in 2012)		Lack of demand for commercial facilities built
3. Service providers become more efficient.	<p>By 2017: Central operational system upgraded</p> <p>Equipment and procedures for 4 water pumping stations upgraded</p> <p>10,000 diffusers installed and 5 selectors put in place in the aeration tanks</p> <p>Program for reduction of nonrevenue water implemented in the selected pilot areas</p>	<p>USUG operating and financial reports</p> <p>PMO progress and completion reports</p>	<p>Assumptions Service providers are supportive of proposed policy and institutional reforms.</p> <p>Customers continue to pay water and sewerage charges.</p> <p>Risk The MUB fails to provide adequate subsidies to augment shortfalls of revenues.</p>
<p>4. Institutional strengthening and capacity building</p> <p>4.1 Subcenter development and community engagement</p>	<p>By 2015: CDCs and SDCs fully functioning in the two targeted subcenters, with at least 40% women participating actively</p> <p>Subcenters plan and redevelopment process are prepared and endorsed by all the stakeholders, through community consultation including at least 50% of women participants</p>	<p>PMO progress and completion reports</p> <p>CDCs' reports</p>	<p>Assumptions Urban planning and subcenter development methodologies and tools and supporting legislation are in place at the start of program implementation.</p> <p>Subcenter redevelopment leads to more efficient land use and management.</p> <p>Risks Program implementation is slowed down by a lack of community and private sector participation.</p> <p>Women are not effectively mainstreamed into the program.</p>
4.2 Operations and management of service providers improved	<p>By 2017: USUG is autonomous in terms of financial and asset management (baseline: USUG not autonomous)</p> <p>Utility tariffs linked to direct cost recovery of O&M, including asset depreciation (baseline: tariffs barely cover O&M)</p> <p>Revised performance contract between the MUB and service providers in place</p>	<p>USUG operating and financial reports</p> <p>USUG business plans</p>	<p>Assumptions Policy reforms receive full government support.</p> <p>Appropriate user charges/ tariffs are not implemented by the MUB, and/or not supported by the target consumers.</p> <p>Risks Inadequate program resources are allotted to support the policy and institutional reforms.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks														
			Lack of incentives to attract private sector participation														
4.3 Strengthened program implementation capacity	<p>By 2014: PMO is fully functioning with fully-trained staff, at least 30% of whom are women (baseline: 0 in 2012)</p> <p>Sex disaggregated program performance and monitoring system operational (baseline: 0 in 2012)</p> <p>Project1 detailed designed are completed (baseline: 0 in 2012)</p>	<p>MUB reports</p> <p>PMO progress and completion reports</p>	<p>Assumption Consultants and PMO staff work effectively as one team.</p> <p>Risk Failure to appoint and retain well qualified and experienced consultants</p>														
Activities with Milestones for Tranche 1 (after Loan Effectiveness)			Inputs														
<p>1. Roads and urban services expanded</p> <p>1.1 Detailed design of water/sewerage improvements completed by April 2014</p> <p>1.2 Detailed design of heating improvements completed by April 2014</p> <p>1.3 Detailed design of roads/other infrastructure completed by April 2014</p> <p>1.4 Urban infrastructure constructed, commissioned and made operational in phases between April 2014 and 2016</p> <p>2. Economic and public services in subcenters improved</p> <p>2.1 Detailed design of kindergarten and business incubators/vocational training centers completed by mid-2014</p> <p>2.2 Facilities constructed, commissioned, and made operational in phases between mid-2014 and 2017</p> <p>3. More efficient service providers</p> <p>3.1 Support to improvements in operational efficiency</p> <p>3.2 Construction of upgraded facilities and measurement systems completed</p> <p>4. Institutional strengthening and capacity building</p> <p>4.1 PMO fully staffed by mid-December 2013</p> <p>4.2 Hiring of capacity development consultants by January 2014</p> <p>4.3 Subcenter planning and development guidelines/regulations in place by December 2014</p> <p>4.4 CDCs and SDCs are established in targeted areas (mid-2014)</p> <p>4.5 Support to financial strengthening and improved regulatory and institutional framework by mid-2015</p> <p>Tranche 2 is prepared and approved by 2016</p>			<p>Amount (\$ million)</p> <p>Project 1</p> <table> <tr><td>ADB</td><td></td></tr> <tr><td>ADF Loan</td><td>22.50</td></tr> <tr><td>OCR Loan</td><td>27.50</td></tr> <tr><td>UEIF-UFPF^b</td><td>3.70</td></tr> <tr><td>MUB</td><td>22.44</td></tr> <tr><td>Cofinancing</td><td>28.38</td></tr> <tr><td>Total</td><td>104.52</td></tr> </table>	ADB		ADF Loan	22.50	OCR Loan	27.50	UEIF-UFPF ^b	3.70	MUB	22.44	Cofinancing	28.38	Total	104.52
ADB																	
ADF Loan	22.50																
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ADB = Asian Development Bank, ADF = Asian Development Fund, CDC = community development council, ha = hectare, km = kilometer, m² = square meter, m³ = cubic meter, MFF = multitranches financing facility, MUB = Municipality of Ulaanbaatar, OCR = ordinary capital resources, O&M = operation and maintenance, PMO = program management office, SDC = small- and medium-enterprise development council, USUG = Ulaanbaatar Water Supply and Sewerage Authority.

^a Traditional tents for housing.

^b Urban Environmental Infrastructure Fund under the Urban Financing Partnership Facility.

ANNEX 2

PROJECT DESCRIPTION

1. The proposed Ulaanbaatar Urban Services and *Ger* Areas Development Investment Program will support the Ulaanbaatar City master plan in upgrading priority service and economic hubs (subcenters) in *ger* areas. The investment program will be implemented over 9 years and will comprise three tranches. Combining spatial and sector approaches, it proposes an integrated solution to respond to the growing demand for basic urban services and develop subcenters as catalyst for growth in the *ger* areas. The program involves financing core urban infrastructure and basic services in priority road sections, investments in socioeconomic facilities based on communities' needs, and the improvement of service providers' operation management. The program will also support (i) community participation, awareness, and empowerment; (ii) urban planning and subcenter development; (iii) extensive on-the-job training in project management and implementation; and (iv) sector reform initiatives necessary to support the program road map and policy framework.²

A. Impact and Outcome

2. The **impact** of the program is improved living conditions in Ulaanbaatar and the **outcome** is a network of livable, competitive, and inclusive subcenters in Ulaanbaatar's *ger* areas.

B. Outputs

3. The program has four **outputs**: (i) roads and urban services are expanded within priority subcenters, and connectivity between them is improved; (ii) economic and public services in targeted areas are improved; (iii) service providers become more efficient; and (iv) institutions and capacity for urban development, program management, and service delivery are strengthened. The program will be implemented over three tranches.

4. **Project 1.** The first tranche of the multitranchise financing facility (MFF) will support the city master plan in developing the Selbe and Bayankhoshuu subcenters.³ The two priority areas are planned to become the main centers in the northern mid-*ger* area, aiming to deliver urban and socioeconomic services to a current combined population of over 200,000 people. The main components to be financed are:

- (i) **Sewerage network** extension from the nearest terminals of the existing city sewerage system: (a) 3.5 kilometers (km) collector main for Bayankhoshuu and 2.6 km for Selbe, (b) sewerage pumping station along with 2 km of sewer pipe extension and 0.9 km of sewer pressure pipe in Selbe, and (c) connection to the public facilities located along the road corridor and within each subcenter.
- (ii) **Road and urban services**: (a) 15 km of combined priority roads; (b) 18.6 km of water supply, 20 km of wastewater, and 21 km of district heating network pipes; (c) sidewalks, drainage, flood protection, waste collection facilities, public space, lighting, and urban furniture; and (d) five heating facilities using most suitable state-of-the-art environmentally friendly technologies.

² ADB provided project preparatory technical assistance financed by the Japan Fund for Poverty Reduction. ADB. 2010. *Technical Assistance to Mongolia for Preparing the Ulaanbaatar Urban Services and Ger Areas Development Investment Program*. Manila (TA 7970-MON).

³ Bayankhoshuu subcenter: Songino Khaikan district–Khoroo 9; Selbe subcenter: Sukhbaatar district–Khoroo 14 and 17.

- (iii) **Social and economic facilities.** Two kindergartens, 8–9 ha of green areas and small squares; and two business incubator centers associated with two vocational training centers.
- (iv) **Multi-interventions in the Ulaanbaatar Water Supply and Sewerage Authority (USUG)** to improve the central wastewater treatment plant and drinking water supply network, improve local control and central operational control systems (SCADA), improve water pumping system, implement a domestic and industrial water metering program, and install remote controlled flow-meters for nonrevenue water management.
- (v) **Institutional strengthening and capacity development** for (a) detailed design and construction supervision for the water supply and wastewater collection systems, municipal infrastructure, and heating services; (b) community participation, awareness, and empowerment, and SME development; (c) capacity building and institutional strengthening for urban planning and subcenter development; (d) PMO to strengthen program implementation capacities; and (e) service provider institutional and regulatory reforms.

ANNEX 3

COSTS AND FINANCING

1. The total cost of the investment program is estimated at about \$320.0 million equivalent, including taxes and duties. Project 1, inclusive of physical and price contingencies, interest, taxes and duties, and other charges is estimated to cost \$104.52 million. The investment plan for the program is summarized in below.

Table 1: Summary Investment Plan
(\$ million)

Item	Investment Program	Project 1
A. Base Cost^a		
1. Expanded roads and urban services		
1.1 Roads improvement	93.21	24.59
1.2 Water supply improvement	35.23	12.39
1.3 Sewerage system improvement	42.91	13.31
1.4 Heating services expansion	74.67	30.14
Subtotal (1)	246.02	80.43
2. More efficient service providers	11.48	3.70
3. Increased economic and public services	15.36	5.00
4. Institutional strengthening and capacity development		
4.1 Program management implementation support	6.13	2.00
4.2 Strengthening service providers	1.53	.50
4.3 Subcenter development and community engagement	4.59	1.50
Subtotal (4)	12.25	4.00
Subtotal (A)	285.11	93.13
B. Contingencies^b	22.63	7.40
C. Financing Charges During Implementation^c	12.25	4.00
Total (A+B+C)	320.00	104.52

Note: Numbers may not sum precisely because of rounding.

^a In mid-2013 prices. Includes value-added tax and import duties estimated at \$16.7 million for the investment program and \$6.18 million for project 1. The government will finance these taxes and duties through tax exemptions.

^b Physical contingencies computed at 5% of civil works and consulting services. Price contingencies calculated at rates ranging from 3%–8.0% for local currency costs and 0.5%–2.2% for foreign exchange costs; includes provision for exchange rate fluctuations under a purchasing power parity exchange rate.

^c Includes interest and commitment charges. Financing charges during implementation on the Asian Development Bank (ADB) loans has been computed (i) at 2.0% per annum of the first tranche's loan from ADB's Special Funds resources (Asian Development Fund); and (ii) at the 5-year USD fixed swap rate plus an effective contractual spread of 0.4%; and a commitment charge of 0.15% on the undisbursed portion of the first tranche's loan from ADB's ordinary capital resources. Financing charges during implementation for the European Investment Bank loan were also calculated based on the 5-year USD fixed swap rate.

Source: Asian Development Bank estimates.

2. The government has requested a MFF in an amount up to \$163.70 million equivalent or 51.2% of the investment program from a blend of ADB's Special Funds resources, ordinary capital resources (OCR), and cofinancing to be administered by ADB.⁴ The MFF will consist of three tranches to be implemented a period of up to 9 years, subject to the government's

⁴ Constructive dialogue with ADB Trust Funds' managers has indicated their interest to consider cofinancing in future tranches.

submission of related periodic financing requests, execution of the related loan and project agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the framework financing agreement. The government will make the proceeds of each tranche available to the MUB for purposes of financing projects under the MFF. It is expected that the MUB will finance the remaining cost of about \$96 million equivalent, or about 30% of the total cost, including taxes and duties (for project 1 only), resettlement, and other miscellaneous costs.

Table 2: Summary Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Investment program		
Asian Development Bank MFF	163.70	51.20
Municipality of Ulaanbaatar	96.00	30.00
Cofinancing ^a	60.30	18.80
Total	320.00	100.00
Project 1		
Asian Development Bank		
ADF Loan	22.50	21.50
OCR Loan	27.50	26.30
UEIF-UFPF ^b	3.70	3.50
Subtotal ADB	53.70	51.30
Municipality of Ulaanbaatar^c	22.44	21.50
Cofinancing^a	28.38	27.25
Total	104.52	100.00

ADF = Asian Development Fund, MFF = multitranches financing facility, OCR = ordinary capital resources, UEIF = Urban Environmental Infrastructure Fund.

Note: Numbers may not sum precisely because of rounding.

^a EIB has expressed interest to provide parallel collaborative cofinancing (not administered by Asian Development Bank) for water supply and sanitation up to \$60.30 million equivalent for the MFF including \$28.38 million equivalent for project 1. If EIB cofinancing does not materialize as planned, the GOM will undertake necessary measures to substitute the shortfall with suitable funding.

^b Urban Environmental Infrastructure Fund under the Urban Financing Partnership Facility.

^c This includes local taxes and duties of Project 1 only, which will be borne by GOM in form of exemption.

Source: Asian Development Bank estimates.

3. The allocation of ADF and OCR financing within the MFF is tentative. It is understood that provision of any additional ADF financing will be accompanied by a corresponding reduction in the available OCR financing, and vice versa, so that in any event the total financing provided by ADB will not exceed the MFF amount. Any additional ADF allocation will be subject to (i) the general availability of ADF resources from time to time, (ii) Mongolia's access to such resources pursuant to ADB's then applicable graduation policy and the requirements of the ADF donors, and (iii) the availability of such resources to Mongolia pursuant to ADB's then applicable policy on performance-based allocation of ADF resources. In addition, development partners have indicated a preliminary interest in complementing ADB's financing after the Board's approval of the proposed MFF through cofinancing. The amounts of cofinancing to be provided by such development partners will be deducted from the total MFF amount. Such cofinancing may be provided as loans or grants, and may take the form of parallel or joint cofinancing. ADB's administration of such cofinancing from time to time will be reported to the Board for information annually. If additional financing is needed because the funding requirements of the MUB exceed the original MFF allocation, a request for additional financing will be submitted to and will require ADB Board approval.

4. For project 1, the ADF loan will finance (i) civil works including equipment and detailed engineering design and supervision, (ii) program management support, (iii) consulting services,

(iv) a proportionate share of the contingencies, (v) financing charges during implementation, and (vi) associated bank charges, transportation, and insurance costs. The OCR loan will finance (i) civil works including equipment, (ii) a corresponding share of the contingencies, and (iii) financing charges during implementation, and (iv) associated bank charges, transportation and insurance costs.⁵ The ADB grant will finance civil works and all associated costs including bank charges, transportation and insurance costs to be incurred by the Ulaanbaatar Water Supply and Sewerage Authority (USUG) under the program. The EIB loan will finance civil works and equipment specific to water supply and sewerage improvements including contingencies and financing charges during implementation. The counterpart funds from the MUB will finance (i) land acquisition, (ii) civil works, (iii) resettlement support, (iv) taxes and duties, and (v) a share of the financing charges during implementation.

5. For project 1, ADB will finance \$53.70 million or 51.3% of the total investment requirement. About 21.5% or \$22.5 million equivalent will be financed from ADF; \$27.5 million or 26.3% from OCR; and \$3.7 million as a grant from the Urban Environmental Infrastructure Fund⁶ under the Urban Financing Partnership Facility. The proposed ADF loan for \$22.50 million equivalent will have a 25-year term, including a grace period of 5 years, a 2.0% annual interest rate, and repayments in equal amortization. The proposed OCR loan for \$27.50 million will have a 20-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's London interbank offered rate-based lending facility, a commitment charge of 0.15% per year; and such other terms and conditions to be set forth in the relevant loan agreements. The EIB is currently processing parallel cofinancing up to €50 million for its management and board approval by December 2013. The proposed EIB loan will have a 20-year term including a grace period of 5 years and an interest rate in accordance with its LIBOR-based lending facility. Portion of such cofinancing will be limited to water supply and sanitation included in project 1.

6. The Government of Mongolia is the borrower of the loan and will relend the proceeds of ADB's loan to the MUB on terms and conditions acceptable to ADB. The grant proceeds will be passed through the MUB without financing charges.

⁵ The ADB loans and grant will also finance bank charges, transportation, and insurance costs as they do not represent an excessive share of the project investment and they apply only to ADB-financed expenditures and will be material and relevant to facilitating project implementation.

⁶ Contributor: the Government of Sweden. Administered by ADB.

Table 3: Detailed Cost Estimates by Expenditure Category (in \$ million)

Expenditure Item	(MNT Million)					(US\$ Million)					Total Cost	% of Total Base Cost
	Foreign Currency	Local Currency			Total Cost	Foreign	Local Currency			Total Cost		
		Excluding Taxes	Taxes	Total			Excluding Taxes	Taxes	Total			
A. Investment Costs ^a												
1. Land	0.00	1,448.40	0.00	1,448.40	1,448.40	0.00	1.02	0.00	1.02	1.02	1.1	
2. Civil works ^b	72,150.24	36,204.08	8,065.20	44,283.88	102,646.60	50.81	25.48	5.68	31.17	82.00	88.1	
2.1 Water supply and sewerage	23,996.82	10,805.67	2,754.66	13,574.53	37,557.15	16.90	7.61	1.94	9.56	26.46	28.4	
2.2 Socioeconomic facilities	4,302.39	1,945.30	496.98	2,442.28	6,744.67	3.03	1.37	.35	1.72	4.75	5.1	
2.3 Heat distribution networks	8,803.57	3,975.80	1,008.15	4,983.95	13,787.52	6.20	2.80	.71	3.51	9.71	10.4	
2.4 Civil works for USUG	5253.74	0.00	0.00	0.00	5,253.74	3.70	0.00	0.00	0.00	3.70	4.0	
2.5 Landscaping and river embankments	5,637.13	3,677.62	724.16	4,401.79	10,038.91	3.97	2.59	.51	3.10	7.07	7.6	
2.6 Other civil works	24,156.59	15,799.69	3,081.25	18,881.33	43,052.13	17.01	11.11	2.17	13.28	30.29	32.6	
2. Detailed engineering design & supervision	6,176.70	0.00	0.00	0.00	6,176.70	4.35	0.00	0.00	0.00	4.35	4.7	
3. Resettlement support	0.00	2,504.88	0.00	2,504.88	2,504.88	0.00	1.76	0.00	1.76	1.76	1.9	
4. Program management support	2,840.00	0.00	0.00	0.00	2,840.00	2.00	0.00	0.00	0.00	2.00	2.1	
5. Consulting services	2,840.00	0.00	0.00	0.00	2,840.00	2.00	0.00	0.00	0.00	2.00	2.1	
Subtotal (A)	84,006.93	40,157.37	8,079.80	48,237.2	132,244.09	59.16	28.28	5.68	33.97	93.13	100.0	
Total Base Cost	84,006.93	40,157.37	8,079.80	48,237.2	132,244.09	59.16	28.28	5.68	33.97	93.13	100.0	
B. Contingencies ^c												
Physical contingencies	4,247.59	1,915.02	426.00	2,341.02	6,588.61	2.99	1.35	0.30	1.65	4.64	5.0	
Price contingencies	10,698.68	4,873.79	1,157.33	6,031.12	16,729.79	1.76	0.80	0.19	0.99	2.75	3.0	
Subtotal (B)	14,946.27	6,788.81	1,583.33	8,372.14	23,318.41	4.75	2.15	0.49	2.64	7.39	7.0	
C. Interest and Commitment Charges ^d												
Interest during implementation	4,610.60	1,481.06	0.00	1,481.06	6,091.66	3.02	0.97	0.00	0.97	3.99	4.0	
Commitment charges	20.54	0.00	0.00	0.00	20.54	0.01	0.00	0.00	0.00	0.01	0.0	
Subtotal (C)	4,631.14	1,481.06	0.00	1,481.06	6,112.20	3.003	0.97	0.00	0.97	4.00	4.0	
Total Project Cost (A+B+C)	103,584.34	48,427.24	9,663.13	58,090.36	161,674.70	66.94	31.40	6.18	37.58	104.52	112.0	

MNT = Mongolian togrog, USUG = Ulaanbaatar Water Supply and Sewerage Authority.

^a In mid-2013 prices. Includes value-added tax and import duties. The taxes and duties are estimated at \$6.18 million for project 1. The government will finance these taxes and duties through tax exemptions.

^b Expenditure item includes equipment.

^c Physical contingencies computed at 5% of civil works and consulting services. Price contingencies computed at 3%-8% for local currency costs and 0.5-2.2% for foreign exchange costs; includes provision for exchange rate fluctuation under a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Interest during construction on the Asian Development Bank (ADB) loans has been computed (i) at 2.0% per annum of the first tranche's loan from ADB's Special Funds resources (Asian Development Fund); and (ii) at the 5-year (corresponding to implementation period) USD fixed swap rate plus an effective contractual spread of 0.4%; and a commitment charge of 0.15% on the undisbursed portion of the first tranche's loan from ADB's ordinary capital resources. Financing charges during implementation for the European Investment Bank loan were also calculated based on the 5-year USD fixed swap rate.

Source: Asian Development Bank.

Table 4: Detailed Cost Estimates by Financier (in \$ million)

Item	ADB OCR Loan		ADB ADF Loan		UEIF GRANT		European Investment Bank		Municipality of Ulaanbaatar		Total Cost
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Total	% of Cost Category	
A. Investment Costs^a											
1. Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	100.00	1.02
2. Civil works ^b											
a. Water supply and sewerage	0.00	0.00	0.00	0.00	0.00	0.00	25.00	100.00	0.00	0.00	25.00
b. Civil works for USUG	0.00	0.00	0.00	0.00	3.70	100.00	0.00	0.00	0.00	0.00	3.70
c. Socioeconomic facilities	0.00	0.00	4.40	100.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
d. Heat distribution networks	4.95	55.00	0.00	0.00	0.00	0.00	0.00	0.00	4.05	45.00	9.00
e. Landscaping and river embankments	0.00	0.00	7.07	100.00	0.00	0.00	0.00	0.00	0.00	0.00	7.07
f. Other civil works	18.55	69.60	0.00	0.00	0.00	0.00	0.00	0.00	8.10	30.40	26.65
Subtotal Civil works	23.50	30.99	11.47	15.13	3.70	4.88	25.00	32.97	12.15	16.02	75.82
3. Detailed engineering design and supervision	0.00	0.00	4.35	100.00	0.00	0.00	0.00	0.00	0.00	0.00	4.35
4. Resettlement support	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	100.00	1.76
5. Program management support	0.00	0.00	2.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
6. Consulting services	0.00	0.00	2.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
7. Duties and taxes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.18	100.00	6.18
Subtotal (A)	23.50	25.23	19.82	21.28	3.70	43.97	25.00	26.80	21.11	22.67	93.13
B. Contingencies^c	1.76	23.78	1.99	26.89	0.00	0.00	2.34	31.70	1.30	17.57	7.40
C. Interest and Commitment Charges^d	2.24	56.50	0.69	17.25	0.00	0.00	1.04	26.00	0.00	0.00	4.00
Total Project Cost (A+B+C)	27.50	26.30	22.50	21.50	3.70	3.50	28.38	27.25	22.44	21.50	104.52

ADB = Asian Development Bank, ADF = Asian Development Fund, OCR = ordinary capital resources, UEIF = Urban Environmental Infrastructure Fund, USUG = Ulaanbaatar Water Supply and Sewerage Authority.

Note: Numbers may not sum precisely because of rounding.

^a In mid-2013 prices. Includes value-added tax and import duties. The taxes and duties are estimated at \$6.18 million for project 1. The government will finance these taxes and duties through tax exemptions.

^b Expenditure item Includes equipment.

^c Physical contingencies computed at 5% of civil works and consulting services. Price contingencies computed at 8%-3% for local currency costs and 2.2%-0.5% foreign exchange costs.

includes provision for exchange rate fluctuation under a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Financing charges during implementation on the Asian Development Bank (ADB) loans has been computed (i) at 2.0% per annum of the first tranche's loan from ADB's Special Funds resources (Asian Development Fund); and (ii) at the 5-year (corresponding to implementation period) USD fixed swap rate plus an effective contractual spread of 0.4%; and a commitment charge of 0.15% on the undisbursed portion of the first tranche's loan from ADB's ordinary capital resources. Financing charges during implementation for the European Investment Bank loan were also calculated based on the 5-year dollar fixed swap rate.

Source: Asian Development Bank.

Table 5: Detailed Cost Estimates by Outputs/Components (in \$ million)

Item	Expanded Roads and Urban Services									MESP	% of Cost Category	IEPS	% of Cost Category	Institutional Strengthening and Capacity Building						
	Total	RI	% of Cost Category		% of Cost Category		% of Cost Category		HSE					% of Cost Category	PMIS	% of Cost Category		SDCE	% of Cost Category	
			WSSI	SSSI	SSSI	HSE	SSP	SDCE												
A. Investment Costs^a																				
1. Land	1.02	0.00	0.0	0.00	0.00	0.03	3.1	0.99	97.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Civil works ^b	81.99	21.61	26.4	11.76	14.3	13.05	15.9	26.89	32.8	3.70	4.3	5.0	5.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Detailed engineering design and supervision	4.35	1.22	28.0	0.63	14.5	0.22	5.1	2.25	51.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Resettlement support	1.76	1.76	100.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5. Program management support	2.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	100.00	0.00	0.00	0.00	0.00	0.00
6. Consulting services	2.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	25.00	1.50	75.00	0.00
Total Investment Costs	93.13	24.57	26.4	12.39	13.3	13.31	14.3	30.14	32.4	3.70	4.3	5.0	5.4	2.00	2.1	0.50	0.5	1.50	1.6	
B. Contingencies^c																				
Physical contingencies	4.64	1.27	27.4	0.85	18.2	0.66	14.3	1.41	30.4	0.00	0.00	0.25	5.4	0.10	2.2	0.03	0.5	0.08	1.6	
Price contingencies	2.75	0.81	29.6	0.39	14.3	0.43	15.8	0.95	34.7	0.00	0.00	0.16	5.7	0.00	0.0	0.00	0	0.00	0.0	
Subtotal Contingencies	7.39	2.08	28.2	1.24	16.8	1.10	14.9	2.36	32.0	0.00	0.00	0.41	5.5	0.10	1.4	0.03	0.3	0.08	1.0	
D. Interest and Commitment Charges^d	4.00																			
Total Project Cost	104.52	26.68	26.5	13.63	13.6	14.40	14.3	32.50	33.2	3.70	3.7	5.41	5.4	2.10	2.1	0.53	0.5	1.58	1.6	

HSE = heating service expansion, IEPS = increased economic and public services, MESP = more efficient service providers, PMIS = program management and implementation support, RI = roads improvement, SDCE = subcenter development and community engagement, SSI = sewerage system improvement, SSP = strengthening service providers, WSSI = water supply system improvement.

Note: Numbers may not sum precisely because of rounding.

^a In mid-2013 prices. Includes value-added tax and import duties. The taxes and duties are estimated at \$6.18 million for project 1. The government will finance these taxes and duties through tax exemptions.

^b Expenditure item includes equipment.

^c Physical contingencies computed at 5% of civil works and consulting services. Price contingencies computed at 3%-8% for local currency costs and 0.5-2.2% for foreign exchange costs; includes provision for exchange rate fluctuation under a purchasing power parity exchange rate.

^d Includes interest and commitment charges. Financing charges during implementation on the Asian Development Bank (ADB) loans has been computed (i) at 2.0% per annum of the first tranche's loan from ADB's Special Funds resources (Asian Development Fund); and (ii) at the 5-year (corresponding to implementation period) USD fixed swap rate plus an effective contractual spread of 0.4%; and a commitment charge of 0.15% on the undisbursed portion of the first tranche's loan from ADB's ordinary capital resources. Financing charges during implementation for the European Investment Bank (EIB) loan were also calculated based on the 5-year dollar fixed swap rate.

Source: Asian Development Bank.

ANNEX 4

PROCUREMENT PLAN AND TENTATIVE CONTRACT PACKAGES

A. Advance Contracting and Retroactive Financing

1. The Asian Development Bank (ADB) has approved retroactive financing for all consulting services except those pertaining to strengthening service providers, and advance contracting for strengthening service providers, heat distribution networks, and water and wastewater operation improvement packages. All advance contracting to be financed out of the proceeds of the loan shall be subject to and governed by ADB's Procurement Guidelines (2013, as amended from time to time)⁷ and Guidelines on the Use of Consultants⁸ (2013, as amended from time to time). The issuance of invitations to bid under advance contracting will be subject to ADB approval. The borrower, and the executing, and implementing agency have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

2. Withdrawals from the Loan Account may be made for reimbursement of eligible expenditures incurred under the Project before the Effective Date, but not earlier than 12 months before the date of the Loans Agreements in connection with civil works and consulting services, subject to a maximum amount equivalent to 20% of the respective loans and grant amounts.

B. Procurement of Goods, Works, and Consulting Services

3. Procurement of goods and services financed under the investment program will be in accordance with ADB's Procurement Guidelines. All procurement contracts will contain anticorruption provisions as specified by ADB. Procurement will generally be carried out by the program management office (PMO) with the support and guidance of detailed design consultants and project implementation support consultants.

4. Civil works above \$1,000,000 or goods above \$500,000 will be procured through international competitive bidding (ICB), civil works below \$1,000,000 through national competitive bidding (NCB), and civil works below \$3,000,000 for road works only through NCB. Equipment and selected material packages worth \$100,000 to \$500,000 will be procured using NCB, while packages under \$100,000 will be procured through shopping. Force accounts will be used for minor works that cannot be defined in advance. Before commencement of NCB procurement, ADB and the government may review the government's procurement procedures to ensure consistency with ADB's requirements. Any necessary modifications or clarifications will be documented in the procurement plan.

5. The procedures to be followed for national competitive bidding shall be those set forth in the Public Procurement Law of Mongolia of 1 December 2005, effective 1 February 2006, as amended on 6 February 2007, 16 July 2009, 10 June 2010, 9 June 2011 and December 2011 (referred to as PPLM), with the clarifications and modifications required for compliance with the provisions of ADB's Procurement Guide.

⁷ Available at: <http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf>.

⁸ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>.

6. The implementation of project 1 covering the Bayankhoshuu and Selbe subcenters will include (i) 13 contracts for civil works procured under ICB method, and (iii) six contracts for consultancy services for the development of design and tender documents and construction supervision and for institutional support.

7. All consultants will be recruited according to ADB's Guidelines on the Use of Consultants.

C. Procurement Plan

Basic Data

Project Name: Ulaanbaatar Urban Services and Ger Areas Development Investment Program	Executing Agency: Municipality of Ulaanbaatar
Country: Mongolia	Loan Number : XXXX
Loan Amount: \$50 million	Grant Number: XXXX
Grant Amount: \$3.7 million	Date of this Procurement Plan: 1 November 2013
Date of First procurement Plan: 15 May 2013	

1. Process Thresholds, Review and 18-Month Procurement Plan

(a) Project Procurement Thresholds

8. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods and works

Procurement of Goods and Works

Method	Threshold
International Competitive Bidding for Works	Equal or more than US\$1,000,000
International Competitive Bidding for Goods	Equal or more than US\$500,000
National Competitive Bidding for Works	Equal or more than US\$ 100,000 and below US\$ 1,000,000 (or below \$3,000,000 for road works only)
National Competitive Bidding for Goods	Equal or more than US\$ 100,000 and below US\$ 500,000
Shopping for Works	Below US\$ 100,000
Shopping for Goods	Below US\$ 100,000
Direct Contracting	Only in special cases
Any other methods of procurement approved for use (see Section III of the Procurement Guidelines)	Not applicable

(b) ADB Prior or Post Review

9. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
International Competitive Bidding for Works and Goods	Prior	
International Competitive Bidding Goods	Prior	
National Competitive Bidding Works	Prior	Prior review only for the first package
National Competitive Bidding Goods	Prior	Prior review only for the first package
Shopping for Works	Post	

Procurement Method	Prior or Post	Comments
Shopping for Goods	Post	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection (QCBS)	Prior	Information to be submitted: (i) draft request for proposals; (ii) shortlist of consultants; and (iii) evaluation and ranking report
Quality-based Selection (QBS)	Prior	
Other selection methods: Consultants Qualifications (CQS), Least-Cost Selection (LCS), Fixed Budget (FBS), and Single Source (SSS)	Prior	
Recruitment of Individual Consultants		
Individual Consultants	Prior	

D. Goods and Works Contracts Estimated to Cost more than \$1 Million

10. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract value (in US\$)	Procurement Method	Prequalification of Bidders (Y/N)	Advertisement date (Quarter/Year)	Comments
Bayankhoshuu Subcenter Subproject					
Construction of (i) 4.96km road 5.5m CW, 1 m sidewalk and underground power line; (ii) 1.19 km road 5.5 m CW; (iii) treatment of 1800 m ² remaining space roads/plots; (iv) power line in Bayankhoshuu subcenter	6,067,000	ICB	N	November-14	Civil Works Contract (Itemized BOQ).
Construction of (i) 4.32 ha landscaping; (ii) 868 m of drainage culvert - 6m3/ml earth filling + 6m3/ml concrete + asphalt road in Bayankhoshuu subcenter	4,336,000	ICB	N	November-14	Civil Works Contract (Itemized BOQ).
Construction of a kindergarten + business incubator/vocational training center 2,500 m ² in Bayankhoshuu subcenter.	2,200,000	ICB	N	January-15	Civil Works Contract (Itemized BOQ).
Construction of (i) 14.4 km of HDPE water supply and sewerage network HDPE pipelines, manholes, valves, water and flow meters, water and sewerage connections and related appurtenances; (ii) 3.45 km of Dia 300 mm HDPE sewerage collector main; and (iii) one 500 m ³ ground reservoir in Bayankhoshuu.	9,854,900	ICB	N	April-14	Civil Works Contract (Itemized BOQ). For EIB Advance contracting
Construction of 8.7 km of double DN80 - DN 200 heat distribution network mains, including supply and installation of insulated GRE and steel pipelines, manholes, valves, water and flow meters, heating service connections and related appurtenances in Bayankhoshuu.	3,891,700	ICB	N	April-14	Civil Works Contract (Itemized BOQ). Advance contracting
Construction of 2 heating facilities to support a district heating system in Bayankhoshuu, including supply of all equipment and materials, automatic controls, emission control equipment, and connections to local infrastructure.	4,960,000	ICB	N	December-14	Civil Works Contract (Itemized BOQ).
Selbe Subcenter Subproject					
Construction of (i) 5.35 km road, 5.5 m CW and underground power line; (ii) 3.42 km road, 5.5 m CW; (iii) treatment of 1800 m ² remaining space roads/plots; (iv) underground power line in Selbe subcenter	8,490,000	ICB	N	November-14	Civil Works Contract (Itemized BOQ).
Construction of (i) 2 bridges 1000 m ² and improvement of existing river embankment 2 km; (ii) landscaping 3.12 ha in Selbe subcenter	2,734,000	ICB	N	November-14	Civil Works Contract (Itemized BOQ).
Construction of a kindergarten + business incubator/vocational training center 2,500 m ² in Selbe subcenter.	2,200,000	ICB	N	January-15	Civil Works Contract (Itemized BOQ).
Construction of (i) 23.7 km of HDPE water supply and sewerage network; (ii) one 2 x 10 kw pumping station, 1.18 km of Dia 250 mm HPDE gravity	14,674,000	ICB	N	April-14	Civil Works Contract (Itemized BOQ).

General Description	Contract value (in US\$)	Procurement Method	Prequalification of Bidders (Y/N)	Advertisement date (Quarter/Year)	Comments
sewerage pipe and 0.91 km of Dia 200 mm pressure sewerage pipe; (iii) 2.43 km Dia 400 mm and 0.12 km Dia 300 mm HDPE sewerage collector main; and (iv) one 500 m ³ ground reservoir, including supply of piping, valves, electrical equipment, and remote control devices in Selbe					For EIB Advance contracting
Construction of 12.7 km of double DN80 - DN 200 heat distribution network mains, including supply and installation of insulated GRE and steel pipelines, manholes, valves, water and flow meters, heating service connections and related appurtenances in Selbe.	5,106,500	ICB	N	April-14	Civil Works Contract (Itemized BOQ). Advance contracting
Construction of 3 heating facilities to support a district heating system in Selbe, including supply of all equipment and materials, automatic controls, emission control equipment and connections to local infrastructure.	7,440,000	ICB	N	December-14	Civil Works Contract (Itemized BOQ).
Water and Wastewater Operation Improvement Subproject					
Procurement and installation of pump equipment, SCADA equipment to be connected to an operational control center for monitoring of nonrevenue water and wastewater treatment process; installation of diffusers in wastewater treatment plant and other civil works; capacity building program.	3,700,000	ICB	N	February-14	Plant Design, Supply and Install Advance contracting

BOQ = bill of quantities, carriage way = CW, ha = hectare, HDPE = high density polyethylene, ICB = international competitive bidding, km = kilometer, kw = kilowatt m = meter, m² = square meter, m³ = cubic meter, mm = millimeter, NCB = national competitive bidding, SCADA = supervisory control and data acquisition.

Source: Asian Development Bank estimates.

E. Consulting Services Contracts Estimated to Cost more than \$100,000

11. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract value (in US\$)	Recruitment Method	Advertisement date (Quarter/Yr)	International or National assignment	Comments
Engineering Services					
Design, tendering, and construction supervision for (i) urban and social infrastructure and access roads, (ii) water supply and wastewater systems and Turnkey procurement for Water and Wastewater Operation Improvement Project for the USUG, and (iii) district heating systems including: heating facilities, and heat distribution pipe networks for Bayankhoshuu and Selbe subcenters. Feasibility study preparation for project 2.	4,347,700	QCBS (90:10)	October 2013	International - National Consultant	Recruitment by PMO, retroactive financing
Program management support					
Strengthened program implementation capacity	1,250,000	QCBS (90:10)	October 2013	International/ National Consultants	Recruitment by PMO, retroactive financing
Program management office staff	750,000	10 IS	September 2013	National	Recruitment by the MUB, retroactive financing
Subcenter Development and Community Engagement Support					
Improved subcenter planning and development	800,000	QCBS (90:10)	October 2013	International - National Consultant	Recruitment by PMO, retroactive financing
Community engagement	700,000	QCBS (90:10)	October 2013	International - National Consultant	Recruitment by PMO, retroactive financing
Improved Operation and Maintenance of Service Providers					
Support to the service delivery organizations USUG, OSNAAG, <i>kantors</i> , and heat-only boiler operators to improve the management of the services	500,000	QCBS (90:10)	January 2014	International / National Consultants	Recruitment by PMO, advance contracting

CQS = consultant qualification selection, MUB = Municipality of Ulaanbaatar, PMO = program management office, QCBS = quality and cost-based selection, SME = small and medium enterprises, USUG = Ulaanbaatar Water Supply and Sewerage Authority.

1. Indicative List of Packages Required Under the Project

12. The following table provides an indicative list of all procurement (goods, works, and consulting services) over the life of the project. Contracts financed by the Borrower and others should also be indicated, with an appropriate notation in the comments section.

General Description	Estimated Value ^a (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Works (> 1 million\$)	71,954,101	12	ICB	N	Detailed in para. 4
Water and wastewater operation improvement	3,700,000	1	ICB	N	Detailed in para. 4
Engineering consulting services	4,347,700	1	QCBS		QCBS ratio: 90-10
Capacity building and institutional support	2,000,000	3	QCBS		QCBS ratio: 90-10
Program management office	2,000,000	1/10	QCBS/IS		QCBS ratio: 90-10

ICB = international competitive bidding, QCBS = quality and cost-based selection.

^a All contract values in this procurement plan exclude taxes and duties which will form part of MUB's counterpart contributions to the program and project investment plan through tax exemptions.

(a) National Competitive Bidding

i. General

13. The procedures to be followed for national competitive bidding shall be those set forth in the Public Procurement Law of Mongolia of 1 December 2005, effective 1 February 2006, as amended on 6 February 2007 and 16 July 2009 (hereinafter referred to as PPLM), with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of ADB's Procurement Guidelines.

- (i) The Standard Bidding Documents of Mongolia for Goods and Works that have been approved by ADB as acceptable for ADB-financed projects, together with ADB's clarifications and modifications thereto, shall be used.
- (ii) Government-owned enterprises in Mongolia shall be eligible for projects only if they can establish that they (a) are legally and financially autonomous, (b) operate under the principles of commercial law, and (c) are not dependent agencies of the executing and/or implementing agency.
- (iii) If a bid security is required, the bid security shall be in any of the following forms at the bidder's option: (a) a bank guarantee, or (b) a cashier's or certified check.
- (iv) Bidders must be nationals of member countries of ADB, and offered Goods and Works must be produced in and supplied from member countries of ADB. Bidders or potential bidders shall not be required to register with the taxation and other registration authorities of the government as a condition or requirement of bidding or award, leaving these requirements for after award and before signing of contract.

- (v) Foreign bidders from eligible countries of ADB shall be allowed to participate in bidding under the same conditions as local bidders and without any domestic preference.
- (vi) Prequalification shall not be required, except in the case of large or complex works, and with prior written concurrence of ADB.
- (vii) Qualification criteria shall be clearly specified in the bidding documents, and all criteria so specified shall be used to determine whether a bidder is qualified. The evaluation of a bidder's qualifications shall only take into account the bidder's capacity and resources to perform the contract, in particular its experience and past performance on similar contracts, capabilities with respect to personnel, equipment and construction or manufacturing facilities, and financial position. The evaluation of the bidder's qualifications shall be conducted separately from the technical and commercial evaluation of the bid.
- (viii) Evaluation and qualification criteria, and submission requirements, to be used in each bidding activity shall be clearly specified in the bidding documents. The evaluation of bids shall be done in strict adherence to the criteria specified in the bidding documents.
- (ix) The invitation to bid and the bidding documents shall be prepared in the Mongolian language. If another language will be used, then such other language shall be English.
- (x) Bidders shall be requested to extend the validity of their bids only under exceptional circumstances and the executing or implementing agency, as the case may be, shall communicate such request for extension to all bidders before the date of expiry of their bids. When the procurement is subject to ADB's prior review, the executing or implementing agency, as the case may be, shall obtain in a timely manner the prior written concurrence of ADB for the extension of the bid validity period.
- (xi) All bids shall not be rejected or new bids invited without ADB's prior written concurrence. No bid shall be rejected merely on the basis of a comparison with the estimated cost or budget ceiling without ADB's prior written concurrence (with specific reference to Article 30 of the PPLM).
- (xii) Negotiations with bidders shall not be undertaken before award of contract, except as provided in paragraph 2.63 of ADB's Procurement Guidelines (with specific reference to Article 30.2 of the PPLM). A bidder shall not be required, as a condition for award, to undertake obligations not specified in the bidding documents or otherwise to modify its bid as originally submitted.
- (xiii) Bidding documents and contracts under national competitive bidding procedures financed by ADB shall include a provision requiring suppliers, contractors, and consultants to permit ADB to inspect their accounts and records relating to the bid submission and the performance of the contract by the supplier, contractor and/or consultant, as the case may be, and to have them audited by auditors appointed by ADB, if so required by ADB.
- (xiv) At the same time that notification on award of contract is given to the successful bidder, the results of the bid evaluation shall be posted on a well-known freely accessible website (namely Mongolia's Ministry of Finance e-procurement website: www.e-procurement.mn) identifying the bid and lot numbers and providing information on the (a) name of each bidder that submitted a bid, (b) bid prices as read out at bid opening, (c) names of bidders whose bids were rejected and the reasons for their rejection, and (d) name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. The executing or implementing agency, as the case may be, shall

respond in writing to unsuccessful bidders who seek explanations on the grounds on which their bids were not selected.

(b) Advance Contracting and Retroactive Financing

14. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines and ADB's Guidelines on the Use of Consultants. The issuance of invitations to bid under advance contracting will be subject to ADB approval.⁹ The borrower and executing and implementing agencies have been advised that approval of advance contracting does not commit ADB to finance the project.

F. Consultant's Terms of Reference

15. Implementation of tranche 1 of the investment program will require 222.5 person-months of international and 749 person-months of national consultants with expertise in (i) urban infrastructure planning, design, tendering, construction, and operation and management; and (ii) institutional strengthening and capacity building in urban planning and management and service delivery. The consultants will provide the following services: (i) preparation of detailed engineering design, specifications, bill of quantities, and bidding documents, tendering and construction supervision for (a) urban and social infrastructure and access roads, (b) water supply and wastewater systems and the turnkey procurement for the water and wastewater operation improvement project for the Ulaanbaatar Water Supply and Sewerage Authority (USUG), and (c) district heating system including heating facilities, and heat distribution pipe networks; and (ii) institutional strengthening and capacity building covering (a) implementation of the capacity building and institutional support plan—support to improve urban planning and subcenter development, the implementation of institutional and regulatory reforms to improve the service providers, and to strengthen program implementation capacities; and (b) consulting services for community engagement and small and medium enterprise development. The outline consulting assignments are summarized below.

16. The detailed terms of reference for each are in Appendix 1.

17. **The preparation of detailed engineering design, tendering, and construction supervision** will require 448.5 person-months of consultants—99.5 person-months of international and 349 person-months of national consultants and advisers. The consultants will have expertise in engineering design and construction supervision of heating systems, water supply and wastewater systems, urban roads and drainage, and public facilities; urban design and landscaping; geodetic engineering; and AutoCAD operations. The consultants will (i) carry out all surveys, field verification, studies, collection of data, and analyses needed to prepare the detailed engineering designs and contract documents for the above components, and for the turnkey procurement for the water and wastewater operation improvement project; (ii) prepare detailed engineering designs, technical specifications, bill of quantities, cost estimates, and tender documents for the above components; (iii) provide support to the program management office (PMO) for the supervision of construction and compliance with project designs and specifications; (iv) develop the project risk management procedures; (v) update and/or finalize required safeguards documents, including the resettlement plan, initial environment examination (IEE) or environment impact assessment (EIA), and environment management plan (EMP) in compliance with ADB guidelines and the relevant frameworks agreed between ADB and the

⁹ Checklists for actions required to contract consultants by method are available in e-Handbook on Project Implementation at: <http://www.adb.org/documents/handbooks/project-implementation/>

Government of Mongolia; and (vi) act as resource persons for training and development activities.

18. **The implementation of the institutional strengthening and capacity building component 1: improved subcenter planning and development** will require 69 person-months of consultants—20 person-months of international and 49 person-months of national consultants and advisers. The consultants will have expertise in urban development finance, urban design and planning, real estate market analysis, land management, legal aspects, urban economics, micro-enterprise and housing finance, and project monitoring. The consultants will (i) support the MUB in the establishment the mechanisms and regulations for subcenter redevelopment; provide orientation and training of relevant staff engaged in the subcenter redevelopment process; (ii) closely monitor the planning and redevelopment process to ensure the integration of the current residents into the subcenter redevelopment plan; (iii) facilitate community and private development and financing entities consultations on the subcenter redevelopment concept and plans; (iv) formulate policy options, approaches, and tools and methods to facilitate the formulation of and communication on the subcenter plans and *ger* areas development; and (vi) develop appropriate urban planning/design regulations for *ger* areas, *Ger* Area Development Agency (GADA), *Ger* Area Housing Project, and PMO staff on all aspects of urban planning and management; and (vii) act as resource persons for the training and development activities.

19. **The implementation of the institutional strengthening and capacity building component 2: improved operations and management by service providers and institutional and regulatory reform** will require 45 person-months of consultants—12 person-months of international and 33 person-months of national consultants and advisers. The consultants will have expertise in institutional and regulatory reform, public-private partnerships and transactions, public utility tariffs and economics, water and waste water operations and maintenance, and wastewater treatment plant operations and maintenance. The consultants will (i) assist USUG in the implementation of O&M management improvements to control nonrevenue water, monitor installation of the new operational controls, and assist USUG in developing its business planning processes; (ii) assist the MUB (PMO) in the selection and contracting out the heating plant agency to operate the new heating facilities; (iii) provide on the job and formal training to USUG, OSNAAG, *kantor*, and possible heating agency staff on all aspects of project management; (iv) improve provisions in the OSNAAG management and the USUG performance contracts; (v) improve the revenue base of service providers; (vi) improve efficiency and effectiveness of service delivery; (vii) improve the capacity of Water Supply Regulatory Commission and the Energy Regulatory Commission; (viii) set clear policy directions based on comprehensive studies and recommendations to facilitate GOM's priority for the development state-of-the-art environmentally friendly gas-fired district heating; (ix) supervise the implementation of the water and wastewater operational improvements; and (x) act as resource persons for the training and development activities.

20. **The implementation of the institutional strengthening and capacity building component 3: strengthened program implementation capacity** will require 97.5 person-months of consultants—33 person-months of international and 64.5 person-months of national consultants and advisers. The consultants will have expertise in the implementation of urban services projects, municipal engineering, urban and/or utility services finance, procurement, social safeguards and gender, environmental management, and financial management and accounting. The international and national financial experts to be engaged must have a recognized professional accountancy qualification, such as Chartered Accountant or Certified Public Accountant, and financial management and accounting. The consultants will (i) assist the

MUB in staffing the PMO and adopting procedures and safeguards—involuntary resettlement and environment—which are consistent with Government of Mongolia and ADB guidelines; (ii) establish detailed work schedules and the work load distribution for the PMO; (iii) provide on the job and formal training to PMO staff on all aspects of project management; (iv) set up and operationalize the financial management and accounting system for the investment program, including disbursements; (v) monitor and ensure the effective implementation of the resettlement plan, the environmental management plan and other safeguard requirements; and (vi) act as resource persons for the training and development activities.

21. Community engagement and small- and medium enterprise development services will require 78 person-months of consultants—18 person-months of international and 60 person-months of national consultants and advisers. The consultants will have expertise in social and poverty analysis, community development, SME development, gender, communications, social mobilization, implement and monitor social action plan and gender action plan, and legal aspects. The consultants will facilitate and guide (i) the capacity building of the community development councils (CDC) and SME development council (SDC); (ii) consultations; (iii) the registration of the CDCs and/or SDCs, formalize their organizational, project, and financial management systems, policies and procedures, and provide legal support to the CDCs; (iv) the implementation of the SME development plan; (v) the consultation and participation of women and other vulnerable community members; (vi) the CDCs to engage into community contracts with the construction companies; (vii) the information, education, and communication (IEC) of the project; (viii) the CDCs and SDCs in mobilizing resources; (ix) the consultations with affected people to ensure smooth planning, land acquisition and resettlement negotiation, and implementation of project 1; (x) the monitoring of current residents integration into the redevelopment plan of the targeted areas; (xi) capacity building on O&M, estate management, community contracting, savings mobilization and micro-credit operations, and CDC engagement in the subcenter redevelopment process and (xii) provide technical guidance through formal and on-the-job training.

ANNEX 5

SUMMARY OF FEASIBILITY STUDIES – TECHNICAL ANALYSIS

1. Technical analysis has produced preliminary designs for water, wastewater, and heating infrastructure extensions for the two subcenters and the water and wastewater central system upgrading under project 1. This includes the relevant comparative analyses; technical specifications; design methods; norms and standards specific to *ger* areas and the cold climate situation in Ulaanbaatar; cost estimates; and relevant institutional arrangements. The infrastructure program was designed on the basis of sustainability, including the sustainable use of water resources and using locally available sources of energy. Alternative technical options have been developed and tested to determine the most technically and financially viable solutions.

2. The investment program has three projects scheduled for implementation over the next 9 years. The approach adopted for project 1 involves the redevelopment of Bayankhoshuu and Selbe subcenters and will be applied to others in the *ger* areas throughout the city. The two subcenters, with a potential for economic development have been given priority and investments are planned to improve the road and utilities networks to ensure connections to existing systems and further stimulate ongoing development. The approach supports the current master plan of Ulaanbaatar and initiates progressive planning and the improvement of peripheral roads, thus encouraging the diversion of urban traffic from the city center.

ANNEX 6

SUMMARY OF FEASIBILITY STUDIES – ECONOMIC ANALYSIS

A. Macroeconomic Context

1. In the last two decades, Mongolia has transformed itself from a socialist country to a vibrant democracy with a rapidly expanding economy. Driven by a booming mining sector, livestock sector development, inward remittances, and an invigorated services sector, Mongolia's economic growth performance has been impressive. From an annual growth ranging from 1.1% to 3.9% before the turn of the 21st century, Mongolia's gross domestic product has grown by an annual average of about 10% in the last 5 years. While economic growth performance has been impressive and prospects are highly positive, challenges remain. Mongolia has chronic rural poverty, inadequate trade facilities, and insufficient institutional and human capacity. Exacerbating the problems is a limited regulatory framework for private sector participation; a relatively weak public sector, a small domestic market, and a narrow economic base compared to other Asian economies. Mongolia's competitiveness also suffers from poor infrastructure, which while lacking in many places is rapidly deteriorating in others. The proposed project will be pivotal to sustaining the economic growth of Mongolia. It will help achieve the government's sustainable development and poverty reduction strategy—by enabling connectivity in the *ger* areas and promoting safety through improved and well-lit urban roads, facilitating households' and business establishments' access to water, addressing critical sanitation issues, and providing more environment-friendly and efficient heating systems in the subcenters of Bayankhoshuu and Selbe.¹⁰

B. Urban Sector Context

2. Mongolia is highly urbanized, with 66% of its total population residing in urban areas. Ulaanbaatar, its capital and primary city, dominates the country's economic, political, and cultural landscapes. The city has an estimated population of 1.2 million, representing about 45% of Mongolia's total population. The city's population has grown at an annual average of 5.7% from 2000 to 2010. Ulaanbaatar accounted for 65% of total gross domestic product and 35% of total employment in 2010. An estimated 800,000 residents of the capital city, making up 60% of Ulaanbaatar's population or 30% of the country's population, live in large and expanding *ger* areas. The current simultaneous process of *ger* areas densification and sprawl is putting tremendous pressures on the urban environment and residents' health. Meanwhile, the lack of employment and income prospects in the rural areas of Mongolia coupled with the severity of the winters in these areas continue to push migrants into Ulaanbaatar—intensifying the pressures on a city already cramped with people, buildings, and vehicles. The proposed project will contribute significantly to decongesting the city center of Ulaanbaatar by stimulating economic development in the peri-urban areas of Bayankhoshuu and Selbe. The proposed development has been planned to occur in the *ger* subcenters first, then over time in the wider *ger* areas surrounding the two subcenters. The project will also help pull migrants away from the city center to the *ger* areas, reducing the pressure on the city core's already fragile and inadequate urban infrastructure and services.

¹⁰ Subcenters are clusters of public facilities and businesses with an associated transport hub. Their sphere of influence is from 30,000 to more than 100,000 people. Outside the core of the subcenters are residential areas consisting of mostly individual houses on large plots. Twenty-four subcenters of different sizes have been identified in the *ger* areas of Ulaanbaatar. Under the investment program, subcenters will serve as entry points and potential catalysts to unlock the future redevelopment of *ger* areas and break the *ger* area redevelopment challenge into manageable pieces.

C. Economic Rationale for Government Intervention

3. Projections of Ulaanbaatar's economic and population growth emphasize the need for improved quality and coverage of roads, water supply, sanitation, heating, and socioeconomic facilities and services at the city core, and in the expanding *ger* areas at the city's periphery. Redeveloping the city of Ulaanbaatar, however, particularly the *ger* areas, presents quite complex technical and financial challenges, which if left unaddressed by the government will continue to deter private sector investments. These challenges are well documented and include the high cost of construction in a city often described as the coldest capital in the world.¹¹ Moreover, the highly deficient urban planning in the *ger* areas has failed to allot sufficient space for businesses and economic enterprises causing constrained economic prospects and consequently, relatively low household incomes among the *ger* residents. Connecting the *ger* areas to the central systems of water supply, sanitation, and heating in the core city or developing more decentralized delivery systems both of which require significant investments may, thus, not be fully recoverable ultimately requiring subsidies. The project will serve as a catalyst, spurring coordinated investments among the public, private, and people's organizations, leading to more widespread and broad-based economic growth in the *ger* areas.

D. Economic Analysis of Subprojects

4. The economic analysis of subprojects was conducted in accordance with Asian Development Bank (ADB) *Guidelines for the Economic Analysis of Projects (1997)*, *Economic Analysis of Water Projects (1998)*, and *Framework for the Economic and Financial Appraisal of Urban Development Sector Projects (1994)*. The estimated costs and benefits of the subprojects were valued at their economic prices using the *domestic price numeraire*, which adjusts border price to their equivalent domestic values using the shadow exchange rate factor (SERF) of 1.02. There is considerable underemployment in Ulaanbaatar for unskilled labor, hence; the conversion factors of 0.7 and 1.0 have been applied to unskilled and skilled labor, respectively.¹² Capital and recurrent operation and maintenance costs (O&M), inclusive of physical contingencies, in constant 2013 prices, were also converted into economic costs by subtracting all transfer payments, including taxes and duties, and applying the appropriate conversion factors. Capital costs were estimated based on the basic designs prepared during the feasibility studies, and included allowances for resettlement costs. Annual costs and benefits for each subproject were evaluated over a 20-year period up to 2033, allowing for a 4-year construction period starting 2014, followed by a benefit period of 16 years.

5. **Urban roads improvement.** The planned development schemes for both Bayankhoshuu and Selbe subcenters aim to (i) implement a defined and level road network to delineate neighborhoods; (ii) densify the area, stimulate local economic activities, and introduce alternative urban housing modes; (iii) protect zones prone to flooding; (iv) open up landlocked land allotments; and (v) provide public open spaces and green parks to encourage a healthy community lifestyle. Anticipated economic benefits were mainly quantified by determining the incremental increase in the potential annualized rental benefits from the use of the land surrounding the improved roads. For each subcenter, leasable spaces were estimated by taking 25% of the areas of economic and commercial influence of the proposed urban roads

¹¹ For instance, an important lesson from the World Bank-funded Ulaanbaatar Services Improvement Project I which was completed in December 2003 was that Mongolia's climactic conditions called for engineering designs that protect the infrastructure against freezing. However, such designs are very costly and there is a need to balance between appropriate designs, high costs, and affordability.

¹² These conversion factors are consistent with similar projects of the same nature in Mongolia. See for example the *Report and Recommendations of the President to the Board of Directors: Proposed Multitranche Financing Facility Mongolia: Urban Transport Development Investment Program (August 2012)*.

improvement. For each subcenter, these areas were assumed to be 50% of the land within a 20-kilometer radius of the planned urban roads. An average lease price of \$7/square meter per month was subsequently used to determine the annualized rental benefits which were further assumed to increase by 5% each year in accordance with the planned development in the areas.¹³ In addition, vehicle operating cost savings were calculated by assuming that 30% of the projected subcenter population owned cars and that savings amounting to \$175/year, increasing at an annual rate of 5%, will be generated from the improved road conditions.¹⁴

6. The resulting base case economic internal rates of return (EIRRs) of 17.76% for Bayankhoshuu and 25.10% for Selbe are both higher than ADB's 12% economic opportunity cost of capital (EOCC).¹⁵ These results affirm the economic viability of the proposed subprojects and their significantly positive net benefits to the subcenter development in the two pilot *ger* areas of the project. Sensitivity analysis conducted suggested that the EIRRs will be most vulnerable to a delay in the realization of the subprojects' anticipated benefits. Capital costs will have to increase by 82.8% in Bayankhoshuu and by 42.6% in Selbe, while benefits will require a reduction of 33.8% in Bayankhoshuu and 68.3% in Selbe, for the EIRRs to drop to the EOCC (Table 1).

Table 1: Economic Evaluation of Urban Roads Improvement

Base Case/Sensitivity Scenarios	Bayankhoshuu Urban Roads	Selbe Urban Roads
Base Case EIRR (%)	17.76%	25.10%
Sensitivity Tests:		
Case 1: Capital cost + 10%		
EIRR	16.41%	23.51%
Switching value	42.56	82.79
Sensitivity indicator	2.35	1.21
Case 2: O&M cost + 10%		
EIRR	17.61%	24.93%
Switching value	373.05	797.54
Sensitivity indicator	0.27	0.13
Case 3: Benefits – 10%		
EIRR	16.06%	23.18%
Switching value	33.80	68.32
Sensitivity indicator	2.96	1.46
Case 4: Benefits delayed by 1 year		
EIRR	15.02%	21.27%
Case 5: Combination of Cases 1, 2, and 3		
EIRR	14.56%	21.51%

EIRR = economic internal rate of return, O&M = operations and maintenance.

Source: Asian Development Bank estimates.

7. **Water supply and sewerage system improvements.** For the water supply improvement subprojects in the Bayankhoshuu and Selbe subcenters, the benefits were derived from two major sources: (i) the benefits from the incremental water sales calculated according to

¹³ Based on lease rates and annual rental rates of growth in comparable areas of Ulaanbaatar as published in the following report: M.A.D. Investment Solutions (2013). *The Mongolian Real Estate Report 2013-2014*. Ulaanbaatar, Mongolia.

¹⁴ The socioeconomic survey conducted by Mongolia Marketing Consulting Group from November 2012 to January 2013 under the project preparatory technical assistance indicated that 30% of the residents of the target subcenters owned cars. Further discussions with representatives from the affected communities indicated that a annual vehicle operating cost savings of \$175/car could be potentially generated by improving the road network in these *ger* areas.

¹⁵ The resulting EIRR in Selbe is much higher than that of Bayankhoshuu because 8,770 meters of urban roads will be developed in Selbe compared to only 6,150 meters of urban roads in Bayankhoshuu.

the willingness to pay of the consumers, existing water demand, and water demand projections for the Bayankhoshuu and Selbe subcenters adjusted for unaccounted for water; and (ii) nonincremental water sales benefits equivalent to the resource cost savings from time and income saved by the water consumers by obtaining water from alternative sources. The socioeconomic and willingness to pay survey conducted in these subcenters showed that households were willing to pay MNT19,756 per month for improved water services. In addition, the resource cost savings estimated at MNT21,150 were based on the socioeconomic survey results, which indicated that households took about 30 minutes three to four times a week to access water from kiosks, delivery trucks, and other private sources.¹⁶

8. For the sewerage improvements, benefits were quantified through reduced (i) health risks and water-related diseases from savings in the disability adjusted life years (DALY), and (ii) savings in medical expenses of households who are exposed to soil pollution through untreated groundwater. A DALY is an indicator of life expectancy combining mortality and morbidity into one summary measure of population health to account for the number of years lived in less than optimum health. In calculating the EIRR, the approach of the World Health Organization (WHO) in determining the annual economic value of a DALY to be equivalent to a country's gross national income per capita has been adopted. Mongolia's gross national income per capita was estimated to reach \$3,952 by 2019 when the benefit period starts using a modest growth rate of 5% per annum. For the purpose of this analysis and based on the global burden of disease approach of WHO, 2% of the calculated savings in DALYs for the Bayankhoshuu and Selbe subcenters was attributed to the proposed sewerage improvements.¹⁷ For the savings of households, 10% of their monthly medical expenses were linked to water borne diseases. Based on the socioeconomic survey results, the average household annual medical expenses in the two subcenters amounted to MNT375,922. The base case EIRRs calculated for each subproject ranged from 15.14% to 23.41%, all exceeding the ADB's 12% EOCC, and confirming the economic robustness of the proposed subprojects (Table 2).

9. **Heating services expansion.** For the heating services, the major benefits considered included (i) reduced health risks from air pollution measured through savings in the DALY, and (ii) medical savings of households from improved air quality in the *ger* areas. In a recent World Bank study, it was concluded that individual households' coal-fired heating appliances, such as the stoves and small furnaces used in the *ger* areas contributed as much as 65% of the air pollution in Ulaanbaatar.¹⁸ Hence, using the global burden of disease approach of WHO, 5% of the calculated savings in DALYs for the Bayankhoshuu and Selbe subcenters was attributed to the proposed heating services which would allow the households to switch to more environment-friendly and less air polluting heating technology.¹⁹ To calculate the savings of households, 20%-30% of their monthly medical expenses were ascribed to diseases related to exposure to outdoor pollution. The socioeconomic survey results indicated that the average household in the two subcenters spent MNT375,922 on annual medical expenses. The base

¹⁶ A socioeconomic and willingness to pay (WTP) survey using the contingent valuation method was conducted through a survey firm, Mongolia Marketing Consulting Group, under the PPTA. The survey result showed that the mean WTP for monthly charges for water supply was MNT19,756. For valuing the nonincremental water benefits, the resource cost savings were estimated by multiplying the time spent by the family to access water with the average household income/hour in Bayankhoshuu and Selbe, as indicated in the socioeconomic survey results.

¹⁷ According to WHO, the burden of disease (in DALYs) attributable to lack of water, sanitation and hygiene in East Asia can reach as high as 10%. See WHO. 2007. *Environmental Burden of Disease Series No.15–Water, Sanitation and Hygiene: Quantifying the health impact at national and local levels in countries with incomplete water supply and sanitation coverage*. Geneva, Switzerland.

¹⁸ World Bank. 2012. *Project Appraisal Document: Ulaanbaatar Clean Air Project*. Washington, D.C.

¹⁹ WHO. 2004. *Environmental Burden of Disease Series No.5–Outdoor Air Pollution: Assessing the environmental burden of disease at national and local levels*. Geneva, Switzerland.

case EIRRs calculated for each subproject ranged from 18.13% to 19.83%, all exceeding ADB's 12% EOCC, and confirming the economic viability of the proposed subprojects (Table 3).

Table 2: Economic Evaluation of Water Supply and Sewerage

Base Case/Sensitivity Scenarios	Bayankhoshuu Water Supply	Selbe Water Supply	Bayankhoshuu Sewerage	Selbe Sewerage
Base Case EIRR (%)	19.76%	23.41%	20.18%	15.14%
Sensitivity Tests:				
Case 1: Capital cost + 10%				
EIRR	18.89%	22.42%	19.08%	14.13%
Switching value	89.20	116.10	73.99	31.16
Sensitivity indicator	1.12	0.86	1.35	3.21
Case 2: O&M cost + 10%				
EIRR	19.69%	23.34%	20.09%	15.07%
Switching value	1,100.40	1,788.30	894.75	461.20
Sensitivity indicator	0.09	0.06	0.11	0.22
Case 3: Benefits - 10%				
EIRR	18.73%	22.26%	18.85%	14.04%
Switching value	75.00	99.00	61.52	28.67
Sensitivity indicator	1.33	1.01	1.63	3.49
Case 4: Benefits delayed by one year				
EIRR	18.11%	21.89%	17.28%	12.73%
Case 5: Combination of cases 1,2, & 3				
EIRR	17.80%	21.23%	17.68%	12.98%

EIRR = economic internal rate of return, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

Table 3: Economic Evaluation of Heating Services

Base Case/Sensitivity Scenarios	Bayankhoshuu Heating	Selbe Heating
Base Case EIRR (%)	18.13%	19.83%
Sensitivity Tests:		
Case 1: Capital Cost + 10%		
EIRR	17.22%	18.90%
Switching value	67.45	83.70
Sensitivity indicator	1.48	1.19
Case 2: O & M Cost + 10%		
EIRR	17.78%	19.44%
Switching value	178.02	201.02
Sensitivity indicator	0.56	0.50
Case 3: Benefits – 10%		
EIRR	16.76%	18.39%
Switching value	44.85	54.20
Sensitivity indicator	2.23	1.85
Case 4: Benefits delayed by 1 year		
EIRR	15.47%	16.59%
Case 5: Combination of cases 1, 2, and 3		
EIRR	15.53%	17.09%

EIRR = economic internal rate of return, O&M = operation and maintenance.

Source: Asian Development Bank estimates.

ANNEX 7

SUMMARY OF FEASIBILITY STUDIES – FINANCIAL ANALYSIS

A. Introduction

1. Financial analysis and financial management assessment (FMA) were undertaken in accordance with the Asian Development Bank (ADB) Guidelines on Financial Management and Analysis of Projects and Financial Due Diligence: A Methodology Note.²⁰ Project 1 comprises revenue generating and nonrevenue generating subprojects aimed at (i) provision of piped water supply and sewerage, (ii) improvement of urban roads with drainage and flood protection, and (iii) delivery of efficient and more environment friendly heating services through heating facilities. Financial internal rates of return (FIRRs) were calculated for all revenue-generating components of the project. For nonrevenue generating components, a financial sustainability analysis for the Municipality of Ulaanbaatar was conducted since it will be responsible for operation and maintenance (O&M).

B. Financial Analysis

1. Revenue-Generating Components

2. A 4-year implementation period was assumed for project 1. The phased implementation of the project was in accordance with the following schedule: 10%, 30%, 40%, and 20%. The first year of implementation was seen as the period for detailed engineering design works, planning, and initial preparation for procurement. On the demand side, the projections assumed that incremental consumption of water will increase due to (i) the annual growth rate in the population of the planned service areas comprising the Bayankhoshuu and Selbe subcenters, and (ii) the increase in incremental consumption of the existing households in the target subcenters as a result of improved access to water supply.²¹

3. The FIRRs and weighted average costs of capital (WACCs) calculations reflect the following assumptions: (i) cofinancing by the European Investment Bank specifically for the water supply and sewerage component, at terms parallel with the ADB loan; (ii) the ADB loan will have a maximum 20-year term inclusive of a 5-year grace period on principal repayment, at a tentative rate based on the 10-year USD fixed swap rate plus a contractual spread of 0.40%, and commitment fee of 0.15%; (iii) the Asian Development Fund loan will have a maximum term of 25 years, also inclusive of a grace period of 5 years and fixed rate of 2% per annum for blend borrowers; (iv) the government will relend the ADB and EIB loans to MUB at an indicative annual interest rate of 3% (v) physical contingencies were computed at 5% of civil works and consulting services; and (vi) price contingencies were calculated at rates ranging from 3.0%–8.0% for local currency costs and 0.5%–2.2% for foreign exchange costs, including provisions for exchange rate fluctuations under a purchasing power parity exchange rate.

(a) Financial Analysis of the Water Supply and Sewerage Services

4. A financial cost-benefit analysis was conducted on an incremental basis and results confirmed the financial viability of the water supply and sewerage component with an FIRR of

²⁰ ADB. 2005. *Financial Management and Analysis of Projects*. Manila; ADB. 2009. *Financial Due Diligence: A Methodology Note*. Manila.

²¹ The current rate of water consumption in the target subcenters is only 8 liters per capita per day which is very low compared to the average consumption in Ulaanbaatar City's core area of 240 liters per capita per day.

3.30%, which exceeded the WACC (0.75%). The financial analysis considered (i) investment from the European Investment Bank loan in the target areas of Bayankoshuu and Selbe; and (ii) tariff collections from incremental demand based on both population and consumption growth.

5. The projected figures reflect the incremental volume of households to be serviced through the water and sewerage pipelines in Bayankoshuu and Selbe as they continue to densify at an average rate of 9% per annum. In addition, incremental water consumption was calculated based on the increasing use of water as access is facilitated by the project. From the prevailing average consumption of households in the subcenters (i.e., at 8 liters per capita per day or 0.01m³), it was assumed that annual consumption with-the-project will rise annually beginning 2019 when it will reach 20 m³, then gradually reaching 0.13 m³ in 10 years.²² This scenario led to positive cash flows and financially viable subprojects. The average incremental financial cost for water supply and sewerage, which is the minimum tariff required for the full cost recovery of capital and operating costs, was calculated at \$0.26/m³. This is lower than the proposed tariff rate of \$0.31/m³ which is equal to the current rate for metered apartments. Currently, the residents of Bayankoshuu and Selbe are charged higher tariffs, at \$0.64/m³, because of the additional costs incurred by Ulaanbaatar Water Supply and Sewerage Authority (USUG) in delivering water to the *ger* areas. It was also assumed for financial viability that the tariff rate will increase by 5% every 5 years. The results of the analysis are shown below in table1.

**Table 1: Financial Evaluation of Water Supply and Sewerage—
Summary of Sensitivity Analysis**

	FIRR
Base Case Scenario	3.30%
Case 1: 10% increase in capital cost	2.01%
Case 2: 10% increase in O&M	3.21%
Case 3: 10% decrease in benefits	2.51%
Case 4: 10% increase in capital costs + O&M; 10% decrease in benefits	0.99%
Case 5: Delay in project benefits by 1 year	0.92%
WACC	0.75%
Proposed initial tariff rate (water and sewerage)	\$0.31/m ³
Current rate of water per m ³ in the <i>ger</i> area kiosks	\$0.64/m ³
Current rate of metered apartment	\$0.31/m ³
WTP expressed for monthly consumption	\$14.11
Proposed rate of increase for tariffs every 5 years	5.00%

FIRR = financial internal rate of return; m³ = cubic meter; O&M = operation and maintenance; WACC = weighted average cost of capital; WTP = willingness to pay.
Source: Asian Development Bank's estimates.

6. The sensitivity analysis showed that financial viability will be at risk if 10% increased investments and O&M costs are combined simultaneously with a 10% decline in revenues which is reflected as Case 4 in Table1. Revenue generation is of utmost importance which means the targeted volume of new connections and higher consumption must be closely monitored and supported by a strong information, communication, and education program. Currently, USUG is suffering financial losses due to collection difficulties which need to be addressed.²³ Hence, for the purpose of this analysis, it was assumed that 30% of gross revenues from tariffs will remain uncollected. It was further assumed that the additional

²² The average consumption in Ulaanbaatar is 240 liters per capita per day although this includes system leakages.

²³ The collection efficiency of USUG ranges from 60% to 70% based on their financial statements.

revenues will entail incremental expenses estimated at 30% of the gross revenues collected.²⁴ A 10% corporate tax rate was applied to the net revenues of the subproject which is the minimum rate applicable to such utility operators of the local government.²⁵

(b) Financial Analysis of Heating Services

7. The heating component for the Bayankhoshuu and Selbe subcenters will generate revenues from the incremental volume of households to be served and their incremental consumption of heating. The financial analysis resulted in an FIRR of 3.67% which is higher than the WACC rate of 1.31%. Basic assumptions covered the following: (i) the growing number of consumer households based on an annual population growth rate of 9%; (ii) the accelerating level of consumption capacity in megawatt (MW)/hour; (iii) the capital costs and O&M to be spent; and (iv) the existing and proposed tariffs of the district heating company for metered apartments, as well as the affordable levels of the households in the service areas.

8. There are a few heating facilities which operate in the *ger* areas, and their tariffs for households are MNT341/m² (floor area of housing unit) and MNT900/m³ for institutional clients. Even with subsidies from the city government, heating facilities have suffered financial losses from their operations because of their high O&M expenses and their tariff rates which are not based on full cost recovery. The proposed initial tariff rate under the project is \$5.95/MW²⁶, which is the current rate for metered apartments. The calculated annual consumption demand covers the heating period and summer months, starting at a low level of 4.2 MW in 2020 to 16.3 MW by 2030 in Bayankhosuu, as compared to the range of 6.7–18.2 MW for Selbe. The results of the sensitivity analysis conducted are summarized below.

**Table 2: Financial Evaluation of Heating Services
Summary of Sensitivity Analysis**

	FIRR
Best Case Scenario	3.67%
Case 1: 10% increase in capital cost	3.22%
Case 2: 10% increase in O&M	3.11%
Case 3: 10% decrease in benefits	2.58%
Case 4: 10% increase in capital costs + O&M; 10% decrease in benefits	1.55%
Case 5: Delay in project benefits by 1 year	1.26%
Weighted average cost of capital	1.31%
Proposed initial tariff rate (heating facilities)	\$5.95/MWh
Current rate for households in <i>ger</i> areas (heating facilities only)	\$0.24/m ²
Current rate of metered apartment	
Willingness to pay expressed for monthly consumption	\$5.95/MWh
Proposed rate of increase for tariffs every 5 years	\$14.13
	10.00%

FIRR = financial internal rate of return; m² = square meter; MW = megawatt; O&M = operation and maintenance.

Source: Asian Development Bank's estimates.

²⁴ Analysis of the financial statements of USUG further shows that their operating costs as % of gross revenues is around 40%.

²⁵ The Mongolian corporate income tax rate is a progressive rate and ranges from 10%–25%: 10% should apply for the first annual income of MNT3 billion (approx. \$2.2 million); and 25% should apply for any amount in excess of MNT3 billion. See *Doing Business Guide in Mongolia 2012*, www.pwc.com.

²⁶ At the conversion rate of 1.182 gcal/hr = 1MW/hr; the current tariff rate for heating in the metered apartment building, which is also the proposed tariff rate under the project, is equivalent to MNT9,824/gcal or \$5.95/MW.

9. The various scenarios adopted for the analysis indicated that the component's FIRR will be most sensitive to increase in capital investment and O&M paralleled by a decrease in benefits and a 1-year delay in revenue generation. The socioeconomic and willingness to pay survey results made evident that heating services ranked highest among the needs and priorities of the households. This indicated the households were aware of the costly and inefficient heating technology they are using to combat the severe winter weather. They understood that their heating systems were polluting the air, leading to serious health problems after a prolonged exposure. This was reflected in the analysis by using a higher collection efficiency of 90% and a lower incremental collection cost of 5%. Revenues from the tariffs were subjected to a 10% tax prior to discounting.

2. Nonrevenue Generating Component

10. In accordance with ADB's guidelines, a financial sustainability analysis was conducted for the nonrevenue generating urban roads improvement component. The city generates revenues internally through various forms of taxes (i.e., personal, property, and services), fees, rent, and charges on properties. In addition to internally-generated revenues, it has availed of loans from the Government of Spain and the World Bank, the proceeds of which have been passed on to USUG, under onlending arrangements. The city is responsible for a large portion of Mongolia's population and has major development functions focusing on the *ger* areas. This requires provisioning for O&M expenses in these areas. The Public Sector Management and Finance Law established the policy of remitting portions of the city's surplus to the state government, for distribution to other poor provinces or districts. This policy has diminished the financial capacity of the city to make larger investments in the *ger* areas as well as in its internal and link roads.

11. The city will have adequate funds to cover its counterpart contributions to the project, the O&M requirements for the improved roads under the project, and its debt service requirements. The major assumptions used for the forecast of the city's revenues are based on the growth trends in its income statements for the period 2008–2012. Even with the addition of the projected O&M for the roads component, the city will still have adequate funds to efficiently operate and maintain the assets, provide counterpart funds, and cover debt service requirements for the subproject which indicate its financial capability to render the subproject sustainable. The total counterpart funds requirement for the project development, provision for O&M, and debt repayment requirement are within the projected fiscal expenditure and investment levels of the city, as seen in the summary table below.

Table 3: Fiscal Projections for the Municipality of Ulaanbaatar, 2014–2018

Item	Actual (in billion MNT)				Projections (in billion MNT)				
	2010	2011	2012	2014	2015	2016	2017	2018	
Recurrent/operating expenditure (MNT million)	65.79	69.29	93.16	149.72	149.72	189.81	240,63	305.06	
Total operating revenues	143.07	217.12	310.29	549.02	712.90	931.72	1,225,02	1,651.68	
Total fund for urban development	37.73	110.17	174.58	175.92	181.27	185,28	187,96	187.96	
Surplus	60.75	67.04	79.55	253.33	372.28	536.84	763,63	1,620.14	
Total investment requirement of roads improvement component				3.49	13.97	10,48	6,99	0.00	
Government fund required for the urban roads subproject				1.34	5.35	4.01	2.68	2,68	
Component government fund/total fiscal expenditure				0.41%	1.44%	0.94%	0.54%	0.47%	
Component government fund/fiscal expenditure for urban development				0.8%	3.0%	2.2%	1.4%	1.4%	

Item	Actual (in billion MNT)	Projections (in billion MNT)			
Project investment/fund for urban development	2.0%	7.7%	5.7%	3.7%	0%

Source: Municipality of Ulaanbaatar's Audit Report, 2008–20012 and Asian Development Bank's estimates.

3. Affordability and Willingness to Pay Analysis

12. A socioeconomic and willingness to pay survey was conducted from November 2012 to January 2013 to determine household satisfaction with and ability and willingness to pay for the water supply, sewerage, and heating services. Based on the results of this survey, an affordability analysis of the proposed tariffs for water supply and sanitation and heating services was conducted. The analysis showed that the proposed tariff of \$0.31/m³ for water supply and sanitation is affordable, comprising 0.83 % to 1.47% of the monthly incomes of households belonging to the bottom three deciles of the Bayankhoshuu and Selbe subcenters. These represent the ultra-poor and poor households and make up about 25% of the total target population. For the heating services, the analysis indicated that the proposed tariff rate of \$5.95/MW is also affordable, constituting 1.40% to 2.47% of the monthly incomes of households in the bottom three deciles of the target subcenters. The combined tariffs for water supply, sewerage, and heating services will also be affordable, making up 2.23% to 3.94% of the monthly incomes of the poorest households in the Bayankhoshuu and Selbe subcenters.

13. Households in the Bayankhoshuu and Selbe subcenters are willing to pay for the improved water supply, sewerage, and heating services. The survey conducted revealed a willingness to pay of \$14.11 per month for water supply and sanitation and \$14.13 per month for heating services. At the proposed tariff of \$0.31/month, households will be paying \$14.11 per month for an increased water consumption of 45 m³ which is significantly higher than the current consumption of 0.96 m³ per household per month in the two subcenters. For the heating services, the proposed tariff of \$5.95/MW will allow the households in Bayankhoshuu and Selbe to shift to metered heating and consume about 2.4 MW per month. However, the projected demand for metered heating is only 0.94 MW per month. Currently, households in the target subcenters use about 10% of their income for the use of coal-fired stoves. With the switch to metered heating, their average monthly spending on heating will decline to about 1.5% to 2.5% of their average monthly income, making room for considerable amounts of savings.

C. Financial Management Assessment

14. An FMA was carried out in accordance with ADB's guidelines to establish the financial management capacity of the Municipality of Ulaanbaatar as the executing agency of the project. The assessment covered funds flow arrangements, accounting policies and procedures, staffing, internal and external audit arrangements, reporting and monitoring system, and the financial information systems. The FMA showed that the city has no experience in managing ADB-funded projects but has prior experience with World Bank and Spanish Government-assisted projects. The planned capacity building component of the project will provide the necessary technical assistance to the city on ADB policies and procedures, including disbursement and procurement processes. The FMA also indicated that the city's accounting and financial reporting system adheres to the existing accounting and financial management standards of the Government of Mongolia which are in accordance with international accounting and financial reporting standards. The designation of qualified staff to manage the financial aspects of the project is critical to the successful implementation of the project by the MUB.