Donor country
Germany

Project/programme title
Geothermal power stations in Olkaria (Olkaria II, III)

Purpose
Safe, reliable electricity generation from renewable energies, in Kenya

Recipient country	**Sector**	**Total funding**	**Years in operation**
Kenya	Energy	EUR 12.8 million	Since 2003,(Olkaria II)

Description

Kenya has great potential for using geothermal energy, but it is not yet making full use of that potential. The first geothermal power station in Kenya (Olkaria I) was ordered in the late 1980s. In 1997, the German government decided to participate, via KfW Entwicklungsbank, in financing of Olkaria II (with a capacity of 70 MW). That power station was ordered in 2003, at a time when the country urgently needed additional electricity generation capacity.

The new power station was built on the basis of experience gained with Olkaria I, and thus it includes a range of technical improvements. In one such improvement, steam and water from the geothermal source are pumped back into the relevant water-bearing ground layers, to provide a closed water cycle.

Via further participation by the Federal Government, a private investor has received a loan for increasing the capacity of an Olkaria III to 48 MW. That plant is able to also tap the thermal energy in the liquid medium, while Olkaria I and II only use the steam from geothermal field.

Indicate factors that led to project's success

Most of Kenya's electrical power is generated hydroelectrically. Geothermal energy is the most suitable source for any expansion of electricity generation, since the country's hydroelectric resources have largely been tapped, and climate conditions are hindering hydroelectric power generation.

Olkaria II was ordered at a time when additional electricity generation capacity was urgently needed.

Technology transferred

Tested, advanced technology, with modern plant control: Olkaria III is a two-phase binary geothermal power station that uses the Organic Rankine Cycle. Expanded plant size for Olkaria II and III; technical and organisational support.

Impact on greenhouse gas emissions/sinks

Operation of a geothermal power station with energy from the Olkaria field produces very low CO2 emissions in comparison to operation of fossil-fired power stations.