

Environmental and Social Data Sheet

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 MW turbine (Unit 6), the necessary wells, steam gathering system and interconnection facilities.
EIA required:	yes
Project included in Carbon Footprint Exercise ¹ :	yes
(details for projects included are provided in section: "EIB Carbon Footprint Exercise")	

Environmental and Social Assessment

Environmental Assessment

The Olkaria geothermal resource is located in the Kenya Rift valley, about 85 km from Nairobi, in a major volcanic complex. The Olkaria area is classified as semi-arid areas, and evaporation exceeds precipitation almost throughout the year.

The project will be located in the Hell's Gate National Park that was established after the start of geothermal exploitation and contains significant wildlife populations including animal species listed on the IUCN Red list such as leopards, Rüppell's vulture and the grey crested helmet shrike. It is also situated 6 km away from lake Naivasha, which is a wetland of international importance according to the Ramsar Convention on Wetlands.

A memorandum of understanding (MoU) was signed in 2008 between the promoter and the Kenyan Wildlife Services (KWS) administering the park to ensure environmental conservation, to mitigate the negative impact of geothermal development, and to promote harmonized use of the diverse resources in the area. Based on this MoU, all geothermal development activities by KenGen within the park are conducted only after consent is given through prior consultation with KWS.

For the power plant, an ESIA was prepared in February 2013 and an EIA license was given by the National Environment Management Agency (NEMA) in June 2013 and extended in July 2015. Essentially, the main environmental risk to the project relates to geological hazards (earthquakes) while the main impacts stemming from the project are expected to be on the landscape and air. Mitigation measures include earthquake proof design, camouflaging steam pipes with colours that blend into the surrounding landscape, landscaping the area around the power plant site, confining clearing within steam line route and appropriate soil erosion measure during construction. Additionally, the new unit will be an extension of existing units 4 & 5 and the additional visual disturbance is limited. The main gases emitted from geothermal steam are CO₂ and hydrogen sulphide (H₂S). Based on the experiences from the Olkaria East and North East production fields the composition of non-condensable gases (NCG) is circa 0.3% of steam, of which ~95% is CO₂. If the new unit is ran as a base load plant and assuming consumption of 520 t/h steam, approximately 13.0 kt/y of CO₂ will be released or ~20 g/kWh, far smaller than the Bank's Emissions Performance Standard of 500 g/kWh. H₂S 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

¹ Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO₂e/year absolute (gross) or 20,000 tons CO₂e/year relative (net) – both increases and savings.

concentrations, gas detectors and training of staff are an integral part of the promoter's policies.

The ESIA mentions the reinjection of the condensate produced during the cooling of the steam at the geothermal reservoir level in order to help maintain the sustainability of the resource.

For the steam field, an ESIA covering the drilling of 80 wells was submitted in June 2012 and covered inter alia the wells for Olkaria I Unit 6. License was granted by NEMA in November 2012, and the wells have since been successfully drilled. During the construction period, the main negative impacts are related to the noise during drilling and testing. The use of silencers during testing has helped mitigate these impacts. During operations, the main risk to the project is the loss of integrity of the well pads' fencing resulting in uncontrolled entrance, which poses a threat of drowning in the ponds. The gulley's under the fences are due to the erosion of the loose soil during heavy rains and require continual monitoring and response to repairs.

A Strategic Environmental Assessment (SEA) was conducted by KenGen for its geothermal expansion programme for the period 2012-2020. The promoter submitted a draft report to NEMA in July 2014 and public consultation has been sought in October 2014. The final report was approved by the Competent Authority in August 2015.

EIB Carbon Footprint Exercise

It is estimated that 95% of the 0.3% of non-condensable gases (NCG) in the steam is CO₂. At 520 t/h steam for the 70 MWe unit, the absolute CO₂ emissions of the project amount to 13.0 kt/y. Without the project, in the medium term, the country would build a mix of coal and gas power plants, as shown in the Least Cost Power Development Plan. The estimated emissions savings compared to the baseline are 178.6 kt CO₂/y.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost'.

Social Assessment, where applicable

The project lies in Hell's Gate National Park where no settlement is allowed, therefore no resettlement is envisaged in this project. On-going grazing practices by the nearby Maasai communities is set to continue with the consent of KenGen, hence the project poses no risk of interfering with those communities' pastoralist livelihoods.

KenGen will maintain records of all the people that will be employed during the construction and operation phase of the proposed Olkaria I unit 6 power plant. KenGen will designate an employment officer to handle employment issues and ensure equitable distribution of employment opportunities. A percentage of the employment opportunities will be set for the local communities similar to practices in previous projects.

Both occupational health and safety and labour standards observed at the client's existing geothermal operations were assessed to be of a satisfactory level, carrying very low risks for the present extension. No workers' accommodation quarters feature.

The scope of this project is not related to the complaints raised in 2014 in connection to communities' resettlement processes underway during 2012-2014 on the Olkaria I-IV project. The Bank will monitor deliberations on a new benefit sharing bill currently being discussed in the Kenyan Parliament and assess implications arising thereof for the project. Additionally, the Promoter's public health, safety and security systems were assessed and deemed satisfactory; nonetheless, they will remain closely monitored to ensure regulation of public access to the project's grounds and prevention of any accident inadvertently suffered by the public.

Public Consultation and Stakeholder Engagement, where required

Public consultation is a mandatory requirement in the ESIA process in Kenya.

For the project, public consultations and participation involved key stakeholders including representatives of lead agencies, local community, neighbouring flower farms, NGO's, NEMA and other interest groups, for both the wells drilling and the power plant.

The stakeholders supported implementation of the proposed project on condition that KenGen implement the Environmental and Social Management Plan (EMPs) included in the ESIA's. The Environmental and Social Management Plans specify detailed requirements along with designated roles and responsibilities throughout the project's life cycle.

Other Environmental and Social Aspects

The promoter holds ISO QMS 9001:2008 and EMS 14001:2004 certifications.

Conclusions and Recommendations

If it were located inside the EU, the project would fall under Annex II of the EIA Directive, leaving it to the competent authority to decide on the need for an Environmental and Social Impact Assessment (ESIA). In accordance with the Kenyan national legislation, it has been subject to a full ESIA procedure. Studies have been performed for both the wells and the power plant, and permits received. No significant residual environmental and social impacts are expected from the project. The project will be located in Hell's Gate National Park, where no human settlements are allowed; therefore no resettlement plan is necessary.

The main environmental impacts from the project as a whole are related to noise during construction and visual impact during operation. Additionally, the extraction of steam from geothermal sources will release low amounts of hydrogen sulphide (H₂S) and CO₂ into the atmosphere.

The social impact of the project is expected to be positive during the construction due to jobs opportunities creation but as part of the wider geothermal activities expansion in the National Park, it could have a negative impact on tourism while in operation.

The procedures followed, the promoter's capabilities and the residual project impacts are acceptable to the Bank.

The following loan conditions have been included by the Bank in the Finance Contract:

First Disbursement conditions (to the Bank's satisfaction):

- Evidence of implementation of all necessary public health, safety and security measures on the project footprint;

Undertakings:

- Implementation of all 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;
- Evidence satisfactory to the Bank of the implementation of public health, safety and security measures for Olkaria I (Units 4, 5 and 6), and Olkaria IV (Units 1&2);