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LifeLong Learning for Energy security, access and efficiency
in African and Pacific Small Island Developing States

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LEAP

Renewable Energy & Energy Efficiency in Small Island Developing States and beyond

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The role of renewable and energy efficiency in the Fijian archipelago- insights from and technology implementations

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Outline of Presentation

1. Overview of the Fijian energy sector
2. The Fiji National Energy Policy
3. Barriers to energy access, security and efficiency (EASE)
4. Solutions and recommendations

1. Overview of Fiji's Energy sector

Location

- Located in the South Pacific (Long 177 E to 178 W, Lat 12 to 22 S)
- Total land area of 18,333 km².
- 300 small islands and two large islands of Viti Lev and Vanua Levu

Energy challenges

Main challenges, shared by other Pacific Island Countries and Territories (PICTs):

- i) Absence of indigenous fossil fuel resources
- ii) Fuel supply chain issues because of the remoteness of outer islands
- iv) Lack of science and technology infrastructure, human resources and institutional and legislative mechanisms

Energy access and security

Fuel imports in 2009

Quantity of imports:

Motor spirits (petrol)	60 million litres
Diesel	260 million litres
Kerosene (aviation fuel)	191 million litres
LPG	16,000 tonnes

Value of imports:

Import type	Value (\$FJD million)	%of total imports
Motor spirits	100	3
Diesel, HFO, other	556	19
Total	656	22

Energy security (cont)

Electricity generation (all sources) and sale (2009)

Type	Production (kWh)	Value (\$FJD)
Industrial	184,000,000	38,000,000
Commercial	343,000,000	82,000,000
Domestic	240,000,000	48,000,000
Other	-	1,000,000
Total	767,000,000	169,000,000

Energy access and security (cont)

Energy access to the average family

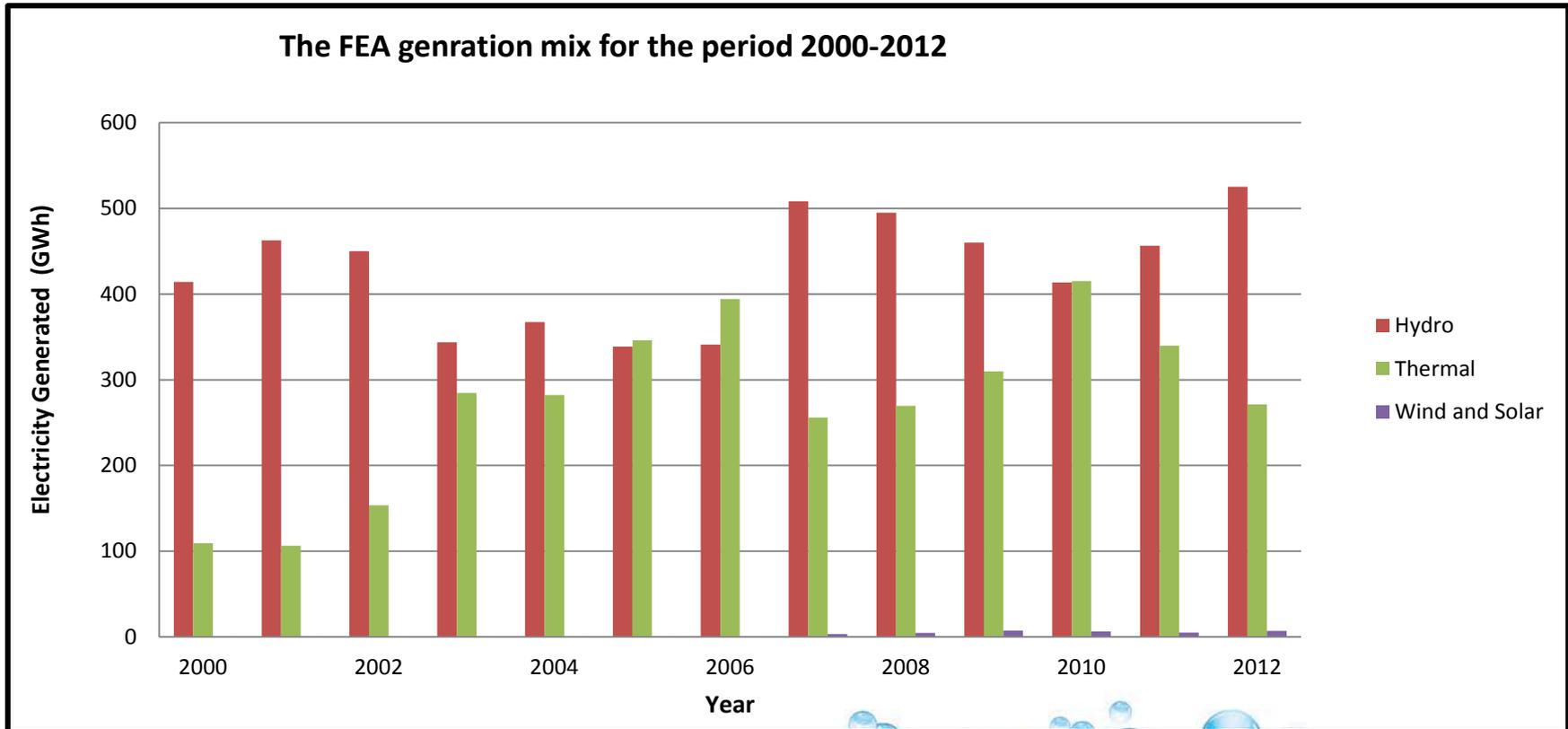
Table 1 Energy security indicator profile for Fiji and the Forum Island Countries (FICs) – 2009 (data extracted from (SPC 2012).

Energy security indicator	Fiji	Average for FICs
Electrification rate (%)	72	23
Access to small power rural (%)	12	8
Access to modern energy rural (%)	86	36
Access to modern energy urban (%)	96	77

Power generation

- Hydro-energy the main source of energy in Fiji for the national power supply system
- 80 MW Monasavu Hydro Scheme in 1983 on the main island of Viti Levu
- 40 MW Nadarivatu hydro scheme commissioned in September 2012
- Two IPPs currently contribute 2-3% towards national generation
- The total peak load for all the grid systems is estimated at 138 MW. FEA has a total installed capacity of about 215 MW.
- In 2012 about 64% of the electricity was generated from hydro and 33% from diesel generators. (~3% from biomass (bagasse and hog fuel and wind)
- Most recent government estimate - the FEA provides grid connected power to 89% of the Fiji population

Grid power



Rural electrification



Rural = outer islands (maritime region) and interior of larger islands where grid electrification absent

- the use of small diesel genset-based village grids, individual Solar Home Systems (SHS), mini hydro and biofuel powered plants.

Table 2. Rural power generation technologies available in Fiji in 2013 (data source: Fiji Department of Energy (2014))

Technology	Number	Total Power (kW)	% of total
SHS	3100	240	1.6
Mini hydro	1	100	0.7
Mini hydro	1	30	0.2
Biofuel (20/80)plants	4	120	0.8
Diesel units	500	14,071	96





2. The Fiji National Energy Policy

First implemented in 2006

- Revised in 2013 to take into account the developments

Main objectives to

- provide all Fijians with access to affordable and reliable modern energy services
- establish environmentally sound and sustainable systems for energy production, procurement, transportation, distribution and end-use
- increase the efficient use of energy and the use of indigenous energy sources to reduce the financial burden of energy imports on Fiji



Energy Targets



Table 3: Targets for Fiji's energy sector:

Indicator	Baseline	Targets		
		2015	2020	2030
Access to modern energy services				
Percent electrification	89% (2007)	90	95	100
Population using wood fuels	20%(2004)	18	12	0
Improving energy efficiency				
Energy intensity (fuel consump. per unit GDP (L/FJD)	0.08(2011)	0.079	0.079	0.077
Energy intensity (power consump. per unit GDP (kWh/FJD)	0.23(2011)	0.219	0.215	0.209
Share of Renewable Energy				
RE share in power generation	56%(2011)	67%	81%	100%
RE share in total energy consumption	13%(2011)	15%	18%	23%



3. Barriers to energy access, security and efficiency (EASE)

- i) lack of basic capacities
 - (human resources at all levels – technicians, trainers, entrepreneurs, decision makers; legislative framework)

- i) Access to reliable and timely data
 - (decision-makers need data to make informed decisions)

- i) Barriers to to the development of IPPs
 - (FEA is still supplier and regulator; feed in tariffs not lucrative; no net-metering legislation encourage home-owners to sell to grid)

- i) Slow rate of technology transfer
 - (e.g. biogas technology known in other countries but Fiji still trying to re-invent the wheel)

4. Solutions and recommendations

- i) Legislations to encourage RET import and biofuel production

- i) Fiji Renewable Energy Power Project
 - (a GEF-funded project to „remove all barriers to private sector investment in the generation of grid-connected RE-based power in Fiji“, including energy policy and regulatory framework, RE resource assessment and project assessment; RE-based power generation demonstration and institutional strengthening)

- i) PRDR (Pacific Regional Data Repository)
 - (see <http://prdrse4all.spc.int>)

Observations

- *The development of the energy sector in the Pacific is constrained by a variety of factors that makes progress slow in most cases and minimal in others.*
- *The FREPP project recognizes the importance of the global approach by adopting a holistic and concerted methodology for the process of attracting more SME investors into Fiji.*

Recommendation

Similar methods and projects such as FREPP are required in the human capacity development sector to finally overcome the inertia that is resisting change.

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Thank you for your attention!