SECTOR ASSESSMENT (SUMMARY): ENERGY

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Fiji Electricity Authority (FEA) has sole statutory authority for the generation, transmission, distribution, and retail of electricity in Fiji. It was established, incorporated, and constituted under the provisions of the Electricity Act, 1966; began operating on 1 August of the same year; is a corporate utility fully owned by the government; and is subject to requirements under the Public Enterprises Act as a commercial statutory authority. Members of the FEA board are appointed by the minister for energy and mineral resources.

2. Fiji’s installed capacity is about 237 megawatts (263 MW)—125 MW of renewable generation (hydro, wind, solar, and biomass), with the remainder (112 MW) provided by fossil fuel (diesel or heavy fuel oil). Fiji’s newly adopted sector policy targets the achievement of 67% renewable generation by 2015, and 99% by 2030.1 To this end, FEA has been pursuing renewable energy investments, the latest addition being the 40 MW Nadarivatu hydroelectric plant commissioned in 2012. Slightly lower rainfall, despite the addition of Nadarivatu, allowed FEA to generate 60% of its output from hydroelectric sources in 2013. Complemented by 1% of total output from wind power, diesel and heavy fuel oil generation decreased to 37% of total output. Nevertheless, FEA expenditure on diesel and heavy fuel oil still totaled over F$122.6 million in 2013—about 41% of total revenue.2

3. Most of Fiji’s power generation is owned by FEA. Two independent power producers contractually authorized to sell to FEA account for 2% of total installed grid-connected capacity in Fiji (Tropik Wood Industries Limited and Fiji Sugar Corporation, both of which use biomass as fuel stock). In terms of total numbers, FEA’s customer base consists largely of domestic consumers (91%), commercial consumers (9%), and industrial consumers (<0.1%). Consumption and revenue statistics are strikingly different, with 48% of electricity sales revenue attributed to commercial consumers, 26% to industrial consumers, and the remainder to domestic consumers. Fiji’s electricity penetration among households is about 90%, with a state policy target of 100% penetration by 2020 (footnote 1). The 10% of the population unserved by commercial power service are dispersed in rural areas. Additional network infrastructure and generation needs to be constructed to expand service to these populations (in the most isolated settlements, basic service may also be provided by solar home systems).

4. Approved tariffs from 1 January 2013 provide for four customer classes (tariff categories), with rates from F$0.33 per kilowatt-hour (kWh) for domestic customers to F$0.42/kWh for commercial and industrial customers. All customer classes have an embedded government-funded subsidy for a fixed volume of consumption per billing period. For domestic customers, the first block of 75 kWh is subsidised at about 50%; for commercial and industrial customers, a reduced rate of F$0.40/kWh is applied to the first 14,999 kWh per month, rising to F$0.42 thereafter. The rate schedule also includes a capacity charge of F$0.34–F$0.38/kWh, creating a two-part tariff.

5. Despite progress in increasing the share of renewable resources in Fiji’s generation mix,

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a high reliance on imported fuels remains. Grid-based power supply has arguably the greatest potential to make Fiji’s energy sector more efficient, cost-effective, and environmentally sustainable. A number of undeveloped but promising hydro sites and significant unexplored geothermal, solar, and wind resources can further reduce Fiji’s reliance on fossil fuel generation. The majority of the population has access to modern forms of energy, thanks to significant improvements since the 1990’s through rural electrification initiatives. However, about 10% of the population is still without access to electricity, and Fiji is struggling to provide remote areas and isolated islands with access to electricity.

6. Biomass is plentiful in Fiji, while supply chain constraints may hinder its use as a commercially viable and sustainable source for power generation. Fourteen geothermal sites with an estimated potential of 38 MW may be exploitable, while small hydro and solar photovoltaic development in isolated communities appear to be attractive options for investigation. Fiji’s wind resource is also potentially viable for small-scale developments for remote areas or niche applications (e.g., telecommunications).

7. Fiji’s electricity system needs significant investment over the next 10 years estimated at about F$1.5 billion [footnote 1], which is unlikely to be financed by the public sector alone. The newly adopted National Energy Policy (2013) prioritizes the attraction of private sector investment to accelerate energy sector development. The policy identifies the lack of a clear regulatory framework for private generation, general weaknesses in Fiji’s business climate, and (for renewable energy) a lack of publicly available data on resources as impediments to such investment that must be overcome.

8. This failure to attract private investment is of particular concern, given the potential for Fiji to use its renewable energy resources to reduce the costs of imported fossil fuels for power generation. While the promotion of larger renewable energy projects will take time and will require significant preparatory work (e.g., robust and credible resource assessments), Fiji should be able to deploy small-scale and household systems rapidly to take advantage, in particular, of its solar power potential.

2. **Government’s Sector Strategy**

9. Regulatory oversight of FEA is weak. Tariffs are approved by the Fiji Commerce Commission, but the manner in which prices are reviewed is not transparent and does not offer the long-term certainty and predictability that private investors prefer. Other than on tariff adoption, FEA is a self-regulating entity whose powers include issuance of licenses to operate in generation or retail and distribution, developing technical rules, and defining rules and incentives for third-party generation. This creates potential for FEA to block new private generation where it perceives this as conflicting with its own interests.

10. Fiji’s National Energy Plan and Green Growth Framework have the following overall targets for the policy area “Expanded Energy Security”:

   (i) Expanded role for the private sector in grid electricity generation;

   (ii) increase in the contribution of non-FEA renewable energy, in particular from small-scale systems;

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(iii) restructuring of the regulatory arrangements to improve transparency and accountability, and remove possible conflicts of interest; and
(iv) achievement of a renewable energy share in electricity generation of 99% by 2030.

11. The stated objective of the Green Growth Strategy as it relates to energy is: “To make Fiji more energy reliant by improving efficiency and also reducing dependence on imported fossil fuels.”

12. Stated objectives of the revised National Energy Plan are:

(i) **Affordable energy for all.** Ensure that all Fijians have access to affordable and reliable modern energy services.

(ii) **Sustainable energy supplies.** Establish environmentally sound and sustainable systems for energy production, procurement, transportation, distribution, and end-use.

(iii) **Reduced import costs.** Encourage the efficient use of energy and the use of indigenous energy sources to reduce the financial burden of energy imports on Fiji.

13. Overall responsibility for coordinating and overseeing implementation of the revised NEP will be led by a new National Energy Coordination Committee (NECC), which will include representatives of the relevant government ministries and agencies. The Department of Energy (DOE) will be the secretariat to the NECC.

14. Primary responsibility for planning and policy development in the energy sector will lie with the DOE. Its legal mandate to carry out this role will be reviewed and strengthened. FEA will remain responsible for planning of the national grid, while responsibility for national master plans and policies on the role of the private sector will be transferred from FEA to the DOE to avoid potential conflicts of interest.

15. The Commerce Commission will continue to be responsible for economic regulation of the energy sector, including competition regulation and the setting of fuel and electricity prices. Technical regulatory functions currently held by FEA, including licensing and approvals, will be transferred to the DOE. To avoid the DOE’s policy-making and regulatory responsibilities being confused, a separate unit under the DOE will be established to undertake these regulatory functions.

16. Diversification of economic growth and foreign and local investments are critical to sustainable economic growth and increased employment opportunities. Expanded reliable access to electricity will promote employment, including home-based industries that offer increased opportunities for female employment, and increase productivity in the agriculture and service sectors. The country is a small open economy, highly vulnerable to volatility in global energy prices. The poor spend more of their income on fuel and energy, and the fiscal space to support subsidies to the poor is very limited. Diversification of generation toward indigenous and renewable energy resources will help reduce the pressure on tariff increases in the longer term, possibly avoid the opportunity cost of fiscal expenditure on power subsidies, and make power more affordable. Renewable energy investment activity also lends itself to the creation of employment opportunities for women, improving their earning potential.
3. **ADB Sector Experience and Assistance Program**

17. Asian Development Bank (ADB) assistance to the energy sector in Fiji dates back to the 1970s and 1980s. ADB has provided three loans to the energy sector, amounting to $36.9 million. The Power Supply Project, the first ADB loan to Fiji, provided support for generation and transmission projects on Viti Levu. The Second Power Project supported transmission, and distribution expansions associated with the Wailoa hydropower station. The Third Power Project supported a third stage expansion of the Wailoa hydropower station under cofinancing arrangements with the European Investment Bank and the Commonwealth Development Corporation. ADB also funded technical assistance for a tariff study and for a rural electrification study.

18. The Government of Fiji approached ADB in October 2013 with a request to support the implementation of key aspects of the revised National Energy Plan. The government has requested that ADB assist with evaluating the requirements for capacity development within the DOE to accommodate the expanded regulatory functions over the energy sector that will be transferred to it from FEA. The government has also requested that ADB assist with the development of key aspects of an electrification master plan that will form the core strategy for investment prioritization, for expansion of power service to unserved areas of Fiji. ADB has agreed to allocate technical assistance resources to respond to these requests from the government.

19. In February 2014, FEA informally suggested to ADB opportunities for future large-scale development partner funded projects in replacing aged transmission assets, and in the construction of new transmission lines to improve system reliability and provide redundancy. These would include the replacement of much of Suva’s underground 33 kilovolt (kV) system, the construction of a new 132 kV line from Fiji’s largest hydroelectric facility at Monasavu to the southern part of Viti Levu, and the extension of the 33 kV network to complete a ring around the perimeter of the same island.

20. Immediate opportunities for ADB interventions in energy exist in capacity building of key state institutions for effective sector regulation and policy enforcement. Upon resumption of lending operations in Fiji, opportunities are plentiful in large-scale investments in extension and reinforcement of FEA’s existing networks, as well as in the expansion of electricity service to communities unserved by FEA or other formalized commercial arrangements. For isolated populations on Fiji’s outer islands, small hydroelectric, solar photovoltaic, and mini-grid opportunities are apparent. Ensuring the sustainability of such investments will require the involvement of competent and incentivized institutional actors.
Problem Tree for the Energy Sector

National Impact

Holding back of economic growth; failure to alleviate rural poverty; households’ reliance on dirty fuels for cooking, lighting, with disproportionate burden on females, pressure on less sustainable energy sources

Sector Impacts

Exposure to oil price volatility
Low investments in power infrastructure leaves many unserved
Expensive or unavailable affordable power, including for female-headed households

Core sector Issue

High dependence on imported fossil fuel with constrained investment in service expansion

Causes

Low penetration of renewable energy
Low penetration rate in rural areas
Limited technical capacity
Limited access to financing
Limited resource surveys
Low rate of investment to expand access

National Impact

Limited resource surveys

Causes

Limited technical capacity

Causes

Limited resource surveys
## Sector Results Framework (Energy, 2014–2018)

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<th>Country Sector Outcomes</th>
<th>Country Sector Outputs</th>
<th>ADB Sector Operations</th>
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<tr>
<td>Outcomes with ADB Contribution</td>
<td>Indicators with Targets and Baselines</td>
<td>Outputs with ADB Contribution</td>
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<tr>
<td>More robust power sector, with higher proportion of renewable generation and greater efficient use of energy including renewable energy</td>
<td>Share of renewable energy in power generation increased to 75% in 2018 (2011 baseline: 60%) Power network system losses reduced to 7% by 2018 (2012 baseline: 11%) Electrification rate increased to 98% by 2018, of which 95% is rural electrification rate (including female-headed households) (2007 baseline: 89% for total and 82% rural)</td>
<td>Energy system expanded, improved, and well managed</td>
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