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Burkina Faso Biomass Energy NAMA

Activity	Disseminate more efficient biomass technology (especially cook stoves) and strengthen the market for more sustainable biomass use and production for energy consumption.
Country	Burkina Faso
Sector(s) involved	Commercial and residential biomass energy consumption
Time frame	2015-2020
Case summary	The NAMA aims to reduce emissions associated with biomass use and respective deforestation e.g. for thermal energy use in the commercial sector by distributing more energy efficient cook stoves for traditional beer brewing and the production of Shea butter and sumbala.[1] In three phases, the NAMA will target i) productive energy use, ii) domestic energy use, iii) alternative energy options and energy markets. The objective is to enable the biomass energy sector to become an economically viable and renewable sector in the context of sustainable low carbon development. Good practice elements of the project design include the level of cross-organisational coordination, the active participation of stakeholders, the market-oriented concept, and the combination of technical assistance and financial components.

Shea tree - Burkina Faso ©iStock.com/africa924

[1] Sumbala is a condiment used for cooking that is prepared traditionally by women by boiling, cleaning and fermenting various kinds of seeds.

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Background

In Burkina Faso, an estimated 107.626 Ha of forests and wooded areas are logged each year. Of this, 13.145.000 m3 or 9.2 Mt of wood are used for fuel, amounting to 16.8 $MtCO_2e$ per year. Biomass energy in both the commercial and residential sector accounts for 84% of energy consumption in Burkina Faso (including domestic household cooking, agriculture and productive use of thermal energy) and is a main driver of deforestation and greenhouse gas (GHG) production. A significant amount of biomass is used for beer-brewing (known as Dolo), Shea and sumbala production, which are a traditional Burkinabe industry and income source for women. These beer-brewers (Dolotieres) are fairly well-organised into associations and groups, especially in urban areas.

A country on the outskirts of the Sahel, Burkina Faso faces severe climate-related challenges such as desertification and droughts, exacerbated by population growth and increased pressures on limited natural resources (Ministère de l'Environnement et du Développement Durable – MEDD, 2012). In the face of these challenges, there is strong political support and a conducive socio-political environment for initiatives that target deforestation, climate change and desertification.

Addressing these challenges, Burkina Faso submitted its first National Communication in 2001 and put in place several programmes in the following years that focus mainly on adaptation and forestry. Supported by the Forest Investment Program (FIP), Burkina Faso has prepared a National REDD+ Strategy (Plan de Préparation à la REDD, R-PP) that calls for a nationwide energy policy to increase the efficiency and sustainability of wood energy value chains and support, and sets respective emission reduction targets. Under the R-PP, Burkina Faso plans to reduce its wood energy consumption by 50% from the current level of domestic consumption, a reduction of 8.4 $MtCO_2e$. The NAMA aims to contribute to the national target and put this nationwide energy policy into operation (SNV, 2015a).

Activities

» The NAMA is in the early stages of implementation and the plan is to commence the first phase in 2016. The objective is to make biomass energy a commercially viable, renewable and low emission energy sector. The NAMA focusses on Burkina Faso's main energy source –biomass energy – and targets both energy efficiency (in the productive commercial and domestic sector) and emission reductions (promoting fuel wood plantations to prevent uncontrolled deforestation and promoting alternative energy sources). The nation-wide project is being set up in phases:

» After the third phase ends with a consolidation of biomass energy initiatives, the activities to improve the efficiency of biomass energy use, and to promote renewable energy sources in Burkina Faso, are expected to continue. The NAMA will provide technical assistance to promote the dissemination and use of more efficient energy technology e.g. by developing the capacity of local masons to build improved cook stoves, training beer brewers to access finance (such as micro credits) and manage their businesses more effectively. The aim in the long term is to create an energy market that promotes the use of efficient technology and alternative energy sources.

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Phases of Activities

1 2015-16 Productive energy
- Promotion of new low emission technologies: focus on efficient cook stoves in beer-brewing, shea butter and sumbala production value chains
- Awareness campaigns
- Credit facility for productive energy
- Wood market (taxation, training)
- **Target: 0,15 $MtCO_2$ reduction & establish a credit facility**

2 2017-18 Domestic energy
- Domestic cookstoves: launch programme "one household, one improved-efficiency stove"
- Wood plantations: sustainable trade, land ownership
- Awareness capaigns in homes and schools: "One school, one forest"
- NAMA Funds (credit/guarantee): Environmental Investment Fund (FIE)
- **Target: 1.031.770 $MtCO_2$ reduction**

3 2019-20 Alternative energy
- Waste-to-energy: business development, tenders
- Biomass energy alternatives
- Off-grid electricity
- Consolidation: other programmes, adopt default values for emission reductions
- **Target: 3.677.902 $MtCO_2$ reduction**

4 2021-22 Energy market

Could include e.g.:
- Carbon Market
- REDD+
- Payment for ecosystem services

Activities continue in next phases, each phase adds new activities. The targeted emission reductions are cumulative.
Source: SNV, 2015a, 2015b (author's illustration)

Institutions involved

» Government agencies: Ministry of Environment and Sustainable Development (MEDD), Permanent Secretariat of the National Council for the Environment and Sustainable Development (SP-CONEDD);

» International partners: SNV Netherlands; Kreditanstalt fuer Wiederaufbau (KfW) via FIE (Environmental Investment Fund) supported by Luxemburg and Sweden; United Nations Industrial Development Organisation (UNIDO); Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ);

» National financial institution: La Société Financière de Garantie Interbancaire du Burkina (SOFIGIB).

Cooperation with

Local NGOs, research institutions and associations of beer-brewers, for instance: Institut de Recherche en Sciences Appliquées et Technologies (IRSAT).

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Finance

- The NAMA received implementation support from the NAMA Facility in the second bidding round for NAMA support projects in 2014, a joint fund of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the Department of Energy and Climate Change (DECC) of the United Kingdom (UK), the Danish Ministry of Climate, Energy and Building (MCEB) and the European Commission. The proposed budget is EUR 13.5m over five years.
- The detailed financing scheme is currently being defined. The aim is to leverage finance through NAMA Facility and existing donor finance channels in the country (such as the Environmental Investment Fund (FIE) supported by Luxemburg – LuxDev – and Sweden – SIDA) to unlock investments into biomass production for energy use. NAMA implementation uses a results-based financing mechanism with distinct phases and milestones to trigger new funding rounds and private investment, e.g. from local breweries and investors in biomass energy for alternative fuels.

People

Key to sustainable implementation are local businesses and private sector entities, finance institutions, and umbrella organisations involved in selling cook stoves, growing biomass or transforming the latter. For instance, in beer-brewing, the Dolotieres and their associations in Ouagadougou and at the village level are key stakeholders with an existing network and experience working with on-going projects who can help to raise awareness and build trust when introducing new technologies.

Impact of activities

- GHG emission reduction: The biomass sector represents 84% of national energy use. The NAMA can achieve substantial emission reductions, in line with Burkina Faso's ambitions to reduce emissions from deforestation for biomass use, namely, 3,68 $MtCO_2e$ over a 6-year period. For instance, efficient cook stoves for Dolo production are 23% more efficient than traditional stoves, leading to an expected reduction of annual GHG emissions of 23.92 tCO_2, which is a 54% reduction in emission compared to a traditional stove.
- Transformational change: Focus is on a more rational and regulated use of biomass, attraction of private investment and introduction of low emission technologies. The project aims to improve production and supply value chains in the energy sector.
- Co-benefits: More stable supply chains and continued and more affordable access to energy. More efficient cook stoves lead to a healthier and more resilient environment, by reducing smoke and air pollution. The majority of the target group are women, whose revenue from Dolo, Shea butter and sumbala production increases because of lower production costs associated with fuel costs, improved capacity to negotiate prices, and improved organisation in associations. Large consumers of wood fuel will be better organised and will access wood fuel more easily and affordably. Associations can increase their social and political voice and empower local men and women to participate in decision-making. The technology, e.g. for Dolo cook stoves, is manufactured by local producers from locally available material, improving job structures, skill sets and revenue for local masons and craftsmen.
- Environmental benefits: More efficient use of biomass reduces deforestation and pressure on natural resources and increases biodiversity. More efficient stoves reduce air pollution.

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Why is it good practice

- Aims to achieve significant GHG impact and co-benefits: The NAMA targets a key source of emissions: the biomass energy sector accounts for 84% of energy consumption and is a main driver of deforestation (9,2 Mt of wood used for fuel per year) and GHG production (16,8 $MtCO_2e$ per year). Moreover, biomass use for energy is vitally important for both domestic and commercial uses. By targeting energy technology, production value chains, biomass supply chains, and local organisational structures, the project can provide benefits to end-users such as increased gender equality, income, employment opportunities and health. The project will also drive the continuation of market processes, empower local producers, and reduce environmental impact in a sustainable manner.
- Aligned with national strategies: The project is embedded in the national strategy to reduce emissions, deforestation and other climate-related impacts and stimulate social and economic development. By focussing on the largest energy source – biomass – the NAMA answers the FIP's call for a comprehensive nation-wide energy policy that includes options for the development of alternative energy (SNV, 2015). Complementary to the FIP focus on economic activities to protect forest areas, the NAMA will cover additional geographic regions and focus on the biomass energy value chain and conversion of biomass to alternative fuels.
- Broad scope and long-term change: The project targets various elements of the energy sector with a focus on biomass, from commercial to residential energy use, mainly in agriculture and livestock management, with a possibility of expanding to further energy uses. The (results-based) phases introduce a number of activities that successively expand the scope of action from energy efficiency (productive and domestic), to emission reductions and energy supply (fuel wood plantations and alternative biomass energy). This broad, scalable approach has a transformational character that can achieve sustainable system-wide transition to cleaner energy use in the long run. By including institutional support to government and ministries to continue activities and monitor emissions, the project aims to produce long-term sustainable change.
- Stimulating private investment: The NAMA has a stronger commercial focus than previous biomass projects in the country by targeting commercial production chains and private sector players. Activities include raising awareness of how to access finance sources and invest profitably in efficient technologies via training for beer brewers and stove suppliers and introducing standards for efficient stoves based on consumer demand. The long-term objective is to create an enabling environment for an energy market that provides investment opportunities for efficient and alternative energy use, by promoting a market for efficient stove technologies and training local entrepreneurs to access finance and markets more effectively. After completion of the third phase, the local banking sector is expected to have invested in the sector, biomass energy is expected to become profitable and attract private investment, and emission reductions are expected to become a commercial product. This framing ensures that the project "speaks the language of the market and consumer" and leverages investment into technologies and supply of biomass from local entrepreneurs to facilitate long-term structural change of markets.
- Participatory process involving key stakeholders: The project is built on existing organisational structures in the country such as beer-brewing associations and explicitly involves such interest groups in their activities. UNIDO, for instance, works on improving ties between Dolo associations in urban and rural areas by inviting urban representatives to speak at the village level. Support is given to foster the formation of interest groups to improve the representation of Dolotieres' interests in decision-making processes and strengthen their position in price negotiations. Supporting local stakeholders and their

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organisation leads to greater inclusiveness and sustainable change and also increases the effectiveness of activities by building trust. Stakeholders were involved in the development of the NAMA based on previous cooperation in biomass projects.

» Coordination among donors built on existing structures: The NAMA will have an advisory board of ministries and a coordinating entity that meets monthly with executing agencies. The aim is to improve and institutionalise cooperation among donor organisations with ongoing biomass projects. The result will be a clear distribution of roles and the advantage of combined expertise in differing fields across various geographic regions, such as in-country technical assistance (e.g. GIZ Projet Foyers Améliorés Au Faso (FAFASO) biomass project), access to finance (SNV), and institutional support (UNIDO). The NAMA is a joint effort to find a common denominator and connect donor organisations and the MEDD. A coordinating committee acts as a mechanism to solve contractual coordination problems and leverage independent streams of revenue that allow for optimised results.

Success factors

» Inclusion of local markets as well as the use and support of existing institutional and social structures such as beer-brewing associations. Explicitly includes local entrepreneurs such as producers of beer, Shea butter and sumbala, producers of efficient stoves, as well as suppliers of biomass, facilitates sustainable structural change of value and supply chains and leverages investment. Inviting representatives of existing associations from other regions to share their experience helps to build trust and raise awareness. Providing training for local entrepreneurs such as book keeping and accessing finance helps leads to ownership and sustainable market penetration along the entire value and supply chain.

» Basing action on information related to value chains facilitates long-term change that recognises local market demand and creates ownership.

» Coordinate efforts across development organisations and with ministries. Institutionalising cooperation reduces transaction costs and redundancies and can increase the effectiveness and outreach of a project based on previous experience and existing networks.

» Especially in a least developed country (LDC) context, it is vital to invest time into feasibility studies that analyse and document local market and social structures to provide information on value chains, financial instruments and barriers. This information should inform the NAMA design.

Overcoming barriers/ challenges

What were the main barriers/challenges to delivery?
How were these barriers/challenges overcome?

Information

Within LDCs such as Burkina Faso, the informal character of value chains may complicate the access to information related to value chains and financial models. Expertise and experience is not well documented. In the design and development phase, it is vital to invest in "translating" informal to formal information by documenting and analysing informal sector information (e.g. on value chains) and integrating this information into NAMA development in a structured way (feasibility studies). Financial analysis is important to enable access to financial instruments and negotiate with local banks.

Local people and stakeholders were unaware of efficient technology for cook stoves, the costs and benefits involved and were sceptical of changes.

Raise awareness by reaching out to local energy end users. A method used in previous biomass projects was the presentation of a video that showed beer brewers talking about their positive experiences in a night cinema setting.

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Financial

Cost of management and technical assistance can be much higher in LDCs' less-institutionalised sectors. It is also more complicated to set up a financial scheme on a local level for female entrepreneurs who are not considered creditworthy, or who are sceptical of banks.

NAMA Facility Support Projects include both a technical and a financial component, meaning NAMA proposals must incorporate mechanisms to finance activities and goals sustainably.

Using existing interest groups to organise self-help groups can leverage communal start-up investment in efficient technology too expensive for individual producers.

Socio-cultural

In Burkina Faso, Dolo beer-brewing is a tradition. Some producers were sceptical of technological change and feared changes in taste.

Identify and address socio-cultural issues from the beginning to overcome resistance. Raise awareness for benefits face-to-face within communities with the help of existing associations and demonstrate cook stove technology. Key for successful adoption of new technology is its demonstration. In previous cook stove projects, beer-brewers who saw the benefits of cleaner, more profitable cook stoves that produced less smoke and thus enhanced the taste of beer, more readily accepted new technology.

Institutional

Lack of institutional structures to build on and high bureaucratic hurdles.

Include support to set up respective institutional components (e.g. for MRV framework) and invest time in building relations and developing projects.

Lessons learned

It is vital to invest adequate time in a feasibility analysis of financial and economic structures at the local sector level when developing a NAMA. Challenges of design of NAMA include properly understanding the financial situation and perspective of entrepreneurs involved and their potential interest to invest in new technology and sustainable biomass sources. A proper feasibility analysis and financial analysis are vital to accessing finance and transforming objectives into practice on the ground.

Ensuring sustainability by involving all local stakeholders as well as ministries is key in all NAMA phases from development to implementation and monitoring.

Coordinating efforts across donor organisations active in the sector can reduce costs, pool expertise and expand the reach of a project.

How to replicate this practice

- Allocate time to an extensive feasibility and financial analysis during the NAMA development phase to enable access to various finance channels and the design of sustainable activities.
- Build on existing structures and experiences of donor organisations with stakeholders, involve the latter in NAMA development and project activities to understand the local market context and facilitate long-term change through ownership.
- Increase ownership and facilitate continued action by increasing staff within respective ministries to work part-time for the project and part-time in the ministry, thereby increasing the capacity of government agencies.
- Take a market-based approach and target entrepreneurs, reach out to local investors and influence value chains based on country and sector-specific market structures.

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