

# The Rwanda Domestic Biogas Program: Supporting vocational skills development and employment creation

## **CHALLENGE**

About 170,000 young people start their working life each year without sufficient qualifications and therefore have only a limited chance to integrate successfully into the economic cycle<sup>1</sup>. It is with this in mind that the Domestic Biogas Program of Rwanda, supported by SNV, has invested heavily in employment creation and support for small businesses.

This case study looks at how vocational skills development has been institutionalised in the Rwandan biogas sector using a multi-stakeholder approach, and how this is contributing toward establishing a commercially viable biogas sector. The case underlines how a partnership approach can achieve significant results with relatively limited input from SNV.

## **CLIENT**

The National Domestic Biogas Programme (NDBP) was jointly developed by the Ministry of Infrastructure and SNV and is housed in the Ministry. The Programme's objective is to develop a commercially viable domestic biogas sector with the dual objectives of contributing to the well being of rural families while reducing pressure on natural resources. The NDBP has a target of 3,000 rural households (20,000 people) using biogas by 2011.

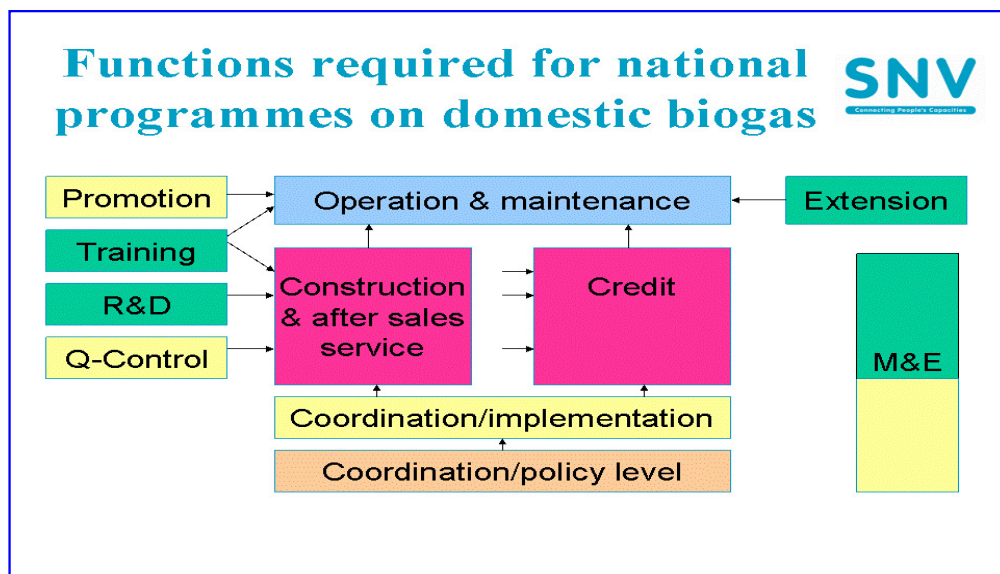
The Programme addresses common problems faced by Rwandan households. These include the limited availability of fuel wood and high costs of other fuels for cooking and lighting, indoor air pollution caused by the traditional way of cooking, and poor sanitation. Thus, the Programme also contributes to increasing household income, gender equality, health improvement and environmental sustainability.

The integrated advisory services offered to NDBP by SNV Rwanda build on SNV's expertise in supporting the development of viable biogas sectors in other countries. This includes policy and institutional development, technical design, operational support, fund brokering, and access to financial services for the end users.

The biogas sector strategy is based on market development, and the program emphasises private sector development so that the supply side may meet the demand. Biogas companies are instrumental to the successful functioning of a biogas program from promotion, construction, quality control, after sale services and support to operation and maintenance by farmers as shown in the table below. For this reason, the program gives prominence to supporting biogas companies through the training of masons and supervisors.

---

<sup>1</sup> 2006 final report on self evaluation for the Poverty Reduction Strategy Paper I



### **RATIONALE**

In recognition of the lack of skills and unemployment problem in the country, Rwanda intends to invest massively in vocational training development to increase skills and entrepreneurship, and to enhance employability and capacity to start up small businesses. It is believed that vocational skills development, with a special focus on youth, women and girls, will increase income and employment.

In keeping with this policy, the Rwanda Domestic Biogas Program has invested in vocational skills development and support to small businesses. However, building quality bio-digesters requires good knowledge and skills on the part of the mason. The performance of bio-digesters is associated with the selection of the right size, the appropriate site for construction, and good quality construction materials and appliances, as well as with strict adherence to construction norms, monitoring operation of the plant, and maintenance - all of which are the responsibility of the mason. Building quality bio-digesters not only requires good knowledge and skills on the part of the mason, but also effective supervision of the installation and post-installation activities by well trained supervisors.

### **METHOD**

The multi-stakeholder approach of the biogas program brings together potential partners to work with the NDBP at different levels and for different purposes. In the particular case of vocational skills development, the Rwanda Workforce Development Agency, its provincial Integrated Polytechnic and Research Centres (IPRCs), their partners (Japan International Cooperation Agency/JICA for IPRC North) and the districts, joined NDBP to support the development of a training programme for the biogas sector with the ultimate aim of boosting private sector involvement, the main driver of the biogas program, and creating jobs for the rural labour force.

To ensure sustainability, the goal has been to bring together existing Technical and Vocational Education and Training (TVET) institutes and to develop their capacity to

provide training. Localising training capacity guarantees long-term technology transfer and better outreach and dissemination, especially in rural areas.

The training programmes target masons, as well as graduates from vocational training centres and technical schools.

Vocational skills development follows a two-pronged approach and centres on (a) institutional development, and (b) on-the-job training.

### ***Institutional development***

The Workforce Development Agency (WDA) has a mandate to coordinate, regulate, and supervise the implementation of an open-ended TVET system in the country. Cabinet formally approved the establishment of WDA on January 18, 2008<sup>2</sup>. The WDA will operate through five decentralized Integrated Polytechnic Regional Centres (IPRC), one in each province. IPRCs will operate the 25 public vocational training schools, and supervise 150 private vocational training schools. Currently, three IPRCs are fully operational.

In June 2009, a MoU was signed between the Ministry of Infrastructure and the Workforce Development Agency (WDA) with SNV as a partner, to establish the biogas training programme through IPRCs, schools and vocational centres, and to integrate the programme into the curriculum.

WDA, NDBP and SNV have developed a plan of collaboration and started implementation. The objectives of the plan are to:

- Increase the capacity of public and private vocational development entities in the areas of biogas technology;
- Promote sustainable development of the biogas sector through technology transfer related to bio-digester construction and appliance manufacturing;
- Support the achievement of the general and specific objectives of the National Domestic Biogas Programme (NDBP) and Workforce Development Authority (WDA).

This will be done in three steps:

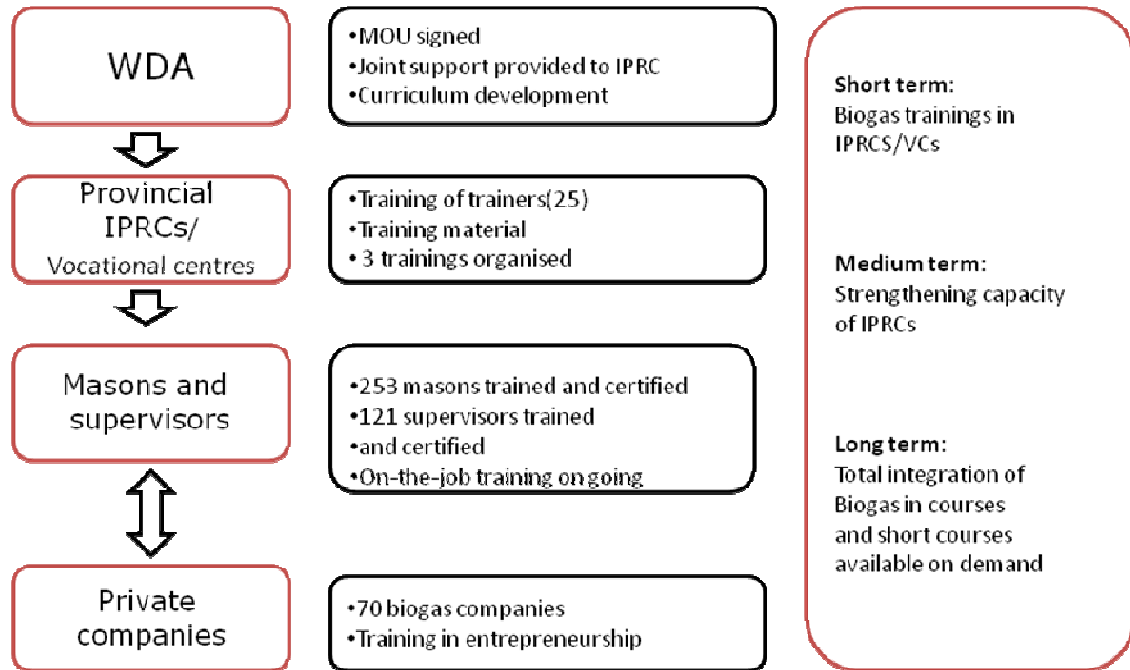
- Short term: IPRC, with support from NDBP and SNV, will train masons and technicians in order to boost construction capacity and ensure NDBP targets are met, and create income opportunities in the rural areas;
- Medium term: further strengthen the capacity of IPRCs by ensuring the availability of fully trained personnel, and by integrating biogas technology into their curriculum;
- Long term: completely outsource biogas training to IPRCs.

Step one and two are closely linked.

---

<sup>2</sup> [www.WDA.gov.rw](http://www.WDA.gov.rw)

SNV's institutional support logic for WDA, IPRCs, and biogas companies, as well as achievements to date, are outlined in the figure below:



To date, SNV, through NDBP, has supported IPRC North (Tumba Technical College - supported by JICA), IPRC Kigali (Kicukiro Technical College), and IPRC South (Ecole Technique Officiel de Gitarama) with specific SNV support for developing and conducting training programmes for masons and supervisors. So far, these have included a training of trainers for lecturers/teachers(This was done for all The 5 Rwanda IPRCS, including two of them not mentioned above), and the provision of technical support during the training courses for the three IPRCs mentioned above. SNV, NDBP and WDA have also embarked on curriculum development to integrate biogas into regular courses, and for the provision of tailor-made short courses.

"The SNV, NDBP, WDA collaboration is fruitful and has surely contributed to this year's governmental retreat decision to have 10,000 new TVET enrolments this year", Nsengiyumva Albert, WDA director

Four trainings have been conducted under this partnership so far, with the following results:

Trainings	Results
Training of trainers for IPRC staff (January 2009)	<ul style="list-style-type: none"> <li>• 25 technical teachers/lecturers trained as trainers</li> <li>• All five IPRC with biogas training capacity</li> </ul>
Training of new biogas companies (July 2009)	<ul style="list-style-type: none"> <li>• 60 masons and 45 supervisors</li> <li>• 20 new biogas companies created</li> </ul>
Refresher training for on-the-job trained masons and supervisors (May 2010)	<ul style="list-style-type: none"> <li>• 129 masons and 40 supervisors</li> <li>• 30 active biogas companies supported</li> </ul>
Training of new biogas companies (May 2010)	<ul style="list-style-type: none"> <li>• 64 masons and 48 technicians</li> <li>• 40 new biogas companies created</li> </ul>

It is important to note that the time gaps between various trainings are used to strengthen the business capacity of the already trained biogas companies prior to other new company intake. Within the biogas program, a clear procedure on the intake of new companies has been established. Invitations are advertised in recognised local newspapers. Interested companies will be admitted to the program after fulfilling certain conditions and with the agreement of the district of origin (all 30 districts of Rwanda are involved).

***On-the-job training:***

On the-job-training was introduced to provide established construction companies with the specific skills required for biogas digester construction. This approach sees one fully trained and certified mason working with a non-trained local mason. Companies may participate upon approval from the National Domestic Biogas Program and under close supervision from the program’s field technicians. It is entirely demand based, and depends on the needs of a specific company. After completing three digesters with the help of a trained mason, trainees undergo a one-week theoretical refresher training (see above) in order to become certified by the program. The on-the job training programme began in mid-2009 and is ongoing. It is followed closely by SNV and NDBP, which provide overall supervision, control, and skills verification.

This training method is linked to the “one digester per administrative sector” program, which aims to promote biogas usage by providing biogas digesters to model farmers in each of the sectors (416 sectors in Rwanda). As it is a new technology, farmers prefer to physically see a biogas digester prior to investing. The one digester per sector helps to facilitate replication, and, at the same time, facilitate the intake of new masons and the on-the –job training.

## OUTCOME

The key outcomes of this programme are:

- An established and strengthened institutional structure providing vocational training to biogas companies. Two IPRCs now have the capacity to provide biogas training, and one has already included it in its curriculum. Both have been training masons and supervisors, resulting in the certification of 253 masons and 121 supervisors.
- Better and more accessible training facilities and services through the decentralised structure provided by IPRCs;
- Increased employability and entrepreneurship, the two objectives of the Rwanda VOSD strategy<sup>3</sup>, in all 30 districts through the establishment and additional skills development of 71 biogas companies.
- Increased farmers' access to biogas services, such as promotion, pre-user training, user training, and after-sales services due to the availability and proximity of trained and certified companies, masons and supervisors.

"I started as a mason, but now I have my own biogas company, and I am very happy with my profits. I have started to realise my personal projects with this business". *Jean Pierre Habanabakize, Roofing Biogas Enterprise, Nyagatare District, Eastern province.*

Critical success factors include:

- Promotion of biogas as a profitable business contributes to increasing interest from companies, and thus to increased intake of masons and supervisors;
- High level of governmental ownership, with WDA as a committed agency;
- SNV's experience in multi-stakeholder sector development, in general, and in developing biogas programmes in particular.

---

<sup>3</sup> 2009,SNV Rwanda VOSD Implementation Strategy

## LESSONS LEARNED

The main lessons learned are as follows:

- Embedding established institutions in vocational training programmes is critical to ensure post-programme sustainability. The multi-stakeholder approach, whereby key partners were involved, proved to be crucial;
- Incorporating biogas into IPRC courses and other vocational training centres allows new graduates to be admitted to the NDBP, allowing for its rapid expansion;
- Governmental support at all levels, especially vocational skills development, is critical;
- Masons and supervisors are willing to learn new technologies and appreciate the new opportunities offered by the labour market.

Points for future action include:

- Further improving IPRCs ownership;
- Managing the high turnover of lecturers in IPRCs;
- Further integrating biogas technology into lessons and curricula (masonry, renewable energy, etc.) in the long term.

Opportunities include:

- Government interest: the signing of performance contracts by all public officials are highly supportive of further improvement of vocational skills development;
- Increasing operational capacity of IPRCs to facilitate the provision of biogas training in all vocational training centres
- Increasing interest from the private sector to participate in the biogas business;
- Willingness of existing companies to further increase their capacities;
- The NDBP certification system of masons and technician that ensures control of workforce development and acts as a guarantor for the quality of installed plants.

Assignment title: Technical support to the NDBP

Lead Advisor: Ndahimana Anaclet

Total number of PPD: 30

Last assignment review score:



theoretical)

Biogas training sessions (Practical and



Biogas training closing ceremony by senior officials (In the first picture, the former energy state Minister and JICA representative)

