

# SNV Sustainable Energy Landscapes:

## Green Energy in Gemena, Democratic Republic of Congo



*Photo: the Gemena landscape is to become an example of carbon neutrality within the next few years with SNV's efforts*

SNV Netherlands Development Organisation is a not-for-profit international development organisation. Founded in the Netherlands 50 years ago, we have built a long-term, local presence in 39 of the poorest countries in Asia, Africa and Latin America. Our global team of local and international advisors works with local partners to equip communities, businesses and organisations with the tools, knowledge and connections they need to increase their incomes and gain access to basic services – empowering them to break the cycle of poverty and guide their own development.

Implementing smart solutions which reduce the reliance on fossil resources, create jobs, safeguard the environment, and promote sustainable development is more than ever urgent. In Gemena, a rural low-income area of the Democratic Republic of Congo, SNV hopes to revive the palm tree culture and tap into its potential for clean energy generation.

Gemena is one of the most deprived areas in the world, suffering from an electrification rate of 1%. Electricity is produced by informal micro-enterprises who use inefficient diesel engines and is distributed through unsafe networks. Electricity supply for the very few who have access to it, is unreliable, hazardous, polluting and above all expensive. This limited access to reliable energy supply hampers the socio-economic development of this otherwise dynamic agricultural hub. SNV's objective is to create a sustainable energy landscape which safeguards energy, food and water security in Gemena, DRC.

This means shifting from expensive and polluting fossil fuel driven-lifestyle to sustainable systems, based on renewable resources and efficient energy use. This also means making smart adjustments in land use, and using locally available renewable energy sources without compromising life-supporting ecosystems.

In order to achieve this, the roughly 1000 hectares of plantations otherwise destined to disappear, will be rehabilitated for sustainable food production and energy generation. Existing plantations will be improved to increase yields, thereby producing more without needing to start new plantations in forested areas. Investing in the production of pure plant oil (PPO) for energy will incentivise the production of palm oil for food. This vision supports a virtuous cycle of production that offers new income-generating opportunities for small-holder palm oil producers and reduces local pollution.





*Photo: Gemena's locals rejoice as a truck loaded with an electrical generator arrives in the town .*

Working with local authorities, the palm oil sector is to be rehabilitated to lastingly satisfy the food and energy needs of the population. Using the SNV-developed siting tool, the most suitable areas for palm oil cultivation will be selected. 1000 hectares of palm oil plantations could produce 3,300 litres of PPO per day. This production could further increase, if existing plantations increased their yields and used the increment to supply the PPO market. Through a Results-Based Financing incentive mechanism for private sector development and improved access to finance, the current number of two PPO production units is expected to expand to at least 15 units producing quality PPO to satisfy the market.

With the current government push for decentralized and participatory energy planning, a diversified energy development plan, combining PPO with other forms such as micro/mini-hydro, solar and biogas, will be implemented to satisfy the growing demand in a cost effective way. Decentralised energy supply will also empower local communities and private sector development.

In areas renewable energy is available, PPO will serve as a complementary option, useful during peak hours; in other areas, PPO will provide the bulk of electricity and mechanical power needs. Just like PPO producers, PPO users will be incentivized to switch to more efficient and safer generators and distribution systems.

Cooperatives and gender-balanced structures will ensure the management of an estimated 100 PPO-powered mini grids. A feed-in tariff system will be implemented to incentivize PPO users to sell electricity to the urban grid.

The following benefits are expected: a more equitable, cost-effective and sustainable supply of electricity is provided for all, including the poor and marginalised. A strengthened network of SME's is created, along with jobs for 10.000 people, mainly the youth.

Moreover, the residues generated during the PPO production process will be reused in various ways: waste water will be turned into biogas for cooking, kernels will be used to produce heat for the PPO production, etc. This will result in improved water quality and a substantial reduction of carbon emissions. A carbon model will be developed for the PPO value chain, to ensure that carbon finance will further incentivise operations.

Within 10 years, the Gemena landscape will be an attractive, green, energy-secure place to live in for 450,000 women and men, with increased income and employment opportunities, without compromising landscape quality, biodiversity and food production. It will become an example of carbon neutrality with its population, enjoying access to clean, reliable and affordable energy to fulfil their needs and develop their aspirations.