European Investment Bank

Luxembourg, 2 December 2025

Environmental and Social Completion Sheet (ESCS)

Overview

Project Name:	*OLKARIA I GEOTHERMAL EXTENSION*
Project Number:	*2015-0459*
Country:	*Kenya*

Project Description*: The project consists of the extension of the existing Olkaria I geothermal power plant with an additional 70 MWe turbine (Unit 6), the necessary wells, steam gathering system and interconnection facilities.*

Summary of Environmental and Social Assessment at Completion

EIB notes the following Environmental and Social performance and key outcomes at Project Completion.

Scope

The project involved the expansion of the existing Olkaria I Geothermal Power Plant (Units 4 & 5) by adding a new **70** MWe generation unit (Unit 6), along with associated wells, a steam gathering system, and grid interconnection infrastructure. The drilling activities for the project had been completed, and sufficient steam supply has been confirmed. After technical optimization, two significant changes were made: (i) a higher output of 86.6MWe from the originally planned output of 70Mwe; and (ii) An additional production well for enhanced capacity. According to the promoter, these changes did not warrant supplemental environmental permitting since the additional wells had been permitted within the strategic environmental framework approved for the entire Olkaria geothermal complex.

The project was implemented as a single-flash geothermal power plant, with the key components being:

- 13 production wells, 5 hot and 2 cold reinjection wells.
- Steam gathering system to deliver steam to the new unit.
- 86.6 MWe geothermal power unit with all necessary ancillary systems.
- Generator transformer and electrical connection to the Olkaria I (Units 4 & 5) high-voltage system.

Environmental

At appraisal, based on the expected electricity generation of 575 GWh/year, the Bank estimated a total of 179ktCO_2/year of GHG avoidance. However, the calculation was later revised to reflect the changes in absolutes and baseline assumptions. In the absolute assumption, the availability factor of 90% was introduced, and the baseline assumption, a correction of the emission factor to include the OM component was included. Thus, a new GHG avoidance was calculated as 271ktCO_2/year. At PCR stage, considering the significant increase of the installed capacity from 70 to 86.6 MW, the avoided GHG emissions was estimated as 338tCO_2/year. Hence, almost 90% increase in positive impact to climate than anticipated at appraisal.

Though H_2S gas concentrations from wells in Olkaria are well below the World Health Organisation standards of 10 ppm averaged over a 24-hour period. Continuous monitoring of gases concentrations, gas detectors and training of staff are an integral part of the promoter's policies.

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All the conditions and undertakings were fulfilled to the satisfaction of the Bank. These included the submission of evidence of implementation of all the necessary public health, safety, and security measure on the project footprint.

The promoter implemented all the measures cited in the Environmental and Social Management Plans (ESMPs) of the respective Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA), and relevant environmental licences. The key mitigation measure outlined in ESMP included.

S/N	Impact	Mitigation
1	Impact on flora	• Minimized clearing since foundation areas had been cleared and compacted under previous project. • Disturbed land was rehabilitated with endemic vegetation.
2	Impact on fauna	• Sensitization against poaching carried out. • Wildlife routes were kept open in the design of steam filed.
3	Visual impact	• The steam pipeline was blended with natural vegetation to minimize visual impact.
4	Hydrogen sulphide emissions	• Automatic hydrogen sulphide sensors installed in strategic locations. • Monitoring was undertaken thrice a week. The levels were far below the NEMA permissible limits.
5	Noise levels	• Work was restricted to between 0800-1700hrs. • Monitoring was undertaken thrice a week. The levels were far below the NEMA permissible limits, 85dB(A).
6	Brine and condensate discharge	• The brine and cold condensate were connected to the hot and cold reinjection wells.
7	Solid waste generation	• Segregation of waste was implemented. • The promoter engaged a NEMA licensed waste handler for waste dispose.
8	Water abstraction	• Abstraction was monitored and was maintained within the permitted levels.
9	Water pollution	• Monitoring of surface and groundwater was undertaken. The monitored parameters were within the NEMA permissible limits.
10	Community grievances	• An effective grievance handling mechanism was set up. • Local communities were given preference in temporary employment placements.

No unexpected residual environmental and social impacts were identified from the project.

Summary opinion of Environmental and Social aspects at completion:

EIB is of the opinion based on reports from the promoter, and site visits by the EIB, that the Project has been implemented in line with EIB Environmental and Social Standards, applicable at the time of appraisal.