

## SECTOR ASSESSMENT (SUMMARY): ENERGY

### Sector Road Map

#### 1. Sector Performance, Problems, and Opportunities

1. The state-owned Nauru Utilities Corporation (NUC) owns and operates power generation and distribution, as well as water desalination and supply, serving Nauru’s approximately 10,000 inhabitants. Additionally, the NUC manages the procurement, storage, and distribution of imported petroleum fuels.<sup>1</sup>

2. The NUC was established in June 2011 by act of parliament on the basis of the Nauru Utilities Authority, inheriting its assets that were previously held by the Nauru Phosphate Corporation. The act establishes the corporation with its objectives of providing “reliable, affordable and sustainable energy, enabling the socio-economic development of Nauru”<sup>2</sup>. While nominally corporatized, it remains subject to direct ministerial control. The chief executive officer of the NUC reports directly to the minister of infrastructure, communications, and utilities. An advisory board convenes regularly to make recommendations to the minister on all matters pertaining to the NUC’s operations.

3. Nauru’s current diesel generation assets are unreliable and inefficient. The NUC’s older large generators are operating at far below their design output capacity and are nearing the end of their useful lives. The physical structure of the powerhouse is also in poor condition, which represents a vulnerability to Nauru’s supply security. While Nauru is virtually 100% electrified, service reliability is extremely poor. Unscheduled—and often prolonged—interruptions are frequent. Although Nauru has established ambitious targets for renewable generation, it remains reliant on reliable and efficient thermal generation (i.e., diesel) for its base load and for system stability and reliability for the foreseeable future. The NUC’s existing installed generation assets are summarized in the following table.

**Nauru Utilities Corporation’s Existing Installed Generation**

Description	Year Installed	Rated Capacity (MW)	Available Capacity (MW)
Unit 1 – Ruston (overdue for overhaul)	1960	2.60	0.80
Unit 2 – Cummins	2014	1.00	0.85
Unit 3 – Ruston (decommissioned)	...	...	...
Unit 4 – Cummins	2013	1.50	0.85
Unit 5 – Caterpillar (out of service)	1985	1.00	0.00
Unit 6 – Ruston	1960	2.00	1.20
Unit 7 – Ruston (decommissioned)	2008	2.80	-
Unit 8 – Ruston (delivered 2011 damaged, never operated)		2.00	0
<b>Total</b>		<b>12.90</b>	<b>3.70</b>

MW = megawatt.

Source: Nauru Utilities Corporation 2014.

<sup>1</sup> This summary is based on Asian Development Bank staff research.

<sup>2</sup> Nauru. 2009. National Energy Policy Framework.

4. Addressing reliability and efficiency shortcomings in Nauru's current diesel generation equipment is of first-order priority to improve service reliability and mitigate the risk of catastrophic failure of NUC's power generation capability. Among the NUC's investment priorities is the introduction of 2.6–3.0 megawatts (MW) (nominal 2.8 MW) of new diesel-fired generation capacity to replace existing generators, improve reliability, and reduce fuel costs. The NUC estimates that this will result in a 20% improvement in generation efficiency from the current 3.4 kilowatt-hours (kWh) generated per liter of diesel consumed to 4.1 kWh.

5. The NUC's financial and asset management systems are deficient in many respects. The corporation is unable currently to account for its gross generation output, which leads to an inability to accurately estimate the fuel efficiency of its generation plant or the volume of power introduced to the distribution system. This, together with the fact that the NUC is currently estimating a significant proportion of customer billings because of inadequacies with customer metering arrangements, makes it impossible to accurately estimate technical (physical) and nontechnical losses (illicit connections, meter tampering, etc.).

6. While the NUC is nominally corporatized, it remains both a recipient and provider of significant subsidies that ultimately burden the Nauru national budget. The NUC receives its fuel free of charge from the state. The NUC's tariffs are distortionary. Up until a tariff revision at the beginning of July 2014, all residential customers received a subsidized tariff of A\$0.10 per kWh for the first 300 kWh per month consumed, rising to A\$0.25 per kWh above 300 kWh per month. A more fiscally responsible policy would be to provide such subsidy on a means-tested basis (and the volume of subsidized power would be considerably lower, e.g., 150 kWh per month). Commercial, industrial, and government customers were charged a slightly higher rate of between A\$0.40 and A\$0.50 per kWh. From July 2014, domestic tariffs increased from A\$0.10 to A\$0.20 per kWh for the lifeline block and from A\$0.25 to A\$0.35 per kWh above this level, and commercial, industrial, and government tariffs rose from A\$0.40 or A\$0.50 to A\$0.70. Despite these rises, all domestic customers continue to receive the benefit of the subsidized lifeline block and, moreover, the higher domestic tariff of A\$0.35 per kWh remains heavily subsidized at only around half of full cost-recovery levels.

7. The NUC currently consumes approximately 7 million liters<sup>3</sup> of diesel fuel for power generation each year, which equates to approximately \$7 million,<sup>4</sup> funded directly by the Nauru national budget. The lack of reliable power service deprives many households and businesses of this essential service, which in itself is welfare diminishing. Further, it compels many private businesses and households to invest in, and maintain, their own sources of generation at significant expense. Other costs are often incurred. For example, during a few days of power outages in January 2011, it is reported that phosphate ships charged the Nauru Phosphate Corporation more than \$250,000 in demurrage charges as there was not enough capacity to run the kilns and loader because of the breakdown of generator units.<sup>5</sup>

## 2. Government's Sector Strategy

8. The government's policy with regard to the NUC is poorly articulated. The government is currently developing an energy road map (with German development cooperation through

<sup>3</sup> A. Daka. 2013. *Technical Evaluation and Assessment Study of NUC Power Generation and Distribution Systems*. Suva: Pacific Power Association.

<sup>4</sup> *Nauru Bulletin*. 2013. Renewable Energy, the Wise Option for Nauru. 5–12 April.

[http://www.naurugov.nr/media/25459/nauru\\_bulletin\\_05\\_12apr2013\\_81\\_.pdf](http://www.naurugov.nr/media/25459/nauru_bulletin_05_12apr2013_81_.pdf)

<sup>5</sup> Nauru Economic Infrastructure Strategy and Investment Plan. <http://aid.dfat.gov.au/countries/pacific/nauru/Documents/nauru%20economic%20infrastructure%20strategy%20and%20investment%20plan.pdf>

Deutsche Gesellschaft für Internationale Zusammenarbeit), which is expected to prioritize the development of renewable (mainly solar) resources to mitigate Nauru's reliance on fossil fuels for power generation. The government has reportedly acquired approximately 10 hectares of land in the southeastern quadrant of the island to accommodate the installation of solar photovoltaic panels. No funding for this capital investment is available. No policy documents available indicate the government's intention to complete the NUC's transformation from an organ of the state into a state-owned corporation operating on commercial principles as an entity separate from the state.

9. Long-term improvement in Nauru's energy sector operations will require significant sharpening of government policy towards the NUC, requiring that the NUC develop appropriate business practices, processes, and systems (e.g., accounting, financial management, inventory control, and human resource management) and that it operate on commercial principles with full-cost accounting for all transactions. The current subsidy practices, such as the supply of diesel fuel free of charge to the NUC, must cease and be replaced by explicit cash payment. Commensurate revisions to tariff policies and collection practices of the NUC are also necessary.

### **3. ADB Sector Experience and Assistance Program**

10. Previous Asian Development Bank (ADB) technical assistance and staff consultancy supported the reform of the utilities sector through (i) developing legislation for the NUC in 2011, (ii) preparing an inventory of assets, (iii) assisting in preparing a corporate strategy, and (iv) introducing a performance management system for senior management.<sup>6</sup> ADB is currently planning separate technical assistance to support the NUC in the following activities: (i) developing and implementing an asset management and maintenance plan, (ii) improving accounting systems through integration of the asset registry and the financial management information system, (iii) implementing performance management systems for lower-level staff, and (iv) reviewing the corporate governance of the organization.

11. Despite significant progress, a number of weaknesses in the performance of the NUC remain. Until recently, NUC preventative maintenance practices have been inadequate, resulting in maintenance being carried out on an emergency or ad hoc basis. This is changing with the April 2014 appointment of a new generation-manager, funded under grant assistance of the Government of Australia.

12. The NUC depends on imported diesel fuel for almost all power generation. Tariffs are the lowest in the Pacific and do not cover diesel fuel cost. The utility therefore depends on a fuel subsidy from the government. Unclear compensation policies and worker classifications result in inefficient allocation of compensation at the NUC.

13. While an asset inventory was introduced under previous ADB technical assistance<sup>7</sup>, additional improvements are required to the accounting system, in particular through integration of the fixed assets register and the financial management information system fixed asset management module which was recently acquired for the NUC. There is also a lack of management autonomy, despite corporatization. Despite the NUC's newly streamlined governance structure, it is still subject to ministerial oversight and requires Cabinet approval to

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<sup>6</sup> ADB. 2011. Technical Assistance to Nauru for Regulatory and Governance Reform for Improved Water and Electricity Supply. Manila.

<sup>7</sup> See footnote 6.

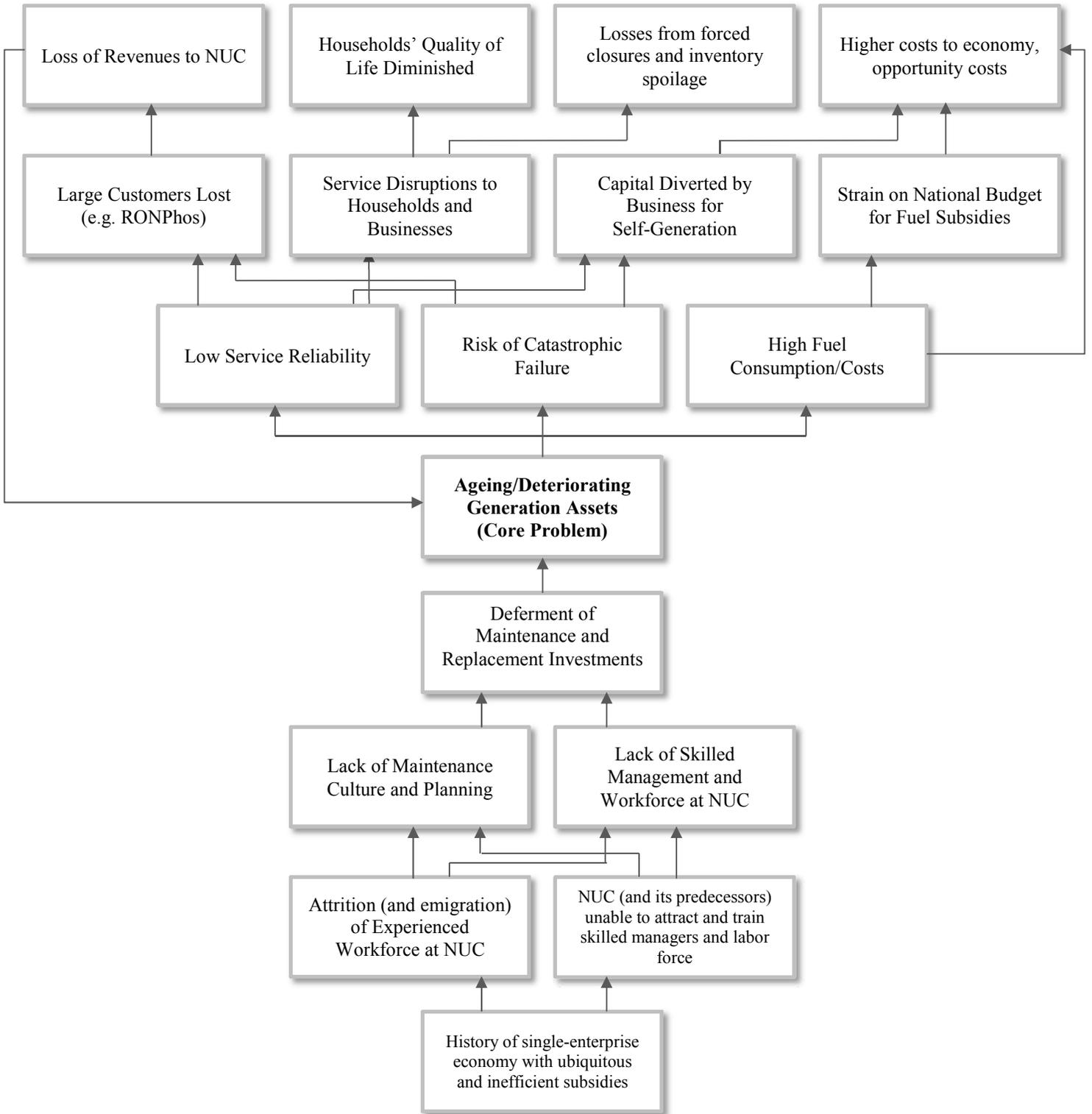
borrow, acquire, and dispose of property, rather than being accountable to an independent board of directors.

14. ADB is scaling up its activities in the Nauru energy sector with the planned approval of the proposed \$4.7 million grant and administration of the Electricity Supply Security and Sustainability Project (cofinanced by the European Union) in 2014<sup>8</sup> Further institutional strengthening of the NUC is required to ensure the sustainability of these investments as well as associated reforms such as the tariff review which will be carried out as part of the grant.

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<sup>8</sup> ADB. 2014. Nauru Electricity Supply Security and Sustainability

**PROBLEM TREE – ENERGY**



NUC = Nauru Utilities Corporation; RONPhos = Republic of Nauru Phosphate Corporation

### Sector Results Framework (Energy, 2014–2016)

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
1. Increased reliability of power service	1. Frequency and duration of unplanned generation outages reduced by 50% by December 2016	1. New diesel-fired generation put into service to supply reliable base-load power for NUC	1. Progress and completion reports of design and supervision consultants; acceptance report of NUC	<b>Planned target subsectors</b> Electricity sector (100%)  <b>Pipeline projects with estimated amounts</b> Electricity Supply Security and Sustainability (NAU-46455, \$2.0 million ADF grant, \$2.7 EU cofinancing)  Institutional Strengthening of NUC (\$0.3 million TASF-IV)	<b>Planned target subsectors</b> Improved reliability and efficiency of NUC's operations; improved business processes at NUC  <b>Pipeline projects</b> 3 MW of new diesel generation installed  Improved asset, personnel, and financial management systems at NUC
2. Lower cost of power generation in Nauru	2. Lower fuel consumption. Baseline: 2010 = 3.4 kWh/liter of diesel consumed  Target: by December 2016 = 4.1 kWh/liter of diesel consumed	2. Improved operational performance of NUC			
3. Improved financial, operational, and governance performance of the NUC	3. Independent board of directors approve annual report by December 2016 Baseline: no independent board of directors (2012)	3. NUC implements asset management and maintenance plan, improved accounting systems, and revised corporate governance arrangements	3. Periodic maintenance carried out four times annually by March 2016. Baseline: none  Balance sheet audited by March 2016; Baseline: none  100% of members of independent board of directors appointed by March 2016; Baseline: 0%	<b>Ongoing projects with approved amounts</b> Project preparatory technical assistance for Electricity Supply Security and Sustainability Project (\$0.4 million TASF-V)	<b>Ongoing projects</b> Project preparatory technical assistance consultants prepare Electricity Supply Security and Sustainability Project for implementation

ADF = Asian Development Fund, kWh = kilowatt-hour, NUC = Nauru Utilities Corporation, TASF = Technical Assistance Special Funds.

Source: Asian Development Bank