



Power Sector Assessment

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## Vanuatu: Country Partnership Strategy (2010-2014)

Asian Development Bank

## VANUATU COUNTRY PARTNERSHIP STRATEGY 2010-2014 POWER SECTOR NOTE

### I. Sector situation and Key issues in the sector

1. An estimated 27% of the Vanuatu population has access to electricity.<sup>1</sup> Access rates in the main urban centers of Port Vila and Luganville are high at about 75%, dropping off considerably in rural areas. Power is supplied to the main urban areas of Port Vila, Luganville, East Malekula and Tanna under a concession arrangement to a private power company UNELCO (subsidiary of the SUEZ group). In Port Vila, the concession is in force until 2031 and provides for exclusive rights to generate and supply electricity within a 15 km radius of the city boundaries. The power supply concession will expire on 31 December 2010 in Luganville, and 13 July 2020 in East Malekula and Tanna. Outside the concession areas, provision of power services is relatively limited and is provided under a range of delivery schemes installed under various Government and donor projects. While the cost of electricity under the concessions is relatively high, the quality of supply is superior than neighboring countries such as Solomon Islands or Papua New Guinea. Power generation within the Port Vila concession is predominantly diesel with wind power currently coming on line from the newly installed Devils Point Wind Farm (approximately 3MW). The diesel used in the Port Vila diesel generators is currently being blended with approximately 20% coconut oil. The Luganville concession is supplied by diesel power generation and hydropower from the Sarataka hydropower scheme (3x300kW units), which is managed by UNELCO under a concession addendum. The Sarataka hydropower scheme was grant financed by the Japanese Government. Tariffs are set for Luganville on the basis of diesel generation costs, and the savings are deposited into the Sarakata Special Reserve Fund, established on 3 March 1995, which is used to finance rural electrification.

2. There is potential for increasing the electricity access rate in both urban and rural areas. Some urban extensions are occurring through subsidies from the Sarakata Special Reserve Fund. The very low electrification rates for rural areas are due to, (i) geographical isolation of many villages, (ii) absence of sustainable operational and maintenance models, and (iii) high up-front costs on low rates of return on investment.

3. Vanuatu does not have indigenous sources of fossil fuels, and the importation of diesel for power generation has a high cost to the economy. However, there are significant indigenous resources which are being increasingly utilized. Vanuatu has considerable technical potential for hydropower generation, however it is generally located near smaller urban areas, and there is limited scope for the main island of Efate. The Sarataka hydropower scheme provides power to the Luganville concession. A number of technically viable rural hydropower sites have been assessed, however there are significant barriers associated with (i) lack of long term monitoring data to support feasibility analysis, (ii) intermittent nature of supply, (iii) high capital costs, (iv) absence of a sustainable institutional model for operation and maintenance, and (v) land access issues. Progress on rural hydropower has been slow to date. There are a number of potential geothermal sites which have been identified, including sites adjacent to Port Vila. However, due to high exploration and capital costs, these sites have not proceeded. UNELCO has constructed a 3MW wind farm at Devils Point, which is connected to the Port Vila grid, and wind monitoring is being undertaken for a second wind farm near Port Vila. Biomass is used as an energy

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<sup>1</sup> Trembath and Price Waterhouse Coopers, Draft Scoping Study on Luganville Power Concession and the Sarakata Hydropower Fund for the Government of Vanuatu, AusAID financed, May 2007.

source by a large percentage of the rural population for household cooking. Coconut oil is being used as a biofuel replacement for diesel generation for small power grids such as Port Olry, and upscaling is underway with European Union assistance. UNELCO is using a diesel coconut oil blend for power generation in Port Vila. Household solar power systems have been trailed extensively for schools and health facilities, however issues with high cost and maintenance have prevented widespread upscaling. The most promising future prospects for renewable energy include (i) blending of coconut oil with diesel and wind for grid-connected systems, and (ii) blending of coconut oil with diesel, solar and possibly hydropower for areas currently not connected to the grid.

4. The key challenges for the power sector include (i) developing alternative power supplies to reduce the impact to the economy from diesel importation, (ii) increasing access to electricity, particularly in off-grid areas, (iii) delivering sustainable operation and maintenance models for rural electrification projects, and (iv) coordination of donor activities in the power sector.

## **II. Institutional arrangements and sector policy and planning framework**

5. The power sector is managed by the Energy Unit within the Ministry of Lands, Energy, Rural Water Supply, Geology and Mines. Staffing levels remain an issue for the Energy Unit, particularly for management of rural electrification expansion. A semi-autonomous Utilities Regulation Authority (URA) has been established which manages the concession agreements with UNELCO. The Government planning document *Planning Long, Acting Short, The Government Policy Priorities for 2009-12*, includes energy sector priorities to (i) ensure that power is more widely available at a fair price, and (ii) explore/expand and invest on renewable energy sources. At the request of government, in 2006 UNELCO drafted the *Rural Electrification Master Plan*, which provides a comprehensive analysis of alternative technologies for electrification of off-grid areas. The main technology proposed are mini grid diesel generation (with coconut oil conversions where resources allow), and solar PV systems, with localized use of hydropower and wind, where resources exist. The master plan is an essential technical analysis of the sector. The Government now requires to develop an action plan based on the findings of the master plan. The private sector has a long history in the Vanuatu power sector. UNELCO, a subsidiary of SUEZ, has the concession for power supply to the main urban areas. There are several small entrepreneurs and NGOs that are involved in renewable technologies and rural electrification, which form an active support base for expansion of the rural electrification expansion.

## **III. ADB and donor partner activities**

6. ADB has provided support to various infrastructure planning activities in Vanuatu, including energy sector planning in the 1980's<sup>2</sup>. Currently, ADB is supporting the promotion of renewable energy through the regional technical assistance project *Promoting Renewable Energy in the Pacific* which is providing support for (i) the Vanuatu Electricity Expansion Action Plan, (ii) development of the Rural Electrification Fund, and (iii) development of on-grid Renewable Energy, including technical assistance for a proposed wind farm. ADB is assisting to reduce the energy intensity of the economy through the regional TA 6485 *Promoting Energy Efficiency in the Pacific*. ADB is also providing technical support to the national entity managing the Clean Development Mechanism (CDM) in order to promote carbon financing of potential clean energy projects.

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<sup>2</sup> TA 0579-VAN: Energy Planning and Institutional Support, approved 29 December 1983.

7. Donor support in the power sector has included both grid-connected supply to the main urban centers and rural electrification. UNELCO has generally managed the Port Vila concession with little donor support. The Japanese Government supported development of the Sarataka hydropower plant which supplies Luganville concession. AusAID has assisted with a number of studies in the power sector and is currently financing an energy advisor to support the Energy Unit. There has been considerable bilateral support for development of renewable energy for rural electrification including Japanese Government support for solar power and European Union support for coconut oil-diesel mini-grid development, etc. Vanrepa, an NGO, is implementing a number of rural wind energy projects, partially donor financed. The World Bank has launched a regional Sustainable Energy Financing Project (SEFP), which is designed to provide financing support to household level renewable energy. The SEFP is being managed by IFC in Vanuatu.

#### **IV. Intended sector outcomes and key outputs supported by ADB**

8. ADB's activities in the power sector will target the following outcomes; (i) reduced cost structure of the power sector through development of least-cost renewable energy generation options, and (ii) improved energy intensity of the economy. ADB will assist in reducing the cost structure of the power sector through (i) provision of technical support to on-grid expansion projects, (iii) improving the energy intensity of the economy through demand-side management, and (iv) providing financial support, as requested, for future clean energy projects. Support will also be provided to increase access to international carbon markets through development of clean development mechanism (CDM) eligible projects. Assistance will be provided through the ADB Carbon Market Initiative Technical Support Facility, backed up by the Asia Pacific Carbon Fund and the Future Fund, as required. Corresponding targets will include (i) development of an on-grid renewable energy project, (iii) implementation of a demand-side management project, and (iv) preparation of guidelines for the CDM National Designated Authority.