Environmental Assessments for ADB TA Projects

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Introduction

Introduction

AECOM is a global leader in providing professional and technical services to a broad range of markets including environmental, transportation, facilities, energy, water and government. With over 87,000 employees in more than 150 countries, AECOM is a leader in all the key markets that it serves. We are currently the No. 2 Design Firm and Green Design Firm, and No. 3 Environmental Firm in the world, as ranked by industry standard Engineering News Record (ENR).

In Hong Kong, we have been at the forefront of engineering, planning and environmental studies for almost 50 years. We are the largest and leading consultant in all our market sectors, with over 4,500 local staff, 110 of whom are environmental professionals. We have built up unrivalled local expertise in all environmental disciplines and have a strong reputation in delivering projects with significant environmental, social and economic importance.

Dr. David Gallacher is an environmental specialist with over 23 years experience. He has an academic background in ecology and environmental management, and has experience in a wide range of project types including environmental planning, impact assessment and monitoring, biodiversity management and habitat creation, sustainable urban design and ESG Reporting.

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ADB TA Environmental Assessment Requirements

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ADB TA Environmental Assessment Requirements

The ADB Safeguard Policy Statement (SPS), requires borrowers to identify project impacts and assess their significance; examine alternatives; and prepare, implement, and monitor environmental management plans. The SPS requires borrowers to consult people likely to be affected by the project and disclose relevant information in a timely manner and in a form and in languages understandable to those being consulted.

Proposed projects are screened according to type, location, scale, and sensitivity and the magnitude of their potential environmental impacts, including direct, indirect, induced, and cumulative impacts.

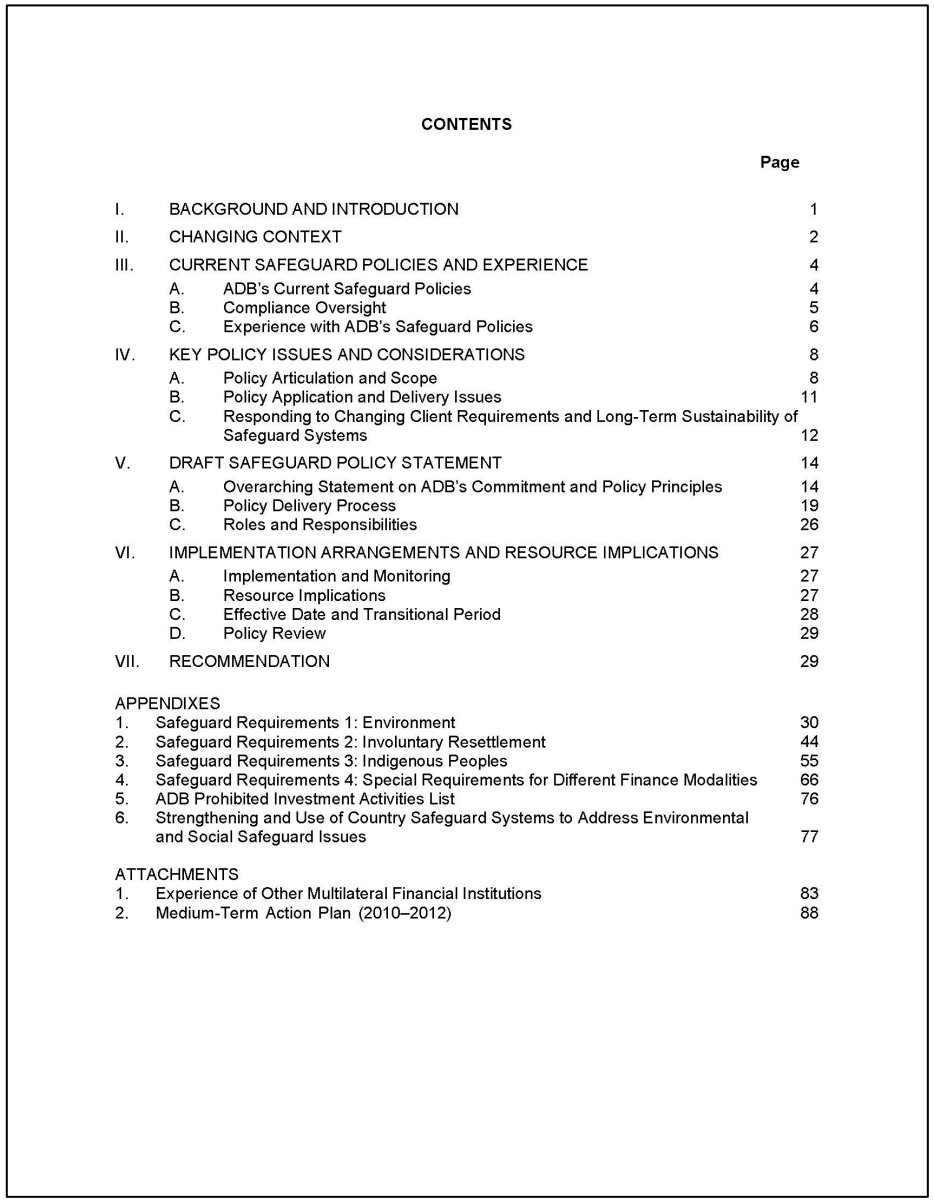
Projects are classified into the following four categories:

Category A. A proposed project is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment (EIA), including an environmental management plan (EMP), is required.

Category B. The proposed project's potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE), including an EMP, is required.

Category C. A proposed project is likely to have minimal or no adverse environmental impacts. An EIA or IEE is not required, although environmental implications need to be reviewed.

Category FI. A proposed project is classified as category FI if it involves investment of ADB funds to or through a FI.



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ADB TA Environmental Assessment Requirements

Public Consultation Requirements: Two rounds of consultation with affected stakeholders

Social and Community Health Assessments: Include details of resettlement plans (if any)

Climate Change: Risk Vulnerability Assessment, Adaptation Measures, Greenhouse Gas Emission Assessment.

Grievance Redress Mechanism: ADB requires that the borrower/client establish and maintain a grievance redress mechanism to receive and facilitate resolution of affected peoples' concerns and grievances about the borrower's/client's social and environmental performance at project level.

Environmental Management Plan: addresses the potential impacts and risks identified by the EIA. The EMP will include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.

Information Disclosure: EIA Reports accessible to interested parties and the general public through the depository library system and on the ADB web site. The full EIA or IEE reports are also made available to interested parties on request. The reports are published at least 120 days before ADB's Board of Directors consider the loan.

Project Assurances: Key elements of EMP often included in loan agreement documentation.

ADB TA Environmental Assessment Requirements

EIA/IEE prepared by International and National EIA Specialists on TA Consultant Team

Input from other Experts (e.g., climate change specialist, resettlement specialist, biodiversity specialist) as required.

Collaboration with consultant team hired by borrowing government agency for domestic EIA.

Table 2: Summary of Consulting Services Requirement

International Name of Position	Person-month	National Name of Position	Person-month
Integrated ecosystem management specialist (team leader)	5.0		
		Wetland management specialist (deputy team leader)	5.5
Biodiversity specialist	2.0	Biodiversity specialist	2.0
		Aquatic insect specialist	1.0
		Forest and freshwater wetland vegetation specialist	2.5
		Water resources and Flood management specialist	3.5
		Wastewater management specialist	2.5
		Climate change specialist	1.0
EIA specialist	2.0	EIA specialist	4.0
Social development and resettlement specialist	2.0	Resettlement specialist	4.0
		Social development specialist	2.0
Economic and financial specialist	2.0	Economic and financial specialist	3.0
		Financial management specialist	1.0
		Procurement specialist	1.5
Total	**13.0**		**33.5**

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Project Example: Heilongjiang Green Urban and Economic Revitalization Project

Environmental Impact Assessment

Background

- The East Heilongjiang sub-region including the four project cities have been an important coal base for the entire PRC.
- Heilongjiang province and project cities face economic decline and population loss due to price cuts of coal and changes in the PRC's energy and climate policies.
- Urban poverty has become serious as a consequence of declining wages combined with poor and unsanitary living conditions caused by a lack of proper urban infrastructure and services.

Background

Expected project impacts: a revitalized economy of East Heilongjiang sub-region with non-coal industries in the four cities; improved East Heilongjiang smart city cluster cooperation; and improved living environment, safety, and public health in the four cities.

Indicative project outcome: improved enabling environment for non-coal economic and industrial transformation.

(i) Output 1 – Sustainable SME investment and access to finance in project cities improved;
(ii) Output 2 – Key infrastructure and systems facilitating non-coal industrial transformation in the project cities improved;
(iii) Output 3 – Remediation and environmental cleanup of impacts from coal mining in the project cities improved
(iv) Output 4 – Integrated urban infrastructure and services in the project cities improved; and
(v) Output 5 – Inclusive capacity in business development services and integrated project planning and management developed.

Classified as Category A for environment. EIA mainly based on information in 9 domestic EISs (PRC Category A) and 22 EITs (PRC Category B), feasibility study reports for each component and PPTA reports.

Project Design Output 1 – Sustainable SME investment and access to finance in project cities improved

Establish SMEFP using Financial Intermediary Loan (FIL) modality to mobilize domestic financing.

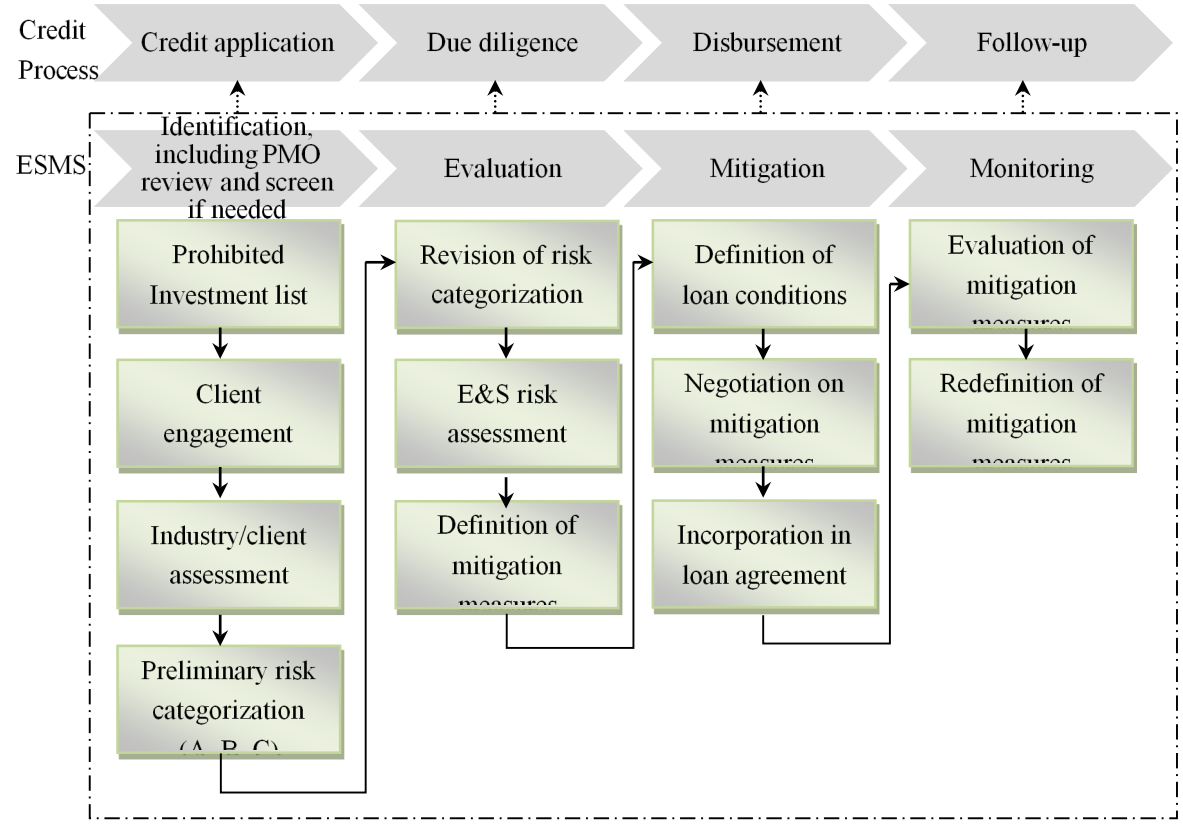
FIL to offer three types of financial products:

- Co-financing of SME investments with the cities taking the subordinated debt position,
- Guarantee support to SMEs to access commercial bank financing for investments and longer-term working capital of up to three years,
- Entrusted loan facility project exclusively for high priority projects for the local government.

- Output classified as Category FI: a standalone ESMS (Environmental and Social Management System) developed (SPS 2009).

Project Design Output 1 – Sustainable SME investment and access to finance in project cities improved

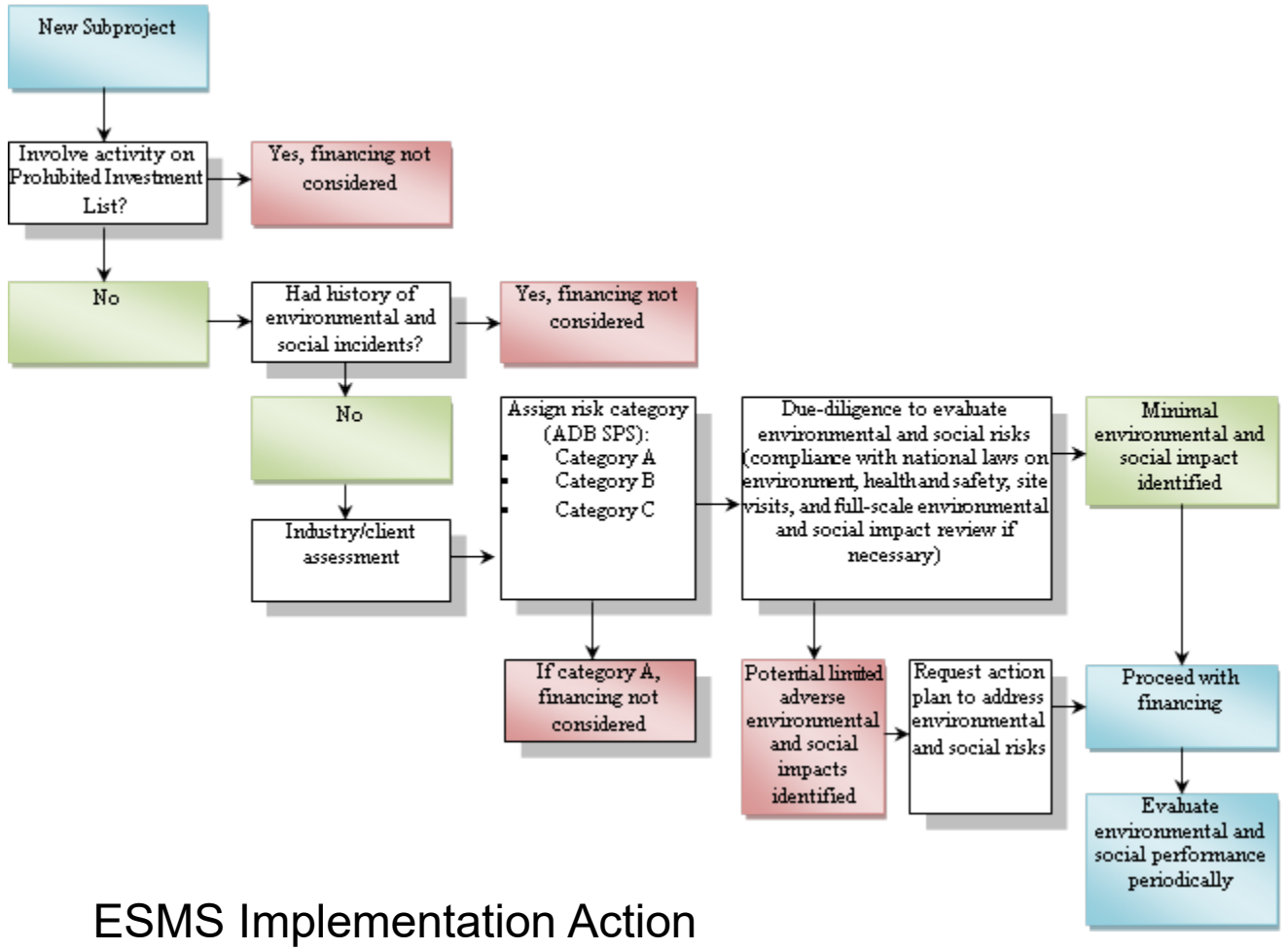
ESMS Should Perfectly Match FI's Operational Process in Order to Be Effective



Project Design Output 1 – Sustainable SME investment and access to finance in project cities improved

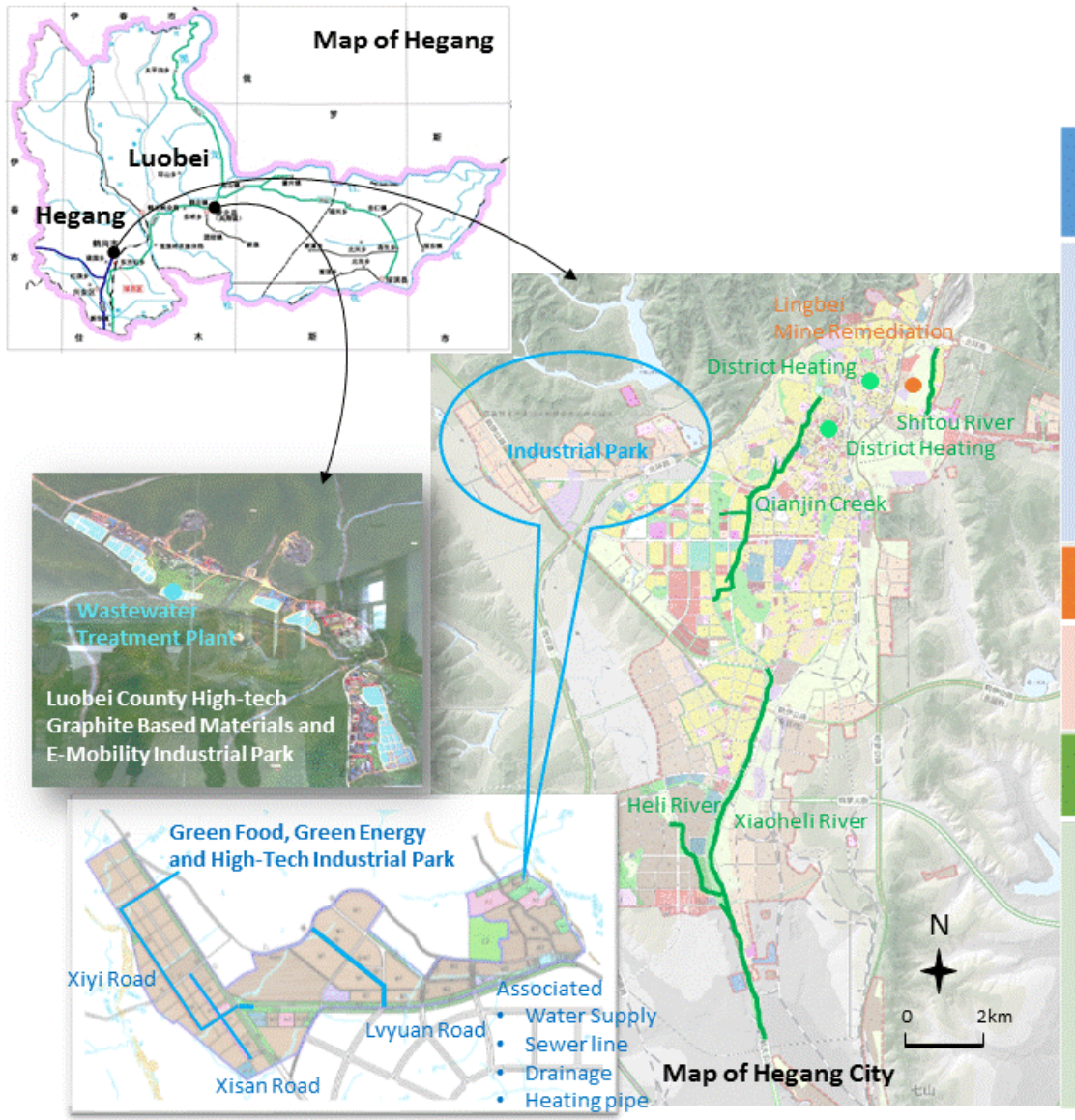
To effectively implement an ESMS, FI will need to:

- Communicate across the bank the importance of the ESMS and its implementation
- Office memo/email, staff meeting, bulletin board, newsletter
- All staff take action in day-to-day duties
- Carry out ESMS responsibilities
- Apply ESMS procedures within risk management review and credit process for new loan applications if use ADB fund



ESMS Implementation Action

Project Design – Outputs 2-4 (Hegang)



Output 2 – Key Infrastructure and Systems Facilitating Non-coal Industrial Transformation

- Green Food, Green Energy and High-Tech Industrial Park - Infrastructure and Business Support Facilities
- Luobei County High-tech Graphite Based Materials and E-Mobility Industrial Park – Infrastructure (WWTP) and Business Support Facilities

Output 3 – Remediation and Environmental Cleanup

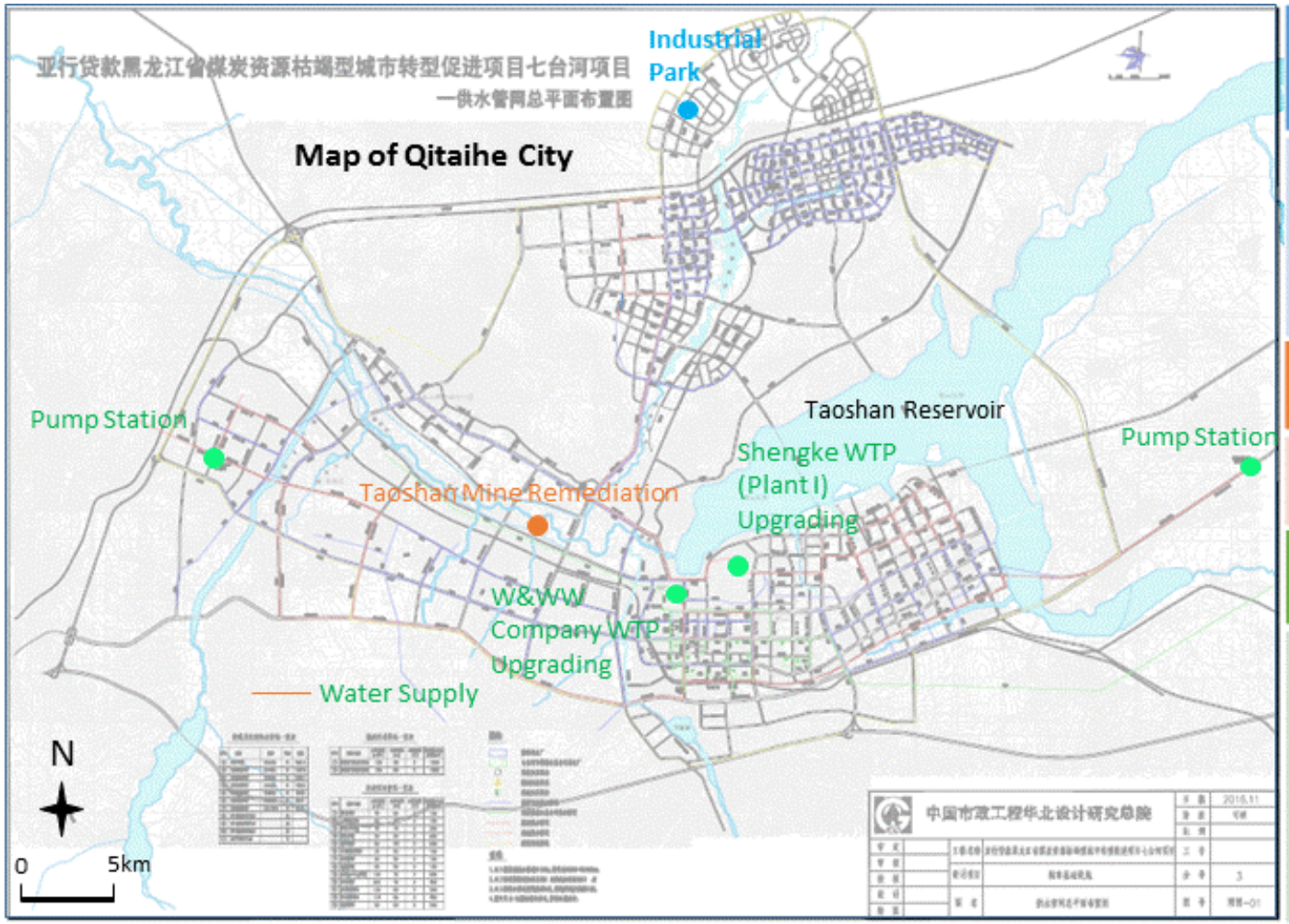
- Remediation of Open Pit Mine / Waste Rock Dumpsite Rehabilitation

Output 4 – Integrated Basic Urban Infrastructure and Services

- Integrated River Rehabilitation and Cleanup from Mining and Ecosystems Based Adaption (Shitou River, Qianjin Creek, Heli River, Xiaoheli River)
- District Heating System Energy Efficiency Improvements
- Road rehabilitation, public and non-motorized transport improvements

Project Design – Outputs 2-4 (Jixi)

Project Design – Outputs 2-4 (Qitaihe)



Output 2 – Key Infrastructure and Systems Facilitating Non-coal Industrial Transformation

- Green Food and Pharmaceutical Biofermentation Industrial Park Infrastructure and Business Support Facilities

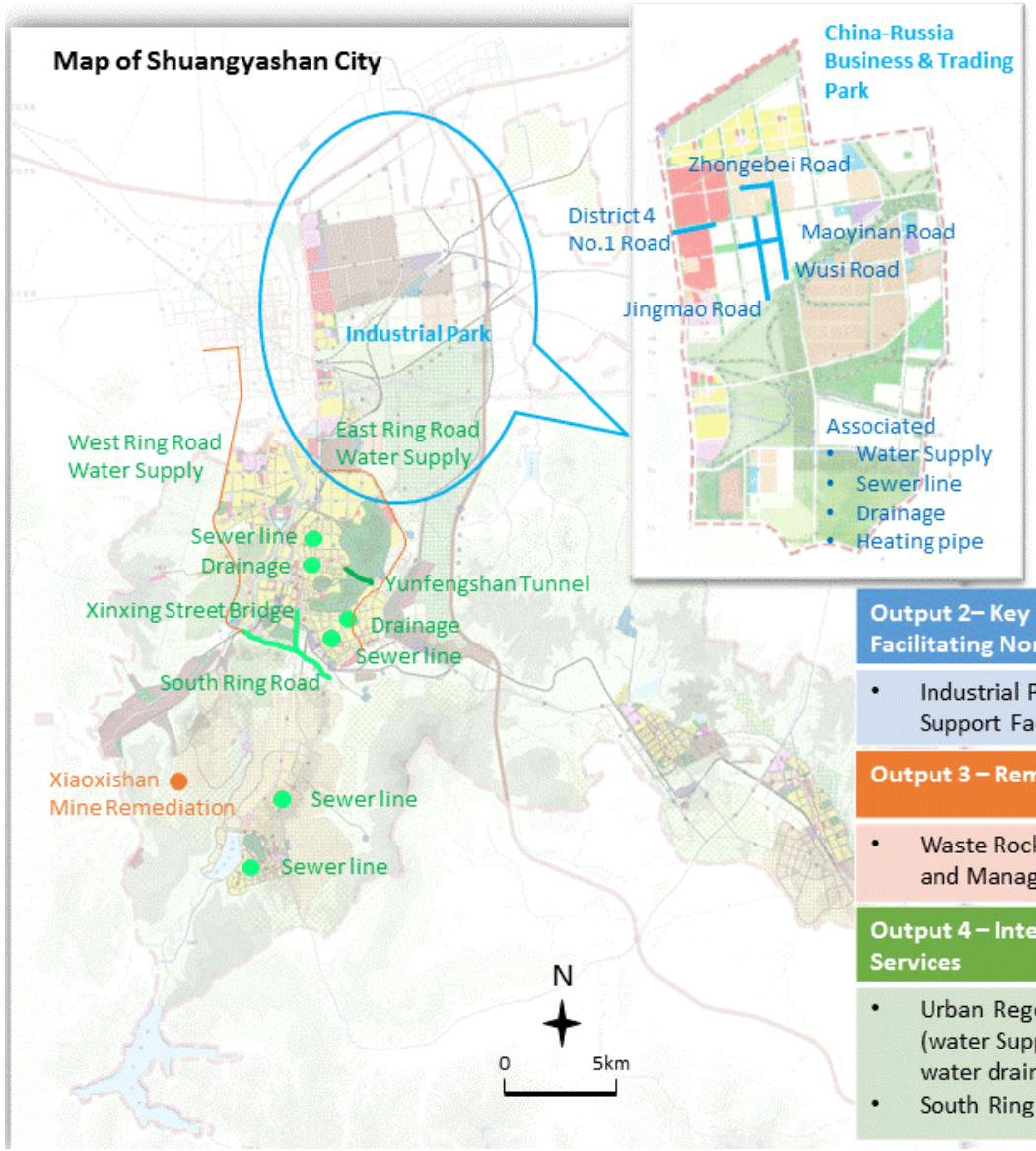
Output 3 – Remediation and Environmental Cleanup

- Mining Remediation and Environmental Rehabilitation

Output 4 – Integrated Basic Urban Infrastructure and Services

- Water Treatment Plant Upgrading and Water Supply Distribution System Replacement and Expansion
- Sustainable and Clean Fuel Public Transport Improvements

Project Design – Outputs 2-4 (Shuangyashan)



Output 2– Key Infrastructure and Systems Facilitating Non-coal Industrial Transformation

- Industrial Park – Infrastructure and Business Support Facilities

Output 3 – Remediation and Environmental Cleanup

- Waste Rock Dumpsite Remediation/Safe Closure and Management of Former Mines

Output 4 – Integrated Basic Urban Infrastructure and Services

- Urban Regeneration and Urban Infrastructure (water Supply, wastewater collection and rain water drainage)
- South Ring Road and Tunnel

Baseline Environment – Output 2

Air and Noise

Sites relatively distant from urban areas. Air quality complies with PRC Class 2 air quality standards and the World Bank Group (WBG) environmental health and safety (EHS) interim target standards

Acoustic quality show compliance with PRC's Class 2 standard and the WBG EHS standard.

Water Quality

Water quality in Yadan River, which is adjacent to the Luobei WWTP, meets the Category III standard of GB3838-2002.

Kuangling River and Muling River (the receiving waterbodies of Jiguan WWTP), are Category IV. High COD, BOD_5, TP and permangate index (I_{mn}) were detected in both of the rivers.

Biodiversity

No species or habitats of recognized conservation interest were observed.

HG 2.1 – Industrial Park Infrastructure

JX 2.2 – Jixi City WWTP

Baseline Environment – Output 3

HG 3.1 – Lingbei Mine (110ha, phase I 48.2 ha)

SY 3.1 – Lingdong District (117ha)

Soil Quality

- Data available from Hegang rehabilitation site show that cadmium (Cd) levels exceed Class III standards. Heavy metals (including Cd) are common contaminants in open cast mine pits.

Groundwater Quality

- Data available from Hegang rehabilitation site show that except for some slight exceedance for ammonia concentrations, groundwater quality can comply with class III standards around the Lingbei mine.

Biodiversity

- Project sites are highly disturbed, largely comprising exposed rock and soil, slag heaps and abandoned/demolished village housing and industrial areas. Vegetation is limited to weedy pioneer species (e.g., *Setaria* sp.), pioneer tree saplings (ash *F. mandshurica* and birch *B. schmidtii*), and some *Pinus* sp. plantation

Baseline Environment – Output 4 (Component 4.1)

HG 4.1 – Shitou River

HG 4.1 – Qianjin Creek

HG 4.1 – Heli River

HG 4.1 – Xiaoheli River

JX 4.1 – Anle Gou Creek

JX 4.1 – Huangni River

Water Quality

– All rivers in Hegang and Jixi had very poor water quality, in most cases not meeting requirements for Category 5 (GB 3838-2002) or the standard for UNEP Category 4 (extreme impairment), due to high ammonia, COD and BOD_5. These rivers have been polluted by untreated domestic and industrial wastewater from urban areas.

Sediment Quality

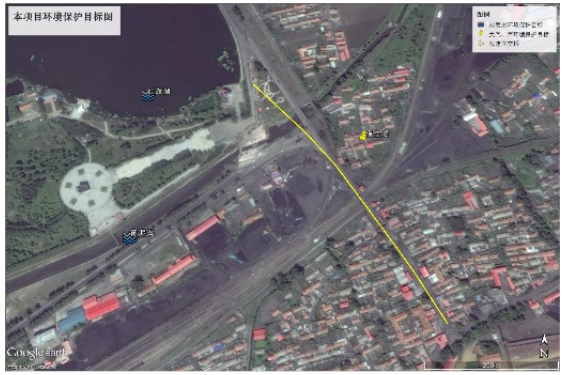
– Slightly elevated copper and zinc concentrations were recorded at some sites in Hegang. However, all sites comply with Class III of PRC's Soil Quality Standard and Control Standards for Pollutants in Sludge for Agricultural Use (GB 4284-84).

Biodiversity

– Vegetation along the channels is limited to common planted trees (e.g., Silver Poplar, *Populus alba*; and Chinese Willow, *Salix matsudana*) and pioneer herbaceous species. Aquatic faunal communities are expected to have low species richness due to poor habitat structure and water quality.

Baseline Environment – Output 4 (Component 4.2/4.3)

Example: Xinxing Avenue



Example: Gongqu Bridge

Air and Noise

- Many sites and nearby sensitive receptors for this component in more urban areas did not meet the Class II of Environmental Quality Standards for Noise (GB3096-2008) and WBG EHS Standard requirements, largely as a result of proximity to roads and railways.

- Ambient air quality monitoring data show compliance with PRC's Class 2 air quality standards and the World Bank Group (WBG) environmental health and safety (EHS) interim target standards

Anticipated Environmental Impact and Mitigation Measures – Construction Phase

Air and Noise

Minor exceedance of noise and air standards is predicted at sensitive receptors adjacent to works areas for some project components due to construction noise and vibration and fugitive dust. These include:

- Some proposed roads in urban areas (including Yufeng Tunnel)
- WTPs to be upgraded are situated close to residential buildings, and will exceed standards within 100 m of works areas
- Some utility pipes to be installed in urban areas.

For land remediation works, transportation of waste rock will require dumper trucks that will increase local traffic noise, with cumulative noise levels of 80-90 dB (A).

These impacts will be localized, short term, and can be effectively mitigated through the application of good construction and housekeeping practice.

Anticipated Environmental Impact and Mitigation Measures – Construction Phase

Water Quality

During land remediation works (component 3.1), there is a potential to mobilize sediments during removal/filling of waste-rock. These sediments could discharge into local drainage systems, increasing sediment loading (and potentially contamination with heavy metals) of local drainage systems. Detailed design of construction works will require:

- Design of measures and systems to control site run-off and leachate.
- Monitoring and management programme.

The river rehabilitation works would involve some dredging works which could mobilize contaminants. To mitigate these impacts:

- The temporary storage sites will be double lined to prevent soil and groundwater contamination;
- Treatment and testing of heavy metals and pesticides of the supernatant water prior to discharge;
- At Hegang, dredged material will be disposed of at the local municipal landfill, with dredged material compliant with relevant standard for this disposal method (GB/T 23485-2009). At Jixi, dredged material will be reused for landscaping works.

Anticipated Environmental Impact and Mitigation Measures – Construction Phase

Biodiversity

Biodiversity impacts will largely be limited to short-term impacts to low value resources. No species or habitats of conservation concern, or areas of recognized conservation interest would be directly or indirectly affected by the works.

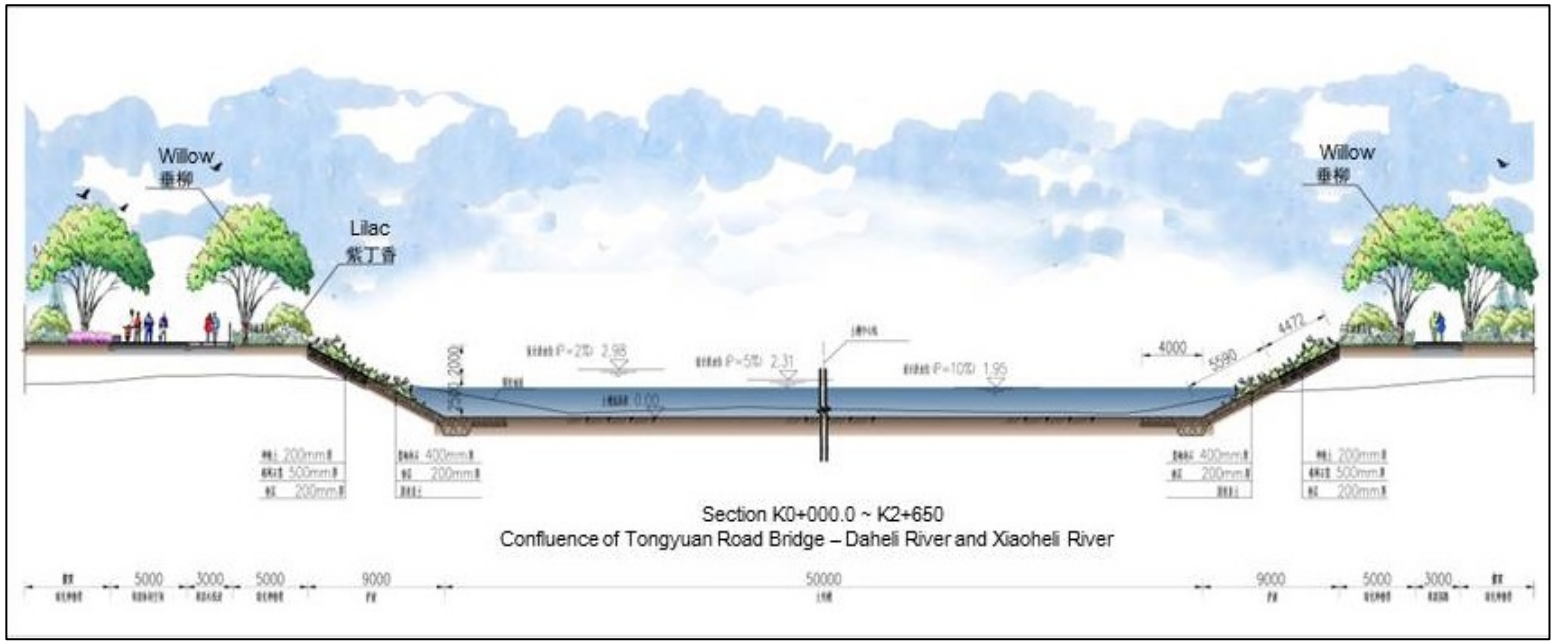
Community and Worker Health and Safety

Most identified impacts to community worker health and safety can be addressed through standard mitigation measures and good site practice. Measures to mitigate specific impacts include:

- Public consultation to minimize noise disturbance caused by road works.
- Measures to minimize disruption to utilities.

Anticipated Environmental Impact and Mitigation Measures – Operation Phase

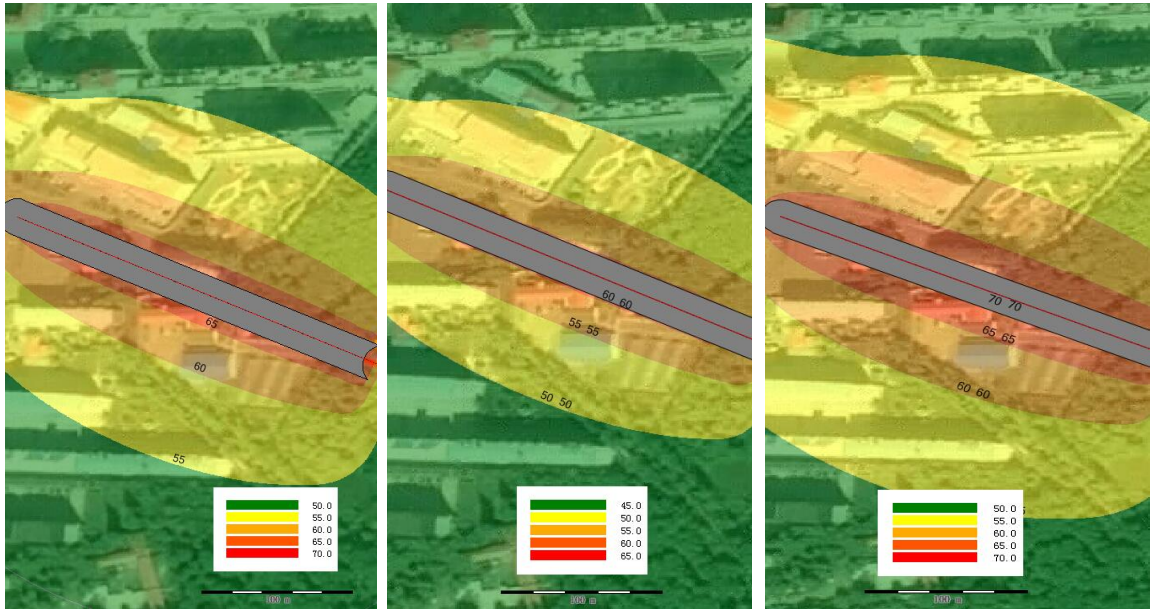
General
Operational phase impacts would be largely beneficial. In particular, there will be substantial improvements in water quality, air quality, landscape and ecological value at the various land remediation sites included under output 3. Water and habitat quality in rehabilitated rivers and lakes will also be enhanced through the revegetation programme, ecological embankment construction, removal of polluted sediments and improved wastewater management.



Anticipated Environmental Impact and Mitigation Measures – Operation Phase

Noise

Negative noise impacts are expected from increased traffic on some of the widened existing and newly constructed roads under component 4.3. However, these impacts can be controlled within relevant standards through implementation of common mitigation measures including imposition of speed limits along certain stretches of road, use of low-noise road surfaces, and providing double-glazing for properties close to the road alignments.



Anticipated Environmental Impact and Mitigation Measures – Operation Phase

Water Quality

The WWTPs will treat wastewater to Class 1A standard of PRC's Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB 18918-2002) before discharging into Muling River (Jiguan WWTP) and reuse within the industrial park (Luobei WWTP). Effluent water quality monitoring will be conducted regularly by the local EPBs.

Climate Change Considerations

Climate Risk Vulnerability Assessment

Temperatures have increased in Heilongjiang over the last 50 years, and temperatures are projected to increase in the future, along with an increase in the frequency and intensity of extreme weather events.

A climate risk vulnerability assessment (CRVA) was conducted, showing many of the project components and outputs will have significant positive effects and contributions to the climate change resilience of the project area. Key adaptation measures include design of drainage with additional capacity to manage increased rainfall and severe rainfall events, design of water and wastewater infrastructure to accommodate potential increases in demand due to higher temperatures, and various measures to increase energy efficiency and reduce water demand.

Greenhouse Gas Emissions

The total annual emission in the operation phase is estimated as 30,962 tCO2e for all project components in four cities. This is well below ADB's SPS threshold level of around 100,000 t/yr CO_2e per year.

Environmental Management Plan – Key Implementation Responsibilities

As Executing Agency (EA), the Heilongjiang Provincial Government (HPG) will be responsible for the overall implementation and compliance with loan assurances and all requirements specified in the EMP.

A Project Management Office (PMO) sits in the municipal DRC of each project city, will have the overall responsibility delegated by the city government for supervising the implementation of the EMP, coordinating the environment grievance redress mechanism (GRM) and reporting to ADB.

Local-level Project Implementation Units (PIUs), under the city governments, will assign one staff to coordinate EMP implementation at local level.

The EMP implementation will be verified an external environmental monitor.

Environmental Management Plan – Monitoring Plan

Pre-construction stage

Item	Monitoring Parameters	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Pre-construction stage					
Soil quality, dredging materials	pH, heavy metals	Mining rehabilitation sites; river dredging sites	Once before construction	Certified EMS and private environmental monitor (EEM)	EMC, PIU, PMO
Waste rock composition	heavy metals	Mining rehabilitation sites	Once before construction	LDI	PIU, PMO

Environmental Management Plan – Monitoring Plan

Construction Phase

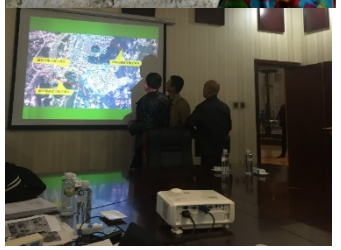
Item	Monitoring Parameters	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Construction Stage					
Noise	L_{Aeq}	Boundary of all construction sites, at least three sensitive receptors for each subcomponent	Once per month during construction period	Certified EMS and private environmental monitor(EEM)	EMC, PIU, PMO
Ambient air quality	TSP, PM_{10}, SO2, NOx	Boundary of all construction sites, at least three sensitive receptors for each subcomponent	1 day (24-hr continuous sampling), quarterly during construction period	Certified EMS and private environmental monitor(EEM)	EMC, PIU, PMO
Surface water quality	SS	Set up 2 monitoring stations at each of the following locations during construction: Bridge construction; Pipeline crossing river construction; River dredging point. Station 1: 50 m upstream of the location; Station 2: 100 m downstream of the location	Monthly during construction period when there is construction activity	Certified EMS and private environmental monitor(EEM)	EMC, PIU, PMO
Groundwater quality	Heavy metals	Groundwater monitoring point at the four mining rehabilitation sites	Twice, once in wet season and once in dry season	Certified EMS and private environmental monitor(EEM)	EMC, PIU, PMO
Construction wastewater supernatant water from dredged sediment disposal sites	SS, BOD5, COD, LAS etc	all construction sites	Weekly during construction period when there is construction activity	Contractors, CSCs	EMC, PIU, PMO
Water and soil conservation	Soil erosion	all construction sites	Weekly during construction period when there is construction activity	Contractors, CSCs	EMC, PIU, PMO

Environmental Management Plan – Monitoring Plan

Operation Phase

Item	Monitoring Parameters	Monitoring Location	Monitoring Frequency & Duration	Implementing Entity	Supervising Entity
Operation stage (the first year)					
Ambient air quality	TSP, NO_2, CO, PM_{10}	Sensitive receptors along the project road	Quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
	Odor (H_2S, NH_3)	At each of the 4 boundaries of the Luobei WWTP and Jiguan WWTP	quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
Noise	LAeq	At each of the 4 boundaries of the Luobei WWTP and Jiguan WWTP, NO.3 WTP, Shengke WTP and Water Drainage Company's WTP; Sensitive receptors along the project road	2 times per day (day time and night time), quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
Surface water quality	Temp, pH, COD, BOD5, TP, TN, SS, TPH, surfactants, fecal coliforms	Downstream of discharge point (Kuangling river for Jiguan WWTP)	Quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
WWTP influent and effluent	Volume, Temp, pH, COD, BOD5, TP, TN, NH3-N, SS, TPH, surfactants, fecal coliforms	At Luobei WWTP and Jiguan WWTP inlet and outlet	Monthly	Certified EMS and private environmental monitor	O&M unit, EMC
WWTP sludge	Moisture content (%), N, P, K, Cd, Pb, As, Cr	At WWTP sludge dewatering facility	quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
WTP sludge quality	Moisture content (%)	At WTP sludge dewatering facility	quarterly	Certified EMS and private environmental monitor	O&M unit, EMC
Groundwater quality	Heavy metals	Groundwater monitoring point at the four mining rehabilitation sites	Twice, once in wet season and once in dry season	Certified EMS and private environmental monitor	O&M unit, EMC

Public Consultation

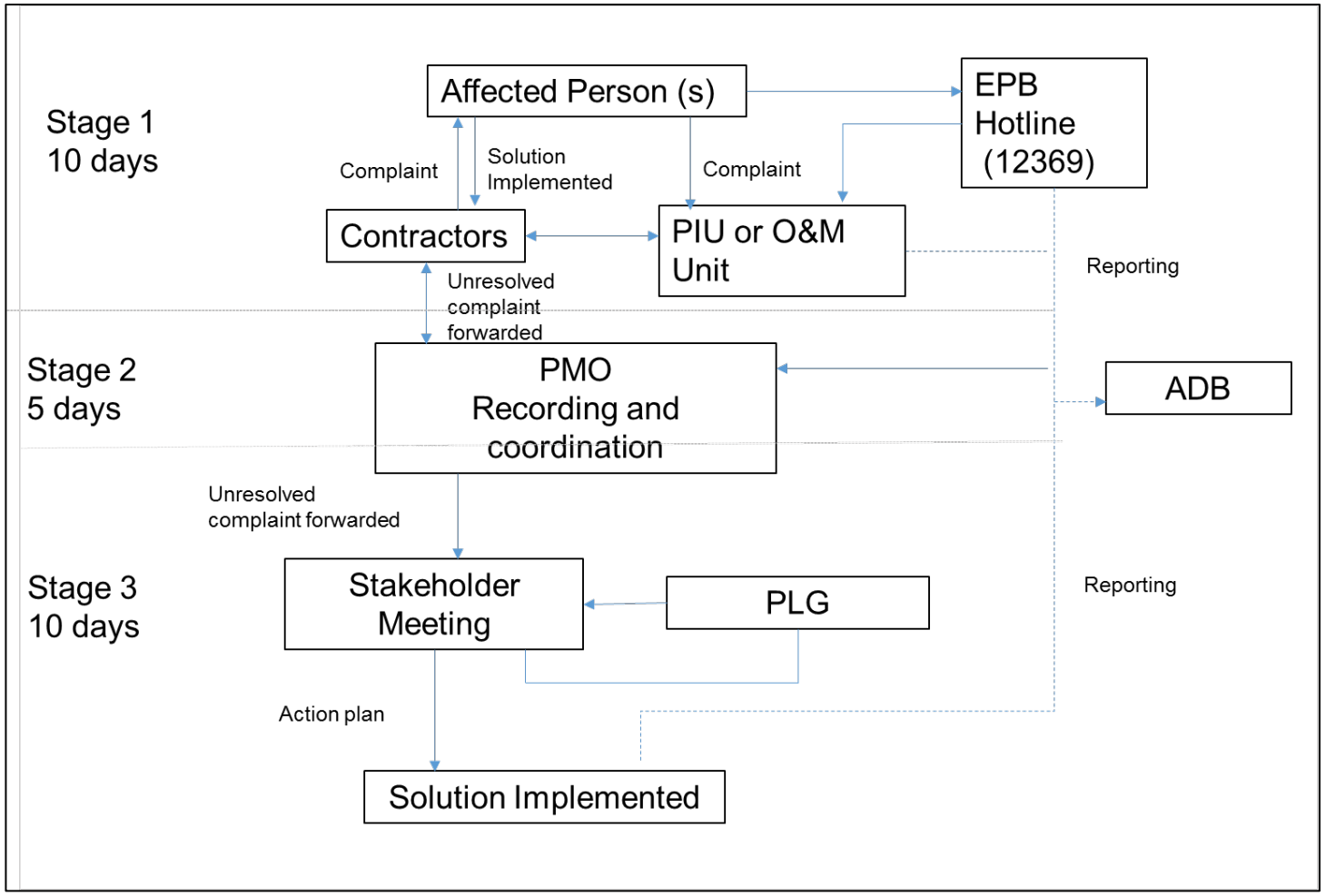


Two rounds of information disclosure of project information and related environmental issues were conducted from Jan to April 2017 through disclosure on project city governments' website, newspaper and community posters. No objections were received.

Questionnaire surveys were conducted in all project cities. Most respondents were supportive of the project and deemed the project will benefit them directly.

Discussion forums were conducted in March 2017 in each of the project cities. Concerns raised include noise caused by the proposed roads during construction and operation, impacts on groundwater due to operation of WWTP. These concerns were adequately addressed by explanations of construction methods and mitigation measures provided by the domestic EIA institutes.

Grievance Redress Mechanism



Conclusion

Assuming full and effective implementation of the project EMP, training, and loan assurances, potential adverse environmental impacts are expected to be minimized and/or mitigated to within the standards applied in this EIA.

Heilongjiang Green Urban and Economic Revitalization Project: Environmental Impact Assessment

04

Challenges and Opportunities

Challenges and Opportunities

Opportunities

- ADB is a reliable client
- TA Projects are a good introduction to new markets
- Projects aligned with ESG commitments

Challenges

- Complex project management dynamics
- Data acquisition and working with domestic EIA consultants
- Balance local regulations/ADB requirements
- EIA Timelines

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