SECTOR ASSESSMENT (SUMMARY): ENERGY

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Grid-connected electricity is generated and supplied in Solomon Islands by Solomon Islands Electricity Authority (SIEA), which is a state-owned electricity utility. SIEA provides electricity to the national capital (Honiara) and eight provincial centers (Auki, Buala, Gizo, Kirakira, Lata, Malu'u, Noro-Munda, and Tulagi). Installed generation capacity in Honiara is 26 megawatts (MW)—with a peak load of 14.3 MW—and combined installed capacity in the provincial centers is 4 MW.

2. All grid-connected electricity generation in Solomon Islands is currently fueled by diesel.[1] Two grid-connected renewable energy projects are proposed for the Honiara grid: Tina River Hydropower Project (14 MW) and Savo Island Geothermal (20 MW).[2] SIEA has recently trialed the use of coconut oil as a diesel replacement at the Auki outstation.[3] Wind monitoring is also proposed at three sites,[4] and about 9% of households nationwide have some form of household solar power generation. About five community-managed micro-hydropower plants are also in operation.

3. Access to electricity is extremely low in Solomon Islands. Grid-connected electricity is supplied to about 12% of the population. The overall access rate in Honiara is 64%, but access in the rest of the country averages just 6%, and five of nine provinces have access rates below 4%. The main reasons are (i) the high cost of diesel power generation in the provincial centers, which gives the corporatized SIEA little incentive to expand the distribution network in the absence of adequate community service obligation funding; (ii) lack of government community service obligation funding for grid extensions; (iii) a difficult geography and small, dispersed pockets of population; and (iv) low capacity to pay in some areas.

4. Solomon Islands has a population of 512,870 and Honiara, on the island of Guadalcanal, has a population of 64,609 (13% of the total). Development and provision of economic infrastructure is concentrated in Honiara, which also has 89% of the national power generation capacity. In Malaita, the most heavily populated province with 137,596 inhabitants or 25% of the national total, access to grid-connected electricity is estimated at 3% and is largely confined to the main provincial center of Auki. More than three-quarters (79%) of households use kerosene lamps as their main source of lighting, 12.2% use solar systems.[5] Other sources of lighting are wood fire, mini hydropower, portable generators, and gas. For cooking, most households in Malaita (98.3%) use wood, the rest relies on gas, kerosene, and other forms. The Auki grid has an installed rated capacity of 720 kilowatts (kW) and a peak demand of 350 kW. The grid covers the main urban area and does not extend significantly into the peri-urban areas. Power supply in

[1] SIEA manages two hydropower plants—Buala with a capacity of 185 kilowatts (kW) and Malu'u (32 kW)—but both are currently nonoperational due to landowner disputes and equipment needing replacement. Both issues are being dealt with.

[2] Both projects are to be developed by private sector financing through independent power producers. The Government of Australia, European Investment Bank, International Finance Corporation, and the World Bank are supporting the Tina River Hydropower Project.

[3] The Auki pilot project was supported by Asian Development Bank (ADB) technical assistance: ADB. {2009}. *Technical Assistance for Promotion of Renewable Energy in the Pacific*. Manila (RETA-7329).

[4] The Pacific Island Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP), implemented by the United Nations Development Programme (UNDP), proposes to finance three wind-monitoring stations.

[5] Solomon Islands Government {2011}, *Report on 2009 Population and Housing Census, 2011*. Honiara.

Auki is unreliable (frequent outages) because of issues with diesel fuel supply and maintenance, which results in businesses operating expensive back-up diesel generation. SIEA currently has 274 residential customers and 335 commercial customers in Auki, which is its third-largest load center behind Honiara and Gizo. Significant unmet demand means that people now resort to self-generation but might connect to the grid if sufficient capacity were available.

5. Power tariffs in Solomon Islands are among the highest in the Pacific. In June 2013, the national uniform tariff was $0.85 per kilowatt-hour (kWh) for residential customers and $0.91/kWh for commercial customers.[6] The government manages its sector policy through the energy unit of the Ministry of Mines, Energy and Rural Electrification, and power tariffs are set by government regulations. While the current tariffs allow SIEA to recover costs and invest in infrastructure, historically this was not the case. As a consequence investment in maintenance and expansion of core power infrastructure have been lacking resulting in underinvestment in capital infrastructure. Revenue collection is currently high at 97%. Historically, however, revenue collection has been an issue. Since 2012 SIEA has made an ambitious effort to install prepayment meters for all consumers in parallel with an overhaul of the billing, accounting, and data management systems. SIEA is now undertaking a utility restructuring program. Due to the high cost of diesel transport, generation costs in the provincial centers are considerably higher than in Honiara ($0.53/kWh in Honiara compared with $0.78/kWh in Auki), which has a negative financial impact on SIEA's operations and has impeded grid expansion. The high cost of electricity and the limited reach of the distribution grid are slowing economic growth in the provincial centers, including Auki, and curb agriculture and tourism in particular.

2. Government's Sector Strategy

6. In October 2010, the government produced The National Coalition for Reform and Advancement Government: Policy Statement, which outlines a comprehensive reform program that focuses on greater autonomy for economic advancement, and on equity of distribution and access to opportunities.[7] It highlights the importance of provincial urban centers in providing services and economic opportunities, and commits the government to a flagship initiative of developing economic growth centers outside Honiara. It envisages the development of reliable infrastructure in these growth centers, such as transport, water, and energy-related assets.

7. The policy statement highlights other components associated with the successful development of economic growth centers. Specifically, it commits the government to reforming the system of customary land tenure and fostering the private sector as the engine of sustainable long-term growth. Restrictions on land ownership and lack of private sector participation have been significant barriers to development of the energy sector in Solomon Islands in the past, and have caused the cancellation of several major hydropower projects on Guadalcanal. Reform in these areas will contribute to an environment conducive to development of the sector. Likewise, the policy statement points to the need to improve the efficiency and performance of the public sector and to adopt a governance framework to improve the management and accountability of state-owned enterprises (SOEs). As part of this pronouncement, the government has outlined the importance of improving the efficiency and effectiveness of SIEA.

[6] By comparison, the Pacific Power Association {2013}, *Performance Benchmarking Report for Pacific Power Utilities*, Suva indicates that the average domestic tariff across 21 Pacific utilities in 2011 was $0.46/kWh.

[7] Government of Solomon Islands, Office of the Prime Minister. 2010. *The National Coalition for Reform and Advancement Government: Policy Statement*. Honiara.

8. A National Development Strategy, 2011–2020,[8] prepared by the Ministry of Development Planning and Aid Coordination, highlights the long-term nature of developing renewable energy resources to provide access to affordable electricity in rural areas. The government's policy for the sector is presented in Solomon Islands National Energy Policy Framework, 2007 and the draft National Energy Policy Framework, 2013, which both prioritize development of renewable energy. Proposed investments in the sector are detailed in the draft Solomon Islands Renewable Energy Investment Plan, 2013.[9]

3. ADB Sector Experience and Assistance Program

9. Solomon Islands has previously obtained infrastructure financing support from the Asian Development Bank (ADB) for (i) a power expansion project that financed a 2 MW diesel generator at the Lungga power plant in Honiara, and a power plant (3.6 MW) and distribution grid at Noro; and (ii) a follow-up project that financed a 4 MW diesel generator at the Lungga power plant as well as grid extensions. Loan 0803-SOL Power Expansion Project (1986–1989) Loan 1064-SOL Second Power Expansion Project (1990–1995) Preparatory work was also carried out on the Lungga and Komarindi hydropower projects on Guadalcanal, but these projects were not deemed feasible for reasons associated with local geology and landownership.[10]

10. More recently, in 2008, ADB provided technical assistance to support (i) trials for replacing diesel with coconut oil at the Auki outstation (para. 2, footnote 3) and (ii) preparation of prefeasibility studies for hydropower to supply provincial load centers. ADB has also provided support for renewable energy by improving access to carbon finance under the Clean Development Mechanism through the establishment of the Solomon Islands Designated National Authority.[11]

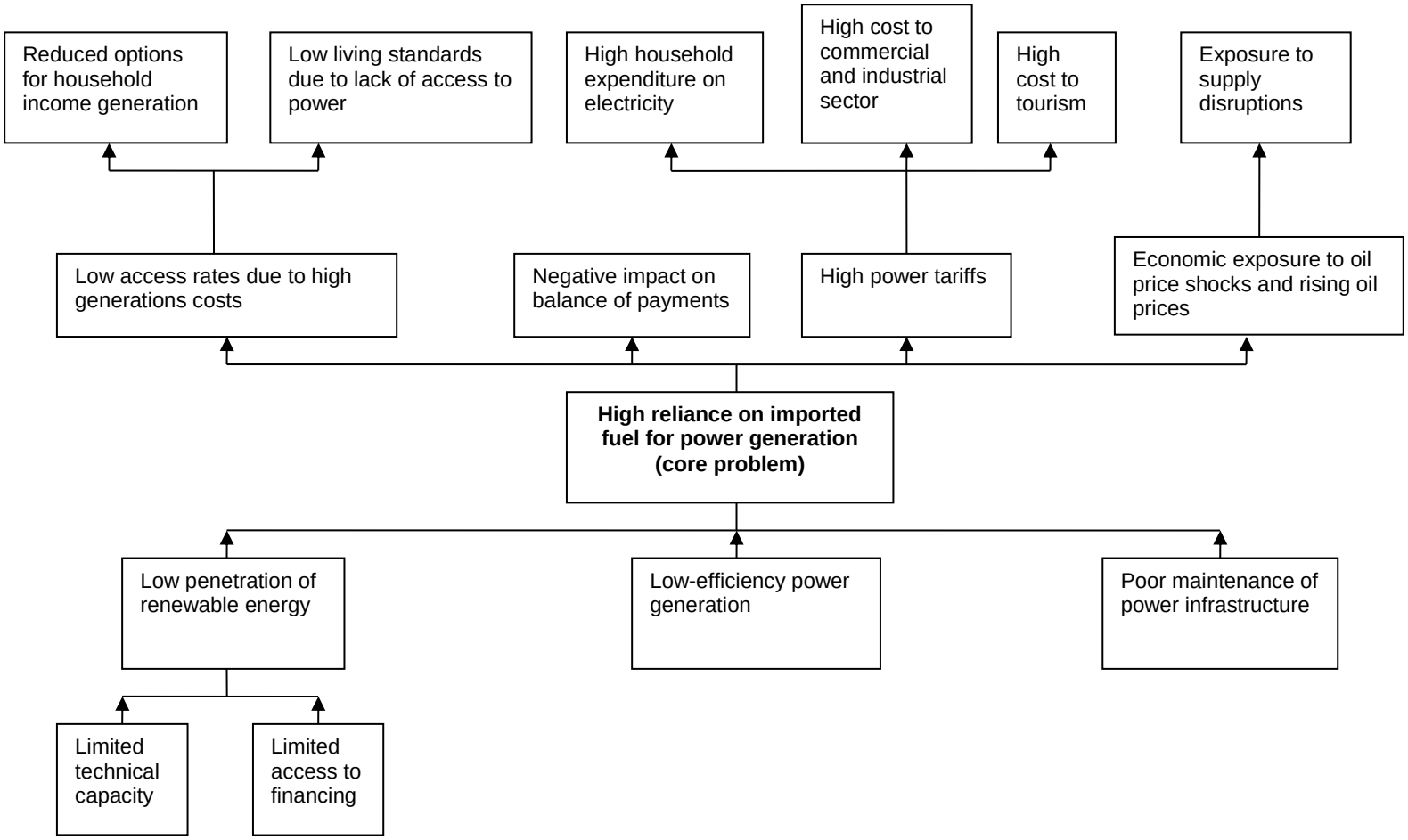
[8] Government of Solomon Islands. {2010}. *National Development Strategy*. Honiara

[9] (i) Government of Solomon Islands. {2006}. *Solomon Islands National Energy Policy Framework, 2007*. Honiara. (ii) Government of Solomon Islands. {2013}. *draft National Energy Policy Framework*, 2013*,* Honiara. (iii) Government of Solomon Islands. {2013}. *draft Solomon Islands Renewable Energy Investment Plan*, 2013*,* Honiara.

[10] ADB. 1976. *Technical Assistance to Solomon Islands for Preparing the Lungga Hydropower Project*. Manila; ADB. 1990. *Technical Assistance to Solomon Islands for Detailed Design of Komarindi Hydropower Project*. Manila.

[11] ADB. 2009. *Technical Assistance for Strengthening the Capacity of Pacific Developing Member Countries to Respond to Climate Change (Phase 1)*. Manila.

Problem Tree for Energy Sector



Sector Results Framework – Energy

Country Sector Outcomes		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contribution	**Indicators with Targets and Baselines**	**Outputs with ADB Contribution**	**Indicators with Incremental Targets**	**Planned and Ongoing ADB Interventions**	**Main Outputs Expected from ADB Interventions**
Increased access to modern energy services	Number of households with access to grid-connected power in provincial centers doubles to 4,000 by 2016 (2010 baseline: 2,000)	Power is generated from new sources of renewable energy in provincial centers and distribution grid is extended	Up to 500 kilowatts of renewable generating capacity is installed by 2016 Length of new or rehabilitated power distribution network is increased by 10 kilometers by 2016	**Planned key activity areas** - Renewable power generation in provincial centers (90%) - Sector policy and capacity development (10%) **Pipeline projects with estimated amounts** Provincial Renewable Energy Project ($12 million) **Ongoing projects with approved amounts** Promoting Access to Renewable Energy in the Pacific (regional capacity development technical assistance, $1 million)	**Planned key activity areas** Small-scale hydropower plants to supply one provincial center is constructed **Pipeline projects** Up to 500 kilowatts of small-scale hydropower capacity is constructed in one provincial center **Ongoing projects** - Coconut oil pilot project is implemented at Auki - A pipeline of 10 renewable energy projects in provincial centers is screened and studied

Source: Asian Development Bank.