PROJECT INFORMATION DOCUMENT (PID)

CONCEPT STAGE

Report No.: 89710

Project Name	Rural Electrification Project (P150908, formerly P148079) – now re-established as a recipient-executed grant-funded project
Region	EAST ASIA AND PACIFIC
Country	Vanuatu
Sector(s)	General energy sector (100%)
Theme(s)	Rural services and infrastructure (50%), Climate change (50%)
Project ID	P150908 (formerly P148079)
Borrower(s)	Republic of Vanuatu
Implementing Agency	Department of Energy
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	19-Nov-2013
Date PID Approved/Disclosed	19-Nov-2013
Estimated Date of Board Approval	26-Nov-2014

I. Introduction and Context

Country Context

The Republic of Vanuatu is an archipelago of 82 volcanic islands (65 of them inhabited) covering a total area of about 12,200 km squared, of which about a third is land. The country is located in the Pacific about 1,750 km east of Northern Australia. Vanuatu's population is approximately 249,000 people distributed almost evenly among the six administrative provinces. The national household count stands at an estimated 50,740 of which three-quarters live in rural areas. The average household monthly income in Vanuatu is VUV 83,800 (US$ 892), with an average household monthly income of VUV 79,500 (US$ 846) reported in rural areas. In recent years, Vanuatu's economy has experienced strong and sustained growth mainly driven by tourism, construction, and aid inflows. The per capita GDP is estimated at US$ 3,124 (US$ 4,916 at PPP).

Sectoral and Institutional Context

The Government of Vanuatu (GoV) has recently endorsed a National Energy Road Map (NERM) which defines five energy sector priorities. Four of the priorities concern promoting wider access to electricity, increase affordability of electricity, increased energy security achieved through a greater diversity of energy sources and climate change. Investment in renewable energy is seen as the key to increasing energy security and mitigating climate change. The Department of Energy (DoE), within the Ministry of Climate Change Adaptation, Meteorology, Geo-Hazards, Energy and Environment, plays a central role in coordinating energy sector development and policy in Vanuatu, including identifying and managing rural energy projects. Presently, only an estimated 27 percent of the Vanuatu population has access to grid electricity, largely in the two major population centers of Port Vila (on Efate island) and Luganville (on Espiritu Santo island), as well as small parts of the islands of

Malakula and Tanna. Supply of this electricity is provided by two private concessions, Union Electrique de Vanuatu Ltd (UNELCO) and Vanuatu Utilities and Infrastructure Ltd (VUI). UNELCO supplies the Port Vila, Malakula and Tanna concessions and VUI supplies the Luganville concession. The total installed capacity in Vanuatu is 30.7MW. Of this capacity, 26MW is in Port Vila, 4.1MW in Luganville, 0.34MW in Malakula and 0.27MW in Tanna. Around 20 percent of electricity is produced using renewable energy (10 percent from the Sarakata hydro plant, which services the Luganville concession area and the rest from wind and coconut oil in UNELCO's concession areas). Outside the concession areas, there are a number of micro-grids, operated by the community or the government using local resources, such as hydro, or small diesel gensets.

Of the 50,740 total households nationwide, an estimated 21,500 are in grid-concession areas or in adjacent areas feasible for grid-extension. The GoV and the two incumbent concessionaires (UNELCO and VUI) are working towards implementing an Improved Electricity Access Project, funded the Global Partnership for Output-Based Aid/World Bank, which will provide assistance to low-income consumers who are still not connected or currently share a connection, within the existing grid service areas.

The remaining 29,240 households are in "off-grid" areas. Some of these households are relatively concentrated and are more likely to benefit from a micro- or mini-grid configuration, powered by local resources, such as hydro and other renewable energy technologies (RET) where available, diesel gensets, or diesel/RET hybrids. There have been no past studies or data that would enable an accurate estimation of the size of the group that would benefit from micro- or mini-grid configurations. Assuming that 30% of off-grid households are in this category (including the few estimated to have operating or forthcoming micro-grid installations), the remaining dispersed off-grid households would be estimated at 20,440. In addition to the off-grid households, some 600 schools, health centers, dispensaries, post offices and aid stations provide vital services to poor and isolated communities. Given these public institutions are located in remote areas, it is not likely that these institutions will have access to grid electricity in the near future. Under the NERM, the GoV's goal is to provide access to modern energy to this off-grid segment of the population in the near, or immediate, future.

Relationship to CAS

A Country Partnership Strategy (CPS) for Vanuatu will be developed in parallel to this operation. This project directly supports the Government's Priority and Action Agenda (PAA) 2006-2015 which aims to: (i) reduce the cost of services (iii) extend the coverage of rural electrification and (iii) promote the use of renewable energy. It is consistent with the GoV's current vision for a more diversified economy and more equitable social and economic development. It is also in line with the targets set out in the NERM to (i) by 2020, provide modern electricity access to 100 percent of households in off-grid areas, via individual home systems and basic power products, and (ii) electrify 90 percent of public institutions in off-grid areas by 2015 and 100 percent by 2020.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The proposed development objective (PDO) is to increase access to electricity services for rural households and public institutions located in dispersed off-grid areas.

Key Results (From PCN)

Achievement of the project development objective will be measured by:
a. People provided with access to electricity under the project by household connections off-grid, disaggregated by gender (number) - core sector indicator - other renewable energy;

b. Community electricity connections under the project off-grid, disaggregated by rural public institution type such as schools, health centres, dispensaries, post offices and aid stations (number) - core sector indicator - other renewable energy.

The direct beneficiaries of the project are the rural households and public sector institutions. Indirect beneficiaries include the rural communities who benefit from improved health and education services and employment opportunities in the supply and maintenance the installations. Implementation of the project will result in strengthened capacity of the DoE, the building up of consumer demand in off-grid areas for electricity services and the development of a private sector capable of providing such services.

III. Preliminary Description

Concept Description

The Project, which will run for 6 years, will target some 17,500 households (85% of the off-grid households) and 600 public facilities, including schools, health centers and other small public service facilities nationwide that are presently unelectrified, located beyond the economic and feasible grid extension area, and too dispersed across the off-grid area to be considered in future projects for isolated micro- or mini-grid configurations. For the successful electrification of this off-grid area, the least cost, practical and nearest term solution is likely to be solar photovoltaic (PV) systems. For households, such systems are likely to be demand driven "plug and play" solar home systems for lighting with capability for mobile phone charging and other small uses. For public facilities, such as schools and health centers, special purpose systems, sourced through tender, will provide lighting as well as capability to power devices, such as computers, DVD players, small TVs, electronic microscopy and refrigeration for medicines. Experience from other rural programs in Vanuatu and other Pacific Island States, indicates that the sustainable dissemination and maintenance of PV systems in remote areas is one of the most challenging tasks in rural electrification. The Project will employ subsidies and private-sector led marketing to enable access by up to 85% of off-grid households (equating to a target of 17,500) to solar PV systems. In cooperation with the Ministries of Health and Education, up to 90% of unelectrified rural schools and public service institutions will be provided PV systems. There are presently 11 private sector PV providers in Vanuatu; approximately 5 have been established for the past 5 years at least, and have design, installation and maintenance capability for large PV systems, such as those considered under Component 2 below. The project will include a screening study of areas suitable for micro- and mini-grids for future project based micro-/mini-grid development.

The project will have four main components:

1. Component 1: Electrification of off-grid households (US$ 4.0 – 5.0 million): This component will "buy down" through subsidies the capital cost of PV systems, ranging from 2.5 peak Watts (Wp) portable pico-solar lanterns to 30 Wp fixed panel, plug and play systems, to make them affordable to the target off-grid households. Capital cost subsidies, initially based on system capacity, will be passed on through participating accredited dealers to consumers purchasing in the open competitive market. The exact level and schedule of subsidies will be determined at the preparation stage; however, a preliminary study carried out for AusAID in 2011-2012 recommended a 50 percent cost subsidy for home systems purchased by the consumer. In effect, this component will expand the current limited commercial market in Vanuatu for 1-2 Wp pico-solar systems to the next or middle range of products that provide significantly higher outputs. This product range limits the systems implemented by the Project to those that are portable or easily installed by the buyer. Because of this, it is anticipated

project implementation will be greatly simplified as the need for on-site provider installation in individual homes is eliminated, along with the associated costs. Although the system capacities are much lower than the "solar home systems" (SHS) category (approximately 50-100 Wp) used in projects in larger countries, this range of small plug and play systems is considered highly suitable in the context of Vanuatu. Given the dispersed nature of off-grid populations in Vanuatu, a dealer model (consumer buys equipment outright) or open market mechanism for PV dissemination is proposed for the Project (see Component 3 below) as opposed to the fee-for-service model (supplier charges an ongoing fee), which often requires a much longer lead time than dealer models. Since a sufficient number of potential competing dealers already exist in the country, it is anticipated the dealer model will continue to build capacity in the private sector, including on-going maintenance associated with the portable home electric systems. Ongoing maintenance will require a distribution system for replacement batteries, which will be a requirement for dealer accreditation.

2. Component 2: Electricity access for off-grid public institutions (US$ 4.5 – 5.5 million). This component will fully finance the procurement and installation of solar PV systems, ranging from 200-600 Wp capacity, for public institutions located in targeted off-grid areas, including but not limited to schools, health centers and other small public service facilities. A modular design of the solar PV systems will be followed for the public institutions to ensure the system can easily be upgraded to meet the institutions' needs in the future. This component will be implemented in cooperation with the Ministries of Health and Education and others, as necessary. A competitive tender process will be held to award a contract for the supply, installation and maintenance of the systems over a five year period. To the extent permitted by geographic factors, the subprojects will be bundled to achieve economies of scale and to facilitate regular maintenance. Accredited companies participating in Component 1 will qualify to tender for activities under this Component.

3. Component 3: Regulation, business development and studies (US$ 2.0 – 2.5 million). This component will include: a) Establishment of regulations and national technical and consumer protection standards for the installation and maintenance of solar PV systems to be used by the private sector, and for environmental and social impact management, including the disposal of batteries, as necessary; b) Accreditation and capacity building for private sector participants: accreditation program that ensures their operation is financially sound, their personnel competency, and their products meet minimum technical and quality standards, and provision of specialized courses in PV technology, to expand availability of local technicians; c) Maintenance training program: for long-term sustainability of the solar PV installations, a training program will be provided to suppliers, local service providers and end users to build local capacity; d) Leveraging microfinance: to encourage lending to rural consumers, the project facilitate development of products, sharing of knowledge and training of borrowers; and e) Program targeting: to ensure least cost solutions to electrify rural areas are considered, this project will undertake a preliminary screening study to identify areas economically suited to electrification by micro- or mini-grids, by examining population size, disbursement of the population, local energy resource availability, proximity to the concession areas and other key factors. Further detailed studies will be undertaken, outside of this project, to determine the feasibility, including identification of energy resources and economics of micro- or mini-grids in the areas identified.

4. Component 4: Project Management and Support (US$ 2.0 – 2.5 million). This component will finance project management activities that will include: a) capacity building and implementation support: assistance from experts and advisers to DoE to assist with the implementation of the Project, including procurement support to manage and monitor the bidding process and contract and independent verification processes. Verification is expected to be undertaken by a verification agent who is independent of the project implementing agency to ensure that subsidies are only provided in

accordance with the project design; b) Workshops and training for the DoE: conduct courses, seminars and other capacity building and training activities for DoE staff related to the technical components of this project; and c) Awareness raising program: market the program to the rural communities and Ministries, to the participating vendors/dealers and service providers, conduct surveys and studies to identify prospective markets, and conduct promotional campaigns, demonstrations and other activities to raise general public awareness.

IV. Safeguard Policies that Might Apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04		X	
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10	X		
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	

V. Financing (in USD Million)

Total Project Cost:	15.00	Total Bank Financing:	15.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	0.00
International Development Association (IDA)	15.00
Total	15.00

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