

NS-232 - Rural Electrification in Vanuatu

Vanuatu

NAMA Seeking Support for Implementation

A Overview

A.1 Party

Vanuatu

A.2 Title of Mitigation Action

Rural Electrification in Vanuatu

A.3 Description of mitigation action

The overall target of the NAMA is to support Vanuatu in achieving the goal defined in the National Energy Road Map (NERM), namely to provide access to electricity to all households in Vanuatu. The NAMA will reduce GHG emissions through the replacement of fossil fuels with renewable energies. The NAMA will also contribute to Sustainable Development (SD) benefits, such as improvement of the situation of groups with specific vulnerabilities, women and the poor.

The NAMA covers two interventions. Under Intervention 1, micro grids will be established. Rural communities/tourism and agricultural facilities/health centres/schools are the focus of these micro grids due to their demand for electricity for lighting, cooling and appliances. The micro grids will use renewable energy sources (solar, wind, hydro) and will provide electricity for lighting, radio and phone charging for households, and for service and production activities in Rural Productivity Zones (RPZs).

Intervention 2 will support extension of existing electricity grids on different islands. Households, public institutions and tourism/commercial consumers in the proximity of lines will be connected. Electricity will be provided for lighting, audio/TV, mobile phone charging, coastal fishing (refrigeration of the fish catch), tourism facilities (lodges), agricultural facilities (preparing, processing and packaging produces) or the production of handicrafts.

In its first phase, the NAMA aims to establish five micro grids under Intervention 1 and support the extension of five electricity grids in Intervention 2. This will provide electricity to around 1,000 households and around 4,700 people. Over the 15-year lifetime of the NAMA, emission reductions will reach around 13,500 tons of CO₂.

Capacity-building will be a key component in the implementation of the NAMA. Special emphasis will be given to identifying and supporting the development of income-generating activities in the Rural Productivity Zones (RPZs), as this is the key to positive rural development. Another important component will be technical support during the identification and

implementation of the different projects under the two interventions, as the aim is to implement technically sound projects with low operating costs.

The baseline scenario for this NAMA consists of two components, a GHG baseline and a sustainable development (SD) baseline. Setting the baseline scenario in this way allows all effects to be properly assessed and quantified through the monitoring activities described in the Measurement, Reporting and Verification (MRV) system. In the MRV, the UN Framework Convention on Climate Change's (UNFCCC) "Small-scale Methodology: AMS-I.L.: Electrification of rural communities using renewable energy, Version 03.0" will be used to monitor GHG emission reductions.

The total cost of the NAMA is estimated at around US\$5.5 million. This includes support to cover the investment costs of the two interventions as well as extensive capacity-building efforts. Cyclone Pam, which hit Vanuatu in March 2015, has curtailed the ability of Vanuatu to contribute to the financing of the NAMA. In total, the Vanuatu government is committed to providing around 12 per cent of the required funding and the private sector is expected to contribute around 6 per cent. The remaining 82 per cent is expected to come from NAMA donors.

Implementation of the NAMA will be led by the Ministry of Climate Change and Natural Disasters as the NAMA Coordinating Authority (NCA). The National Advisory Board (NAB) will be appointed as NAMA Approver/Focal Point to the UNFCCC. The role of NAMA Implementing Entity (NIE) will be taken by the Department of Energy (DoE) in cooperation with the Project Management Unit (PMU).

The NAMA will receive capacity development support over a period of five years. Initial efforts will focus on securing national and international funding as well as establishing the institutional structure. The first five projects in each of the two interventions will be prepared and implemented in the years 2016 and 2017. Upon availability of additional funding, further projects can be implemented in the two interventions. After the implementation of the interventions, the NAMA will operate over a period of 15 years.

A.4 Sector

<input checked="" type="checkbox"/> Energy supply	<input type="checkbox"/> Transport and its Infrastructure
<input type="checkbox"/> Residential and Commercial buildings	<input type="checkbox"/> Industry
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Forestry
<input type="checkbox"/> Waste management	

Other

A.5 Technology

<input type="checkbox"/> Bioenergy	<input type="checkbox"/> Cleaner Fuels
<input type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal energy
<input checked="" type="checkbox"/> Hydropower	<input checked="" type="checkbox"/> Solar energy
<input checked="" type="checkbox"/> Wind energy	

A.6 Type of action	<input type="checkbox"/> Carbon Capture and Storage <input type="checkbox"/> Ocean energy <input type="checkbox"/> Land fill gas collection <input type="checkbox"/> Low till / No till
	<input type="checkbox"/> Other <input type="text"/>
A.7 Greenhouse gases covered by the action	<input checked="" type="checkbox"/> National/ Sectoral goal <input type="checkbox"/> Project: Investment in machinery <input type="checkbox"/> Strategy <input type="checkbox"/> Project: Investment in infrastructure <input type="checkbox"/> National/Sectoral policy or program <input type="checkbox"/> Project: Other
	<input type="checkbox"/> Other <input type="text"/>
A.7 Greenhouse gases covered by the action	<input checked="" type="checkbox"/> CO2 <input type="checkbox"/> CH4 <input type="checkbox"/> N2O <input type="checkbox"/> HFCs <input type="checkbox"/> PFCs <input type="checkbox"/> SF6
	<input type="checkbox"/> Other <input type="text"/>

B National Implementing Entity

B.1.0 Name	Ministry of Climate Change and Natural Disasters
B.1.1 Contact Person 1	Jesse Benjamin
B.1.2 Address	Namba 2 Area Port Vila, Vanuatu
B.1.3 Phone	+678 25201
B.1.4 Email	jbenjamin@vanuatu.gov.vu
B.1.5 Contact Person 2	
B.1.6 Address	
B.1.7 Phone	
B.1.8 Email	
B.1.9 Contact Person 3	
B.1.10 Address	
B.1.11 Phone	
B.1.12 Email	
B.1.13 Comments	

C Expected timeframe for the implementation of the mitigation action

C.1	Number of years for completion	5
C.2	Expected start year of implementation	2016

D Currency

D.1	Used Currency	<input type="text" value="AED"/> Conversion to USD: 1
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E Cost

E.1.1	Estimated full cost of implementation	5500000
E.1.2	Comments on full cost of implementation	The full cost of implementation include stabilization fund, extensive capacity development support and capital investment for interventions 1 and 2. The NAMA will be financed through national and international public funds and private sector contributions.
E.2.1	Estimated incremental cost of implementation	

E.2.2 Comments on estimated incremental cost of implementation

F Support required for the implementation the mitigation action

F.1.1 Amount of Financial support 4500000

F.1.2 Type of required Financial support

<input checked="" type="checkbox"/> Grant	<input type="checkbox"/> Guarantee
<input type="checkbox"/> Loan (sovereign)	<input type="checkbox"/> Equity
<input type="checkbox"/> Loan (Private)	<input type="checkbox"/> Carbon finance
<input type="checkbox"/> Concessional loan	
<input type="checkbox"/> Other <input type="text"/>	

F.1.3 Comments on Financial support

It is expected that international support will be provided for the implementation of the NAMA. The international contribution is expected to be US\$ 4.5 million.

F.2.1 Amount of Technological support

F.2.2 Comments on Technological support

Technical support is included in the capacity development cost.

F.3.1 Amount of capacity building support 1300000

F.3.2 Type of required capacity building support

<input checked="" type="checkbox"/> Individual level
<input checked="" type="checkbox"/> Institutional level
<input type="checkbox"/> Systemic level
<input type="checkbox"/> Other <input type="text"/>

F.3.3 Comments on Capacity Building support

The following additional positions will be created for management of the NAMA:

- NAMA Team Leader: oversees the implementation of the NAMA programme;
- Micro grid expert: is responsible for the implementation of Intervention 1 (micro grids);
- Grid extension expert: is responsible for the implementation of Intervention 2 (grid extension);
- Technical expert: supports the implementation of the two interventions in technical matters.

All these positions will be created in the NIE. To create and increase the capacity of the staff to be hired, international experts will be involved in the first phase of the NAMA. The positions that will need to be filled by international experts are those of NAMA expert and rural electrification expert.

Their task will be to increase the capacity of the NAMA implementation team.

F.4 Financial support for implementation required

F.5 Technological support for implementation required

F.6 Capacity Building support for implementation required

G Estimated emission reductions

G.1 Amount

0.0135

G.3 Additional information (e.g. if available, information on the methodological approach followed)

To take account of suppressed demand the parties to the UNFCCC asked the Executive Board of the Clean Development Mechanism to explore the possibility of including in the baseline a scenario where future anthropogenic emissions by sources are projected to rise above current levels, due to the specific circumstances of the host party (UNFCCC, 2012). This principle can be specifically applied to the methodology AMS-I.L:

"A suppressed demand situation is applicable when a minimum service level¹ to meet basic human needs² was unavailable to the end user of the service prior to the implementation of the project activity. Hence, these guidelines are applicable when basic human needs were not met. For example, in the pre-project scenario, households may have had only very few kerosene lamps in place that were only operated for short time periods, thereby only partially meeting the basic lighting demand of the household" (UNFCCC, 2012).

Significant GHG emissions arise from the use of fossil fuels in the baseline scenario. The emission factors included in the CDM methodology AMS-I.L. were determined in a conservative manner through the application of emissions factors gathered from a variety of sources such as information from CDM projects, research and the Intergovernmental Panel on Climate Change (IPCC) (Pöyry Management Consulting, 2011).

As per AMS-I.L., the following are the baseline emission factors for each tranche of the annual amount of renewable electricity consumed per consumer during the crediting period:

- a) For the first 55 kWh of renewable electricity consumed by each consumer the baseline emission factor is 6.8 tons of carbon dioxide per MWh (tCO₂/MWh);
- b) For facility consumption of more than 55 kWh but equal to or less than 250 kWh, the baseline emission factor is 1.3 (tCO₂/MWh);
- c) For facility consumption beyond 250 kWh, the baseline emission factor is 1.0 (t CO₂/MWh).

The distinct emission factors for these three levels of energy consumption take into consideration the baseline technologies used to meet basic household lighting energy needs (i.e. 15W bulbs x 5 hrs/day x 365 days = 55 kWh); more extended household energy needs/micro enterprise needs (i.e. 100W fan or TV x 5 hrs/day x 365 days = 183 kWh), and the needs of public buildings and/or small, medium and micro enterprises (SMMEs) (Pöyry Management Consulting, 2011).

In light of the challenges for the NAMA actors in monitoring electricity generation at each facility, a simplified and conservative baseline emission factor is chosen. For both

interventions this will be 1.0 tCO₂/MWh.

**Note :

1 Defined as a service level that is able to meet basic human needs. In some situations, this service level may not have been provided prior to the implementation of the CDM project activity, indicating suppressed demand with a consequent future emissions increase due to income effect, rebound effect or other technical factors such as limited availability of a service (e.g. connection to a very weak grid) or low quality of a service (e.g. aversion to pollution caused by kerosene lanterns).

2 Defined for the purpose of the guidelines to include physical and physiological needs such as basic housing, basic energy services (including lighting, cooking, drinking water supply and space heating), sanitation (waste treatment/disposal) and transportation.

H Other indicators

H.1 Other indicators of implementation

The coordination and management of the NAMA requires an institutional structure, which shall meet the following requirements.

- It must be embedded in national and sectoral policies and strategies.
- It must be capable of effective communication and reporting as required by international agencies, such as the UNFCCC.
- It must provide an interface to international bilateral and multilateral NAMA funding entities, such as the Green Climate Fund.
- It must be able to ensure proper management of financial flows between the NAMA funding entities and the recipients.
- It must be able to ensure the achievement of NAMA targets in terms of electrification, GHG mitigation and sustainable co-benefits.
- It must be able to allow transparent monitoring of GHG emission reductions and the Sustainable Development indicators.

The recommended institutional structure of the NAMA is based on the following principles.

- Ensuring the strong involvement of national stakeholders to create country ownership and political commitment.

- Using existing and experienced entities organizational systems which are already in place and allow for prompt and smooth implementation of the NAMA.
- Ensuring that the institutional structure is appropriate for the receipt of international private and/or public donor funding.

The institutional structure for the NAMA shall include the following institutional bodies at the country level:

- (i) NAMA National Focal Point or National NAMA Approver (NA);
- (ii) NAMA Coordinating Authority (NCA);
- (iii) NAMA Implementing Entity (NIE);
- (iv) NAMA Executing Entities (NEEs).

I Other relevant information

I.1 Other relevant information including co-benefits for local sustainable development

In addition to GHG emissions, the MRV system for this NAMA will monitor the impact of the NAMA interventions on selected Sustainable Development (SD) indicators.

The selection of the SD indicators was done using the Sustainable Development Evaluation Tool (SD Tool) developed by UNDP (UNDP, 2014d). The SD Tool divides the SD indicators into four different domains: environment; social; growth and development; and economic.

The tool requires for each of the Interventions to decide whether an indicator (such as access to clean and sustainable energy, empowerment of women or improvement of livelihood of poor, etc.) is selected, identify the impact, add an explanation on the chosen indicator, define the effect (positive, negative, both) and indicate whether monitoring is done.

Monitored SD Parameters for Intervention 1 :

- 1 Number of health clinics electrified
- 2 Number of households electrified
- 3 People with access to RE electricity
- 4 Number of schools electrified
- 5 Number of new women-run enterprises
- 6 People with new income generating activities (businesses)
- 7 Number of new jobs (total)
- 8 Number of new jobs for women

Monitored SD Parameters for Intervention 2 :

- 1 Number of health clinics electrified
- 2 Households having access to electricity services
- 3 People with access to electricity services
- 4 Number of schools electrified
- 5 Number of new women's enterprises

6 People with new income generating activities (businesses)
7 Number of new jobs (total)

J Relevant National Policies strategies, plans and programmes and/or other mitigation action

J.1 Relevant National Policies National Energy Road Map (NERM)
J.2 Link to other NAMAs .

K Attachments

K Attachments

Title	Description
ER Monitoring_protected.xls	
NAMA Final Vanuatu 2.pdf	Fully-fledged NAMA Design Document,
NAMA_SD_Vanuatu_Final_protected.xls	

K.1 Attachment description

K.2 File

L Support received

L.1 Outside the Registry

L.2 Within the Registry

Support provided	SupportType	Amount	Comment	Date
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