



Nadarivatu



FBC

# Fiji

## The Electricity Sector – Road to Resilience



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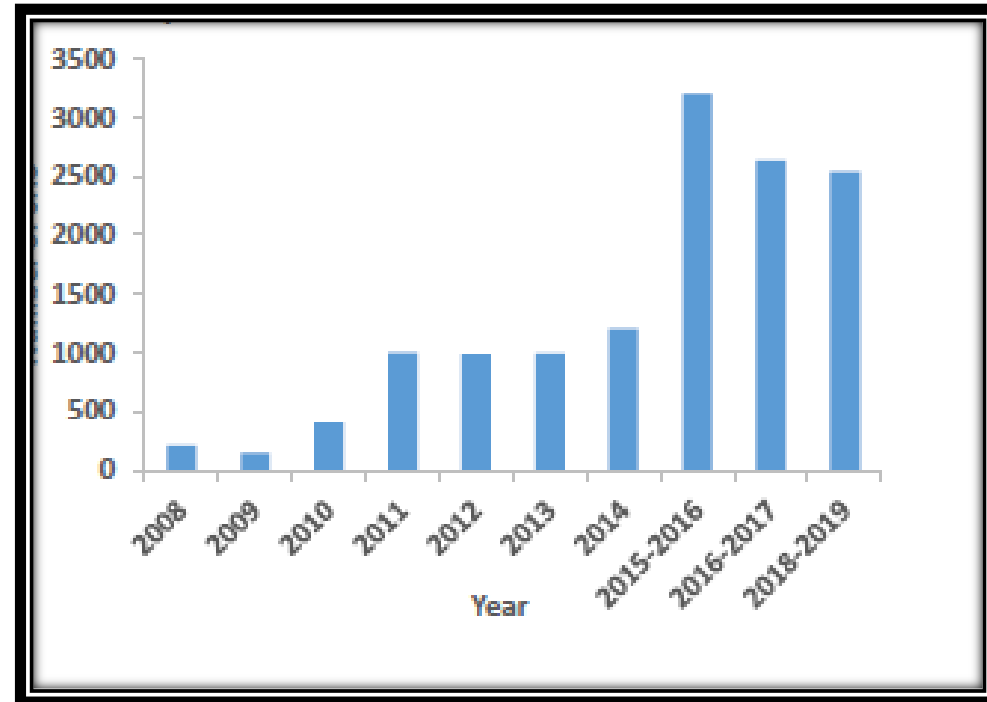


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# Electricity Access in Fiji ( 2020)

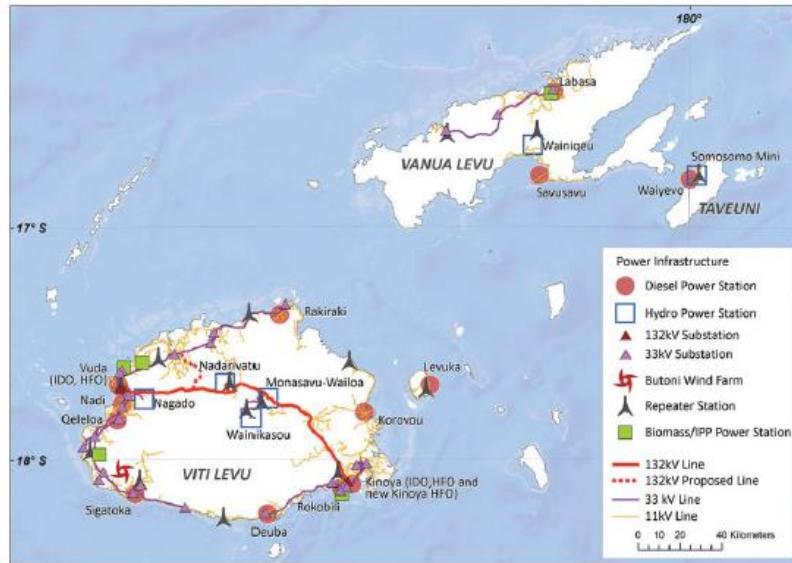
	<u>Number of HH</u>	<u>%</u>
EFL	151,513	78.9%
Solar	23,982	12.5%
None	7,165	3.7%
Other	3,494	1.8%
Village diesel plant	2,795	1.5%
Own generator	2,002	1.0%
Vatukoula Goldmine	404	0.2%
Village hydro plant	323	0.2%
FSC	175	0.1%

Almost 96% have access to some form of electricity – 79% connected to the grid.



Annual Solar Home Systems installation- almost 13,500 in existence.

# Fiji Power Infrastructure

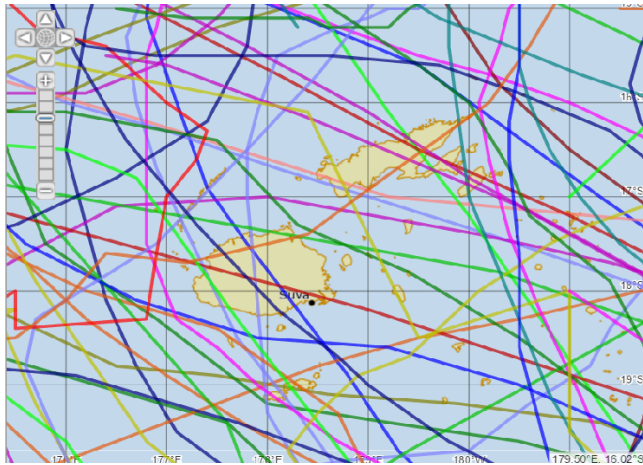


- EFL is exploring running the cables underground : 17.7 % of 33 kV and 8.7% of distribution lines already completed. EFL
- Moving substations and diesel powerhouses to higher grounds will be necessary
- CAT 4 /5 compliant SHS and buildings - Build Back Better

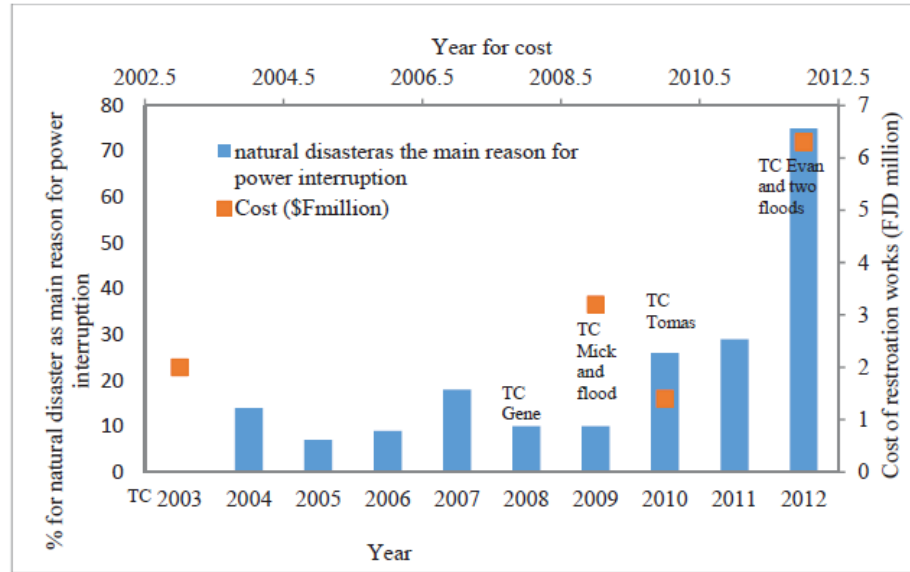
## Fiji electricity sector vulnerabilities to climate change and other shocks

- Changing rainfall patterns affect hydropower production – various RE sources use required
- Substations are subjected to storm surges and floods
- Transmission and distribution lines are exposed to high winds
- Rural diesel minigrid systems are impacted by storm surges and flooding
- Biomass based systems : Supply chain issues
- Solar systems are vulnerable to high winds and flooding

# Cyclones and Electricity Infrastructure



Cyclone tracks over Fiji – Av. 17 cyclones per decade



EFL Cyclone damages :2003- 2012

Cyclone Winston(2016) :  
Overall damages > 2 Billion FJD  
EFL losses : 30.1 Million FJD

	Central	Eastern	Western	Northern
FEA generation, transmission and communication	0	15	15	0
FEA distribution lines (11kV and 415/240V)	30	80	75	30
Rural solar home systems (DoE managed)	n/a	17	53	20
Rural diesel grids (DoE/Community managed)	n/a	22	2	8

10 Million FJD for SHS rehabilitation in recent years.

Damage to the power sector (% assets) Cyclone Winston , 2016

# Climate Change and Cyclones



Giulia Borsa

- Stronger cyclones
- Storm surges and flooding
- Sea level rise- many coastal villages being relocated



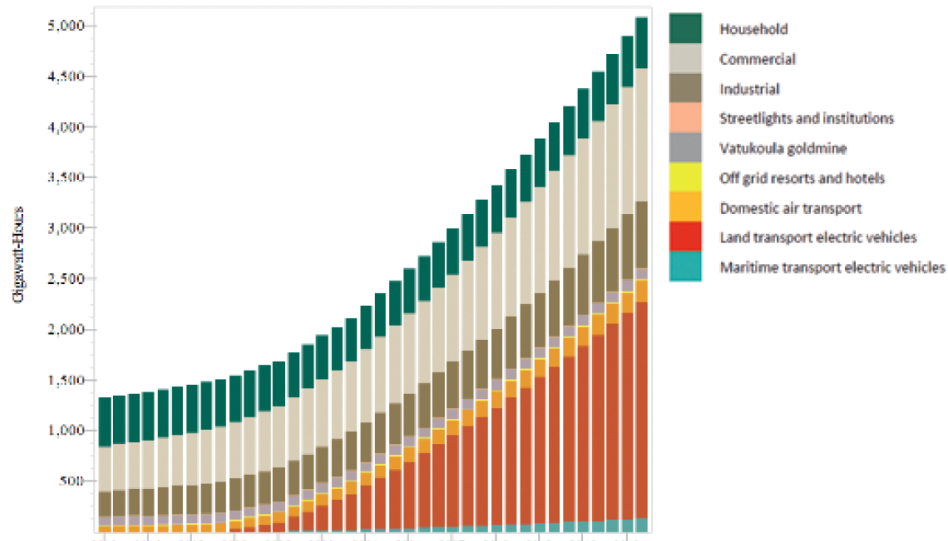
Damaged power lines on Kings Road near Rakiraki, Ra Province, Viti Levu  
Source: World Soilbank/World Bank



2020 : Cyclone Harold and COVID-19

# Fiji's LEADS : Net Zero Ambitions ( 2050)

Figure 19. Demand (GWh) under High Ambition scenario.



Transport will need to be electrified : Multiple RE resources required

Fiji NDC : 30 % emissions reductions with 100% RE electricity by 2036

## Recent developments

- IFC supported 15 MW GCPV in the offing
- Agrophotovoltaics: GCF supported ( 10 M USD) : 4 MW PV + 5 MW BSS

## Solar Future

- Rooftop solar PV
- Strategically placed land based GCPV systems
- Floating solar ( hydro dams)
- Storage –battery + pumped hydro

# Resilience : Everyone's business

- FRDP : 3 goals : Low carbon Development ( second goal)
- FRDP: Climate change adaptation/mitigation and disaster resilience should be integral parts of the national sustainable development initiatives
- FRDP: Whole of Society approach- Civil Society ,Private sector and governments all get involved in the resilience initiatives
- Energy-Water -Food Nexus : no silos anymore
- SDG 7 synergies – energy access impacts many other SDGs. Productive Use of Energy essential for sustainability of off-grid systems.
- Distributed RE based systems for resilient grid system- regulatory framework and incentives for IPPs.
- Community participation crucial for off-grid systems – bottom up design
- Capacity building , equipment certification , accredited training essential for sustainability of off-grid systems.
- Developing Renewable Energy resources is the only way for energy resilience in the PICTS

# Some questions to explore community resilience (off grid)

- What incentives can be created for remote communities to motivate them to take responsibility for their energy systems?
- Are there any financial innovations to reduce the financial barriers to resilient energy infrastructure?
- What technical innovations are there to ensure energy resiliency during and after severe cyclones?