

ENERGY FOR LIFE - BEST PRACTICE AWARD 2011

System / Location

SNV-supported Tanzania Domestic Biogas Programme (TDBP)



Over the period 2009 – 2013, the Tanzania Domestic Biogas Programme (TDBP) aims to improve livelihoods of farming households, exploiting market and non-market benefits of domestic biogas. Using an infrastructure of local organisations across Tanzania, the programme aims to have an expansive outreach of biogas dissemination.

The programme will: support the construction of 12,000 new biogas plants; stimulate proper bio-slurry use by embarking on extension activities; facilitate toilet connection by making a second inlet pipe to the digester mandatory; avoiding deforestation of some 8,000 hectares of forest and reducing greenhouse gas emissions by 60kt CO₂; benefit 72,000 people (mainly women and children) and virtually eliminating indoor air pollution; ensure the proper construction, maintenance and operation of the constructed installations by providing 5,000 person-days of professional training and 16,800 person-days of user training; have generated direct rural employment at artisan level to the tune of 840 person-years. These objectives are set in a wider, 10-year framework to establish a commercially viable biogas sector in Tanzania, providing 100,000 households with the technology.

Planning/Installation

Tanzania Domestic Biogas Programme
www.biogas-tanzania.org
info@biogas-tanzania.org

Donation/Support

The Africa Biogas Partnership Programme (ABPP)

Operator

PROJECT DATA SHEET

| | |
|--|--|
| Year the installation started operating | 2009 |
| Type of system | Domestic biogas digesters |
| Type of energy produced | Gas |
| Location | Various regions in Tanzania |
| Geographical position | |
| Size of installation | 4, 6, 9 and 13 m ³ |
| Power of installation | 1 plant (6 m ³)= 1.28 kWth |
| Use of energy produced | Cooking & Lighting |
| Quantity of energy produced per day | 1 plant (6 m ³) = 4.6 MWh/plant/yr |
| Type of financing | Programme subsidy (25%), own investment (75%) |
| Source of financing | |
| system investment cost | 4 m ³ - 350-400 US-\$; 6 m ³ - 400-550 US-\$ |
| System cost per watt | |
| Income generated from installation | (user-survey analysis to be compared to baseline survey) |
| Maintenance cost per year | No maintenance costs required beyond user-training. Modified- CAMARTEC fixed-dome design is guaranteed for 2 years and has a lifespan of more than 25 years. |
| Fossil fuel savings per year | Fuel substitution: 1670 plants = 6.874 t biomass Fossil fuel: 1670 plants = 57 t fossil fuel |
| CO ₂ reduction per year | 1670 plants = t CO ₂ eq |
| Number of beneficiaries | 10,020 people reached through 1670 biogas plants |
| Presence of renewable energy country programme | Yes |



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LEGAL FRAMEWORK

The programme will follow the technical potential for domestic biogas as published in 2 independent feasibility studies. Operations will start Tanzania's North-eastern regions and subsequently annually expand to the South and South-east and the West and North-west regions of the country. Eventually, the programme aims to entirely cover Tanzania.

Promoting a sectorial approach in which Government, non-government and private sector organizations, in a complementary fashion assume those programme functions that intrinsically fit to the character of their organization. Within this sector, the supply side ensures "off-the-shelf- availability" of the technology whereas the demand side organizes the beneficiaries, provides microfinance, promotes the technology and integrates it into rural development activities.

A single autonomous entity, the Tanzania Biogas Programme Office, hosted by the Centre for Agricultural Mechanisation and Rural Technology (CAMARTEC), responsible for coordination and management of the support activities. The key in the programme's inclusive approach is the multi-stakeholder approach, whereby capable partners embark on functions best suited to their mandate and capacity as effective local partners, decentralizing the activities of TDBP. Government co-funding, though promised at the initiation of programme, has yet to come through.

FEASIBILITY, SUSTAINABILITY AND REPLICABILITY

Introducing the private sector, as biogas construction (micro-) enterprises, in the primary process of the programme (construction, after sales service). Both at supply and demand side of the sector large-scale dissemination experience on domestic biogas is very limited. The programme will invest significantly in training and capacity building. On the supply side of the market -to ensure that dissemination skills are available locally as much as possible - and on the demand side -to ensure households understand the operation and maintenance of their plants sufficiently and apply bio-slurry to their best advantage. The main programme activities are promotion & marketing, quality management and training. Other activities include finance and administration, private sector development, extension, institutional support, monitoring & evaluation and research & development.

SOCIAL IMPACTS

Biogas is a multi-impact domestic technology and renewable energy. The key impact area is cooking and lighting needs, leading to fossil-fuel substitution and reduction of indoor air pollution. Specific numbers are addressed in the project data sheet above. However, the high fertilizer/nutrient value of the bio-slurry effluent is also a key impact area. This can lead to income generating activities, food security and soil nitrification. Another impact area is improvement of sanitation and hygiene by the toilet connection inlet pipe and cowshed manure management.

A clear area of the programme's impact is vocational skills development, whereby the training of rural masons into biogas skilled constructors allows for a rurally-effective method of private sector development and service-delivery.

FINANCING AND FINANCIAL IMPACT

The total budget for the first phase of the programme, corrected for inflation on Euro basis, reaches € 16,737,357 (TZS 30,771 million). Household Investment takes the lion share, 74%, of the programme costs, technical assistance remains at 26%. Participating households, through the investment costs of their installations, will contribute 60% to the programme budget. ODA funding (ABPP, SNV) has been committed to the programme to cover 32% of the budget. For the remaining 8%, contributions of the Government of Tanzania, through its Renewable Energy Fund, are sought.

Through the Implementing Partner structure of biogas dissemination, costs per plant are reduced due to local know-how and expertise. Supporting local organisations add an investment cost to it, but this is steadily reducing in terms of programme costs per biogas plant as capacity is built at local levels.

ADDED VALUE

Potentially 12,000 biogas domestic plants,

Deforestation/ biomass and fossil fuel substitution for 1670 plants,

The programme is able to ensure adequate dissemination in various localities, each equipped with a private-sector driven approach of capacitating local masons to become biogas construction enterprises,

Women masons/supervisors are prioritised and supported,

A proactive engagement to ensure all biogas households receive support (technical assistance/advisory) on user-training, efficient use of their bio-slurry and maintenance of their biogas plant,

Women-headed households are supported through demonstration sites for their horticultural activities through the use of bio-slurry,

Consistent R&D to ensure the technology can be robust and long-term. Innovative research is being carried towards cost reduction on construction materials (all available locally), local appliance manufacturing (stoves, lamps), and biogas plants that use a lot less water as input too,

The programme is scaling up various biogas loan products through local micro-finance banks that allow customers to take a 2 year loan at favourable rates through local lending institutions in their areas,

At national-level the programme is trying to create coherence in the biogas sub-sector with a National Biogas Steering Committee Exploring the opportunities of carbon-financing to improve its financial and programmatic sustainability.

