

# NS-208 - Electrification with solar PV mini-grids in rural villages in Rwanda

## Rwanda

### NAMA Seeking Support for Preparation

#### A Overview

A.1 Party

Rwanda

A.2 Title of Mitigation Action

Electrification with solar PV mini-grids in rural villages in Rwanda

A.3 Description of mitigation action

This Nationally Appropriate Mitigation Action (NAMA) targets mitigation in the rural electrification (off-grid) sector in Rwanda and focuses on the development and implementation of up to 100 solar PV mini-grids in rural villages, with operation under a Public Private Partnership (PPP) framework. The NAMA will include the application of power for Rural Productivities Zones (RPZ) for increasing the income generating potential of rural communities, through micro- and small businesses. The total installed capacity, for all villages, is expected to be between 9 – 10 MWp, providing 24 hr supply via solar PV generation and low voltage mini-grids. At the point of full implementation the NAMA actions are expected to provide access and service the expected electricity needs of over 100,000 persons in rural areas.

#### Emission reductions:

The estimated average annual mitigation potential at the point of full implementation is approximately 11,300 tCO2e per year. For the NAMA period of 2016 – 2030, the direct estimated net GHG emission reductions are approximately 104,000 tCO2e.

#### Sustainable Development Benefits:

The mitigation actions support Rwanda's national development and poverty reduction policies and strategic visions and goals. It is envisioned that significant sustainable co-benefits of the NAMA include:

- Improve jobs creation in rural areas
- The use of domestic resources for electricity generation and reduce dependence on imported fuels,
- Increased renewable power generation (off-grid)
- Increased new business opportunities for communities and income generation,
- Reduced household air pollution (particulates),
- Provides the option for limited water irrigation, to increase agriculture productivity,
- Lower some of the daily energy-related burdens of community members

### Private Sector Participation:

After implementation, it is expected that the solar PV mini-grids will be operated as Public Private Partnerships (PPPs) under Operation, Maintenance, and Management (OMM) agreements with the community cooperatives or state executing agency. The PPP private company partners would receive revenues through electricity sales via pre-paid metering and contracts. Given the volume of installations it is expected that PPP private company partners will be able to manage multiple mini-grids (e.g. enter into more than one PPP). It is expected that the design and installation of the PV mini-grids will be through Engineer, Procurement, and Construction (EPC) contracts with private sector companies. Each EPC contract will involve multiple installations, and the tender through the government public procurement process. In addition, the RPZ component is expected to encourage electricity use for small enterprises in the communities, thus increasing the number of income generating activities for the communities and women.

#### 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	
<input type="checkbox"/> Other	

#### A.5 Technology

<input type="checkbox"/> Bioenergy	<input type="checkbox"/> Cleaner fuels
<input type="checkbox"/> Energy Efficiency	<input type="checkbox"/> Geothermal Energy
<input type="checkbox"/> Hydropower	<input checked="" type="checkbox"/> Solar Energy
<input type="checkbox"/> Wind Energy	<input type="checkbox"/> Ocean Energy
<input type="checkbox"/> Carbon Capture and Storage	<input type="checkbox"/> Low till / No till
<input type="checkbox"/> Land fill gas collection	
<input type="checkbox"/> Other	

#### A.6 Type of action

<input type="checkbox"/> National/ Sectoral goal	<input checked="" type="checkbox"/> Project: Investment in machinery
<input type="checkbox"/> Strategy	<input type="checkbox"/> Project: Investment in infrastructure
<input checked="" type="checkbox"/> National/Sectoral policy or program	<input type="checkbox"/> Project : other
<input type="checkbox"/> Other	

#### A.7 Greenhouse gases covered by the action

<input checked="" type="checkbox"/> CO <sub>2</sub>	<input checked="" type="checkbox"/> CH <sub>4</sub>
<input type="checkbox"/> N <sub>2</sub> O	<input type="checkbox"/> HFCs
<input type="checkbox"/> PFCs	<input type="checkbox"/> SF <sub>6</sub>
<input type="checkbox"/> Other	

### B National Implementing Entity

#### B.1.0 Name

Rwanda Ministry of Infrastructure (MININFRA) - Rwanda Energy Group (REG)

#### B.1.1 Contact Person 1

Mrs. Mireille UWERA

#### B.1.2 Address

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B.1.9 Contact Person 3	Eng.Donath HARERIMANA
B.1.10 Address	
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B.1.13 Comments	

C Expected timeframe for the preparation of the mitigation action

C.1	Number of months for completion	18
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D Currency

D.1	Used Currency	AED
Conversion to USD: 1		

E Cost

E.1.1 Estimated full cost of preparation	400000
E.1.2 Comments on full cost of preparation	<p><b>The full cost of preparation covers the cost of preparation for the NAMA Design and Document, and a comprehensive development of a rural electrification master plan (with off-grid database and plan for long-term saturation levels of grid access). As well as institutional level Capacity Development Support for NAMA finance and MRV.</b></p> <p><b>Note that the Climate Change Focal Point (Rwanda Environmental Management Authority) and the National Implementing Entities will provide in-kind programme management, institutional coordination, and procurement services during the preparation phase of the NAMA. This in-kind contribution is not included in the estimated full cost of preparation.</b></p>

F Support required to prepare the mitigation action

F.1.1 Amount of Financial support	310000
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
F.1.3 Comments on Financial support	<p>Preparation of NAMA Design and Document:</p> <p>This consists of the activities and cost of full NAMA design and its documentation, including the institutional framework, implementation planning, financial structuring, support required, and MRV system design and management. (USD 110,000)</p> <p>Rural Electrification Master Plan:</p> <p>These national level planning action consists of the determination of: (1) the current level and points of on-grid and off-grid access to electric in Rwanda, directly identifying the points where electricity access is needed; and (2) to determine the long-term saturation levels of on-grid access, directly indicating where off-grid access will be needed in a long term</p>

F.2.1 Amount of Technical support		perspective, and indirectly pointing out the locations for implementing the solar PV mini-grids. (USD 200,000)
F.2.2 Comments on Technical support		
F.3.1 Amount of capacity building support	90000	
F.3.2 Type of required capacity building support	<input checked="" type="checkbox"/> Individual level <input type="checkbox"/> Institutional level <input type="checkbox"/> Systemic level <input type="checkbox"/> Other	
F.3.3 Comments on Capacity Building support	<b>Workshop for institutional capacity building for climate finance and financial structuring in priority sectors of NAMAs seeking support for implementation. Focus is on meeting general international requirements, and specific requirements of selected support facilities. (USD 45,000)</b>	
F.4 Financial support required	<input type="checkbox"/>	
F.5 Technological support required	<input type="checkbox"/>	
F.6 Capacity support required	<input type="checkbox"/>	

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

G.1 Relevant National Policies	The planned NAMA is in line with all relevant national and sectoral policies, which are as follows:  A) Key policy linkage to the national Green Growth and Climate Resilience strategy with a focus on low carbon development to 2020 and a vision for 2050. The key linking programmes are: - Programme 6: Sustainable Small Scale Energy Installations in Rural Areas: Action 1: Private Sector Involvement (key indicator = # and size of private renewable energy enterprises); Action 2: Maximisation of Energy Project Potential (key indicator = Load factors, failure rates); Action 3: Build Consumer Confidence (key indicator = Product uptake rates). B) Key future policy linkage to the national Sustainable Energy for All Action Agenda (currently in draft form) with a focus on renewable energy to 2030. The key linking programmes are: Access to electricity: for Rural off-grid households 20-35% (key indicator = % with access); Renewable electricity: Share of renewable generation capacity for electricity 65% (key indicator = % which is RE capacity). C) Key current short-term policy linkage to the National Energy Policy (2013 – 2018) focuses in part on: Enhance access to sustainable, modern energy for all Rwandans: Increase household access to off-grid electricity to 22%; Scale up innovative partnerships to increase rural access to appropriate off-grid technology solutions (PPPs and awareness-raising).
G.2 Link to other NAMAs	

#### H Attachments

H	Attachments	Title Description
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H.1 Attachment description

H.2 File

Browse...

I Support received

I.1 Outside the Registry

I.2 Within the Registry

Support provided	Support Type	Amount	Comment	Date
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