

SECTOR ASSESSMENT (SUMMARY): ¹ WATER AND OTHER URBAN INFRASTRUCTURE AND SERVICES

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. In 2012, urbanization in Mongolia reached 67% (1.90 million out of a total population of 2.85 million). The urban economy grew by an estimated annual average of 11% during 2006–2012, and now accounts for 65% of total gross domestic product (GDP). However, the urban sector is dominated by the capital city, Ulaanbaatar, which contains almost half the national population and two-thirds of the urban population. Darkhan, with an urban population of about 76,400, is the third largest city in the country behind Ulaanbaatar and Erdenet.

2. The migrant population in urban areas has created a unique urban phenomenon, as most new urban residents move to informal settlements—*ger* (traditional tent) areas. All Mongolian cities comprise two distinct patterns of residential districts, each of which is highly correlated with the degree and incidence of both income and quality-of-life poverty. The first comprises planned areas based on Soviet-style urban design, encompassing medium-density, multifamily apartment housing surrounding public open space. The second comprises low-density *ger* areas—informal settlements characterized by long strips of large (usually 700 square meters) *khashaas* (unserved or underserved plots) accessed along wide dirt roads. Each *khashaa* may contain a number of structures, often *gers*, and in more established *ger* areas, also often wooden houses (widely used in Darkhan), masonry, or concrete structures. Most *ger* areas are served by water kiosks, supplied either from water mains or by water trucks, sometimes by local wells. Sanitation in *ger* areas is typically in the form of on-plot pit latrines, causing soil and groundwater pollution. Mostly, wastewater is not collected from *ger* areas as pipe network expansions are costly in low-density areas. In general, the lack of services leads to harsh and unsanitary living conditions in *ger* areas.

3. Darkhan *soum* (district) is served by water from a system of wells located in the Kharaa River valley, about 5 kilometers (km) upstream of Darkhan *soum*. A total of 18 wells are available, which could deliver 70,000 cubic meters per day (m³/day) of groundwater. Total residential and industrial demand is about 18,000 m³/day to 23,000 m³/day, and is provided from six production wells. The raw water is generally of drinking quality at the point of extraction, and is not normally subject to treatment. However, chlorination facilities exist at raw water storage tanks and chlorination is occasionally carried out during the summer when quality declines.² Despite this, water quality problems are experienced at the point of delivery as a result of the poor condition of many sections of the 40-year-old pipe network, which suffers an overall leakage rate estimated at over 40%. Progressive replacement of key elements of the water supply network (which has commenced) is likely to result in a progressive improvement in leakage.

4. Darkhan has a separate sewer system—sanitary sewage and surface water are served by independent networks. The sewer network has a total length of about 223 km, made up of about 97 km of trunk main, 2 km of rising main, and the remainder in secondary sewers and connectors. The condition of the network is variable, as many of the pipes are almost 50 years

¹ ADB. 2014. *Interim Country Partnership Strategy: Mongolia, 2014–2016*. Manila; ADB. 2014. *Darkhan Wastewater Management Project: Project Preparation*. Consultant's report. Manila (WFMFDC00100-MON), administered by ADB.

² Reported by Darkhan Us Suvag, head of laboratory services.

old. The age of the network by length is as follows: 65% installed in 1965, 30% installed in 1990, and 5% installed in 2005. No detailed information exists on the retention period within the sewer system, although no septicity problems have been reported. The generally sloping topography of the core urban areas of Darkhan helps in generating self-cleansing velocities in the sewer network.

5. The sewer system only serves residents living in formal urban areas, estimated at about 60% of the total households connected to the public sewer system. Of the remaining percentage (most of whom live in *ger* areas), a significant majority use open long-drop pit latrines for sanitation, and soakage pits for gray water disposal. It is also reported that 14% of the wastewater generated in the city is directly discharged into surface waters, mainly from the *ger* settlements.³

2. Government's Sector Strategy

6. The Government of Mongolia has not articulated a specific strategy for development of the urban sector, and water and other urban infrastructure and services sector. However, relevant government policies, strategies, and legislation are as follows:

- (i) the National Development Strategy, 2007–2021, structured around achievement of the Millennium Development Goals (MDGs);
- (ii) the Regional Development Concept, 2001–2010 and related Law on Regionalized Development Management and Coordination, enacted in 2003;
- (iii) the Government Platform Action Plan, 2012–2016;
- (iv) the amended Law of Mongolia on Municipal Water Supply and Wastewater Treatment Operation, enacted in 2011 and the founding of the Water Services Regulatory Commission of Mongolia in 2012; and
- (v) the Ministry of Construction and Urban Development Investment Plans of 2013 in Wastewater Treatment and Utility Management and Service Delivery Improvements.

7. The National Development Strategy targets economic growth rates of at least 14% per annum and per capita GDP of \$5,000 equivalent by 2015. It stresses both the need to ensure rapid and sustainable development based on a market economy and to actively develop regions and infrastructure to reduce urban-rural disparities. The strategy identifies as one of its key objectives to allocate funds in accordance with priority and sector needs, monitor spending, and ensure efficiency.

8. The Regional Development Concept and related Law on Regionalized Development Management and Coordination; and Medium-term Strategy on Regional Development, 2001–2010 called for better-balanced regional growth. This strategy sought to direct funds toward the development of selected main urban centers in each of the five regions. In 2012, the Ministry of Construction and Urban Development launched the *soum* center development project that was intended to provide new administrative centers (i.e., school, hospital, and government

³ B. Scharaw and H. Wesenfeld. 2012. *Integrated Water Resources Management – Model Region Mongolia (MoMo) – MoMo Fact Sheet: Sequencing Batch Reactor (SBR) Pilot Plant on the Central Wastewater Treatment Plant in Darkhan City*. Berlin: Federal Ministry of Education and Research (BMBF) and BMBF Framework Programme Research for Sustainable Development (FONA) Sustainable Water Management.

buildings) for a number of strategic and fast-growing *soum* centers. However, the continuing (and accelerating) primacy of Ulaanbaatar, stagnation in the growth of most other major urban centers (including Darkhan), and focusing of non-Ulaanbaatar growth in towns impacted by major mining investment (e.g., Erdenet and the towns of South Gobi) demonstrates the limited success of these strategies.

9. The Government Action Plan, 2012–2016 includes the following policy objectives for the urban sector, and water and other urban infrastructure and services sector:

- (i) improve the centralized heating, water supply, and wastewater systems for people living in *aimag* (province) centers to ensure they live a comfortable life;
- (ii) carry out re-planning of the urban areas with community involvement, and implement housing programs by providing centralized solutions to *ger* district electricity, drinking water and vehicular road-related issues, and other infrastructure elements, either making them independent or recoverable through installments;
- (iii) carry out technological renovations in water supply, drainage, and sanitation facilities;
- (iv) take measures to enforce the law on water supply and sewer use in towns; and
- (v) introduce technologies to treat and reuse industrial and household wastewater.

10. The government is pursuing an ambitious reform agenda in the water and wastewater sector, assisted by the Asian Development Bank (ADB). Based on the amended Law of Mongolia on Municipal Water Supply and Wastewater Treatment Operation Article 9 (2011), a Water Services Regulatory Commission has been established and is operational. The head of the commission and the members were appointed by Prime Ministerial Resolution No. 56 of 30 May 2012, with duties including to (i) regulate water supply and sewerage system service tariffs systems, (ii) analyse and approve tariffs for cities based on requests by their utility companies, and (iii) approve communication and regulation of water supply and sewerage entities.

11. The commission has investigated the issue of water supply and sewerage tariffs, and has proposed a system of tariff reform that would progressively increase tariffs, first to fully recover operation and maintenance costs, and thereafter, to cover the costs of depreciation. The recommendations include (i) a structure that provides for both fixed and variable tariffs; and (ii) an immediate substantial increase in tariffs, and thereafter, progressive tariff increases to support the sustainable operation of water and wastewater management systems. However, legal impediments remain to date (October 2014) regarding the recommended reforms of the Water Regulatory Commission being executed.

3. ADB Sector Experience and Assistance Program

12. ADB has been a leading agency in funding both technical assistance and loan projects in the urban sector, with a primary objective of supporting the government's drive toward achieving the MDGs by providing sustainable services in secondary cities and towns. As of December 2013, ADB had approved 1 grant-financed project, 3 loan-financed investment projects, amounting to \$85.3 million; 1 multitranche financing facility for \$163.7 million; and 14 technical assistance projects amounting to \$10.0 million, of which 7 were for loan preparation and 7 for capacity building, institutional strengthening, and policy support. ADB also provided two grants from the Japan Fund for Poverty Reduction amounting to \$3.7 million for assisting *ger* areas and

remote rural communities. ADB's urban sector program has sought to achieve (i) improved living conditions for the urban poor, (ii) improved access of the poor to basic services, (iii) better urban environmental conditions, and (iv) improved urban planning. Urban sector outputs included (i) upgrading low-income housing, (ii) providing services to marginal urban areas, and (iii) formulating an urban sector strategy.

13. Key lessons from ADB's prior support are (i) institutional weakness is a key constraint both to timely and efficient execution of projects and to long-term sustainability of the assets created; (ii) lack of government policy regarding the delineation of functions and intergovernmental fiscal relations is an important constraint to efficient resource allocation; (iii) local governments are unable to borrow from international financial institutions and other lenders, limiting their access to funds for urban development; (iv) lack of procurement capacity should be addressed during project preparation; (v) the short construction period needs to be factored in when the implementation schedule is formulated; and (vi) projects have had only limited and variable success in raising tariffs for urban services, resulting in underfunding of operation and maintenance. The issue of tariffs is complicated by the high cost of servicing in some (particularly *ger*) areas, and government policy to subsidize service tariffs.

14. ADB's support, and its anticipated outcomes, will contribute to the higher-order country partnership strategy objectives of improved investment efficiency, inclusive social development, private sector development, good governance, and environmental sustainability. Investment in water supply and wastewater management infrastructure will contribute to achievement of the MDGs, improve the urban environment, and support inclusive social development. Helping to improve the performance of urban service providers and supporting the urban transportation system will contribute to improved governance and provide an opportunity for an enhanced role for the private sector in urban infrastructure and service provision. It will also contribute directly to the climate change objectives of lowered greenhouse gas emissions. Support in urban planning and prioritization, feasibility work, and packaging of urban investments will contribute to good governance and to the better targeting of investments.

15. Rapid economic growth in Mongolia, led by the mining sector, presents a number of opportunities in the urban sector. A key challenge will be to identify quality projects that can generate the economic and financial benefits to justify borrowing on ordinary capital resources terms and establish an institutional and policy framework that attracts private sector participation. Support in Ulaanbaatar will focus on addressing (i) enhanced urban planning and infrastructure upgrading in *ger* areas; (ii) enhanced service provision in water supply and wastewater management; and (iii) policy, legislative, and institutional issues. Building on its past activities, ADB will support urban planning and upgrading of infrastructure in *aimag* and *soum* centers that are required to serve selected economic corridor development.

16. At the outcome level, key indicators are (i) contributing to the achievement of the MDGs; (ii) enhancing socioeconomic development; (iii) continuing reductions in urban poverty; and (iv) reducing disparity in per capita GDP between Ulaanbaatar and other urban areas, and in the quality of urban services between apartment areas and *ger* areas. Outcomes in ADB-supported areas could be compared with areas not benefiting from ADB support. At the output level, indicators would include improved quality, coverage, and reliability of urban services and increased service sustainability. This would be recorded in figures on water supply, sewerage, and district heating coverage and potable water wastage and consumption, and financial performance indicators for service providers.

Problem Tree for Water and Other Urban Infrastructure and Services Sector

EFFECTS

Poor living conditions in Darkhan *soum* and degradation of the Kharaa River environment caused by groundwater and surface water pollution

Lessened attractiveness of living conditions and potential loss of skilled labor

Water pollution and potential loss of aquatic biodiversity

CORE DEVELOPMENT PROBLEM

Municipal wastewater management infrastructure services do not meet growing demands for sustainable urban development in Darkhan *soum*

Limited institutional capacity of wastewater and environmental management

Inadequate coverage and quality due to aging of municipal sewer, pumping, wastewater treatment, and sludge management infrastructure

Weak skills in environmental planning and management

Inadequate wastewater collection and pumping

Inadequate wastewater treatment if facility not renewed

Limited capacity of project planning and management

Dated sewer system and pumping stations

Dated domestic and industrial wastewater treatment facilities

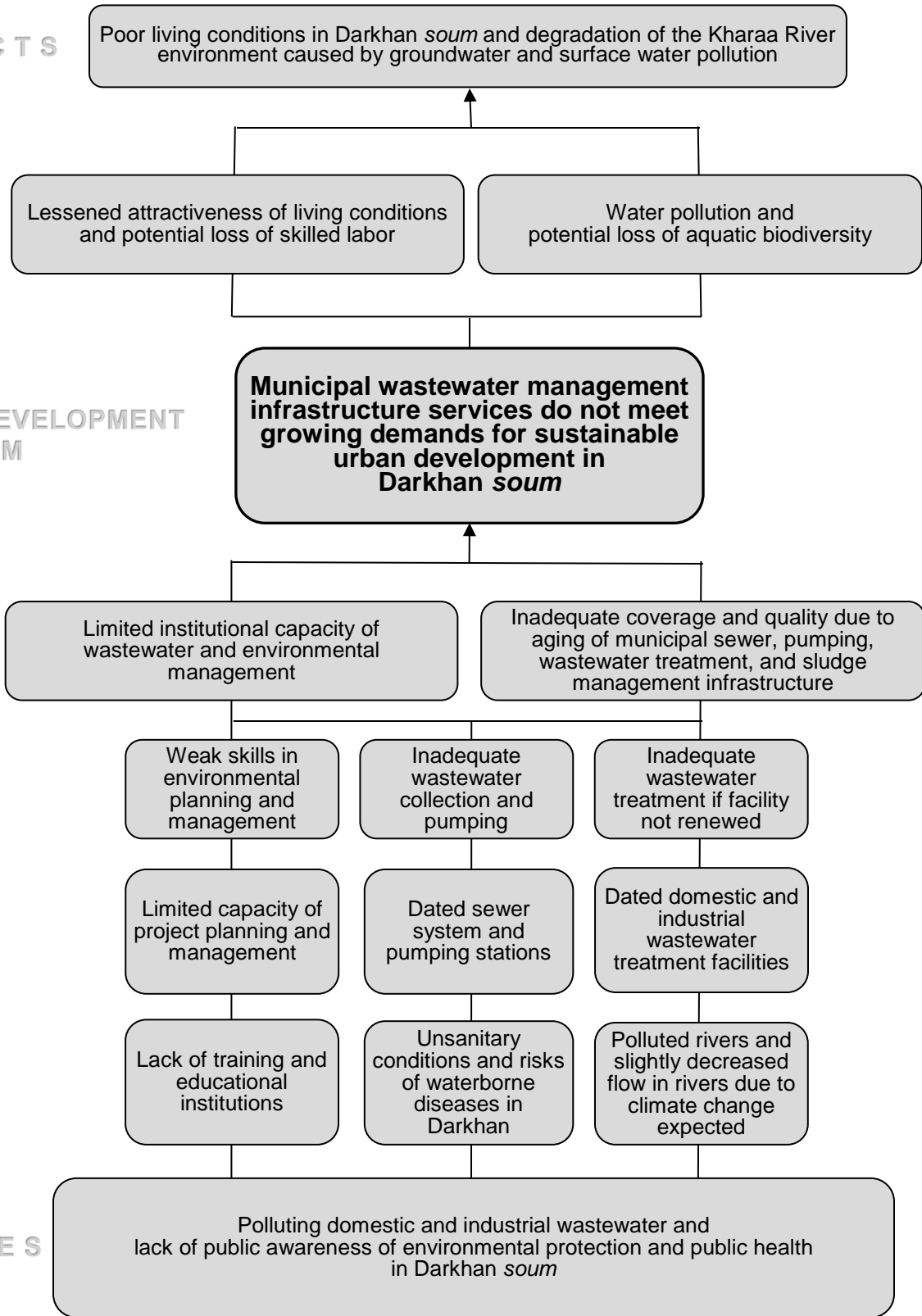
Lack of training and educational institutions

Unsanitary conditions and risks of waterborne diseases in Darkhan

Polluted rivers and slightly decreased flow in rivers due to climate change expected

CAUSES

Polluting domestic and industrial wastewater and lack of public awareness of environmental protection and public health in Darkhan *soum*



Sector Results Framework (Water and Other Urban Infrastructure and Services, 2014–2016)

Country Sector Outcomes		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contribution	Indicators with Targets and Baselines	Outputs with ADB Contribution	Indicators with Incremental Targets	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Interventions
More people enjoy improved urban services and better living conditions in urban areas	<p>Population using an improved drinking water source in urban area increases to 85% by 2016 (2010 baseline: 78%)</p> <p>Population using an improved sanitation facility in urban area increases to 45% by 2016 (2010 baseline: 37%)</p> <p>Average water consumption in <i>ger</i> areas increases to 10 lpcd by 2016 (2010 baseline: 6.5 lpcd)</p>	Basic urban infrastructure and services are expanded and efficiently delivered	<p>360 km of water supply pipe and 340 km of sewage pipe constructed by 2016</p> <p>Ulaanbaatar water and sewage operator's per-unit operational costs decrease 10% by 2018 (2010 baseline: \$0.28 per cubic meter of water sold)</p> <p>Densification in targeted <i>ger</i> areas increases to 200 persons per ha by 2018 (2010 average baseline: 50 persons per ha)</p> <p>Improved and integrated district plans are produced for each of the nine districts of Ulaanbaatar by 2016</p>	<p>Planned target subsectors Water and sanitation infrastructure (50% of funds)</p> <p>Other urban infrastructure (50% of funds)</p> <p>Pipeline projects with estimated amounts Darkhan Wastewater Management Project (\$18.5 million)</p> <p>Ulaanbaatar Urban Services and Ger Area Development Program – Project 2 (\$55.0 million)</p> <p>Ongoing projects with approved amounts Urban Development Sector Project (\$28.2 million) with supplementary (\$7.03 million)</p> <p>Southeast Gobi Urban and Border Town Development Project (\$15.0 million)</p> <p>Ulaanbaatar Urban Services and Ger Areas Development Investment Program – Project 1 (\$53.7 million)</p>	<p>Planned target subsectors About 60 km of water supply, sewerage, and heating pipeline; 15 km of paved road (including associated facilities); 2 business incubators; 2 kindergartens; and a 20,000 m³ WWTP constructed</p> <p>Strengthened contractual and regulatory arrangements for delivery of efficient water and wastewater services</p> <p>Improved urban planning system and capacity, and community engagement</p> <p>Pipeline projects WWTP, pumping stations, sewer rehabilitation, heating boilers and pipelines, paved roads, and water kiosks</p> <p>Ongoing projects 14 water supply bore wells, 2 reservoirs, about 110 km of water mains, 48 km of sewers, 10 heating boilers, and 19 km of heating pipeline installed</p> <p>47 water kiosks, 14 km of paved roads, 6 solid waste landfill sites, and 2 km of storm water drainage constructed</p>

ADB = Asian Development Bank, ha = hectare, km = kilometer, lpcd = liter per capita per day, m³ = cubic meter, WWTP = wastewater treatment plant.

Source: Asian Development Bank estimates.