



# Draft Design and Monitoring Framework

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Project Number: 39019  
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## People's Republic of China: Inner Mongolia Autonomous Region Environmental Improvement Project

A design and monitoring framework is an active document, progressively updated and revised as necessary, particularly following any changes in project design and implementation. In accordance with ADB's public communications policy (2005), it is disclosed before appraisal of the project or program. This draft framework may change during processing of the project or program, and the revised version will be disclosed as an appendix to the report and recommendation of the President.

Asian Development Bank

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<b>Impact</b>  Environmental improvement resulting from a reduction in atmospheric and water pollution	Annual emission reduction of 787,243 t of CO <sub>2</sub> , 15,105 t of SO <sub>2</sub> , 2,272 t of NO <sub>x</sub> , and 19,136 t of TSP in the Project area.  Annual discharge reduction of 14,126 t of COD, 5,738 t of BOD, 7,600 t of SS, 898 t of NH <sub>3</sub> -N, 1,234 t of TN, and 88 t of TP in the Project area.  A total of about 30,000 poor households benefited by the gas and central heating supply connection and tariff discounts starting 2010.	IMAR and project cities statistical yearbooks	<b>Assumptions</b> <ul style="list-style-type: none"> <li>The Project is implemented as planned</li> <li>Complementary reforms and activities are implemented</li> <li>Major changes in macroeconomic condition that affect gas and coal markets</li> </ul>
<b>Outcome</b>  Efficient, safe, and reliable gas and heating supply and wastewater treatment systems that conserves energy and water resources in the project cities	Reliable gas services to about 1 million urban population, with annual supply capacity of 434.5 million m <sup>3</sup> of natural gas and 21.25 million m <sup>3</sup> of CNG for residential, commercial, and industrial purposes in the project cities by 2010.  Reliable central heating services to about 1 million urban population, with a coverage area of 25.776 million m <sup>2</sup> and 826 MW heating supply capacity by 2009.  Closure of 396 small inefficient coal-fired boilers and an average 20% efficiency improvement in heating supply by 2009.  More than 85% of the household coal fired stoves for heating and/or for cooking substituted by central heating and/or gas supply by 2010.	PPMS and PCR  IMAR and project cities statistical yearbooks  Reports and information provided by the PMO and the PIAs  Implementation and impact monitoring by the GIMAR and ADB  Ex-post monitoring by the GIMAR	<b>Assumptions</b> <ul style="list-style-type: none"> <li>GIMAR continues enforcing environmental standards</li> <li>Project implementation according to schedule</li> <li>Continued government's effort in reforming the gas and heating sector.</li> <li>Continued government's effort in energy conservation and improvement of primary energy mix.</li> <li>Complementary social services to the poor are in place.</li> <li>Affected persons are compensated and resettled in a timely manner</li> <li>Sufficient gas and heating demand</li> <li>The environmental management and mitigation plan is implemented.</li> </ul> <b>Risks</b> <ul style="list-style-type: none"> <li>Loan does not become effective in time due to domestic approval procedure</li> </ul>

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	<p>784 workers affected by the closure of small boilers will be reemployed and 133 affected rural peasants will be resettled by 2009.</p> <p>The daily wastewater treatment capacity increases by 86,000 m<sup>3</sup> in Wulateqian and Wulatehou cities by 2009.</p> <p>Treated water meets the national discharge standard and the 30 million t of the treated grey water recyclable annually by 2009.</p> <p>Energy efficiency improves from 58% to 80% (by 22%) and energy is conserved annually in terms of standard coal of 540,000 t by 2010.</p>		<ul style="list-style-type: none"> <li>Construction delayed due to internal approval procedure</li> <li>The institutional and financial reform action plans are not implemented by PIAs</li> </ul>
<p><b>Outputs</b></p> <p>1. Improved central heating systems in the project cities</p> <p>2. Provision of gas transmission and distribution systems in the project cities.</p> <p>3. Enhanced wastewater treatment capacity in project cities</p>	<p>A well-functioning central heating supply system in 8 project cities with 126 km heating pipeline, 21 boilers, and 190 heating exchange stations by 2009. Closure of 396 small coal-fired boilers by 2009.</p> <p>Construction of a 406 km gas transmission trunk pipeline from Changqing to Linhe, including 7 transmission and 8 valve stations, and a 338 km urban gas distribution pipeline in 8 project cities including 1 CNG primary supply station, 3 CNG satellite filling stations, and 4 gas unloading stations by 2010.</p> <p>Construction of 2 wastewater treatment plants, a 48 km sewer transmission pipeline and 4 pumping stations by 2009.</p>	<p>Quarterly progress reports, PAMs, MTR, PPMS, and PCR</p> <p>Annual financial, operation and performance reports of project companies</p> <p>Social, resettlement and poverty monitoring report by implementation consultants</p> <p>Implementation and impact monitoring by the GIMAR and ADB</p> <p>Compliance with ADB covenants</p> <p>Ex-post monitoring by the GIMAR</p>	<p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>Adequately staffed PMO and PIOs.</li> <li>Sufficient counterpart funds</li> <li>Project implemented according to schedule</li> <li>Effective resettlement planning and monitoring</li> <li>In-time procurement and quality equipment</li> <li>Complementary social services to the poor are in place.</li> <li>MOC, NDRC and city price bureaus continue to implement urban gas and heating, and water sector reforms.</li> <li>Local government allocates sufficient budget for subsidizing heating tariff for the poor.</li> <li>Cost savings from efficiency improvement are passed on to consumers.</li> </ul> <p><b>Risks</b></p> <ul style="list-style-type: none"> <li>Loan covenants are not met during project implementation.</li> </ul>

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4. Institutional strengthening and capacity building	<p>An implementation plan developed by 2006, and implemented by 2009, and 95% of billing collection of PIAs by 2011.</p> <p>PIAs are profitable and a return on net fixed asset increasing gradually to at least 6.0% and 1.4 times debt service ratio starting 2011.</p>		<ul style="list-style-type: none"> <li>The recommendations made by the consultants are not implemented.</li> <li>Insufficient training for appropriate PMO staff</li> </ul>
<b>Activities with Milestones</b> <p>1.1. Civil works: civil works contracts awarded by September 2006 and completed by December 2009.</p> <p>1.2. Materials and equipment: materials and equipment procured by July 2008.</p> <p>1.3. Land acquisition and resettlement: resettlement completed by December 2008.</p> <p>1.4. Implementation consulting services: consultants are recruited by September 2006 and their works are completed in June 2011.</p> <p>1.5. Institutional strengthening: consultants are recruited by December 2006 and their works are completed in December 2007.</p> <p>1.6. Tariff reforms: an action plan is prepared by December 2007 and implemented before project completion.</p> <p>1.7. Trainings: training programs completed by December 2010.</p> <p>1.8. ADB support and supervision: ADB's procurement training completed by September 2006 and supervision starts in July 2006.</p> <p>1.9. Project impact monitoring: baseline data collected by February 2007 and monitoring and reporting starting in June 2007.</p>			<b>Inputs</b> <p>ADB: \$110.0 million</p> <ul style="list-style-type: none"> <li>Civil works: \$5.8 million</li> <li>Equipment: \$90.7 million</li> <li>Consultation: \$2.2 million</li> <li>Contingency: \$11.3 million</li> </ul> <p>Local Banks and PIAs: \$220.4 million</p> <ul style="list-style-type: none"> <li>Civil works: \$117.4 million</li> <li>Equipment: \$80.0 million</li> <li>Contingency: \$23.0 million</li> </ul>

ADB = Asian Development Bank, BOD = biological oxygen demand, CNG = compressed natural gas, CO<sub>2</sub> = carbon dioxide, COD = chemical oxygen demand, GIMAR = Government of Inner Mongolia Autonomous Region, IA = implementing agency, IMAR = Inner Mongolia Autonomous Region, km = kilometer, LPG = liquidize Petroleum gas, m<sup>3</sup> = cubic meter, MW = megawatts (= 1,000,000 watts), MOC = Ministry of Construction, MTR = midterm review, NDRC = National Development and Reform Commission, NO<sub>x</sub> = nitrogen oxides, PAM = project administration mission, PCR = project completion report, PIA = project implementing agency, PIOs = the project implementing office, PMO = the project management office, PPMS = Project Performance Management System, PRC = People's Republic of China, SO<sub>2</sub> = sulphur dioxide, SS = suspended solids, t = tons, t/y = tons per year, TN = total nitrogen, TP = total phosphorus, TSP = total suspended particulates.

Source: Asian Development Bank estimates.