

# Renewable Energy and Energy Efficiency

## German Development Cooperation in Kenya

### Challenges and Opportunities

Kenya's energy framework is one of the most developed in sub-Saharan Africa. Numerous reforms instituted by the Kenyan Government over the past two decades have considerably increased competition and efficiency in the energy sector. As an example, between 2011 and 2016, the country's installed power capacity rose by around 50%, from 1,539 megawatts to 2,341 megawatts. During the same period, access to electricity more than doubled, from about 2,038,625 connections (covering 26% of Kenya's total households) in 2011, to 4,890,373 connections (extending to over 50% of households) by 2016. Rural electrification rose to 32%, mainly through electricity connections in public facilities and surrounding households.

However, a number of challenges remain including limited access to electricity in remote areas, especially the sparsely populated northern region where less than 6% of households are currently connected to the national electricity grid. Power outages are still common due to inadequate transmission and distribution technologies. And most of Kenya's primary energy consumption (68%) is derived from biomass, with more than 90% of rural households using this form of energy, mainly for cooking.

Given Kenya's abundant renewable sources, the country has high potential to scale up relevant technologies. The Government of Kenya has accorded the private sector a central role in enhancing power generation and increasing access to electricity, creating many business opportunities for renewable energy sector enterprises, including those from Germany.

### Our Approach

In cooperation with Kenya's Ministry of Energy and Petroleum and associated institutions, the German Development Cooperation (GDC) is contributing to an environmentally-friendly, cost-effective and reliable energy supply in the country, focusing on geothermal, solar, hydro and wind power. GDC is partnering with the private sector to promote renewable energy technologies and energy efficiency measures. Rural electrification will be promoted through isolated mini-grids, to contribute to reliable and sustainable electricity supply in remote areas.

Working in alignment to Kenya's priorities, GDC offers a broad variety of financial and technical instruments. First, GDC provides long-term, low-interest loans to public utilities, and long-



*Olkaria geothermal power plant in Naivasha, Nakuru County*



*Solar-hybrid mini-grid in Talek, Narok County*

*From geothermal power plants to solar-hybrid mini-grids, German Development Cooperation is contributing to an environmentally-friendly and secure energy future. Photo above: KfW Photo Archive/Rüdiger Nehmzow, photo below: GIZ/Alex Kamweru*

term financing to private enterprises. Second, GDC advises the Government on how to achieve renewable energy objectives, and ways to implement nationwide change processes by incorporating them into legislation and strategies. GDC also builds the technical competence of the private sector in planning and designing energy systems, and collaborates with academia to train solar technicians.

GDC works directly with the Government and counties, local administrations, non-governmental and community-based organisations and academia, a strategy that ensures knowledge, experiences and resources are efficiently maximized. Financing mechanisms have also been established, linking financing institutions to small- and medium-sized enterprises and customers seeking loans.

The Delegation of German Industry and Commerce in Kenya (AHK Kenya), acts as an information and contact broker between German and Kenyan renewable energy and energy efficiency sectors. GDC facilitates an integrated expert within the German Delegation to connect development cooperation and export promotion activities. The Project Development Programme complements these activities by expediting business partnerships, knowledge transfer and capacity building, reference project support and policy advisory. The partners mentioned above jointly promote the brand: **Renewables – Made in Germany.**

## Our Impact

- **Developed site for the geothermal power plants** Olkaria I, II, III and IV; upgraded and rehabilitated Kindaruma hydro power plant, leading to an increase in environmentally-sound power generation capacity of 470 megawatts.


- **Provided finance totalling EUR 44 million to three independent power producers** focusing on geothermal power in Narok County, Rift Valley, and wind power in Marsabit County, northern Kenya, with a joint generating capacity of 348 megawatts.


- **Provided access to improved cooking for over 5 million people and electrification for 180,000 people. Annually, this investment prevents over 640,000 tonnes of carbon dioxide emissions and saves more than 0.5 million tonnes of firewood, corresponding to 31,000 hectares of natural forest. It has also created income generation and employment for about 1,000 people.** The use of small solar systems contributes to savings on kerosene and electricity services such as mobile phone charging totalling to EUR 400,000 per year.


- **Various German solar photovoltaic (PV) companies have entered, or are planning to enter, the Kenyan market** thereby enhancing dissemination of renewable energy systems and energy efficiency solutions in the country.


- **Increased awareness of renewable energy benefits and improved framework conditions for rural electrification** escalating private sector participation.



Small solar systems are promoted using a market approach that supports local entrepreneurship. Photo: GIZ/Amunga Esuchi

## Success in the Field

The global energy partnership, Energizing Development (EnDev), is funded by six donor countries, including Germany. EnDev Kenya focuses on facilitating access to clean energy for rural populations by promoting the sustainable production, marketing, installation and use of improved cook stoves. It also promotes high quality, affordable and efficient solar (Pico PV) systems, using a strict market approach.



Photo: GIZ/Amunga Esuchi

*“Until 2009, I was an ordinary farmer struggling to feed my family. Now, with my new job as an installer of clean stoves, I earn enough money to pay for food, school fees and can even repair my house!”*

– Lydia Wangui Kimani, Stove Installer, Bibironi,

Kiambu County, one of the areas where GDC is implementing renewable energy and energy efficiency projects.

Following the installation of a solar-hybrid mini-grid in Talek, Narok County, Rift Valley, which was supported by GDC, sales have increased and new businesses have started. *“Since the installation of the solar electricity, business has grown. People can now charge their phones using electricity!”* – Lucy Wanjiku Mwangi, hardware store owner.

## FUNDS FOR RENEWABLE ENERGY AND ENERGY EFFICIENCY

Commitments 2010–2013	EUR 102.10 million
Commitments 2014–2016	EUR 113.46 million
Planned disbursements 2017–2019	EUR 108.10 million

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