



RENEWABLES

Off-grid and mini-grid development in the Pacific – challenges and opportunities

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- Pacific countries have seen rapid growth in larger-scale grid-connected PV systems
- Challenges for grid-integration and land availability
- Smaller-scale renewable energy opportunities
- Many communities still have limited or no electricity access
- Study the existing market and opportunities for smaller-scale renewable energy across Pacific and Timor-Leste
- Possible ownership models

- Main Grid – larger distribution networks, covering capital cities and surrounding areas (10MW)
- Mini-grid – smaller grids typically serving one island or village (under 10MW)
- Stand-alone/off-grid – individual systems serving only one building or facility

- Opportunities for private rooftop solar in some countries
- Examples Dili (Timor-Leste), Majuro (RMI), South Tarawa (Kiribati) and Pohnpei (FSM)
- Not possible in some other countries due to “saturation”



- Originally most systems were donor-financed on public buildings
- Now, rooftop PV Financially attractive for private buyers
- Commercial/industrial/tourism most common
- Private households less common, except where there have been incentives
- Some countries have a relatively mature local PV market (eg Fiji)
- Benefits go to building owner

- O&M – relatively straightforward if there are local companies/technicians with relevant skills
- Can be done through partnerships:
- Eg in Timor-Leste, O&M was done through a partnership between a local training organization and an Australian partner, the Alternative Technology Association

Mini-grids



- Historically diesel powered
- Now more commonly PV-battery powered
- Typically utility owned/operated
- Other models possible – private or community-owned



- Higher level of service
- Higher cost than individual systems due to need to build a distribution network
- Operation and maintenance – requires full-time staff
- Benefits the community

- Typically at least 100 households (eg Solomon Power)
- “Anchor” load – a relatively large load
 - Kolombangara Island (Solomon Islands): Kolombangara Forest Products operate a mini grid on this island and also provide power to the community
 - Ovalau Island (Fiji) – a tuna processing factory is the largest load on the island

- Ownership and operation models?
- Mostly operated by utilities
- Higher cost to operate, but often in areas with lower incomes
- Often cross-subsidised
- Usually not financially attractive for private ownership model (some exceptions)
- “Hybrid” models possible (eg donor capital funds, private O&M contract)
- Other options?

- Individual household systems – typically solar PV kits, micro-hydro, small generators
- Range in size from small lighting kits to larger systems that can power AC
- Relatively low-cost but lower level of service



- Many opportunities in countries with low electrification
 - PNG, Vanuatu, FSM, RMI, Kiribati, Solomons
- Mix of donor funded programs and private local companies
- O&M can be a challenge – cost and technical capability
- Partnerships can be helpful
- Ongoing O&M training is necessary

- Larger stand-alone system at a community facility (eg community centre, school, church)
- Facilities that can be used by the entire community (electronics, washing machines, etc)
- Can also supply neighbouring houses
- lower cost than a full mini-grid



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