Proposed Policy-Based Loan
Mongolia: Ulaanbaatar Air Quality Improvement Program
CURRENCY EQUIVALENTS
(as of 18 September 2017)

Currency unit – togrog (MNT)
MNT1.00 = $0.000407
$1.00 = MNT2,454.00

ABBREVIATIONS

ADB – Asian Development Bank
IAP – implementation action plan
µg/m³ – microgram per cubic meter
PBL – policy-based loan
PM₂.₅ – particulate matter of less than 2.5 micrometers in diameter
TA – technical assistance

NOTE

In this report, "$" refers to United States dollars.

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**PROJECT AT A GLANCE**

1. **Basic Data**
   - **Project Number**: 51199-001
   - **Project Name**: Ulaanbaatar Air Quality Improvement Program
   - **Country**: Mongolia
   - **Borrower**: Government of Mongolia
   - **Department/Division**: EARD/EAER
   - **Executing Agency**: Ministry of Finance

2. **Sector**
   - **Subsector(s)**
     - **Public sector management**: Public administration
     - **Energy**: Energy sector development and institutional reform
     - **Health**: Health sector development and reform
     - **Transport**: Transport policies and institutional development
     - **Water and other urban infrastructure and services**: Urban policy, institutional and capacity development
     - **ADB Financing ($ million)**
       - Public administration: 20.00
       - Energy sector development and institutional reform: 60.00
       - Health sector development and reform: 10.00
       - Transport policies and institutional development: 10.00
       - Urban policy, institutional and capacity development: 30.00
       - **Total**: 130.00

3. **Strategic Agenda**
   - **Subcomponents**
     - Inclusive economic growth (IEG)
     - Environmentally sustainable growth (ESG)
     - **Climate Change Information**
       - Mitigation ($ million): 22.50
       - CO₂ reduction (tons per annum): 117,000
       - Climate Change impact on the Project: High

4. **Drivers of Change**
   - **Components**
     - Governance and capacity development (GCD)
     - Civil society participation
     - Institutional development

5. **Poverty and SDG Targeting**
   - **Location Impact**
     - Urban: High

6. **Risk Categorization**
   - Complex

7. **Safeguard Categorization**
   - Environment: C
   - Involuntary Resettlement: C
   - Indigenous Peoples: C

8. **Financing**
   - **Modality and Sources**
     - **ADB**
       - Sovereign Stand-Alone Policy-Based Lending (Regular Loan): Ordinary capital resources: 130.00
     - **Cofinancing**: None
     - **Counterpart**: None
     - **Total**: 130.00

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Source: Asian Development Bank
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I. THE PROPOSAL

1. The Government of Mongolia requested financial assistance from the Asian Development Bank (ADB) to support Ulaanbaatar, its capital city, to address the severe air pollution problem that constrains its sustainable and inclusive economic development. This policy-based loan (PBL) proposal is included in ADB’s country operations business plan for Mongolia, 2017–2019.1

2. ADB is proposing a two-tranche, stand-alone PBL to reduce Ulaanbaatar’s air pollution and greenhouse gas emissions under the National Program for Reducing Air and Environment Pollution, 2017–2025 framework, by helping the government deliver on its Implementation Action Plan (IAP) commitments, prioritized based on cost-effectiveness.

II. PROGRAM AND RATIONALE

A. Background and Development Constraints

3. Ulaanbaatar is home to 1.3 million people, about half of the nation’s population. The city is the world’s coldest capital, with temperatures regularly dropping below –20 degrees Celsius in winter months (October–March). Global climate change is leading to more frequent natural disasters in the vast countryside, hastening migration to the city as nomadic herders lose their livelihoods. Lacking other income sources, these herders seek refuge in the city and settle in ger areas, which lack adequate public services such as water, sanitation, heat supply, and public transport, partly because of budget gaps.2

4. Ulaanbaatar is experiencing some of the highest levels of air pollution registered in the world, especially in winter, and these pose serious public health risks. Estimates suggest that 10% of deaths in Ulaanbaatar in 2013 resulted from air pollution complications.3 Children are particularly vulnerable to pollution impacts such as reduced fetal growth, preterm birth, pneumonia, impaired brain development, and reduced lung function leading to acute and chronic respiratory diseases.4 The negative impacts of air pollution—including medical costs, lost productivity, chronic illnesses, and shorter life expectancy—greatly contribute to poor health and living standards, especially for low-income families who cannot afford proper nutrition (and hence are less immune to diseases) and medical care. The annual health cost of air pollution was estimated at $463 million in 2009.5 Studies concluded that the economic impact of air pollution is 18%–28% of Ulaanbaatar’s gross domestic product and 8%–13% of Mongolia’s gross domestic product.6

5. The largest source of air pollution is raw coal burning (or waste, by the poorest) for heat and cooking in households and small heat-only boilers in the ger areas. This contributes to an estimated 80% of ambient concentrations of inhalable particulate matter of less than 2.5

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1 The project is included in ADB. 2017. Country Operations Business Plan: Mongolia, 2017–2019. Manila. An initial draft of the design and monitoring framework is in Appendix 1. Transaction technical assistance will be provided for program preparation (accessible from the list of linked documents in Appendix 3).

2 Gers are traditional portable round tents covered with skins or felt and used as a dwelling by nomads in the steppes of East Asia. Ger areas comprise traditional gers and houses often constructed with poorly insulating materials.


micrometers in diameter (PM$_{2.5}$). An increasing number of private vehicles and highly polluting public transport buses are thought to be responsible for 10% of ambient PM$_{2.5}$. Coal burning in the combined heat and power plants contributes to an additional 5%–6%, and resuspension of unpaved ger roads dust and of fly ashes to the remaining 4%–5%. These sources produce dangerous levels of PM$_{2.5}$, which have recently triggered an unprecedented civil society response.

**B. Policy Reforms and ADB’s Value Addition**

6. Several policies had been piloted to curb emissions from the energy and transport sectors, such as provision of cleaner coal, incentives to buy cleaner cookstoves, insulated construction materials, and cleaner vehicles and transport fuels. However, the policies were issued by different agencies without scientific analysis, coordination, or continuity, and have often resulted in wasted financial resources (subsidies).

7. In November 2016, the government renewed the composition (following the new cabinet) of the National Committee for Reduction of Air Pollution, and commissioned a National Program for Reducing Air and Environment Pollution, 2017–2025 and its IAP. The National Program, approved by the cabinet on 20 March 2017, aims to update urban planning and increase the quality of urban infrastructure. The IAP, by specifying accountable institutions, time frames, and costs, signals the government’s commitment to tackle the air pollution problem. However, there is an opportunity to rationalize the IAP by prioritizing actions that are cost-effective, coordinated among agencies, and financially and economically viable and sustainable. These actions need to be supported by a robust and comprehensive policy framework: Mongolia’s ambitious environmental regulations lack details and enforcement provisions for their implementation, and are not supported by public awareness and participation.

8. It is a social and political imperative to implement measures to curb air emissions from key sectors and protect the most vulnerable groups (through interventions such as providing child vaccinations against pneumonia and filtering systems in hospitals, schools, and kindergartens). Such measures could prevent yet another highly polluted winter and ensure that those most in need of social welfare will be protected despite the overall fiscal consolidation.

9. From a long-term perspective, urban and energy planning need to be integrated for more efficient and sustainable redevelopment of ger areas. In fact, due to uncoordinated urban and energy master plans, the city’s combined heat and power plants cannot supply heat and electricity to the ger areas because of either insufficient capacity or incomplete transmission networks. Expanding the district heating transmission network to the ger areas will also enable the dismantling of highly polluting and inefficient heat-only boilers.

10. Program justification. Ulaanbaatar is experiencing an unprecedented air pollution level that (i) harms citizens’ public health, disproportionately children and poor people; and (ii) results in

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8 In 2016 in Ulaanbaatar, the annual average of ambient PM$_{2.5}$ concentration was 80 micrograms per cubic meter ($\mu g/m^3$), i.e., eight times the World Health Organization’s recommended standard of 10 $\mu g/m^3$, and about three times the Mongolian air quality standard (25 $\mu g/m^3$). In January 2017, peaks of PM$_{2.5}$ as high as 1,017 $\mu g/m^3$ were recorded in the Bayankhoshuu ger area.

9 The National Committee is led by the Prime Minister and co-led by the Minister for Environment and Tourism, and comprises vice ministers and other agency directors. Its composition was expanded to include civil society organization representation. It has oversight of a technical working group led by the Ministry of Environment and Tourism and comprising 32 members from line ministries, academia, and civil society organizations.
significant health and economic costs, a long-term burden on the already weak national economy. The problem can only be controlled by a multisector approach for strengthening environmental governance: short- to medium-term gap-filling policies for curbing emissions from key sectors and for health protection measures; and long-term, integrated urban and energy plans. The proposed program aligns with and strengthens ADB’s ongoing urban development, health, and energy programs.\textsuperscript{10} The first tranche will be allocated to the most urgent policy actions; the second tranche, while enabling monitoring of the first tranche implementation, will lay the foundation for long-term policies.

11. **Government linkages.** The program is aligned with the National Program and its IAP. The program is also (i) aligned with ADB’s country partnership strategy for Mongolia, 2017–2020;\textsuperscript{11} and (ii) consistent with ADB’s environment, energy, and health operational directions.\textsuperscript{12}

C. **Impacts of the Reform**

12. The country’s overarching objective will be public health and living standards through reduced air pollution in Ulaanbaatar improved. The outcome will be effective air pollution control measures implemented. Outputs will include (i) IAP rationalization and air pollution control regulatory framework improved, (ii) measures on air pollution reduction and health protection implemented, and (iii) environmentally sound and integrated urban and energy plans developed and approved.\textsuperscript{13}

D. **Development Financing Needs and Budget Support**

13. **Development partners.** The program’s objectives were shared with and well received by the World Bank, Government of Japan through the Japan International Cooperation Agency, Swiss Agency for Development and Cooperation, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), as well as United Nations agencies. The program will support the implementation of consulted development partners’ initiatives.

14. The government requested a regular loan of $130 million from ADB’s ordinary capital resources. The loan will have a 15-year term, including a 3-year grace period; an annual interest rate determined following ADB’s London interbank offered rate-based lending facility; and a commitment charge of 0.15% per year (Table 1). The average maturity and maturity premium will be calculated based on the government’s request on repayment method.

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount ($ million)</th>
<th>Share of Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Development Bank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinary capital resources</td>
<td>130.0</td>
<td>100.0</td>
</tr>
<tr>
<td>(regular loan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>130.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>


\textsuperscript{13} Performance indicators detailed in the design and monitoring framework (Appendix 1) offer examples of the types of actions that support each output.
E. Implementation Arrangements

15. The Ministry of Finance is the program’s executing agency. Implementing agencies will be confirmed during the final dialogue with the government on policy actions. Implementation will be from 1 March 2017 to 31 December 2018. The loan proceeds will be disbursed following ADB’s simplification of disbursement procedures and related requirements for PBLs, upon the satisfactory completion of the policy actions agreed between ADB and the government.\(^{14}\)

III. DUE DILIGENCE REQUIRED

16. A proposed transaction technical assistance estimated to cost $300,000, of which $250,000 will be financed on a grant basis by ADB’s Technical Assistance Special Fund (TASF 6), to be processed and approved with the concept paper, will assist the implementing agencies in fulfilling policy commitments.\(^{15}\) Terms of reference for the TA are outlined in the transaction TA report.\(^{16}\)

17. The required due diligence includes a sector assessment, justification of PBL amount, and summary poverty reduction and social strategy. Direct or indirect impacts of the policy actions on environment, involuntary resettlement, and indigenous peoples will be evaluated. A matrix of each policy action’s potential impact, with appropriate mitigation measures and a qualitative indication of likely order of magnitude, will be prepared.

IV. PROCESSING PLAN

A. Risk Categorization

18. The program is classified as complex, as it exceeds $50 million.

B. Resource Requirements

19. Program processing is estimated to require 10 person-months of staff time and 5 person-months of consultant time.\(^{17}\)

C. Processing Schedule

20. The proposed processing schedule is in Table 2.

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\(^{15}\) With $0.25 million funding from ADB’s Technical Assistance Special Fund (TASF 6).

\(^{16}\) Technical Assistance for Program Preparation (accessible from the list of linked documents in Appendix 3).

\(^{17}\) Funded under ADB. 2015. *Technical Assistance for Promoting Sustainable Energy for All in Asia and the Pacific.* Manila.
### Table 2: Proposed Processing Schedule

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Expected Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept paper approval</td>
<td>September 2017</td>
</tr>
<tr>
<td>Loan fact-finding mission</td>
<td>September–October 2017</td>
</tr>
<tr>
<td>Informal Board seminar</td>
<td>October 2017</td>
</tr>
<tr>
<td>Management review meeting</td>
<td>November 2017</td>
</tr>
<tr>
<td>Loan negotiations</td>
<td>November 2017</td>
</tr>
<tr>
<td>Board consideration</td>
<td>January 2018</td>
</tr>
<tr>
<td>Loan effectiveness</td>
<td>March 2018</td>
</tr>
</tbody>
</table>


### V. KEY ISSUES

21. Close coordination is required with the executing and implementing agencies to monitor the progress of the National Program. Within ADB, support from the Economic Research and Regional Cooperation Department and the Sustainable Development and Climate Change Department will ensure adequate analysis in support of required due diligence.
# DESIGN AND MONITORING FRAMEWORK  
(Initial Draft)

**Country’s Overarching Development Objective**
Public health and living standards through reduced air pollution in Ulaanbaatar improved  
(National Program for Reducing Air and Environment Pollution, 2017–2025)\(^a\)

<table>
<thead>
<tr>
<th>Results Chain</th>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
</table>
| **Effect of the Reform**  
Effective air pollution control measures implemented | By 2019: Budget allocated to air pollution reduction measures increased to $xx million  
(2016 baseline: $XX million) | Annual government budget reports | Climate disaster-induced rural-to-urban migration outpaces implementation of policy actions. |

<table>
<thead>
<tr>
<th>Reform Areas</th>
<th>Indicative Policy Actions</th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1. IAP rationalization and air pollution control regulatory framework improved | 1.1 Issued IAP  
1.2 Government progress reports on the National Program IAP issued regularly (at least one by November 2017 and one by November 2018)  
(2016 baseline: not issued)  
1.3 National Committee meetings held regularly, at least bimonthly until December 2018, to discuss the IAP’s progress  
(2016 baseline: 0)  
1.4 Parliament hearing held on the progress reports of the IAP and on the Air Pollution Outlook Report prepared annually by MET  
(2016 baseline: 0)  
1.5 Education and outreach program to increase awareness on air pollution—including connections between air quality and health, and fuel use and air pollution—developed and implemented by MET in 2017, targeting X persons in schools, public offices, and utilities, including 50% female staff  
(2016 baseline: 0)  
1.6 Inventory of innovative, low-carbon technologies for space heating and green buildings, with a | 1.6 MET and MCUD annual reports | Reforms are discontinued because of changes in political priorities. |
<table>
<thead>
<tr>
<th>Results Chain</th>
<th>Performance Indicators with Targets and Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>focus on technologies appropriate for Ulaanbaatar, established by MET and MCUD (2016 baseline: 0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7 Energy efficiency standards for electric stoves and heaters issued by MOE (2016 baseline: not issued)</td>
<td>1.7 Issued standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.8 Green building standard, including a rating system for green buildings performance, approved by MCUD by 2018 (2016 baseline: not approved)</td>
<td>1.8 Approved green building standard and issued rating system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9 Budget plan to upgrade city air quality and emission compliance monitoring network developed by Ulaanbaatar Municipality (2016 baseline: 0)</td>
<td>1.9 Budget plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.1 Resolution issued by MOE and Ulaanbaatar Municipality to provide x tons of semi-coke briquettes or lower-emitting fuel, and distribute to XX,XXX ger population areas households in district x (2016 baseline: not issued)</td>
<td>2.1 Resolution issued by MOE (for production) and ordinance issued by Ulaanbaatar Municipality (for distribution)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.2 Amendment to the excise tax law to promote greater usage of higher-quality transportation fuel submitted to Parliament by the government (2016 baseline: not submitted)</td>
<td>2.2 Submitted amendment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 Ban on imported private and public transport vehicles not compliant with the equivalent of Euro IV emission standard approved by cabinet (2016 baseline: not approved)</td>
<td>2.3 Cabinet resolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4 Resolution requiring insulation and air filtration systems in new kindergartens, schools, and hospitals in Ulaanbaatar approved by Cabinet (2016 baseline: not approved)</td>
<td>2.4 Cabinet resolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.5 Decree for mandatory vaccination with pneumococcal</td>
<td>2.5 National decree</td>
<td></td>
</tr>
<tr>
<td>Results Chain</td>
<td>Performance Indicators with Targets and Baselines</td>
<td>Data Sources and Reporting Mechanisms</td>
<td>Risks</td>
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<tr>
<td>conjugate vaccine for children from 0 to 5 years old in Ulaanbaatar's highest-polluted areas (district x and y) approved by the government, including adequate budget allocation for vaccine management (storage, distribution) per UNICEF standards (2016 baseline: not approved)</td>
<td></td>
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<tr>
<td>3. Environmentally sound and integrated urban and energy plans developed and approved</td>
<td>3.1 Urban and Energy Master Plans integrated and master plans implemented by Ulaanbaatar Municipality with coherent land-use policies (expanding district heating to ger areas to enable dismantling of heat-only boilers) (2016 baseline: not integrated)</td>
<td>3.1 Revised Urban and Energy Master Plans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2 Resolution requiring all new government-owned and government-run buildings to apply energy efficiency standards and prohibiting use of on-site coal-fired boilers in Ulaanbaatar approved by the cabinet (2016 baseline: not approved)</td>
<td>3.2 Cabinet resolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3 x additional demonstrations of renewable energy sources piloted by Ulaanbaatar Municipality and MCUD to complement or replace existing heating systems by December 2018 (2016 baseline: N/A)</td>
<td>3.3 Ulaanbaatar Municipality and MCUD annual reports</td>
<td></td>
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<tr>
<td></td>
<td>3.4 Sustainable financing strategy developed by the government for long-term policies on energy efficiency (lowering the cost of needed financing) (2016 baseline: 0)</td>
<td>3.4 Annual reports</td>
<td></td>
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</tbody>
</table>

**Budget Support**

| | $130,000,000 |
| ADB (ordinary capital resources) | |
| ADB (TASF 6 and CDIA) | $500,000 |


*Ger* are traditional portable round tents covered with skins or felt and used as a dwelling by nomads in the steppes of East Asia. *Ger* areas comprise traditional *gers* and houses often constructed with poorly insulating materials.

Source: ADB.
Appendix 2

PROBLEM TREE

Effects

Health and living standards of people reduced
Outcomes for poor and vulnerable segments are worse than for non-poor
Social cost of air pollution drain already weakened economy

Core problem

Unhealthy air quality in Ulaanbaatar

Causes

Inconsistent energy and environment policy, legal, and regulatory framework

Incomplete environmental regulations and instruments for enforcing air pollution control
No cost-effectiveness analysis for decision making
Limited coordination and communication among ministries and with the private sector
Fragmented and discontinuous energy subsidies

Highly polluting urban systems

Vulnerable population exposed to and unprotected from high levels of air pollution
Raw coal burning for cooking and heating in inefficient stoves and poorly insulated houses
Increasing private vehicles and highly polluting public transport buses
Uncontrolled resuspension of fly ashes and of dust from unpaved roads
Lack of infrastructure to provide cleaner energy
Lack of financial resources to redevelop ger\textsuperscript{a} areas

Uncoordinated urban development

Limited consistency among city urban and energy master plans
Limited control over in-migration and urban settlement patterns
No income diversification for rural households who migrate to the city when losing their herds

\textsuperscript{a} traditional portable round tents covered with skins or felt and used as a dwelling by nomads in the steppes of East Asia
LIST OF LINKED DOCUMENTS
http://www.adb.org/Documents/LinkedDocs/?id=51199-001-ConceptPaper

1. Initial Poverty and Social Analysis
2. Technical Assistance for Program Preparation