

## Argentina - PROBIOMASA: Project for the Promotion of Energy from Biomass

### *Replacing fossil fuels with biomass as an appropriate national mitigation action*

Agency: Ministry of Agriculture, Livestock and Fisheries, Secretary of Agriculture, Livestock and Fisheries, and Ministry of Federal Planning, Public Investment and Services, Secretary of Energy with the assistance of the United Nations Organization for Food and Agriculture (FAO).

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### Introduction

The PROBIOMASA program started in 2013 and aims to boost production, management and sustainable use of biomass for energy purposes.

The domestic energy supply in Argentina is mostly based on hydrocarbons: 51% comes from natural gas and 35% from oil and its derivatives. Studies carried out by the Government with FAO assistance show the great potential of biomass as an energy source; however, institutional, legal, economic, technical and sociocultural barriers must be overcome first.

Currently, banks do not have a tool for technical evaluation of biomass projects, and this results in poor access to financing for this kind of facilities. In addition to that, environmental requirements in the Argentinean electricity sector have only been designed for large thermal energy projects, leaving the Provincial Environmental Agencies without a methodological tool to evaluate this type of projects. The private industry sector, that has the capabilities to invest in the energy switch to biomass, has expertise in other core business different from the energy production and therefore without knowledge about this market since the biomass generation is not still developed in Argentina. Consequently, there are many risks due to the performance uncertainty, low market share of the new technology adopted and the logistic challenge of biomass supply. In addition, biomass projects can probably have an impact on local stakeholders; in consequence the development of these kinds of projects must be very well communicated and the social participation be allowed from the very beginning with access to information and capacity building. One of the purposes of PROBIOMASA is to prepare a methodology tool for the banks to technically evaluate different biomass projects. Therefore, the banks will be able to finance projects that are technically sound. It will also develop a multicriteria methodology that will help compare the impact of different biomass projects.

### NAMA Description

PROBIOMASA pursues, during its execution, to secure the establishment of provincial-level bioenergy strategies aligned with national policy regarding energy, agricultural and environmental dimensions. The project will develop the necessary mechanisms at local, provincial and national level to ensure implementation, supervision and monitoring of the production, management and sustainable use of biomass. According to previous studies (WISDOM, 2009)<sup>1</sup> the potential of biomass consumption could be increased from 2.5% (BEN 2006) to 10%, which represents a total of 12,000,000 ton/year of the final energy consumption. This, in turn, involves avoiding emissions by 8,727,788 tons of CO<sub>2</sub>eq/year. To reach that challenging goal it would be required the inclusion

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<sup>1</sup> FAO. 2009 Woodfuel Integrated Supply/Demand Overview Mapping, Argentina.

of 2000 electric MW and 2000 thermal MW that is 10 times more than the goal of PROBIOMASA for 2016.

Goal: PROBIOMASA aims to generate a total of 200 electric MW and 200 thermal MW by 2016.

Also, it expects to generate other benefits such as:

- Annual savings by replacing imported fossil fuels.
- Creation of a significant number of new jobs.
- Generation of new capabilities focused on renewable energy management.
- Energy security improvement in isolated areas (30 communities in total).
- Reduction of local pollution of soil and water as well as fire reduction.

#### CO<sub>2</sub> reduction from electricity energy production using biomass

Capacity to be installed	200	MW
Conversion factor		1 kWh= 860 kCal
Annual electricity energy production	1,401,600	MWh/yr
Dispatch factor	0,8	1.1.1
Fuel Replaced	Diesel	1.1.2
Grid emission factor	0.338	tCO <sub>2</sub> eq/MWh
Quantity Replaced	400	M m <sup>3</sup>
Annual Emissions reductions	473,741	tCO <sub>2</sub> eq.
Aggregate emission reductions in 20 years	9,474,820	tCO <sub>2</sub> eq.

#### CO<sub>2</sub> reduction from renewable thermal energy production

Capacity to be installed	200	MW
Dispatch factor	0,9	
Annual thermal energy production	1,576,800	MWh/yr
Conversion factor		1 kWh= 860 Kcal
Performance of the equipment	80%	
Input Energy required	1,69506E+12	Kcal/yr
Diesel oil Low Heating value	8619	Kcal/l
Diesel oil savings	196,665,506	l/yr
Diesel oil CO <sub>2</sub> emission factor	2.683	kgCO <sub>2</sub> /l
Annual Emission Reductions	527,681	tCO <sub>2</sub> /yr
Aggregate emission reductions in 20 years due to thermal energy displacement	10,553,624	tCO <sub>2</sub> /l

#### Support Requested

The estimated cost for one electric MW generated using biomass is 2.5 USD million and 1 to 1.5 USD million for one thermal MW. Taking into consideration that PROBIOMASA's goal is to generate a total of 200 electric MW and 200 thermal MW, the investment required amounts to 750 USD million. The total funding support provided by the host country is \$USD 5,488,975.

Financial support is required for:

- 1) Funding is necessary for building capacity of institutions involved in the preparation and presentation of the NAMA.
- 2) The development an MRV strategy. The main indicator is the capacity substitution of fossil fuels with biomass, considering the access to biomass, as well as the existence, type and cost of the technology.
- 3) 84 projects were identified in different stages of implementation. Some of the pilots projects that could be included in the NAMA are the following:
  - Biomass drying technology, sawdust, 215 ton / day of biomass, \$USD 15 millon. Province of Misiones
  - Combined heat and power using cane harvest, generation capacity / production of: 62 MW, investment of \$USD 49 million. Province of Tucumán,
  - Combined heat and power using cane harvest, generation capacity / production of: 16 MW, \$USD 10 million. Province of Tucumán,
  - Biogas production for electricity generation, 1 MW investment of U\$D 2.5 million. Province of Córdoba,
  - Combined heat and power using forest industry waste, 400,000 ton / year of waste with a investment of USD 65 million and a generation capacity / production of: 15 MW. Province of Misiones
  - Biogas production for electricity generation, using guano-laying chickens generation capacity / production: 4.642.800 kWh/year, investment of \$USD 6,618,700. Province of Buenos Aires