EBRD COVID-19 Resilience Framework - Environmental Social Assessment Training Programme

Video 4 – Wastewater collection and treatment

June 2020

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Introduction

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The purpose of this training video is to illustrate how EBRD's Environmental and Social Policy (2019) and the accompanying Performance Requirements can be applied during an environmental and social assessment of a Project within the wastewater collection and treatment sector.

The example used is the rehabilitation and expansion of municipal infrastructure.

Introduction to the Project

Key facts:

- Construction of 9 new wastewater treatment plants and expansion of 10 existing facilities
- Expansion of 2,200km sewerage pipe network and pumping stations
- Purchase of 400 evacuation trucks to remove sewage from remote rural areas for treatment at the new/expanded facilities

- The Project will reduce pollution into a regional freshwater lake - a key economic resource in the region for fishing and tourism
- Improvements to the Client's operational procedures

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Application of the PRs

EBRD Performance Requirement		Applicability and justification
1	Assessment and Management of Environmental and Social Risks and Impacts	Yes – category B Project. The Project is expected to generate significant environmental, social and health benefits. The construction works will generate environmental and social risks and impacts.
2	Labour and Working Conditions	Yes – the Project involves the use of a workforce and multiple primary suppliers to provide goods and services. Contractor management is required.
3	Resource Efficiency and Pollution Prevention and Control	Yes – the Project aims to enhance exiting pollution prevention and control and is required to meet the EU Urban Wastewater Treatment Directive. Construction works will generate air and noise emissions.
4	Health, Safety and Security	Yes – from road vehicles, workforce exposure to hazards associated with construction works (excavations, health risks) and the future handling of sewage using excavation trucks.
5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Yes – additional land is required for the construction of new wastewater treatment facilities and expansion of the sewerage pipe network.
6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes – due to the clearance of vegetated land for the new facilities and from a significant reduction in pollution into a freshwater lake.
7	Indigenous Peoples	No – there are no people in the project area that meet the PR7 applicability criteria.
8	Cultural Heritage	Yes – significant excavations and earth movements are required during construction of the new facilities and expansion of the sewerage pipe network.
10	Information Disclosure and Stakeholder Engagement	Yes – a comprehensive public disclosure and consultation process was undertaken. There was significant stakeholder interest in the Project as the current wastewater treatment infrastructure is inadequate.

Introduction to the Project

Using the Project we will explore the application of:

- PR3: Resource Efficiency and Pollution Prevention and Control

…and the analysis of alternatives during the early design of the Project.

Task 1 – Review of existing documentation

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Task 1 – Review of existing documentation

The following was requested from the Client:

PR3: Resource Efficiency and Pollution Prevention and Control

- Annual resource usage (water, fuels, chemicals)
- Waste inventory and details of disposal facilities used
- Environmental monitoring records
- Options and alternatives analysis

Analysis of alternatives

A detailed analysis of alternatives was undertaken at the design stage in relation to:

- Pipeline network design and configuration
- Wastewater treatment technologies
- Management of treated effluent
- Treated effluent disinfection
- Management and disposal of sludge

The ‘do-nothing’ option was also analysed and discounted due to ongoing impacts to freshwater resources, livelihoods, and risks to human health.

Network design

Underlying principle is the EU's Urban Waste Water Treatment Directive (UWWTD), and compliance with national legislation

Current situation: Old infrastructure network had been developed without a strategic plan resulting in maintenance problems, equipment failure and generation of large waste volumes.

Alternatives Considered

- Local Governorate Master Plan
- National Water Organisational Plan

Solution

- A different approach which ignored the constraints of local administrative boundaries to achieve an efficient use of existing resources!

Wastewater treatment technology

Underlying principle is the EU's Urban Waste Water Treatment Directive (UWWTD), how this applies (nitrogen and phosphorous limits) and compliance with national legislation

Current practise: Old infrastructure with underinvestment, poor management and monitoring.

Alternatives Considered

- Standard biological treatment technology
- Advanced biological treatment system

Solution

- Rehabilitate and expand existing plants
- Enhance staff training
- Improve treatment technology

Management of treated effluent

Current practise: Limited compliance with national discharge standards (weaker than UWWTD Directive requirements).

Agriculture effluent drainage is the highest contributor to nitrogen and phosphorus pollution in the freshwater lake, followed by untreated domestic wastewater discharge.

Alternatives Considered

- Discharge to drains
- Reuse for irrigation purposes, excluding edible crops

Solution

- Examine different effluent reuse options

Management and disposal of sludge

EU Directive on the application of sewage sludge in agriculture

Current practise: Approved contractor collects sludge, and is responsible for the quality of the material received and sale for agricultural purposes.
However, sludge is not properly tested for pathogens and heavy metals concentrations due to lack of laboratory equipment. The suitability of the sludge for agricultural use cannot be determined

Alternatives Considered

- Add-on technologies to reduce sludge (anaerobic digesters)
- Separate industrial and public sewage systems
- Landfarming/restoration or agriculture
- Landfilling or incineration

Solution

- A sludge management strategy……

Task 2 - Site visit and discussions

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Key findings associated with PR3

- Observation
  - Evaluating the operations and their key inputs and outputs
  - Evaluating the management systems and monitoring

- Verification
  - Verifying data provided to assess accuracy

- Appreciation
  - The environmental setting
  - Discussions with operatives to get their insights into the operations

- Recording
  - Take extensive records (photos, notes) to support interpretations and recommendations made

Challenges
  - Time
  - Language and local culture barriers
  - Management attitudes

Task 3 – Analysis and reporting using the EBRD format

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Task 3 – Analysis and reporting using the EBRD format

The following gaps were identified that needed to be addressed in the ESAP:

1. Establish a Resource Efficiency Department
2. Conduct capacity building for personnel on energy and resource efficiency
3. Incorporate feasible resource efficiency measures into the design of the proposed wastewater investments
4. Included feasible treated effluent reuse options into WWTP design and operation
5. Incorporate necessary pollution prevention measures into the design of the proposed wastewater investments and contracts
6. Implement a treated wastewater quality monitoring system
7. Develop a greenhouse gas inventory for the Project (direct and indirect emissions including those from anaerobic wastewater treatment)
8. Conduct a review of existing oil, fuel and chemicals storage areas (bunding, delivery areas, spill response procedures)

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