

Peru - Scaling up Waste-to-Energy Activities in the Agricultural Sector Proposal for a NAMA Programme

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This document summarizes a NAMA concept to scale up waste-to-energy activities in the Peruvian agricultural sector. The NAMA development work was initiated by the Ministry of Environment (MINAM) and will be led by the Multisectorial Bioenergy Commission that consists of the MINAM, the Ministry of Agriculture (MINAG), the Ministry of Energy and Mines (MINEM), and the Ministry of Production (PRODUCE). The work receives support from the International Climate Initiative (ICI) of the German Government.

Objective

The objective of the NAMA is to promote the scaling up of self-supply waste-to-energy technologies in the Peruvian agricultural sector to contribute to rural sustainable development and to global climate change mitigation. In particular, the NAMA aims to:

- Facilitate farmers' and agro-industries' access to capital to cover (up-front) investment costs of self-supply technologies and infrastructure for bioenergy generation from agricultural waste.
- Build the capacity of beneficiaries of the NAMA programme to establish, operate and maintain technologies and infrastructure to ensure their efficient and long-term use.
- Promote the establishment of an waste-to-energy services and technology market in Peru.

Background

2.1 Energy production in the context of climate change – Peru's NAMA submission

Biomass waste from agricultural production has a great potential to be converted to energy. This potential is often untapped. In Peru, the agricultural sector generates about 13.5 million tons of biomass waste annually (MINAG, 2010) of which most is burned or left to rot on the fields.

Converting agricultural biomass waste into energy can provide a decentralized energy source in rural areas while simultaneously achieving a cost-effective solution to waste disposal, and a reduction in greenhouse gas (GHG) emissions.

Agricultural waste-to energy activities would fit well into Peru's plan to cover part of the

increasing demand for energy with renewable energy and to reduce national GHG emissions.

The energy demand is projected to grow by 9 percent per year. Meeting this demand is equivalent to a new 500 MW generation plant that would have to be taken into operation every year (IFC, 2011). Beside its potential, agricultural waste-to-energy activities currently contribute less than 4 percent to the national energy matrix.

By 2020, the country plans to have at least 33 percent of renewable energy in their energy matrix. This goal, set by the Ministry of Energy and Mines (MINEM), was also communicated in Peru's submission to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) on Nationally Appropriate Mitigation Actions (NAMAs).

In this submission, the government further stated its "firm willingness to strengthen the collective action to mitigate climate change through the development of a sustainable and low-carbon economy (UNFCCC, 2011)".

The energy sector (including transport) contributes about 27 percent of the national GHG emissions which increased by almost one-third compared to GHG emissions in 2000 (Figure 2) (PlanCC, 2012). This increase is the result of an overall increase in energy consumption and the incorporation of natural gas into the national energy matrix.

Scope of the NAMA based on waste-to-energy generation potentials

The NAMA targets agro-industries, farmer cooperatives and individual farmers throughout the country. Biomass waste from the following crops will be considered: Sugar cane, Cotton, African palm, Rice, Coffee, Cacao, Aspara y Olive.

Other crops produce a significant amount of biomass waste, but further research is needed to determine the energy generation potential and/or assess the sustainability of its use. Crops under this category include: Potato, Cassava y Corn

About 85 percent of the potential is in sugar cane waste.

All self-supply technologies will be considered that are relevant for transforming agricultural waste biomass into energy. Figure 4 presents an overview on waste biomass sources, the available transformation technologies and the application or final use.

Estimated NAMA impacts

4.1. GHG emissions

Agricultural waste-to-energy activities have an estimated annual GHG emission reduction potential of 9.3 million ton CO₂eq. [included percentage of total GHG emissions]

NAMA components

The proposed NAMA comprises a range of activities to address the barriers presented in chapter 4 of this document. An overview of the different components and activities under each component is shown in Figure 1, followed by a summary description of each component.

NAMA Fund to support investments in and capacity building for agricultural waste-to-energy activities

A NAMA Fund (Figure 2) will be the core element of the proposed NAMA to help overcome financial barriers to investments in self supply waste-to-energy technologies, to finance capacity building for waste-to energy activities, and to support the awareness raising and coordination activities that are necessary to build a renewable energy market in Peru.

Since Peru has three geographical regions which differ in terms of their socio-economic characteristics, energy needs and the agricultural waste-to-energy generation potential, support programs will be designed that consider the different barriers, potentials and needs of the regions.

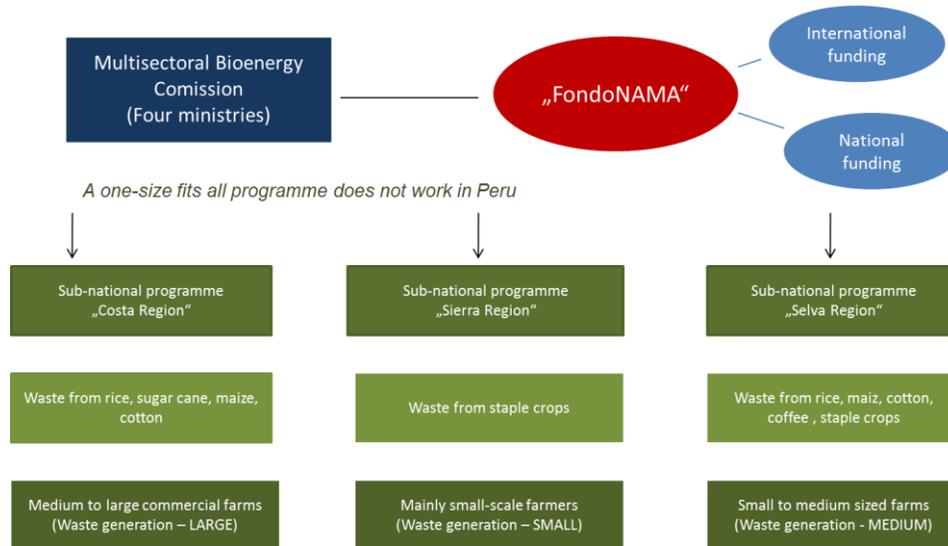


Figure 1: Proposed NAMA framework. Source: Own elaboration

Capacity building support

The objective of the technical support programme is to develop and foster the technical capacities of national experts to design and implement self-supply waste-to-energy energy projects. The programme will be targeted at different stakeholders including project developers, energy service professionals, the financial service industry as well as relevant government officials (e.g. regulators). Activities will be designed to the specific needs and knowledge gaps of different stakeholder groups.

Outreach to promote the establishment of a renewable energy market

Outreach and awareness raising activities are planned to be an important component of the proposed NAMA to generate knowledge about the potential of renewable energies in Peru and to help build a national renewable energy market.