Building Viable Domestic Biogas Programmes:
Success Factors in Sector Development



SNV
Netherlands Development Organisation
Connecting People's Capacities

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About Us

SNV Netherlands Development Organisation is an international development organisation of Dutch origin with over 40 years of experience in Africa, Asia, Latin America, and the Balkans. We are dedicated to a society where all people enjoy the freedom to pursue their own development. SNV supports national and local actors within government, civil society, and the private sector in their endeavours to find and implement local solutions to development challenges. We actively engage in partnerships with other development agencies as well as the private sector to leverage our resources and efforts for genuine economic development and sound governance.

SNV uses **governance** and **empowerment** concepts in its overall positioning, aiming for a change in power relations that expands assets and capabilities of poor people to negotiate with and influence institutions, policies, values, relations and processes that affect their lives. Governance is embedded throughout our practices and is an essential component of contributing to sustainable poverty impact. In doing so, we promote the characteristics of good governance that we value deeply: more legitimacy and voice, more transparency and accountability, more responsiveness from duty bearers to right holders, as well as fairness and equity.

With a strong presence of national and international advisors in-country, SNV provides capacity development services, facilitates knowledge development, brokering and networking, and supports advocacy and policy dialogue at the national and international levels. SNV provides tailored and effective contributions to locally-driven development solutions.

Within the framework of national poverty reduction strategies and the Millennium Development Goals (MDGs), we support local organisations in strengthening their performance and contribute to:

- **sustainable and equitable production, income and employment for the poor**
- **effective, efficient and increased access to and delivery of basic services (education, water & sanitation, health and renewable energy)**

SNV currently works in 32 countries in Africa, Asia, Latin America and The Balkans.

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Preface

About 2.5 billion people and innumerable enterprises in developing countries are facing serious problems in terms of their energy supply. The availability of traditional fuels such as wood is declining, while commercial fuels are too expensive and their availability unreliable. Provision of renewable energy has the potential to lift or keep households out of poverty and to develop small businesses.

However, the provision of renewable energy technologies is not always accompanied by capacity development support to local actors and therefore hampers the sustainability of initiatives. Here lies the main challenge for SNV: to develop sustainable local capacities in order to enhance access to and delivery of renewable energy services.

Apart from providing advisory services to the development of biofuels and improved water mills, SNV's work on renewable energy has focused on biogas. The primary objective of SNV's biogas intervention is to develop commercially viable renewable energy sectors in the countries where we work.

SNV started supporting biogas activities in Nepal in 1989 and since then national programmes have been initiated in Vietnam, Bangladesh, Cambodia, Lao PDR, Pakistan and Indonesia. By mid-2009, more than 285,000 households (1.85 million people) had been equipped with biogas plants. At the invitation of the Asian Development Bank, SNV is now leading a working group on domestic biogas in the framework of the 'Energy for All Partnership.' Through this initiative, an additional one million biogas plants are planned for the Asian region by 2015/2016.

SNV's biogas activities have been expanded to include Africa. Rwanda is the first country of engagement, with another six countries (Senegal, Burkina Faso, Ethiopia, Tanzania, Uganda, and Kenya) targeted in the framework of the 'Africa Biogas Partnership Programme.' This programme took off at the end of 2008, in cooperation with Hivos, and aims to reach 70,000 households by 2013.

In this publication, we are going to reveal the secret of SNV's success: the multi-stakeholder sector development approach in optimising organisational and institutional capacities within national contexts.

With our motto "Connecting People's Capacities" in mind, every day more than 1,400 SNV professionals across the world call forth our idealism and proven expertise in support of local organisations that have the potential to make significant contributions to their country's development. We look forward working with you!

Yours sincerely,



Jean de Matha Ouédraogo

Corporate Knowledge Network Sponsor on Renewable Energy

1. Introduction



For the past two decades, SNV has supported the preparation and implementation of national[1] domestic biogas programmes in countries in Asia[2] and, more recently, in Africa. In particular, the programmes in Nepal and Vietnam - our longest running initiatives – have met with a fair amount of international acclaim[3].

One could think of different reasons for this apparent success; it could be inherent to the culture of the population, a nation's specific energy situation, or the intrinsic qualities of the technology. Surely, these factors, and others, will go a long way towards explaining the achievements. This paper, however, attempts to explore whether SNV's approach regarding national biogas programmes has been of any significance or whether we were just "at the right place in the right time."

1 "national" used here means large-scale, covering the better part of a country over time.
2 Nepal, 1992; Vietnam, 2003; Cambodia, Bangladesh and Lao PDR, 2006; Pakistan and Indonesia, 2009.
3 Nepal: World Climate Award 1999, Ashden Award for Sustainable Energy 2005; Vietnam Energy Globe Award 2006.





Hence, the key question this paper attempts to answer is:

"What is the secret of the successful domestic biogas programmes, and what is SNV doing to achieve this success?"

Before suggesting answers to this question, however, chapter two of this paper briefly explains the technology of domestic biogas, the services it potentially provides to its customers, and how these services link to the needs of rural farming households in developing countries. Chapter three discusses what we think are the main features and associated challenges of SNV's approach:

- Facilitating thorough, participatory and context-specific preparation
- Establishing a sustainable sector as the ultimate long-term objective
- Interlinking impact and capacity development targets
- Promoting a market-oriented approach
- Attributing sector functions to multiple stakeholders

The paper concludes with an epilogue in which the presented features are put in the framework of programmatic, technical and financial sustainability.

To provide the reader with some background information on large-scale domestic biogas programmes, a brief description of the biogas programme in Nepal is added in Annex 1.

Typical of secrets, they lose much of their magic once they are revealed, and that may well be the very purpose of this paper. The scope of SNV's approach is wider than domestic biogas alone, and thus the demystification of this sector's success may invite other actors to add new features. At the same time, the reader is invited to reflect upon and critique the approach in order to improve SNV's professional performance in this sector.

2. About Domestic Biogas

About 2.5 billion people in developing countries are facing increasing problems with their energy supply. Their access to traditional cooking fuels such as wood, agricultural residues, dried manure, and charcoal is declining, while commercial fuels are too expensive and their availability unreliable.

Particularly for women and children, the collection of traditional fuels devours time that could have been spent at school or in productive activities. By burning these fuels, they are exposed to smoke and prone to respiratory illnesses and eye ailments[4]. Often, the same households are facing additional consequences including lack of hygiene and proper sanitation. These result in water-borne diseases affecting mainly women and children. In many places, the collection of traditional fuels and the production of charcoal exhaust natural resources and damage the environment on which the people heavily rely.

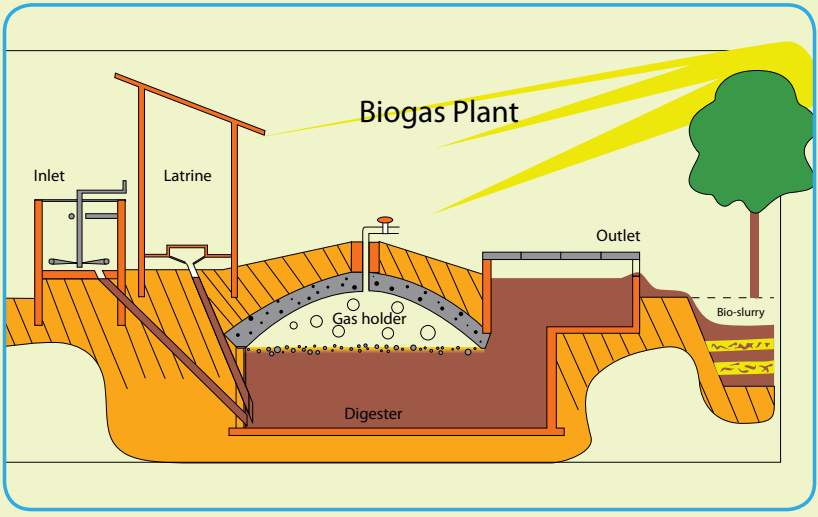
There is, in short, an urgent need for alternative, more sustainable energy sources and improved sanitation. By converting animal manure and human excreta into cooking energy, biogas could fill the void.



4 It is estimated that annually about 1.5 million people die prematurely because of respiratory diseases originating from traditional fuel burning (World Health Organisation, 2006).

2.1 The Technology

Domestic biogas plants convert animal manure and human excreta at the household level into a combustible methane gas. This 'biogas' can be used effectively in simple gas stoves for cooking and in lamps for lighting. In some instances, farmers use biogas for illumination as well as cooking, especially in remote rural areas where reliable electrification does not exist. The residue of the process, bio-slurry, can be collected easily and used as a potent organic fertiliser to enhance agricultural productivity. On average, farmers keeping a minimum of two heads of cattle or six adult pigs can generate sufficient biogas to meet their daily basic cooking and lighting needs. Investment costs of quality biogas plants vary between EUR 200 and EUR 900, depending on plant size, location of construction, and country, with the higher costs in Africa.





2.2 The Potential

The biogas technology is a proven and established technology in many parts of the world, especially Asia. Several countries in this region have embarked on large-scale programmes on domestic biogas, such as China (about 30.5 million household digesters by December 2008), India (about 4.1 million by March 2009) and Nepal (about 220,000 plants by mid-2009).

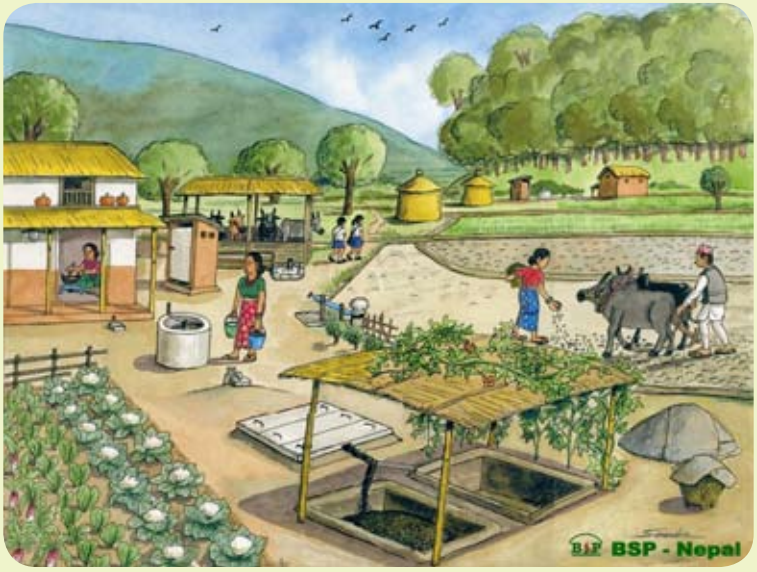
In Africa, no large-scale programmes have been established in the past, despite a substantial technical potential of about 18.5 million households[5]. SNV's biogas programme activities expanded to Africa in 2007, with Rwanda being the first country of engagement. Another six countries (Senegal, Burkina Faso, Ethiopia, Tanzania, Uganda, and Kenya) are targeted in the framework of the 'Africa Biogas Partnership Programme,' a programme in cooperation with Hivos aiming to reach 70,000 households by 2013. Programme activities in Tanzania and Ethiopia took off at the end of 2008, while Senegal, Burkina Faso, Uganda and Kenya are preparing for the same rapid growth.

2.3 The Benefits

Biogas plants provide multiple benefits at the household, local, national, and global levels. These benefits are appreciated differently in different countries, and can be classified according to their impact on gender, health, poverty, employment, and environment.

Benefits for women: Women express great satisfaction with biogas, particularly with the instant cooking it allows. Not only are time and labour for the collection of traditional cooking fuels and cleaning of cooking pots greatly reduced, but biogas is also much quicker and easier for cooking. Biogas is smokeless and does not require constant attention or blowing on the coals, as the use of wood fuel does. Women can put a pot on the burner and do other activities while the food is cooking. This workload reduction

5 Felix ter Heegde and Kai Sonder, October 2006: Domestic Biogas in Africa, a first assessment of the potential and need



provides opportunities for women to embark on other activities, varying from earning additional income to extending childcare or self-development.

Benefits for health: Noticeable improvements in the respiratory health and reductions in eye problems have been reported since the inception of the biogas programme. In some cases, older women who were no longer able to cook over an open fire were able to cook again with biogas. Better hygienic conditions are achieved through improved manure management and sanitation through toilets attached to the biogas plant. The concept of latrine and biogas promotion in one package originated from the perception that both applications share the same target group (women and children), have similar benefits (comfort, hygiene, and time-saving), and have comparable promotion aspects.





Financial and economic benefits: The primary impact of biogas plants on poverty alleviation is the reduction of the economic and the financial costs expended on fuel for cooking and lighting, as well as the improvement of food security through increased agricultural yields. Users of biogas plants often manage to stay away from the poverty trap. In the densely populated deltas of Vietnam, biogas plants offer farmers the opportunity to embark on small-scale piggery, which would not be allowed without a plant (socially and sometimes legally). Biogas addresses environmental limitations in such a way that it offers farmers a means to carve a living. However, biogas does not directly benefit those farmers without livestock who generally represent the very poorest strata of society. Farmers may benefit only indirectly, from greater availability of traditional fuels and employment opportunities. Still, biogas plant construction is a labour-intensive process that generates income and businesses in rural areas. For example, at least 11,000 people have obtained employment from different organisations, especially biogas companies and workshops, in the biogas sector in Nepal.

Environmental benefits: In addition to the environmental improvement at the household level, biogas utilisation helps reduce deforestation. By returning bio-slurry to the fields, depletion of nutrients and organic matter in the soil is reduced, as is pressure to expand and clear land for agricultural purposes. Biogas is produced on a sustainable basis, as the carbon dioxide associated with its combustion is reabsorbed in the process of growth of the fodder and food for animals and men, respectively. Therefore, by displacing traditional and fossil fuels, changing traditional manure management systems, and reducing the need for chemical fertiliser, biogas reduces greenhouse gas (GHG) emissions.

The table below provides an overview of the main benefits of an average biogas plant realised through the Biogas Support Programme (BSP) in Nepal[6]:

6 Bajgain, S. and Shakya, I., edited by M.S. Mendis, The Nepal Biogas Support Program: A Successful Model of Public Private Partnership for Rural Household Energy Supply, Kathmandu, 2005



Reduction of workload (especially women)	1,100 hours per year (3 hours per day)
Improvement of sanitation and health	- no indoor pollution - attachment of toilets to the biogas plant (for 72% of all plants) - improved dung management
Saving of firewood	2,000 kg per year
Saving of kerosene	32 litres per year
Reduction of greenhouse gas emissions	4,900 kg per year (as per 2005 CDM rules)
Increase of agricultural production	- availability of agricultural residue (1,000 kg per year) and dried manure (500 kg per year) originally used for cooking - saving of chemical fertiliser (39 kg N, 19 kg P and 39 kg K per year)

3. Features and Challenges of SNV's Approach



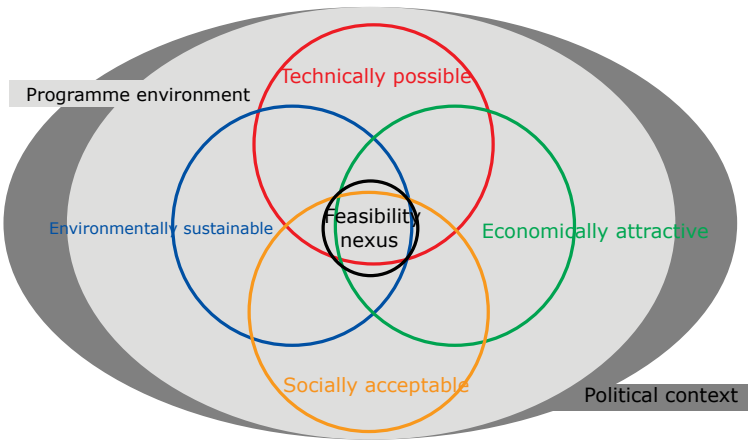
Hereunder, five interrelated features of SNV's biogas approach are presented, together with their associated challenges. Each feature provides a description of SNV's specific role as well as some examples.

3.1 Facilitating thorough, participatory and context-specific preparation

("P5: Proper Preparation Prevents Poor Performance")

Although Nepal, Vietnam, Cambodia, Bangladesh, Lao PDR, Pakistan, and Indonesia are all Asian countries, they show significant differences in their technical, economic, social, cultural, environmental, and political make-up. A national biogas programme needs to fit this country-specific environment, and as a result, programmes differ significantly between countries. Whereas the private sector drives the biogas programme in Nepal, the programme in Vietnam is mainly managed by the provincial governments.

The feasibility nexus



The quest for the best fit, expressed in the feasibility nexus, is the focal point of all the steps of the preparatory process. To assess feasibility, SNV uses comprehensive checklists and questionnaires.

Thorough studies are required to determine the market potential of domestic biogas, the proper technical design, the most appropriate institutional set-up, and the required implementation modalities. To instil ownership from the very beginning, such preparation needs to take place in a participatory manner, in close consultation with relevant stakeholders from the government, civil society, and the private sector.

The *challenge* of this feature is that thorough preparation results in a time-consuming and costly start-up process for the biogas programme. Quicker

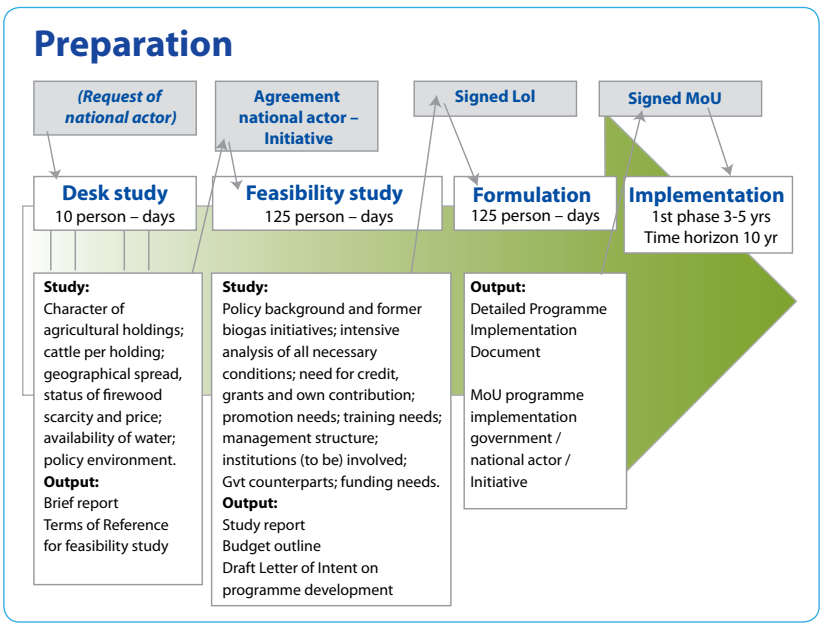




and cheaper deals are always tempting but include the considerable risk that eventually, the programme will not be owned by the relevant stakeholders.

SNV applies an elaborate preparation trajectory: first, during the desk study, answers regarding the technical potential for domestic biogas are provided. If the conditions for large-scale dissemination of domestic biogas are met, SNV will undertake fact-finding missions and feasibility studies in order to make a well founded "go/no go" decision for involvement.

This second step, the feasibility study, assesses environmental, socio-cultural, economic and institutional aspects in detail. These missions and studies include comprehensive context and multi-stakeholder analyses, looking at the potential demand for biogas plants and the constraints faced by the current







and possibly future suppliers of services. Analyses also look at the possible inclusion of women and disadvantaged groups. The resulting reports thus provide information on the commercial scope of the programme, indicate high-potential areas within the country, and provide a first sketch of the programme and its environment, identifying potential key stakeholders.

In the case of a "go" decision, a detailed proposal for a national programme, including output targets, estimated expenditures, and proposed financing, is formulated in cooperation with the different (potential) stakeholders. Crucial during the formulation phase is arriving at an accepted institutional set-up for the programme. Typically, the resulting Programme Implementation Document describes the first phase of implementation - a period of three to five years - within an overall planning horizon of ten years.

Actual implementation only takes place after financial arrangements (possibly including a carbon component) and organisational issues have been settled. Between the desk study and actual implementation, one to two years can pass easily.

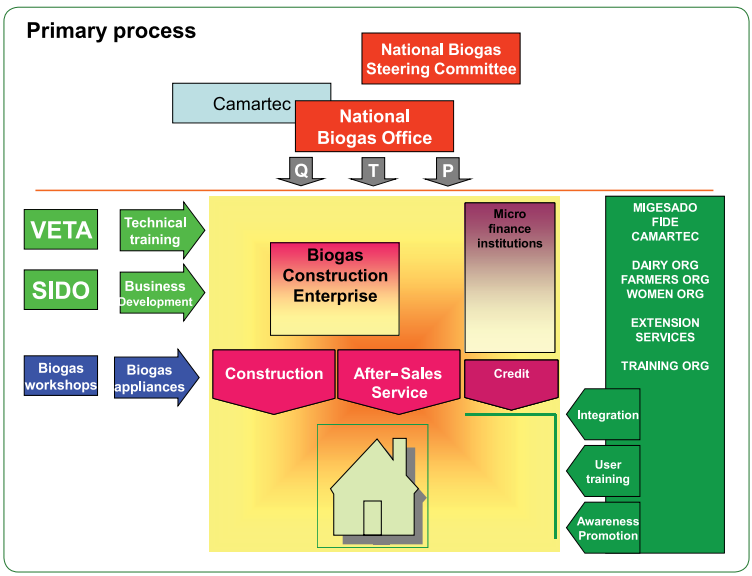
Example 1 (Lao PDR)

The Technology Research Institute of Science, Technology, and Environment Agency (STEA/TRI) in Lao PDR requested SNV to assist in the set-up of a biogas programme. A number of studies were undertaken to analyse the possible market potential of domestic biogas. It was concluded that short term this potential would be not very big, but that in certain areas, for example in the capital, Vientiane, a modest demand could be tapped already. Also, a participatory assessment of the possible institutional set-up for a small programme was undertaken, concluding that STEA/TRI would not be the appropriate implementing partner, as they do not employ staff-members at the district level that would be able to interact with livestock farmers in rural areas. The Department of Livestock and Fisheries (DLF) under the Ministry of Agriculture and Forestry (MAF) was recommended as the most appropriate implementing partner. However, STEA/TRI could be one of the other actors within the programme, undertaking activities in the field of technical training, applied R&D, and perhaps also quality control. The total time lapse during the preparation of the national pilot programme in Lao PDR amounted to one and a half years.

3.2 Establishing a sustainable sector as the ultimate long-term objective

("Haste makes waste")

The ultimate objective of all activities undertaken in the framework of large-scale programmes is to arrive at a commercially viable biogas sector, a sector that can be sustained by capable stakeholders and financed without any Official Development Assistance (ODA)[7]. In essence, sector development should translate into *biogas companies marketing their services to smallholder households on a*



7 ODA does not refer to carbon funds to be mobilised for the financing of national programmes on domestic biogas

commercial basis, whereby customers have access to credit facilities to finance the investment. For this to happen, the primary process - the transaction between supplier and client - should follow the rigours of the market.

In many countries, the biogas sector is developed weakly or is altogether absent at the start of the intervention. Sector development is a complex job and cannot be achieved overnight. A long-term effort, anywhere between seven and twenty years, may be required to create the required 'critical mass.'

The *challenge* of this feature is that donors are often not able and/or willing to continue support for a long period, as their policy cycle is seldom longer than five years, often resulting in frequent shifts in priorities and objectives. For national governments in developing countries, priorities are usually manifold in nature, with domestic biogas as just one of the many sub-sectors that would be in need of support. As a result of such "short-sightedness," many development efforts are begun but aborted early without getting a fair chance to grow.

SNV is advocating the importance of a sustainable sector as a long-term objective and plays an active role in mobilising the required resources for subsequent phases of biogas programmes. Success and tangible impact are the crucial ingredients required to convince governments and donors to continue providing financial support to national programmes.

In addition, SNV increasingly embarks on the often cumbersome development of a carbon component to the biogas programmes to improve the financial feasibility of large-scale programmes, thereby reducing the financial dependency on public funding.





Example 2 (Nepal)

In Nepal, sector development has been on the agenda of BSP since its inception in 1992. It took not less than two years to open the market for constructors other than the Gobar Gas Company (GGC) and lenders other than ADB/N. The establishment of the apex body, the Alternative Energy Promotion Centre (AEPC), required a preparation of four years as well as diplomatic pressure by donors making such an apex body conditional to their funding. The Association of Biogas Companies (NBPA) was established in 1994, but to date, this association has not yet fully achieved its envisioned role. Investment subsidies have been reduced, the Government of Nepal (GoN) has been increasing its contribution to the programme, and a start was made with self-financing through CDM project development. No doubt, the biogas sector in Nepal has made significant developments. This progress was only possible with the continuous financial support provided by the Dutch Ministry of Foreign Affairs (DGIS) since 1992 and the German Development Bank (KfW) and the GoN since 1997. SNV played a very active role in advocating this support for the programme.

3.3 Interlinking impact and capacity development targets

("It takes two to tango")

In the programmes, impact targets are linked to capacity development targets. Targets on impact relate to the number of households getting access to biogas plants, while capacity building targets relate to results in the areas of organisational strengthening and institutional development. Need for capacity building becomes clear when targets on impact are not reached in a qualified manner. All actors in the biogas programme are potential clients for capacity development services, whereby the focus may shift depending on performance at a certain time. Hence, level of impact is the main driver for capacity development.

The *challenge* of this feature is that many development interventions merely look after one set of targets: impact or capacity development. Targeting impact





without capacity development looks attractive, as it can generate tangible results short-term, but it often fails to sustain these results. Targeting capacity development without impact focus builds on the assumption that actors - after being capacitated - will automatically deliver to (prospective) customers. This assumption often does not materialise because the analysis of the required capacity development is determined by an actor and/or donor, but not tested in the market.

SNV regards impact and capacity development as Siamese twins, strongly promoting the link between both. This concept was successfully applied during the set-up (formulation of objectives and activities, and estimate of required budgets) and implementation (monitoring, quality control, and reviews) of the national programmes in Nepal, Vietnam, Cambodia, Bangladesh, Lao PDR, and Rwanda. Impact targets, such as the number of households having installed a biogas plant, are directly linked to the development of the capacity of parties on the supply side, such as the number of companies providing quality services on construction and after-sales service. Moreover, the content of capacity building is directly linked with observed gaps in service quality (examples include quality control for biogas technicians, training support for participating vocational training institutes, business training for biogas companies, and ICT and administration training for participating government officials).

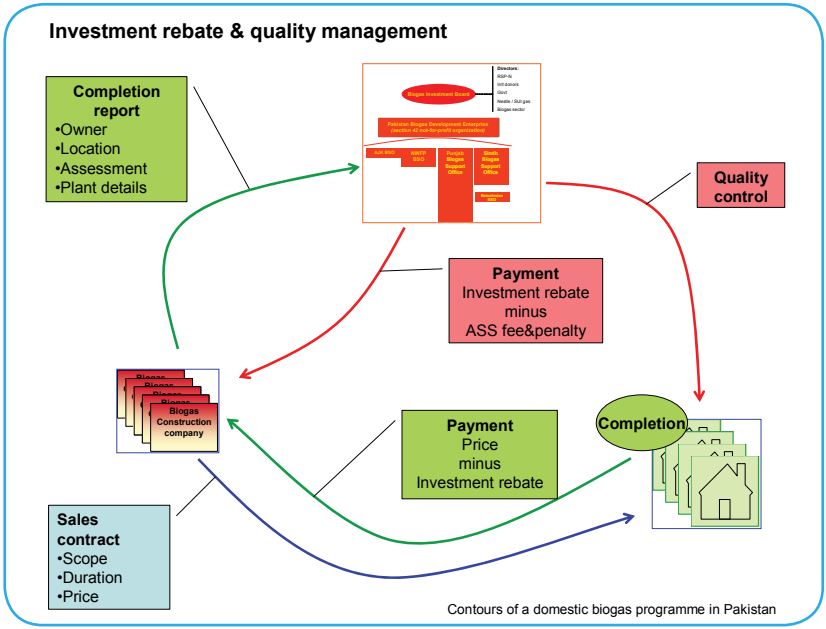
Example 3 (Vietnam)

At the start of the second phase, construction progress in a number of provinces in the Vietnam Biogas Programme showed only modest improvements whereas research indicated ample potential. Further analysis indicated that many biogas construction teams - kind of "proto-companies"- depended heavily on provincial authorities with regards to marketing, rather than reacting directly from market developments. To improve the performance of the biogas construction teams, the Vietnam Biogas Programme developed a comprehensive "commercialization component" to the programme, aiming to improve the business and marketing skills of the construction teams.

3.4 Promoting a market-oriented approach

("The customer is always right")

When biogas services fail to live up to the expectations of the owner, it is the user who will suffer. In addition, there will be an immediate negative effect on the progress of the programme, as neighbouring potential users will delay or even cancel their investment decision. As a result, the market for biogas plants will perish. Hence, a strict enforcement of carefully designed quality standards is crucial in the promotion of biogas technology.



Contours of a domestic biogas programme in Pakistan



These standards shall not be limited to the design, construction materials, or method and after-sales service of biogas plants. They shall also be applied to the quality of information provided to the potential users prior to their investment decision. If this decision is taken on the basis of wrong (erroneously high) expectations, these expectations will never be met after installation of the plant; product dissatisfaction by the user will prevail, even if the plant is kept in operation.

Ensuring user-satisfaction requires actors on the supply side (constructors and lenders) to be fully accountable to the (prospective) customers and behave in a customer-friendly manner in order to increase their business. Product credibility as perceived by customers in rural areas is not easy to achieve, but fundamental to the creation of the feedback loop: "service-quality – user satisfaction – promotion – sector development."

Example 4: Nepal

Before the initiation of BSP, the Gobar Gas Company (GGC) in Nepal was the sole organisation for the construction & after-sales service of biogas plants. On paper, GGC had developed an outstanding policy on after-sales service, including a guarantee. In practice, however, this policy was not implemented, and there was no other party enforcing the GGC to implement it. In addition, the GoN was frequently changing promotional subsidies on investment or interest. The broken promises seriously undermined the credibility of the technology, resulting in a stagnant or even declining market.

It is this loop that drives large-scale dissemination of an innovative technology like domestic biogas. By linking service-quality to investment-rebate, biogas programmes create leverage on quality, whereby a "carrot and stick" approach supports development towards a mature sector.

The challenge of this feature is striking the right balance between market-driven and programme-enforced quality management. Although eventually the market will drive towards products with the highest user-satisfaction, actors operating in a *marginal market* may not have the luxury of a long-term perspective, may lack the drive of competition, or may face market domination by large single-actors, all of which are factors potentially hampering the sector's ability to mature. Conversely, very strong programme-enforced quality management



may undermine the accountability of actors on the supply side towards prospective customers. This will increase the financial burden on the programme, slowing down development towards a sustainable sector.

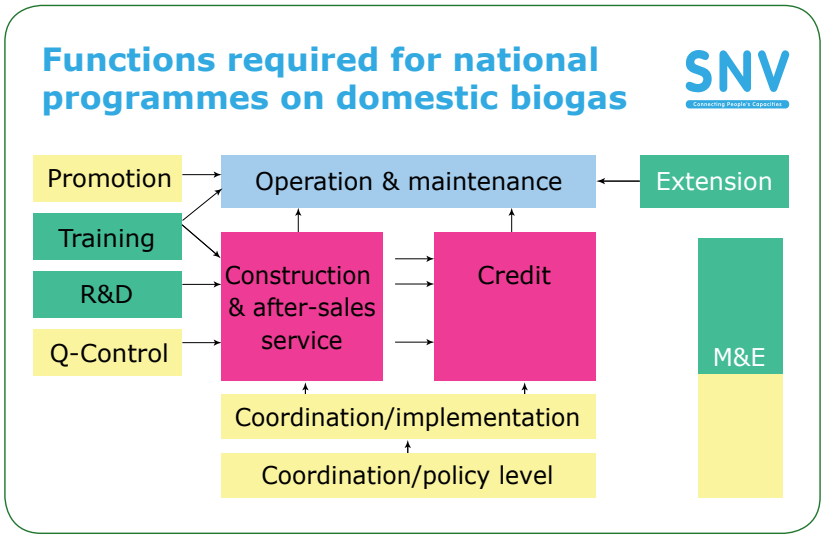
For the Biogas Support Partnership in Nepal, SNV has developed and tested several systems on quality management and on quality enforcement from the perspective of the customers and for the protection of the investment made by the customers. For example, standards for the construction of biogas plants are put on paper, agreed upon with the companies, and controlled on the basis of samples. Well-performing companies are awarded and provided with a high-quality grade that they can use for the marketing of their product, while non-performing companies are penalised and, if performance doesn't improve, expelled from the programme. SNV is transferring its vast knowledge of quality management to new biogas programmes in other countries.

3.5 Attributing sector functions to multiple stakeholders

("Let the cobbler stick to his last")

Large-scale domestic biogas programmes require a wide range of functions to be executed in a comprehensive and coordinated manner. Examples of such functions are promotion and marketing, financing, construction & after- sales service, operation & maintenance, quality control, training & extension, research & development, monitoring & evaluation, and programme management.

Whereas the function of operation & maintenance can only be executed by the customers, other functions should be undertaken by multiple rather than single stakeholders as much as possible to avoid monopolies, dependencies, and conflicts of interest. This allows competition on the supply side, from which the users, ultimately, will benefit.



Another consideration to keep in mind towards this multi-actor approach is that successful programmes would quickly grow too large and complex to be run efficiently by a single actor.

National and local governments, the private sector, and NGOs can only work together fruitfully in the programme on the basis of proper role divisions, suitable institutional arrangements, and good governance. Governments should not engage in construction or credit facilities, but they could be involved in facilitation, promotion, regulation, financing, and lobbying for donor funding.

Proper institutional arrangements are required; multiple stakeholders, like construction companies and banks/MFIs, can only compete on a level playing field. From the start, such arrangements should be in place between user and supplier in the form of a sales contract, guarantee card, credit agreement, etc. There should also be arrangements between the implementing agency





and the primary suppliers (companies and banks/MFIs). Parallel programmes with different implementation modalities need to be avoided, as these will distort the market. Good governance (transparency and accountability) by all actors is paramount for all transactions to be concluded in the programme.

The challenge of this feature is that stakeholders often do not want to limit their activities to one or a few functions only. They rather like to operate on the basis of a "single actor project approach," as such an approach will provide them with the maximum amount of resources and freedom to manoeuvre, with minimum discipline by the market.

Actor - activity matrix

Actor - activity	Promotion & marketing	Investment financing	Construction and A.S.S	Quality Management	Training	Extension	Institutional Support	Monitoring & Evaluation	Research & Development	Programme Management
Biogas Board										E
AEDB/GoP								I		E
PBDE	S	E	S	E	S	S	S	S	S	
Credit providers		I								
RSP-N	S	S				S	E			
RSPs/NGOs	E	E			E	E	E			
PCRET									I	
Voc Training centres					E					
Biogas Branch org	S		S		S					
Biogas Constr Enterprises	E		E							
Consultancy orgs					S			E	E	

Initialising/coordinating	I
Executing	E
Supporting/assisting	S



SNV promotes involving a maximum of the existing organisational and institutional capacities already available in the country and strengthening these capacities through local capacity building organisations, rather than establishing new organisations or institutes. As an outsider, and backed-up by its recognised capability in the field of domestic biogas, SNV often plays an effective role in bringing stakeholders together and in reaching a consensus between these stakeholders on the way forward. Capacity development is the core business of SNV and directly relates to the development of a sustainable sector.

Example 5: Vietnam

The biogas programme in Vietnam aims to construct 140,000 biogas plants between 2006 and 2011. The resulting training requirement for provincial administrators and technicians, as well as biogas constructors, is substantial.

Vocational schools throughout the country have been enabled by the programme to provide these trainings. The shift clearly reduces the workload of the programme and, more importantly, introduces biogas technology as a part of the regular curriculum in schools. In this way, biogas training courses can be offered on a commercial basis to masons and local programme staff, securing a sound basis of biogas knowledge that lasts beyond the programme.

4. Epilogue



Building viable domestic biogas programmes evolves around three important aspects: programmatic sustainability, technical sustainability, and financial sustainability.

Aiming for ***programmatic sustainability***, SNV follows an integrated approach to optimise institutional arrangements and to strengthen the capacities of all actors in the sector. Crucial in this approach is the role of the private sector in the primary process of the programme.

As previously stated, SNV aims to involve a maximum of organisational and institutional capacities already available in the country and to strengthen these capacities through local capacity building organisations *("What you don't phase in, you don't have to phase out").*

Hence, SNV does not implement activities directly, limiting its permanent deployment of manpower to a limited number of biogas advisers per programme.





Technical sustainability is pursued in biogas programmes, and by introducing a rigorous, quality management component to the programme, it helps to ensure that supply-side actors remain fully accountable to their customers.

Quality management should not limit itself to direct "technical" aspects only, but should include a promotional message, user satisfaction, and after-sales service. Linking investment rebate with quality provides programmes with the necessary leverage on service quality.

The financial sustainability of large-scale domestic biogas programmes is more complex to achieve, foremost requiring national governments to contribute to the costs. Carbon benefits need to become a sustainable source of income for biogas sectors[8].

The "human factor"

Regarding manpower, there just might be another "hidden secret" in SNV's approach. Within SNV's biogas practice team, many advisors have been with the organisation for a rather long time. As a result, the team has managed to build up institutional memory across countries and regions about what works and doesn't work in specific contexts, and in this way, it has developed a product over time. As team members typically are involved in specific programmes over a longer period, they are able to develop a relationship with key external stakeholders (donor agencies, knowledge centres, and governments) based on trust. Equally important, the team has managed to keep the biogas product high on the internal SNV agenda throughout all the strategy changes from the 1990s onwards. The importance of a core team of well-led and coordinated, dedicated, knowledgeable, and professional staff can hardly be overestimated.

A related challenge is to combine a steady course of action based on lessons learned with "out of the box" thinking, using new opportunities and learning from successes elsewhere.

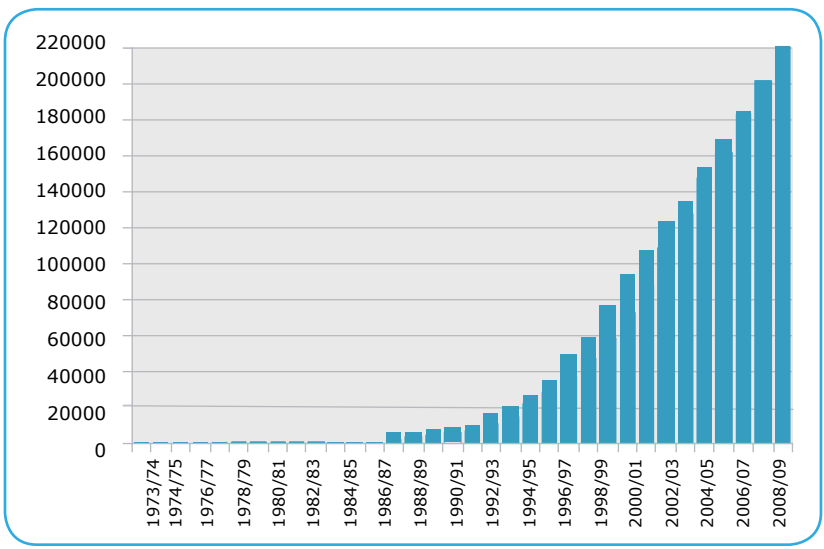
8 As a carbon component to biogas programmes would typically require performance verification, carbon components could improve the programmatic and technical sustainability of biogas programmes as well.

5. Annex

The Biogas Support Programme in Nepal

With financial support from the Netherlands Directorate-General for International Cooperation (DGIS), the Biogas Support Programme (BSP) in Nepal started in 1992. At the time of its inception, there was basically only one company (state-owned), the Gobar Gas Company (GGC), producing and servicing biogas plants, and only one state-owned bank, the Agricultural Development Bank (formerly ADB/N), providing loans to biogas farmers. Due to various constraints, the production of biogas plants never exceeded 1,500 units per year, despite a tremendous technical potential of 1.5 million units throughout the country.

Much has changed since then. By mid-2009, under BSP, over 200,000 units had been installed throughout the country (see graph: cumulative number of biogas plants installed in Nepal over the period 1973/74 up to 2008/09).

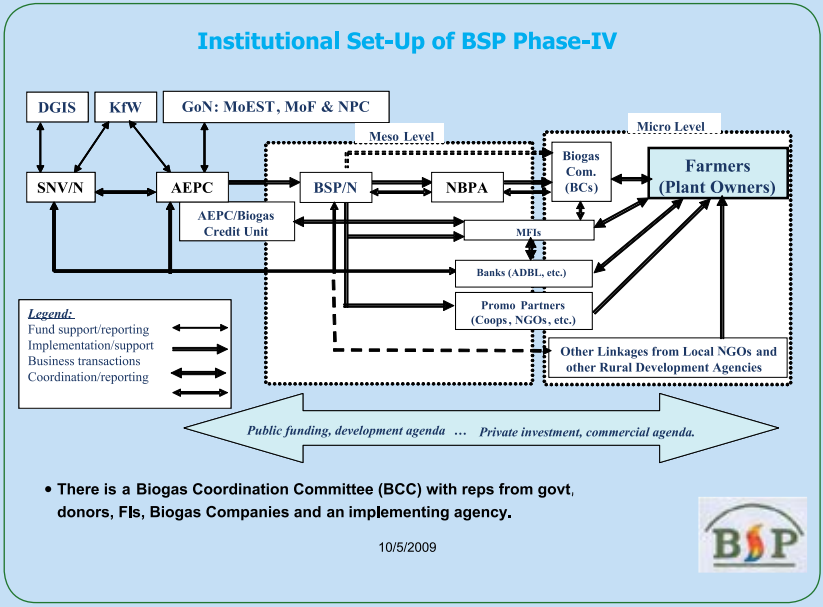




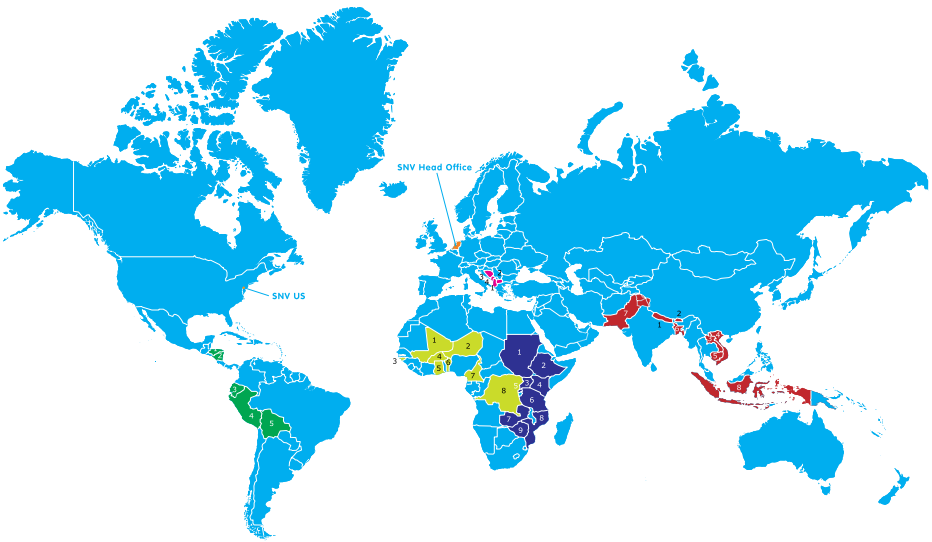
Additionally, the biogas sector has made significant developments, including the following:

- By the end of 2008, more than sixty qualified private companies had installed biogas plants throughout the country
- Appliances are manufactured by some fifteen qualified local workshops
- In 1994, the biogas companies established a branch organisation called the Nepal Biogas Promotion Association (formerly NBPG) to promote the interest of these companies, which forms a sustainable backbone of the sector
- In addition to the Agricultural Development Bank Limited (formerly ADB/N), more than 120 MFIs deliver loans to biogas farmers
- About thirty local and international NGOs promote biogas in their working areas

- In 1996, the GoN established an apex body under the Ministry of Science & Technology, the Alternative Energy Promotion Centre (AEPC), to support biogas and other alternative energy applications in Nepal at the policy level. A Biogas Coordination Committee under the AEPC, representing all major stakeholders, plays a coordinating role
- At the start of phase IV of BSP in 2003, the SNV programme office was transformed to an autonomous, indigenous institute called Biogas Sector Partnership-Nepal (BSP-N). This institute was established to further absorb responsibilities for the implementation of the programme, with SNV limiting itself to the provision of advisory services to the major players in the sector. The figure below provides an overview of the programme's institutional set-up:



SNV is dedicated to a society in which all people enjoy the freedom to pursue their own sustainable development. We contribute to this by strengthening the capacity of local organisations.



Latin America

1 Honduras
2 Nicaragua
3 Ecuador
4 Peru
5 Bolivia

West and Central Africa

1 Mali
2 Niger
3 Guinea Bissau
4 Burkina Faso
5 Ghana
6 Benin
7 Cameroon
8 DR Congo

East and Southern Africa

1 Sudan
2 Ethiopia
3 Uganda
4 Kenya
5 Rwanda
6 Tanzania
7 Zambia
8 Mozambique
9 Zimbabwe

Balkans

1 Albania
2 Macedonia
3 Bosnia Herzegovina
4 Montenegro

Asia

1 Nepal
2 Bhutan
3 Lao PDR
4 Vietnam
5 Cambodia
6 Bangladesh
7 Pakistan
8 Indonesia

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