

### About SNV Tanzania & Biogas

Tanzania population of 37 million people is growing at 2 % per year. Nearly 80% of Tanzanians live in rural areas where they meet 94% of their energy needs with biomass, particularly by burning wood. This dependency on fuel wood has led to a rapid deterioration of Tanzania's ecosystems. Collecting fuel wood requires difficult time-consuming work primarily done by children and women. Smoke from burning fuel wood also leads to respiratory and eye diseases.

Renewable energy technologies, like domestic biogas, can improve the present situation. Biogas has a relatively long history in Tanzania and was initially introduced by the Small Industries Development Organisation (SIDO) in 1975. CAMARTEC and GTZ carried this work forward in the 1980s-1990s by developing, promoting and providing training in the biogas sector. Other organisations involved in domestic biogas were, and to some extent still are, ELCT, MIGESADO in Dodoma, FIDE in Babati District as well as several private enterprises. During those years, interested parties built around 6,000 biogas digesters. As a result, older generations of Tanzanians know the advantages of biogas.

Biogas is a feasible option for the domestic energy needs of Tanzania's rural population and offers the following socioeconomic and environmental advantages.



#### Biogas:

- Provides a low cost energy source for cooking and lighting, because it's produced by readily-available animal dung and human waste.
- Improves sanitation in the home, farmyard and surrounding environment.
- Eliminates respiratory and eye diseases caused by indoor air pollution resulting from traditional cooking with wood, because it eliminates the need for an indoor wood fire.
- Saves time for women and children, because they don't need to collect wood.
- Creates rural employment, particularly for biogas masons and entrepreneurs.
- Produces an effluent called bio-slurry which is an excellent organic fertilizer.
- Lessens the pressure on rangeland as biogas stimulates zero-grazing practices. As a result, the ecosystem becomes more resilient
- Reduces greenhouse gas emissions on a global level.
- Reduces deforestation and forest encroachment by providing a realistic substitution for fuel wood.

Based on the 2007 feasibility study and our 2008 programme implementation document, SNV estimates that the technical potential for domestic biogas in Tanzania is around 165,000 households. Kilimanjaro, Mbeya, Iringa and Ruvuma are the areas with the most potential.

### SNV's Approach to Biogas

SNV previously developed a commercially-viable method to promote domestic biogas in Asia, and we recently introduced this concept to a number of African countries, including Rwanda, Ethiopia, Kenya, Uganda, Senegal, Burkina Faso and Tanzania. This concept is based on a multi-stakeholder approach focused on involving the private sector to market and construct quality domestic biogas infrastructure and provide after-sales services to the biogas households. The programmes promote single, standardized biogas digester designs to enable clear and robust quality management systems.

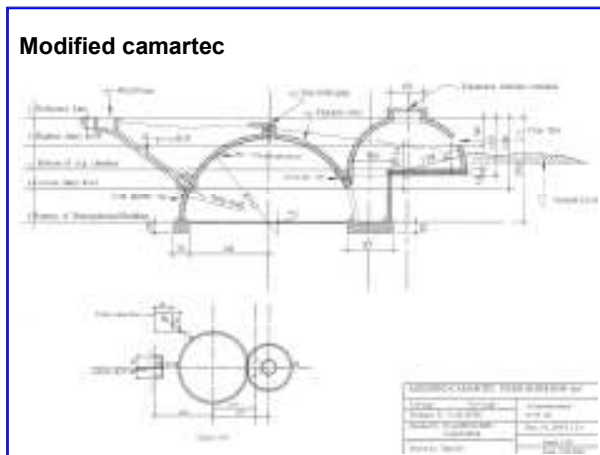
The Tanzania Biogas Stakeholders Group opted for the modified CAMARTEC design in four different sizes to respond to the energy needs of individual households and the availability of animal dung. A major challenge is the relative high initial investment to build a biogas plant. The turnkey cost for a 6 m<sup>3</sup> digester can be as high as US\$1,000. To stimulate demand, we are working to find a way to provide financial incentives like investment subsidies and special biogas loans.

Rather than directly executing the biogas programme, SNV will assist CAMARTEC and other programme partners to implement the Tanzania Domestic Biogas Programme (TDBP). The main actor is the private sector providing construction and after-sales services.

Financial support is obtained from the Netherlands Government through its Africa Biogas Partnership Programme. In addition, SNV will request the Rural Energy Agency of Tanzania to co-fund TDBP activities.

Other important partners include:

- Vocational and Educational Training Authority (VETA) to train biogas masons and supervisors.
- SIDO to provide business support to the emerging biogas construction enterprises.
- MIGESADO-Dodoma and FIDE-Babati to share their experience in biogas dissemination.
- Savings and Credit Cooperatives Union League Tanzania (SCCULT) to provide affordable biogas loans distributed by their network of SACCOS.
- Local capacity builders to carry the work forward.



## Current Goals

Over the next 5 years, the first phase of the project, SNV and TDBP will work to improve the livelihoods and quality of life of rural farmers in Tanzania through exploiting the market and non-market benefits of domestic biogas. By the end of the first phase, the programme aims to:

- *Support the construction of 12,000 new biogas plants nationwide and keep at least 95% of the constructed biogas plants in continued operation.*
- *Enable proper bio-slurry use by fitting 80% of the biogas plants with the needed facilities. The bio-slurry will transform 65 kilotons of organic matter into rich organic fertilizer that can significantly increase agricultural yields and may reduce the amount farmers spend on chemical fertilizers.*
- *Fit all biogas plants with a second inlet pipe to allow a future toilet connection and help 2,400 households connect a toilet to their biogas installation to further improve the sanitary situation of the households.*
- *Protect 8,000 hectares of forest from being deforested and reduce greenhouse gas emissions by 60 kilotons of Carbon Dioxide (CO<sub>2</sub>). Biogas generated by the plants will produce the equivalent of nearly 100 kilotons of biomass fuel.*
- *Benefit 72,000 people directly by eliminating the need to gather fuel wood, thereby reducing the daily workload of women and children by the equivalent of 2,003 human years of labor. Women and children will also chiefly benefit from the elimination of indoor air pollution.*
- *Provide 16,800 days of user training and over 5,000 days of professional training. The programme will generate direct employment in rural areas equivalent to 840 human years.*

SNV will strive to meet the above targets in the first phase of the project, but long term, TDBP estimates it will need 10 dedicated years to establish a commercial viable domestic biogas market, with 100,000 domestic biogas digesters operating in Tanzania.

***SNV is dedicated to a society where all people enjoy the freedom to pursue their own sustainable development.***

***We contribute to this by strengthening the capacity of local organizations.***

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