



## Concept Paper

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Project Number: 53028-001  
August 2019

# Proposed Policy-Based Loan Mongolia: Ulaanbaatar Air Quality Improvement Program, Phase 2

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**Asian Development Bank**

## CURRENCY EQUIVALENTS

(as of 1 August 2019)

Currency unit	–	togrog (MNT)
MNT1.00	=	\$0.00038
\$1.00	=	MNT2,666.0

## ABBREVIATIONS

ADB	–	Asian Development Bank
GDP	–	gross domestic product
IMF	–	International Monetary Fund
PBL	–	policy-based loan
PM <sub>2.5</sub>	–	particulate matter of less than 2.5 micrometers in diameter

## NOTE

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

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## PROGRAM AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number: 53028-001</b>	
<b>Project Name</b>	Ulaanbaatar Air Quality Improvement Program, Phase 2	<b>Department/Division</b>	EARD/EAER
<b>Country Borrower</b>	Mongolia Government of Mongolia	<b>Executing Agency</b>	Ministry of Finance (formerly Ministry of Finance and Economy)
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Energy</b>	Energy sector development and institutional reform	60.00	
<b>Health</b>	Disease control of communicable disease	20.00	
<b>Public sector management</b>	Public administration	30.00	
<b>Transport</b>	Transport policies and institutional development	10.00	
<b>Water and other urban infrastructure and services</b>	Urban policy, institutional and capacity development	40.00	
		<b>Total</b>	<b>160.00</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information<sup>1</sup></b>	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	High
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns Urban environmental improvement	<b>ADB Financing</b>	
		Adaptation (\$ million)	80.12
		Mitigation (\$ million)	80.12
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	Civil society participation	Effective gender mainstreaming (EGM)	✓
Knowledge solutions (KNS)	Institutional development		
Partnerships (PAR)	Knowledge sharing activities		
	Implementation		
	United Nations organization		
<b>5. Poverty and SDG Targeting</b>		<b>Location Impact</b>	
Geographic Targeting	No	Rural	Low
Household Targeting	No	Urban	High
General Intervention on Poverty	No		
SDG Targeting	Yes		
SDG Goals	SDG3, SDG9, SDG11, SDG13		
<b>6. Risk Categorization:</b>	Complex		
<b>7. Safeguard Categorization</b>	<b>Environment: C Involuntary Resettlement: C Indigenous Peoples: C</b>		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>160.00</b>	
Sovereign Stand-Alone Policy-Based Lending (Regular Loan): Ordinary capital resources		160.00	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>0.00</b>	
None		0.00	
<b>Total</b>		<b>160.00</b>	
Note: An attached technical assistance will be financed on a grant basis by the Technical Assistance Special Fund (TASF-6) in the amount of \$250,000.			
<b>Currency of ADB Financing: USD</b>			

<sup>1</sup> The project reduces greenhouse gas emissions. However, it does not fall under the eligibility criteria for climate mitigation finance as defined by the joint multilateral development bank methodology on tracking climate finance, which notes that not all activities that reduce greenhouse gases in the short term are eligible to be counted towards climate mitigation finance. Accordingly, greenfield fossil fuel projects are excluded, and climate mitigation finance is considered zero.

## I. THE PROPOSAL

1. During 2018–2019, the Asian Development Bank (ADB) implemented the Ulaanbaatar Air Quality Improvement Program policy-based loan (PBL) (phase 1) in response to the Government of Mongolia’s request to help Ulaanbaatar, its capital city, address the severe air pollution that constrains its sustainable and inclusive economic development.<sup>1</sup> The support successfully raised the government’s ambition to end the use of raw coal for heating and replace it with less polluting heating alternatives, notably by providing the impetus for a ban on household use of raw coal in May 2019.<sup>2</sup> However, the ban may be (i) less effective than expected if necessary supporting policy and regulatory measures are not implemented, and (ii) difficult to maintain in the long-term without sustainable and affordable alternative clean heat supplies.

2. The proposed PBL phase 2 is intended to build on the success of phase 1. The first tranche will accelerate implementation of policies and regulations to embed the air quality improvement measures developed under phase 1, particularly the raw coal ban. The second tranche will put in place sustainable long-term measures for clean heating supply in the form of urban development and heating plans and accompanying policy reforms. The proposed loan is included in ADB’s country operations business plan for Mongolia, 2019–2021.<sup>3</sup> Policy-based lending is considered suitable for phase 2 support given (i) the multisectoral nature of the air pollution issue in Ulaanbaatar, (ii) continued constraints on development financing needs, and (iii) the need for stronger and sustained institutional and regulatory reforms.

## II. PROGRAM AND RATIONALE

### A. Background and Development Constraints

3. **Economic challenges.** After a period of rapid growth driven by an influx of foreign investment in mining, Mongolia’s economy slowed sharply as prices for mineral exports dropped. Growth in gross domestic product (GDP) fell from 11.2% in 2013 to 1.2% in 2016, and the budget deficit jumped to 15.4% of GDP, leading the government to request support from the International Monetary Fund (IMF). Under the IMF program, the economy has started to recover, with GDP growth reaching 6.9% in 2018 and forecast at 6.1% in 2019 but still well below earlier levels.<sup>4</sup>

4. **Ulaanbaatar’s air pollution crisis.** The economic slowdown and increasing poverty have worsened Ulaanbaatar’s already severe air pollution. The city is the world’s coldest capital, with temperatures regularly dropping below –20°C in winter months. Since 1990, nomadic herders have migrated on a large scale to Ulaanbaatar as a result of the loss of rural public services, lack of rural employment opportunities, and disasters triggered by natural hazards. These migrants settled in *ger* areas, which now contain 60% of Ulaanbaatar’s population of approximately 1.6 million, about half the country’s total population.<sup>5</sup>

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<sup>1</sup> ADB. 2018. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loan to Mongolia for the Ulaanbaatar Air Quality Improvement Program*. Manila.

<sup>2</sup> ADB is assessing the impact of phase 1 on air quality, which is complicated by the incomplete nature of the current monitoring systems, changes in reporting methodology, and difficulties in separating the impacts of phase 1 actions from other activities and environmental changes. The release of tranche 2 under phase 1 is expected in September 2019.

<sup>3</sup> The project is included in ADB. 2019. *Country Operations Business Plan: Mongolia, 2019–2021*. Manila. An initial draft of the design and monitoring framework is in Appendix 1. ADB will provide transaction technical assistance to support program design and help implementing agencies fulfill policy commitments and to help the government design and implement elements of the program (Appendix 3).

<sup>4</sup> ADB. 2018. *Asian Development Outlook 2018 Update: Maintaining Stability Amid Heightened Uncertainty*. Manila.

<sup>5</sup> *Gers* are traditional portable round tents covered with skins or felt and used as dwellings by nomads in the steppes of East Asia. *Ger* areas comprise traditional *gers* and houses often constructed with poorly insulating materials.

5. **Reliance on polluting heat supply sources and pollution impacts.** In the absence of district heating due to inadequate network capacity, heat supply in *ger* areas largely comes from burning raw coal in household stoves and small heat-only boilers. This coal use has created some of the highest levels of air pollution in the world. Between February 2017 and February 2019, in central Ulaanbaatar the average concentration of ambient inhalable particulate matter of less than 2.5 micrometers in diameter (PM<sub>2.5</sub>) was 65 micrograms per cubic meter—over six times the World Health Organization’s air quality guideline. The public health consequences are severe. An estimated 29% of cardiopulmonary deaths and 40% of lung cancer deaths in Ulaanbaatar are attributable to air pollution.<sup>6</sup> The estimated economic impact is as high as 8%–13% of GDP.<sup>7</sup>

6. **Inefficient energy consumption.** Around 80% of PM<sub>2.5</sub> emissions are attributed to the use of raw coal (footnote 6). The use of this highly polluting fuel is exacerbated by poor energy efficiency in *ger* areas with resulting high levels of heating fuel consumption. Modern building standards exist but are not widely applied. Lack of access to financing and energy service companies constrains retrofitting.

7. **Absence of long-term plans.** Switching to improved fuels and electric heaters, along with improved energy efficiency, will help alleviate air pollution but will not reduce it to acceptable levels or ensure long-term sustainability. Current urban development plans lack necessary guidance on applying green standards and expanding clean heat supply technologies along with associated institutional and pricing reforms. Ulaanbaatar also lacks long-term solutions for other sources of pollution, notably growing transport emissions.

8. **Policy responses and policy-based loan, phase 1.** The government approved the Mongolia National Program for Reducing Air and Environmental Pollution, 2017–2025 and an implementation action plan for 2018–2019 under the newly established National Committee for Reducing Environmental Pollution as the coordinating body for air quality improvement.<sup>8</sup> Phase 1 supported initial policy reforms under the national program in two tranches: the first focused on foundational policies, and the second on immediate mitigating actions, including a pilot to replace raw coal with improved fuel (briquettes), which helped spur the decision to ban the household use of raw coal.<sup>9</sup> Mongolia will need (i) continued policy-based lending to sustain the momentum of the ban and ensure continued institutional and regulatory support to minimize associated risks; and (ii) policy actions to ensure the timely deployment of briquettes and other substitutes for raw coal in preparation for winter 2019–2020, and to deliver sustainable reductions in air pollution as economic growth resumes.

9. **ADB’s role and corporate strategy.** The program is aligned with ADB’s country partnership strategy for Mongolia, 2017–2020, which focuses on three strategic pillars: (i) promoting economic and social stability, (ii) developing infrastructure for economic diversification, and (iii) strengthening environmental sustainability.<sup>10</sup> The program is fundamentally consistent with ADB’s Strategy 2030, particularly in supporting better health outcomes through reduced

<sup>6</sup> R. Allen et al. 2011. An Assessment of Air Pollution and its Attributable Mortality in Ulaanbaatar, Mongolia. *Air Quality Atmosphere & Health*. 6 (1). pp. 137–150.

<sup>7</sup> National Secretariat for the Second Compact Agreement between the Government of Mongolia and the Millennium Challenge Corporation of the United States. 2016. *Mongolia Constraints Analysis*. Ulaanbaatar.

<sup>8</sup> Government of Mongolia. 2017. *Mongolia National Program for Reducing Air and Environment Pollution, 2017–2025*. Ulaanbaatar.

<sup>9</sup> Initially, these briquettes will be formed from coal middling, a waste product from coal processing, which is available from existing mines at zero cost. Due diligence has been conducted on the production capacity, supply chain, and cost competitiveness (including the existing allocated budget subsidy) for briquettes.

<sup>10</sup> ADB. 2017. *Country Partnership Strategy: Mongolia, 2017–2020—Sustaining Inclusive Growth in a Period of Economic Difficulty*. Manila.

pollution from energy supply, promoting gender equality, and accelerating low greenhouse gas emissions development.<sup>11</sup> It complements ADB's recent and ongoing urban development, environment, energy, and health investment projects.<sup>12</sup> The multisectoral approach in the program policy's actions will support ADB's efforts to support green, affordable, and integrated urban planning in the *ger* areas; development of renewable energy technologies and institutional reform; and support for mobilizing green finance (footnote 12). ADB's key areas of assistance in the health sector include strengthening primary health care centers and referral hospitals, supporting sector planning and reforms, and human resources. The program complements ADB's health portfolio, specifically supporting health sector development and associated capacity development. The program will also support private sector development, including green financing for energy efficiency retrofits and investment in clean air technologies.

## B. Policy Reform and ADB's Value Addition

10. **Policy reforms.** Proposed reforms include: (i) further strengthening the regulatory framework to regulate emissions from current heat supply sources and to set and enforce building standards; (ii) rollout of less-polluting heating fuels and solutions to replace raw coal use in the short term; and (iii) strategies and accompanying plans for long-term clean heat supply.

11. **Linkages with phase 1.** In addition to supporting rolling out the briquettes, policy actions in phase 1 aligned with proposed reforms include (i) establishing standards for energy efficiency in buildings; (ii) establishing standards for electric heaters to replace coal stoves; (iii) integrating climate change adaptation and resilience into urban planning; and (iv) raising community awareness of measures to reduce air pollution. The proposed actions under phase 2 complement and extend those undertaken in phase 1.

12. **Proposed policy actions under phase 2.** Actions supporting the raw coal ban include (i) establishing the regulatory framework and supply chain for briquettes; and (ii) substituting 20,000 coal stoves with electric heaters. The government has also identified the need for institutional strengthening of the National Committee for Reducing Environmental Pollution, and appropriate actions will be defined during fact-finding. Other specific short-term mitigating measures include (i) installing particulate filters on heat-only boilers, (ii) expanding the pneumococcal conjugate vaccine immunization program nationally, (iii) launching a community engagement program on reducing indoor air pollution, and (iv) testing the effectiveness of alternative approaches to reducing indoor air pollution.<sup>13</sup> Phase 2 actions supporting regulatory framework reforms will include (i) increasing air quality monitoring capabilities and (ii) promoting energy efficiency in privately owned buildings. Actions supporting long-term sustainability include (i) integrating urban adaptation measures into the new 20-year master plan for Ulaanbaatar; (ii) developing a clean heat supply plan; and (iii) developing an e-mobility road map, including electric buses in Ulaanbaatar to replace elderly diesel buses in order to reduce transport sector emissions.

13. **Alignment with government plans and ADB's value addition.** The program is aligned with the government's National Program for Reducing Air and Environmental Pollution, 2017–2025 (footnote 8) and the 2019 implementation action plan. ADB has engaged in policy dialogue

<sup>11</sup> ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

<sup>12</sup> ADB. 2018. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Mongolia for the Ulaanbaatar Green Affordable Housing and Resilient Urban Renewal Sector Project*. Manila; ADB. 2017. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loan to Mongolia for the Social Welfare Support Program, Phase 2*. Manila; and ADB. 2018. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Mongolia for the Upscaling Renewable Energy Sector Project*. Manila.

<sup>13</sup> A communications strategy formed part of phase 1, but with a less targeted focus.

with the government since approval of the national program. The phase 1 experience enabled ADB to identify further reforms required under phase 2. ADB adds value to these reforms by deploying policy advice, technical assistance, and financing instruments.

14. **Lessons learned.** The program has incorporated lessons learned from phase 1 and other ongoing projects and regional activities, including air quality improvement projects in northern areas of the People’s Republic of China.<sup>14</sup> Lessons learned include the need for effective community engagement to encourage uptake of new heating technologies and the importance of adequate replacement supply arrangements before enforcing bans on raw coal.

15. **Coordination with development partners.** ADB shared its objectives with the World Bank, the Japan International Cooperation Agency, the European Bank for Reconstruction and Development, the Swiss Agency for Development and Cooperation, Deutsche Gesellschaft für Internationale Zusammenarbeit, and United Nations agencies. The program will support development partners’ initiatives including energy efficiency promotion and education on indoor air pollution causes, its health impacts, and mitigation measures. The development partners have agreed to closely collaborate on developing the 20-year master plan for Ulaanbaatar.

### C. Impacts of the Reform

16. The impact of the reform will be air quality in Ulaanbaatar improved.

### D. Development Financing Needs and Budget Support

17. The government’s financing gap, as defined by the IMF, is \$800 million in 2019 and \$848 million in 2020, of which \$142 million in 2019 and \$35 million in 2020 will be funded by the IMF; the remainder will be funded by donor support as part of the IMF program, including by the proposed loan. The government has requested a regular loan of \$160 million from ADB’s ordinary capital resources (Table 1).

18. The loan proceeds will be disbursed in two tranches of \$80 million each, following ADB’s *Loan Disbursement Handbook* (2017, as amended from time to time). The first tranche will be withdrawn upon loan effectiveness and compliance with policy actions, and the second tranche upon compliance with policy actions agreed between ADB and the government.

**Table 1: Indicative Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Ordinary capital resources (regular loan)	160.0	100.0
<b>Total</b>	<b>160.0</b>	<b>100.0</b>

Source: Asian Development Bank estimates.

### E. Implementation Arrangements

19. The Ministry of Finance is the program’s executing agency for phase 1. The project team will confirm implementing agencies for individual policy actions during the final dialogue with the government. Implementation will be from November 2019 to March 2020, including prior actions.

<sup>14</sup> ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loan to the People’s Republic of China for the Beijing–Tianjin–Hebei Air Quality Improvement – Hebei Policy Reforms Program*. Manila.



### III. TECHNICAL ASSISTANCE

20. A transaction technical assistance of \$250,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF 6) to support program design and to help the implementing agencies fulfill policy commitments. All ADB-financed procurement of goods, works, and consulting services will be conducted in accordance with the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

### IV. DUE DILIGENCE REQUIRED

21. The required due diligence includes a sector assessment, justification of PBL amount, program impact assessment, and summary poverty reduction and social strategy. The project team will develop a gender action plan and evaluate direct or indirect impacts of the policy actions on environment, involuntary resettlement, and indigenous peoples. The project team will work closely with the Energy and Urban Sector Groups as well as the Environment Thematic Group to ensure that the policy actions are underpinned by sound analytical inputs and build on ADB's experience.

### V. PROCESSING PLAN

#### A. Risk Categorization

22. The program is classified as *complex*, as it exceeds \$50 million.

#### B. Resource Requirements

23. Program processing is estimated to require 10.0 person-months of staff time and 14.0 person-months of consultant time.

#### C. Processing Schedule

24. The proposed processing schedule is in Table 2.

**Table 2: Proposed Processing Schedule**

<b>Milestones</b>	<b>Expected Completion Date</b>
1. Approval of concept paper	August 2019
2. Fact-finding mission	September 2019
3. Informal Board seminar	September 2019
4. Management review meeting	October 2019
5. Loan negotiations	October 2019
6. Board consideration	November 2019
7. Loan signing	November 2019
8. Loan effectiveness	November 2019

Source: Asian Development Bank estimates.

### VI. KEY ISSUES

25. There are no key issues anticipated. The executing and implementing agencies will coordinate closely to monitor the progress of the program. Support from ADB's Economic Research and Regional Cooperation Department and Sustainable Development and Climate Change Department will ensure adequate analysis to support the required due diligence.

**DESIGN AND MONITORING FRAMEWORK**  
(Initial Draft)

<b>Country's Overarching Development Objectives</b>			
Urban air pollution reduced (National Program for Reducing Air and Environment Pollution, 2017–2025) <sup>a</sup> Public health and living standards improved (National Program for Reducing Air and Environment Pollution, 2017–2025) <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting Mechanisms</b>	<b>Risks</b>
<b>Effect of the Reform</b> Air quality in Ulaanbaatar improved	By 2021: a. Air quality improved, with annual average ambient PM <sub>2.5</sub> concentrations lowered by 30% (2019 baseline: xx µg/m <sup>3</sup> )  b. National total annual spending for air pollution reduction measures is increased by 100% (2019 baseline: \$xx)	a–b. Air quality monitoring measurement results and annual budget report of the National Committee for Reducing Environmental Pollution	Rapid rural–urban migration and accelerated rates of urbanization induced by climate-related disasters may outpace implementation of policy actions.
<b>Reform Areas</b> 1. Implementation action plan efficiency and air pollution control regulatory framework improved	<b>Indicative Policy Actions</b> By November 2019: 1a. Procurement plan and contract packages for air quality monitoring system hardware finalized (2019 baseline: None)  By February 2020: 1b. Policy on end-of-life management of electric heaters and stoves prepared (2019 baseline: None)  1c. Pilot model for energy service company delivery of energy efficiency retrofits for <i>ger</i> area houses to comply with latest building standards, designed with minimum 50% participation by households headed by women (2019 baseline: None)  1d. Building energy performance certification scheme designed (2019 baseline: None)	1a. Approved procurement plan and contract packages  1b. End-of-life management policy for electric heaters and stoves  1c. Final report of energy service company pilot  1d. Draft implementing regulation	Impending elections may delay preparation and/or approval of master plan.
2. Key measures on air pollution reduction and health protection implemented	By November 2019: 2a. Supply chain for briquettes established, including supply contracts and allocation of subsidies (2019 baseline: xx)	2a. Briquette subsidies and pricing regulatory document	

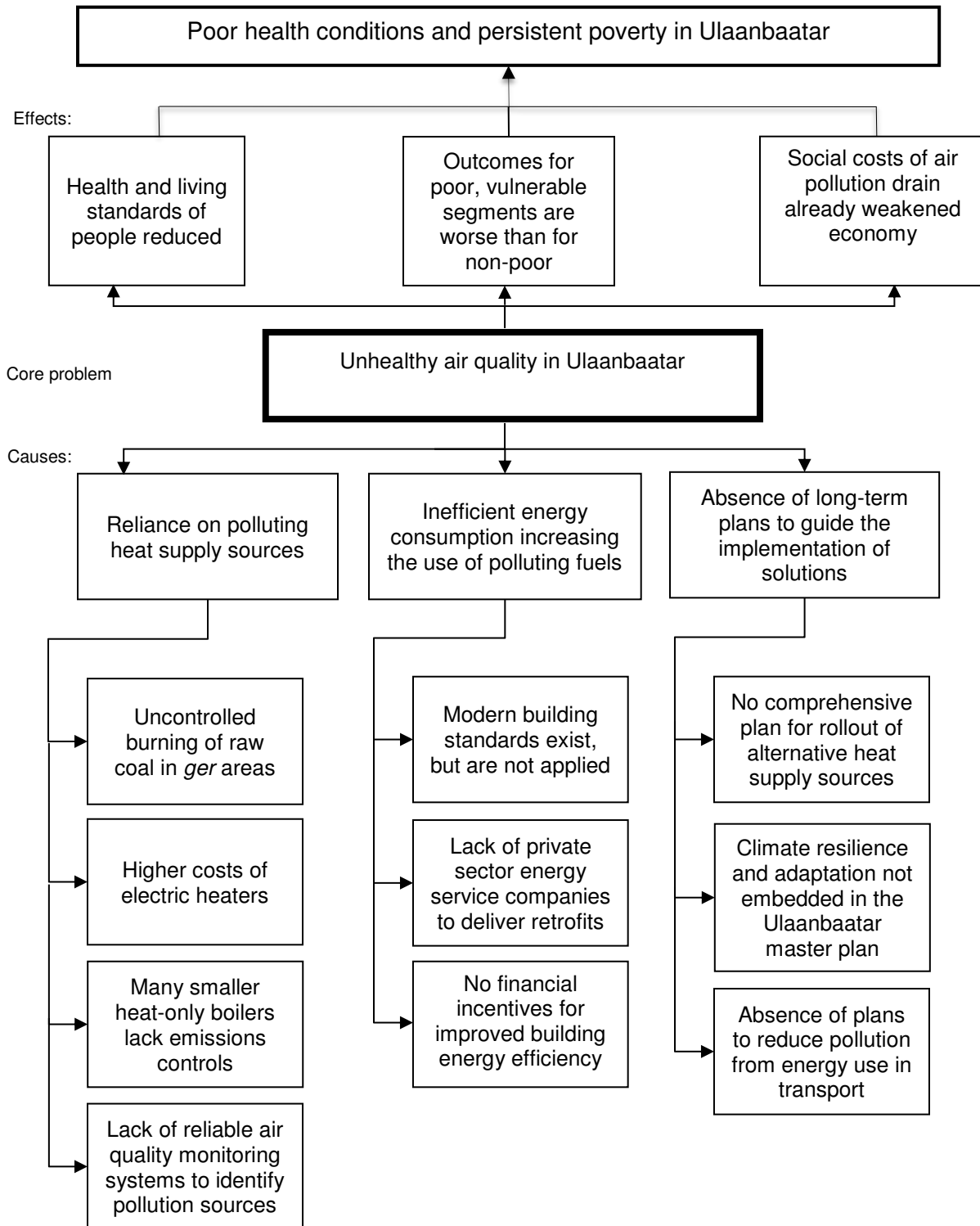
	<p>2b. Conditions created to roll out electric heaters, including expanding night-time heating tariff (2019 baseline: none)</p> <p>2c. Rollout of the pneumococcal conjugate vaccination to xx people according to the national immunization plan, with at least xx% women in the target group (2019 baseline: xx)</p> <p>By February 2020: 2c. Community engagement program on managing and mitigating indoor air pollution, including proper use of briquettes (2019 baseline: xx)</p> <p>2d. Tender issued for procuring and installing xx filters for small and medium-sized heat-only boilers (2019 baseline: xx)</p> <p>2f. Multiyear testing program commenced, including control sample, on the impacts of options for reduction and mitigation on indoor air pollution (2019 baseline: None)</p>	<p>2b. Night-time heating tariff and subsidies regulatory document</p> <p>2e. National immunization plan</p> <p>2c. Engagement records indicating gender of household head</p> <p>2d. Tender documents</p> <p>2f. At least 3 months test results for control sample</p>	
<p>3. Mechanisms for environmentally sound and integrated urban, energy, and transport systems implemented</p>	<p>By February 2020: 3a. Ulaanbaatar master plan 2020–2040 issued, including policies integrating climate resilience, green construction, and energy efficiency standards into public and private new development (2019 baseline: None)</p> <p>3b. Long-term clean heat supply plan for <i>ger</i> areas developed (2019 baseline: None)</p> <p>3c. Road map for e-mobility, including piloting of options, such as electric buses, prepared (2019 baseline: None)</p>	<p>3a. Ulaanbaatar master plan 2020–2040 approved by the government</p> <p>3b. Approved long-term heat supply plan</p> <p>3c. Approved road map</p>	
<p><b>Budget Support</b>  Asian Development Bank: (ordinary capital resources): \$160,000,000 (loan)  Asian Development Bank Technical Assistance Special Fund (TASF 6): \$250,000</p>			

PM<sub>2.5</sub> = particulate matter of less than 2.5 micrometers in diameter, µg/m<sup>3</sup> = microgram per cubic meter.

<sup>a</sup> Government of Mongolia. 2017. *National Program for Reducing Air and Environment Pollution*. Ulaanbaatar.

Source: Asian Development Bank.

**PROBLEM TREE**



**LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/LinkedDocs/?id=53028-001-ConceptPaper>

1. Initial Poverty and Social Analysis
2. Technical Assistance Report