

African Biodigester Component – Kenya



SEE – Clean Cooking

Countries	Kenya
Technology	Biodigesters
Project period	01-2022 – 09-2025
Budget	6,330,000 EUR
Partners	Ministry of Energy, Ministry of Agriculture, Council of Governors, biodigester enterprises, biogas associations and (micro)-finance institutions
Implementers	ABPL, GIZ, SNV
Objective	Facilitate access to tier 5 cooking for over 100,000 people by 2025 and modern energy for 250 social institutions and small businesses.
Indirect cumulative results by 2025	113,000t CO ₂ eq per year avoided 1,400 jobs created, 30% of which are filled by women 90% of users with a functioning biodigester apply or trade bio-slurry

informally and even the ones that have formalised their businesses are still small or micro-enterprises, characterised by inadequate staffing capacity, weak financial and business development processes, poor visibility, inability to meet the tender requirements for larger projects (e.g., government projects), weak distribution channels and inadequate convincing power (particularly for medium scale biodigester customers). There are five to ten active companies selling prefabricated systems, most of which are still piloting their business models.



Background

Funded by the Dutch Ministry of Foreign Affairs (DGIS) and the Danish International Development Agency (DANIDA), the African Biodigester Component (ABC) in Kenya aims at facilitating a shift of the biodigester market from its pioneering to the expansion phase where more than 20,000 small (0 to 50 m³) and 250 medium (50 to 500 m³) size biodigesters will be installed. The component is implemented by a consortium between GIZ and SNV (the Netherlands Development Organisation) in cooperation with the Africa Bioenergy Partnership Limited (ABPL - ex-KBP). Kenya has a number of biodigester enterprises ranging from independent masons to firms with more than 150 staff. From previous market analyses, 140 fixed dome biodigester artisans are believed to still be active, building an average of ten digesters per year. Most of these artisans operate

Overall, the country has limited capacity for the construction of medium-scale systems (≥ 50 m³). The majority (over 80%) of the enterprises, both prefabricated and fixed dome, do not sell enough biodigesters to sustain their businesses and must complement with other business activities to generate enough income. Combined, these companies have constructed and installed over 21.000 biodigesters within the last ten years.



Various awareness creation activities will increase the demand for small and medium-scale biogas digesters among the project's target groups, stimulating their adoption, and maximising end-user benefits through the valorisation of biogas and other by-products, such as bio-slurry and compost.

ABC works on two demand aggregation pilots:

- developing the network of sale agents of biogas digester companies
- aggregating demand for biogas digesters through SACCOs and dairy cooperatives.

Awareness creation will be undertaken considering the different segments (small and medium scale), the different technologies (e.g., fixed dome, prefabricated), the different applications (sizes, biogas, bio-slurry, bio-slurry enriched compost) and related benefits, as well as financing options. The valorisation of bio-fertilisers, behavioural change aspects and information on good farming practices to eliminate structural challenges of small-holder farms will be considered. Awareness campaigns will be deployed targeting farmer marketing hubs and the use of digital campaigns on social and mainstream medias.

Intervention Logic

The project objectives will be achieved by means of a well-balanced mix of demand-side, supply-side, financing and enabling environment interventions, geared at boosting demand and supporting biogas digester companies in acquiring more clients.

A Result-Based Reimbursement (RBR) facility for domestic biogas digesters will be the core instrument of the African Biogas Component (ABC). Through the provision of result-based reimbursement, ABC aims to provide the last push needed for the biogas digester market to reach a critical mass of clients within Kenyan farmers. This is expected to enable suppliers of small-scale biogas digesters to achieve economies of scale, the market to be firmly rooted in the expansion phase and become self-sustainable.

For the medium-scale market segment, the component will provide two instruments:

- A revolving fund for biogas digester enterprises.
- A result-based financial incentive for demand creation and conversion of sales agents. It is expected that these sale agents transform a lead of commercial clients into a solid business plan for financial institutions

Central to the project is the focus on improving the enabling environment for the biogas digester market, considering the holistic nature of the sector (energy, agriculture, waste management, sanitation, etc.). Thus, the project will support policy development and strengthen biogas digester sector associations and networks through technical assistance, advisory and mentoring, capacity-building interventions, dialogue events and advocacy.

ABC through SNV will also be involved in capacity-building activities for county authorities to include biogas digester and biogas in the county development planning. This activity will focus on 12 counties selected in a participatory manner.

In these counties, door-to-door consumer education activities will be led by ABPL through the biogas marketing hubs and existing demo farms. The project will also work through the energy, agriculture, and technical vocational training centres network.



Specific incentive for low sales arid counties

To properly operate, biogas digesters need available feedstock and water. Mobilizing the feedstock to one place can be costly and technically not feasible. For this reason, most biogas digesters are used on sites with important quantities of manure or organic material: animals in stables, institutions, or compost sites. Water is usually added to the feedstock with a volume ratio of 1:2 or 1:1 to increase biogas production.

Those two parameters (easily accessible feedstock and water) are limited in the arid counties of Kenya. For this reason, ABC had defined a specific bonus for low sales arid counties of Garissa, Lamu, Mandera, Wajir, Marsabit, Turkana, West Pokot, and Isiolo in its RBR. This bonus is equivalent to 40% of the total reimbursement incentive. ABC will also develop specific guidance for biogas digester enterprises to reduce the amount of water in the biogas digestion process.

To increase biodigester utilisation, ABC will work on a maintenance manual and on the certification of masons including differentiating between masonry and piping works. ABC will support the commercial biodigester sector by training existing domestic biodigester masons to work on larger systems. An annual biogas valorisation challenge will be organized to reward the best valorisation ideas by a monetary prize and media coverage. Finally, ABC will implement the “Corporate Social Responsibility” Virtuous Circle to communicate the environmental and economic benefits of anaerobic digestion of biowaste.



Gender Equality

The component will support women entrepreneurs and women-led businesses, while also specifically targeting women in demand activation through gender-sensitive Behavioural Change Communication (BCC) and household dialogue approaches. Gender will be mainstreamed in the project implementation processes, partners strategies and enabling environment – contributing to Kenya’s *Gender Policy in Energy* through supporting and building the capacity of women-led enterprises and promoting the employment of women, and target project beneficiaries. Women and men will equally benefit from the project, and this shall be achieved through gender equality during the identification and selection process of project participants and beneficiaries.



Increasing biodigester functionality

ABC commissioned a study showing that 82% of the domestic biodigesters installed in Kenya are functional. While biodigesters have enormous potential in promoting access to clean cooking, non-functional biodigesters are endangering the reputation of the whole sector.

Thus, the study provides the following recommendations for ABC to reach its ambitious objective of reaching 90% functionality:

- develop basic capacity of farmers on minor maintenance and repairs to reduce reliance on biodigester enterprises’ technicians,
- develop a specific curriculum on biodigester feeding and the use of bioslurry and bioslurry derived composts to improve the biodigester efficiency and business model,
- improve biodigester enterprises’ communication channels, especially on prompt and timely redress of concerns and calls from farmers for maintenance to reduce reputational risks for them and the sector

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