

Evaluation African Biogas Partnership Programme

Executive summary

The subject of this evaluation is the Africa Biogas Partnership Programme (ABPP) that was launched in 2009 in six African countries (Ethiopia, Uganda, Kenya, Senegal, Tanzania, Burkina Faso).¹ The ABPP programme aims at developing a sustainable domestic biogas sector. A sustainable biogas sector is characterised by a sustainable demand and supply side supported by an enabling environment and balanced interactions between consumers, providers/suppliers and policy makers.

A first phase (2009-2013) focused on the creation of national programme teams, hosted by national implementing agencies, and on the capacity development of these teams enhancing technical and programmatic skills to stimulate programme effectiveness and the promotion of the biogas technology. The national programme teams collaborate with implementing partners (NGOs, government institutions or producers groups) to promote and disseminate the biogas technology, to conduct quality control and monitor the masons trained. A second phase, started in 2014, will run until the end of 2018. This phase has a specific focus on private sector development (a.o. creation of biogas construction enterprises - BCE), on the introduction of quality assurance systems, the facilitation of access to credit for consumers and private sector actors as well as on the (continued) promotion and institutionalisation of biogas, the use of bioslurry and obtaining carbon revenue. In the second phase some of the tasks like promotion and quality control have been transferred from the implementing partners to the masons and their biogas construction enterprises. The ABPP is financed by DGIS, the Ministry of Foreign Affairs in the Netherlands and implemented by SNV and Hivos. Hivos is the fund manager while SNV provides advisory services to the national programme teams.

Set-up of the evaluation

The objective of the evaluation was to assess the effectiveness of the ABPP approach in developing a market oriented biogas sector, along with assessing the impact of ABPP in terms of number of people using biodigesters. The findings will be used for accountability to the main donor i.e. DGIS, as well as for learning and improvement of the programme. The evaluation is based on an assessment of the programme in Burkina Faso, i.e. Programme Nationale de Biodigesteurs du Burkina Faso (PNB-BF), and in Tanzania, i.e. Tanzania Domestic Biogas Programme (TDBP). The evaluation was carried out by a multi-disciplinary team of consultants, managed by ACE Europe. The consultants combined qualitative and quantitative research methodologies, including household surveys among biogas users and potential users and telephone surveys among masons. The evaluation took place between December 2014 and October 2015.

Outcome realised but ambitious targets not reached

Both programmes succeeded in installing all biogas functions in the respective countries (promotion, masons' training, research and development, construction and after sales service, quality control, operations and maintenance, bioslurry extension, credit, programme coordination and monitoring). The targets for biodigesters constructed were achieved by respectively 78 % in Tanzania and 44% in Burkina Faso (by the end of 2014).

¹ The programme in Senegal was not successful and not included any-more in the second phase of ABPP

The numbers show that very ambitious targets were set. It also demonstrates in particular the difficult conditions within which a biogas programme had to be started in Burkina Faso (lack of knowledge and expertise on biogas, difficult climate conditions, weak private sector, etc.).

In Tanzania a total number of 755 masons were trained and 65 biogas construction enterprises are being supported. In Burkina Faso 306 masons were trained of which 150 remained active. These are associated in 14 biogas construction cooperatives.

2014 was characterised by a declining market with less digesters being built. This was explained by a combination of factors, such as the abolishment of the programme subsidies in Tanzania (not supported by a proper communication strategy) and the introduction of Result Based Financing (RBF) in both countries that had a negative impact on biodigester promotion executed by the implementing partners. The introduction of RBF estranged many of the implementing partners at a time where BCEs were not yet ready to take up new functions like e.g. promotion.

Growth potential at the demand side

Biogas has become an interesting technology for rural and peri-urban households who have a diversified income basis of improved livestock combined with agriculture - preferably high value crops - and other income generating activities. Apart from the daily feeding, the biodigester requires relatively little maintenance and repair. It provides clean renewable energy, solves the waste problem of animal dung on the farm while the bioslurry reduces the costs of inputs for agriculture.

In both countries, a large group of "first" adopters was reached which are overall satisfied with their biodigester, the production of gas and the use of bioslurry. The impact of access to biogas has a direct monetary effect in those regions where firewood is to be bought, while the comfort and time saving effect - mainly for women- plays a bigger role in the other regions (fast and clean cooking).

The ABPP programme demonstrated that biogas technology could also be introduced in regions with difficult climate conditions (e.g. long dry seasons). Initially the programme in Burkina Faso was confronted with a relatively high number of non-operational digesters in some zones during the first phase, due to the lack of sufficient dung to start-up the digester. This was solved during the second phase by demanding the collection of sufficient dung before construction work, enabling the start-up of the digester in presence of the mason. Availability of sufficient dung during dry season remains a challenge in many regions in Burkina Faso because zero grazing is not common yet and sufficient fodder for the animals is lacking. Nonetheless, the majority of the biogas users are satisfied with the biogas production in Burkina Faso, although biogas has not fully substituted firewood. The traditional 3-stone fire remains the most frequently equipment used for cooking (which is not the case any more in Tanzania).

The cost of the digester was affordable for the first group of early adopters. Households are convinced that the benefits of biogas outweigh the cost. The survey illustrates that the first group of biogas users can be situated among the "richer" segments of the target groups but in most regions a large group of potential biogas users exists that are interested in obtaining a biodigester. Lack of sufficient knowledge on the use and maintenance of a biodigester and its costs are among the reasons of postponing investment in a biodigester.

From the survey appeared that the current biogas users obtained biogas information mainly from the field technicians/promoters of the implementing partners while the non-users know about biogas through the

experience of their neighbour. Continuous investment in biodigester promotion and marketing are important to expand the group of biogas users. By the end of the first phase, the promotion and marketing functions had been transferred to the masons and their construction enterprises but masons have played only a limited role in biogas promotion so far, according to the surveys.

Initial efforts to facilitate access to biogas credit appeared to be less effective in view of the structure and limits of the credit market in both countries. During the second phase adapted biogas credit products have been developed that have been put into the market recently. The ABPP programme assumes that expansion from the group of early adopters and first movers to a larger group of biogas users (targeting other segments of the population) will be stimulated by the introduction of a cheaper biodigester design, targeted promotion and easier access to biogas credit (from 2015 onwards).

Biogas market is attractive for Biogas Construction Enterprises (BCEs)

More than 80% of the masons interviewed found income from biodigester construction attractive. They like the job although working conditions are demanding. Currently there is not sufficient year round demand to enable all masons to work full-time on biodigester construction. Masons are hopeful for the future and indicated that - with the introduction of a cheaper biodigester design and the availability of subsidies and credits - a large group of farmers will invest in biogas.

By the end of the first phase of the programme, masons were stimulated to form either biodigester construction enterprises (in Tanzania) or cooperatives (in Burkina Faso). Different biogas functions such as promotion, construction, quality control, after sales services were to be taken up by the group members. In Tanzania three groups of active masons could be identified: individual masons, masons working in small informal groups and the BCEs which demonstrates that not all masons are interested joining a BCE. In Burkina Faso the majority of active masons are working within a cooperative. The surveys in both countries demonstrated that members of BCEs/cooperatives are overall more satisfied with the biodigester construction business and the income compared to the individual masons.

In phase II, promotion, marketing and quality control have been transferred to the BCEs or cooperatives in view of creating a sustainable private biogas sector. However, in both countries the masons had almost no experience in the field of enterprise development and marketing. Investment in promotion is not yet widespread among the masons, regular provision of after sales services is not guaranteed by all masons. The capacities of all masons and BCEs still need to be further strengthened to enable them to execute the new tasks assigned to them.

The programme, especially in Tanzania, appears to favour the market participation of larger companies. Financial incentives were made available from 2014 onward for each biodigester constructed by a BCE, including incentives for companies who produce a minimum number of biodigesters per month and extra financial/marketing support to the 3 best performing BCEs. The underlying assumption is that larger BCEs are more efficient in market development. The evaluators referred to the risk that these BCEs could limit their operations to the high potential areas and avoid the more difficult areas. This ABPP strategy might seem to be interesting in the short-term, with high pressure from donors and programme performance indicators on the number of biodigesters to be constructed, but might hamper longer term widespread installation of the biodigesters and maintenance. In view of the limited investment in equipment and the clear advantage of the proximity to the client, there are no indications that a small dynamic company would be less efficient in capturing local market demands than a larger company. Small-localised enterprises

might be even more apt to answer the demand in more isolated areas where communication and transport are a problem.

Enabling environment – government and MFI-sector responding slowly

Governments in both countries are only slowly responding to the emerging biogas market. Subsidies for biogas were made available by governments in both countries (Tanzania only recently) and biogas has been integrated in renewable energy policies but without specific implementation measures so far. Even though there are several opportunities to link biogas to other policy reform processes such as on zero-grazing, deforestation, milk and meat sector development, not much specific advocacy has been done by the two programmes to influence these policies.

The MFI-sector did not show much interest in biogas at the start of the programme. Initially the programme had not made sufficient efforts to show the economic advantages of a digester. This, in addition to MFIs limited long term resources and the fact that credit accessibility is limited for most households (who would prefer to access credit for investments with a direct (cash) income such as livestock) has resulted in limited availability and uptake of credit. Mid 2015 the perspectives for improved access to credit for biogas are promising resulting from negotiations with the World Bank in Burkina Faso and with the Rabobank Foundation and the National Microfinance bank in Tanzania. The strong advantages of bioslurry will most probably be an important driver for accessing credit for biodigesters.

A biogas market in an infant stage

The most important steps to develop a biogas market have been covered by ABPP, with relatively small programme teams. The programme is still in control of many functions including price setting, appliance provision, quality control, research and development. Strict quality control is needed to guarantee quality and credibility of biodigesters and thereby level the commercial and technical playing field. In a next phase it will be needed to increase initiatives for market diversification which is needed for further biogas market development, initiatives enabling, for example, the entering of new players in the market (e.g. with other designs, appliances), research of different applications of the biogas technology, exploring what models and applications could be interesting for different target groups (incl. institutional actors such as schools). This should enable access to new market segments (different target groups, regions).

An official independent regulatory system for the biogas sector (certifying masons, quality control) is not in place yet which is needed to stimulate a free competitive market.. The fact that the subsidies are related to the cost of labour leaves little room for the BCE and the cooperatives to adapt their prices depending on the demand or the purchasing capacity of the client and to develop specific marketing strategies for specific market niches. The programme is not clear on the future role for the government, in terms of e.g. the elaboration of quality standards, quality control or research and development. Response of credit providers is still very weak and commercial appliance providers have not yet shown an interest in the biogas market (SimGas- excepted).

The evaluators formulated some remarks related to the introduction of the Result Based Financing, arguing that the phase of market development had not been taken into account sufficiently. In market development

different phases can be distinguished such as market introduction, market growth, market maturity and market saturation and decline stage. The phase of market introduction is characterised by high upfront costs, related to promotion, marketing, etc. and relatively limited revenues, because not so many products (digesters) are yet being sold. Result based financing makes perfect sense in the phase of market saturation and a part of the growth phase, but not in first phase and also not at the beginning of the growth phase, when growth is still fragile. The introduction of RBF happened at a time when the role of players changed with the reduction of responsibilities and tasks of the implementing partners and the increase of tasks for the BCEs and cooperatives, within a short transition period. Rather than having a blanket, countrywide approach RBF should have been introduced gradually depending on the phase the market is in per region or province.

Recommendations

Being almost half way in the second phase, programme attention could shift gradually towards stimulating a more competitive and responsive biogas market. The evaluators formulated a set of recommendations that can be taken into account for future actions.

1. The programme should invest in more pro-active and evidence based advocacy towards governments, other development actors and other donors and look for more alignment with other development programmes (incl. other programmes of SNV), and expand the number of strategic partners.
2. A lesson learnt from the programme is the importance of a clear communication strategy on the (decreasing) availability of subsidies and other financial incentives to avoid market shocks. A minimum subsidy could be maintained in order to cover the costs for biodigester quality control until another financing source for quality control is found.
3. An explicit strategy for the institutionalisation of different biogas functions is needed, such as the provision of subsidies (terms and duration), quality control system, and biogas certification system and the respective roles of government, the national implementing agencies, their programme teams and the implementing partners.
4. For future programmes, it is recommended to involve all actors in a genuine participatory discussion on the way and timing of introducing RBF. For the current programme, it is recommended to monitor the sales of the biodigesters and analyse where adjustments need to be made (e.g. investing in extra promotion, looking for partnerships with organisations or government agencies that easily reach out to specific target groups).
5. More and longer term support is needed to assist the upgrading and professionalization of the masons and BCEs. Efficient strategies cover a mix of training, coaching and mentoring.
6. Extra support and strategies are needed to enable masons and their BCEs to establish biogas shops that can be linked to an energy hub providing more products than only biogas appliances. Experiences from the IRES programme in Tanzania should be shared with Burkina Faso.
7. Even though the choice to cover the labour cost through the subsidies was initially relevant, it proved to limit the capacity of the masons to adopt diversified market strategies. A shift of subsidies to the

global cost of the biodigester (e.g. with vouchers) would enable more market diversification including new actors in the supply of labour and/or appliances.

8. With regard to the promotion strategies and the roles of respectively implementing partners and BCEs, it is recommended to apply a diversified approach of transferring promotion and marketing responsibilities from implementing partners to BCEs, adapted to the characteristics of BCEs and cooperatives operating in the different regions. Collaboration with producers' organisations, women groups, farmers' groups, local authorities and local opinion makers need to be fully integrated in the promotion strategies.
9. In order to enhance inclusiveness of the ABPP approaches, it is recommended to further develop and implement gender strategies, to learn from the Tanzania Opportunities for Youth Employment (OYE) strategies and to provide incentives for keeping smaller BCEs in the market. Incentives should be clearly oriented towards development objectives such as reaching new market segments, orienting supply to poorer clients, innovations on efficiency of production and access to appliances and not based on the number of biodigesters constructed in general.

