

Workshop on High Penetration Variable Renewables in Pacific Island Countries: Small grids and Off-grid

UNSW Sydney

7 December 2018

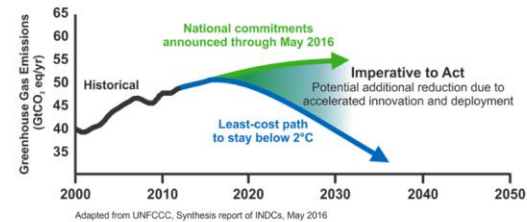


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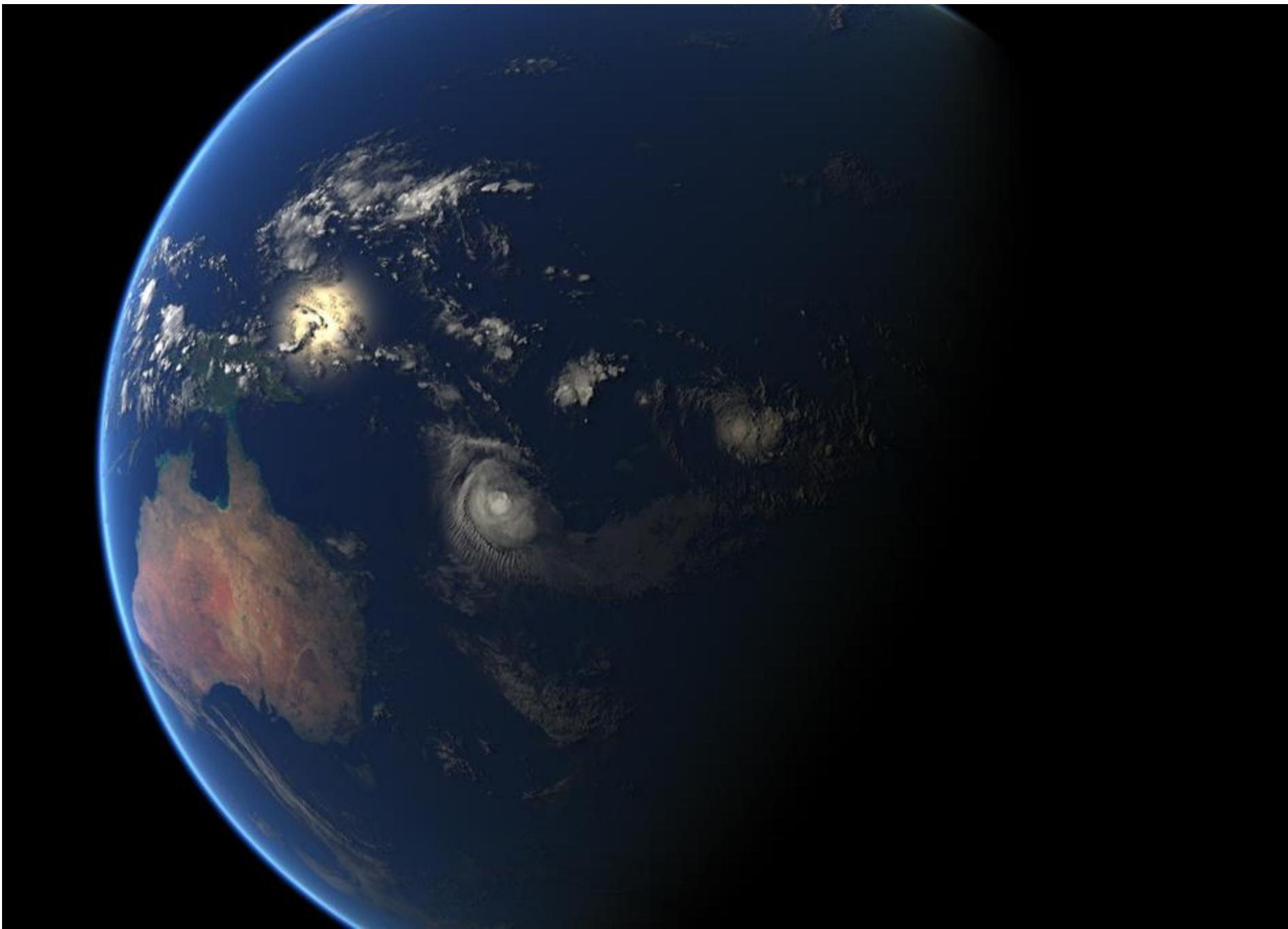


Imperative to Act

The global community has made remarkable progress in driving down the costs and increasing the use of key clean energy options. However, these impressive gains are still insufficient to meet our long-term climate goals while providing affordable, reliable, and secure energy supplies.

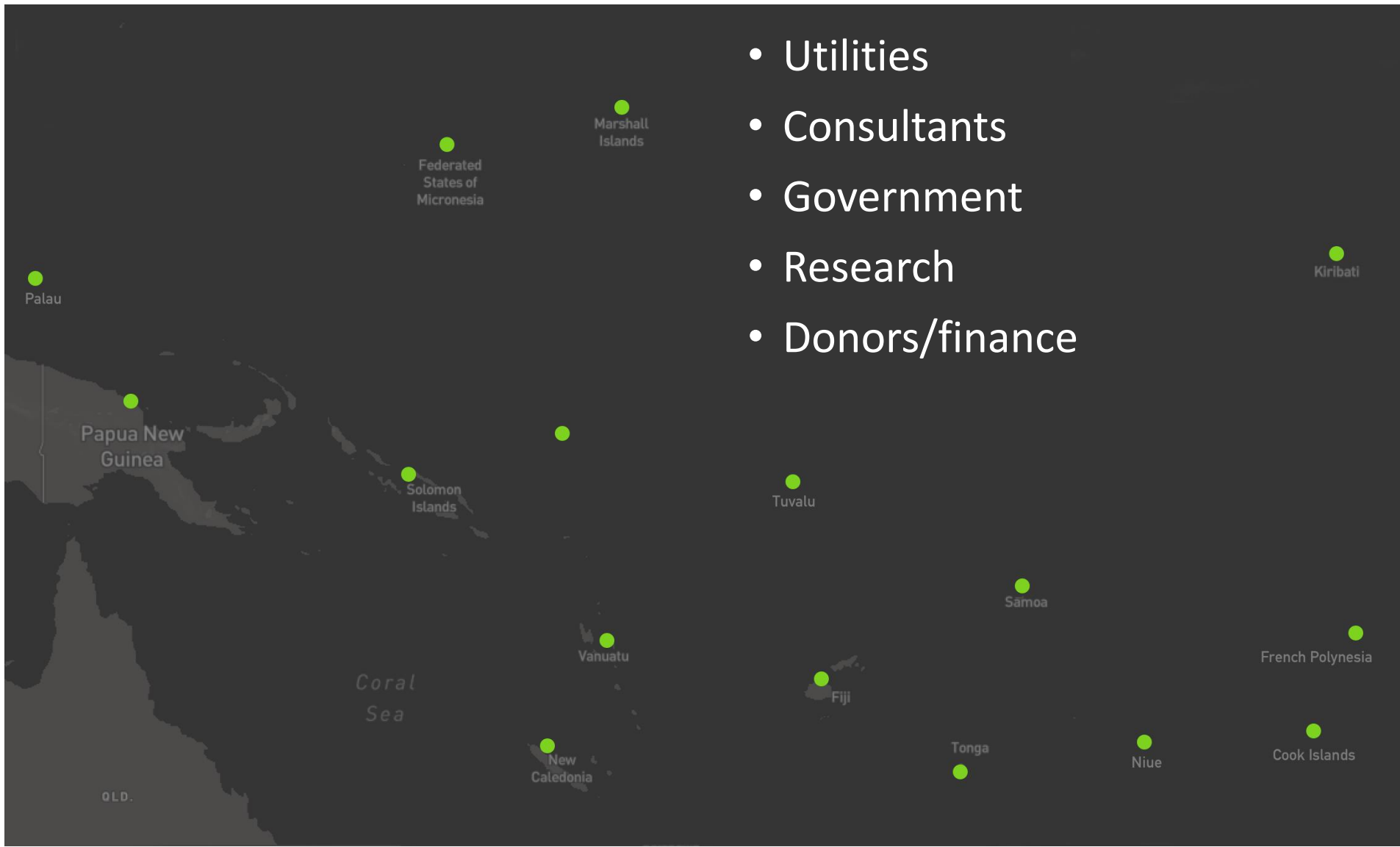


UNSW's Institute for Global Development acts as a catalyst for the UNSW community to deliver on the UN Sustainable Development Goals, working in partnership to positively transform lives and advance a just society.



Workshop participants

- Utilities
- Consultants
- Government
- Research
- Donors/finance



Our task



- Discuss challenges and opportunities of introducing more variable renewable energy into small grid and off-grid contexts in the Pacific
- Hear from a range of invited speakers regarding the status of Variable Renewable Energy Integration, key challenges and solutions to facilitate high penetrations of these renewables in small grids, and improved off-grid energy service delivery
- Identify potential future work to address key issues and themes arising in the discussion

Renewables have never been cheaper



#Renewables4Climate



**RENEWABLE POWER:
CLIMATE-SAFE ENERGY
COMPETES ON COST ALONE**



RELATED CATEGORY: solar home systems with battery storage

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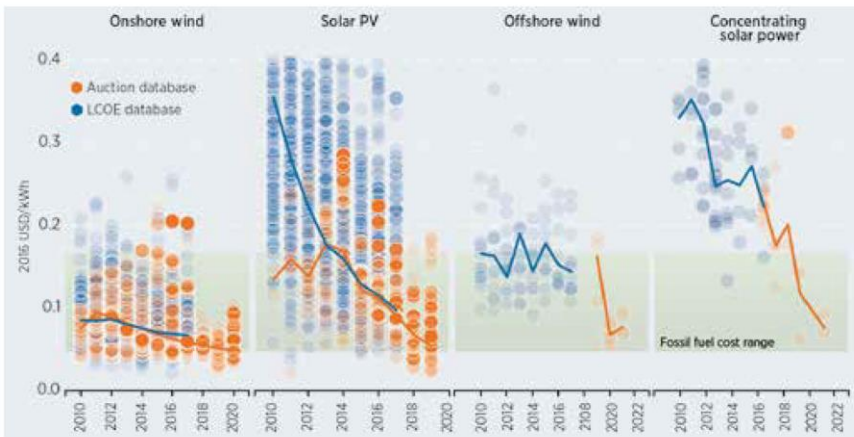
60w home lighting solar energy storage system with battery backup
 US \$145.00-\$165.00 / Set
 1 Set Min. Order
 Application: Home
 Specification: Mini
 Solar panel: 18V 60W poly panel
 Type: off grid system
 Place of Origin: Guangdong,China (...)
 Brand Name: OEM
 6 YRS Shenzhen YHD Electronic Co., Ltd.
 Gold Supplier Trade Assurance
 Transaction Level
 China (Mainland)
 9 Transaction(s)(6 months) Response Rate
 \$ 60,000+ 79.3%
 Contact Supplier Leave Messages

300w-500w 12v home solar electricity storage 40ah battery system power generation with TV
 US \$145.00-\$245.00 / Piece
 1 Piece Min. Order
 Application: Home
 Specification: Normal
 Type: AC/DC Solar Generator
 Color: KEYE or OEM
 Place of Origin: Guangdong,China (...)
 Load Power (W): 300W - 500W
 1 YR Guangzhou Keye Electronic Co., Ltd.
 Gold Supplier Trade Assurance
 Transaction Level
 China (Mainland)
 Response Rate
 77.8%
 Contact Supplier Leave Messages

Camping portable generator inverter battery solar mini home power energy storage system with low price
 US \$236.00-\$248.00 / Piece
 1 Piece Min. Order
 Application: Commercial,home & out...
 Specification: Mini
 Color: Black
 Certificate: CE RoHS
 Material: Aluminum Alloy
 Warranty: 12 months
 2 YRS Shenzhen GreenBar Smart Electronic...
 Gold Supplier Trade Assurance
 Transaction Level
 China (Mainland)
 10 Transaction(s)(6 months) Response Rate
 \$ 5,000+ 95.2%
 Contact Supplier Chat Now!

Rosen Home Solar 5kw PV Panels Hybrid Storage System with 5kw Battery
 1 YR Hefei Rosen Solar Energy Technology ...
 Gold Supplier Trade Assurance

Figure 2: The levelised cost of electricity for projects and global weighted average values for CSP, solar PV, onshore and offshore wind, 2010-2022



The need has never been greater



The Washington Post
Democracy Dies in Darkness

Energy and Environment

'We are in trouble.' Global carbon emissions reached a record high in 2018.

As nations assemble in Poland for climate talks, the figures suggest there is no clear end in sight to the growth of humanity's contribution to climate change.



As environmental activists protest in Brussels, the United Nations' climate change talks begin in Poland on Dec. 2. (Reuters)



Katowice Climate Change Conference – December 2018



What exists is possible



This seven-acre solar plant now provides all the power used on Ta'u Island.

PHOTOGRAPH BY DANIEL LIN

How a Pacific Island Changed From Diesel to 100% Solar Power

The island of Ta'u in American Samoa now boasts a solar microgrid from Tesla's SolarCity.

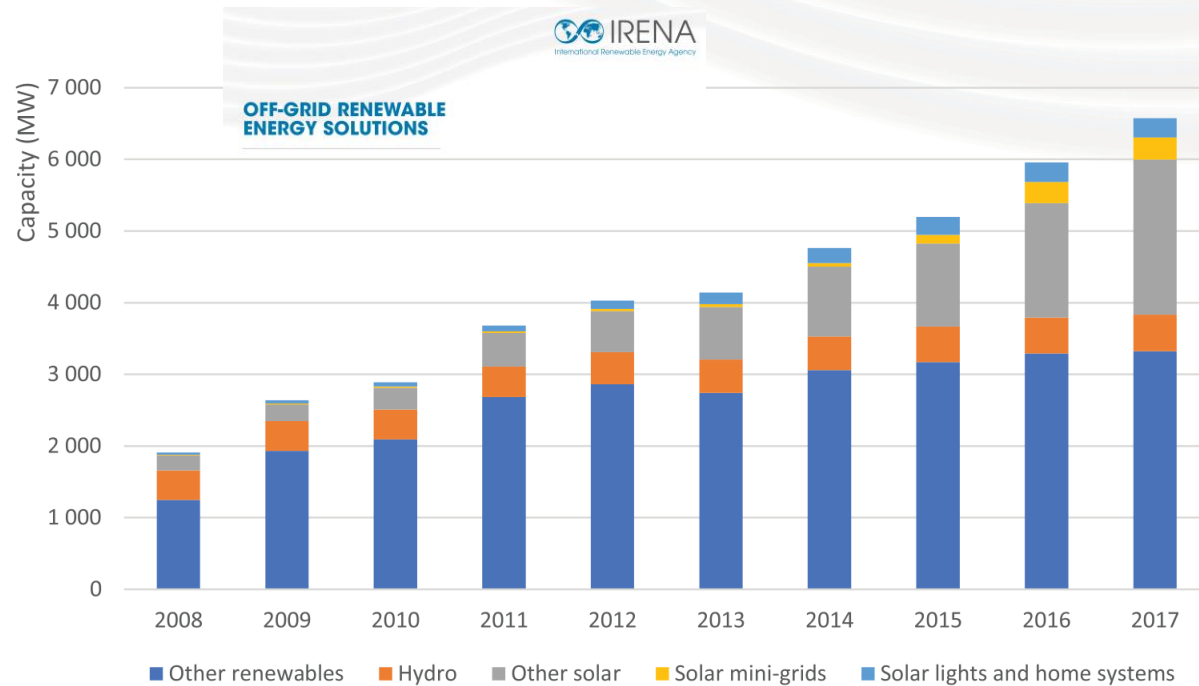
Momentum is growing

Actions and support before 2020: where are we?

Paving the way for progress under the Paris Agreement



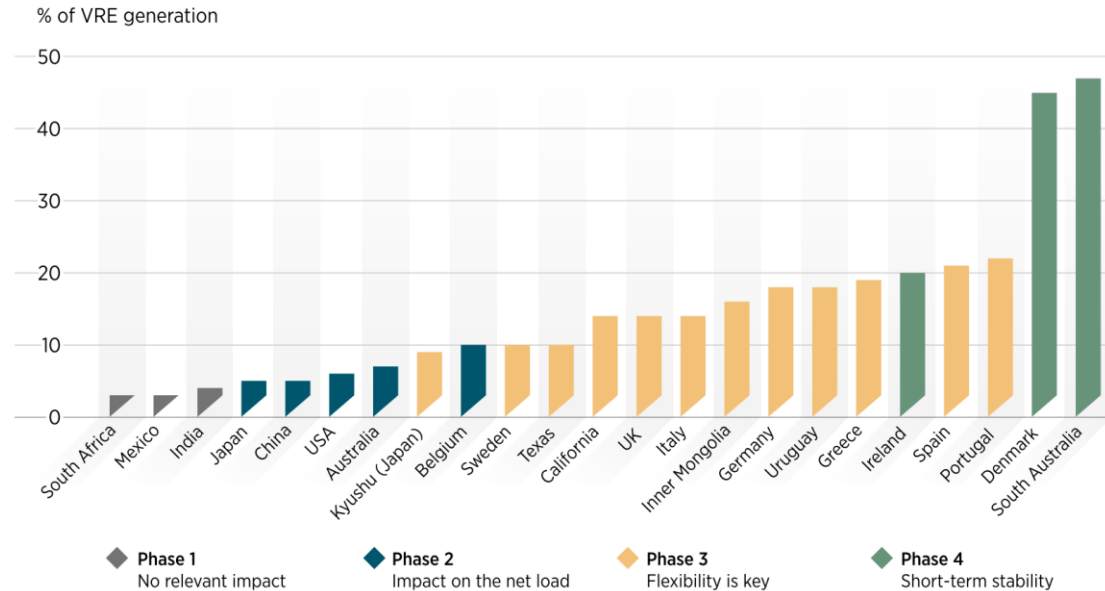
Figure 2: Capacity of off-grid renewable energy solutions globally



However

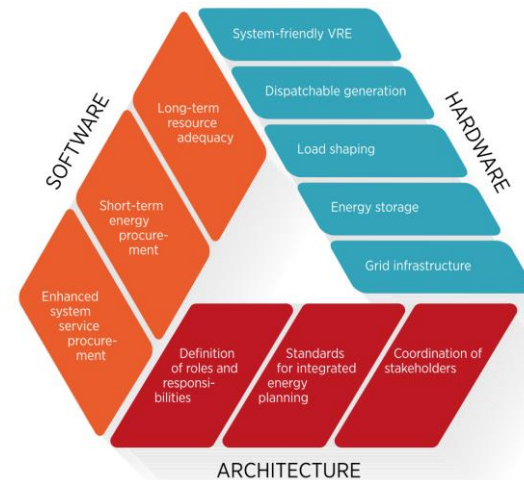
Affordable, secure and environmentally sound integration of high penetrations of variable renewables into small island grids and off-grid systems remains a challenge

- A challenge with shared but also unique characteristics
- And varied perspectives
 - Engineering and technology
 - Economics and planning
 - Financing and investment
 - Policy and governance
- And key actors
 - Utilities
 - Consultants
 - Government
 - Research
 - Donors/finance



Some key questions

- *What do we, as a key stakeholder, need to do better?*
- *What are key actions from the other stakeholder groups that would better support your work?*



The Day



Program

- 10-10:15** Introduction to the Workshop, Iain MacGill, CEEM UNSW
- 10:15-10:35** Overview of Status and Challenges for RE in the Pacific, Atul Raturi, USP
- 10:35-10:55** Roadmaps for VRE Upscaling - challenges & issues, James Hazelton, IT Power Australia
- 10:55-11:15** Utility experience in the Pacific region with high penetration VRE, Andrew Daka, PPA

Break

11:30-1:15 Panel Presentations and Discussion: Technical and Planning Challenges and Opportunities

- Tiaon Aukitino, Kiribati Public Utilities Board
- Saad Sayeef, CSIRO
- Pesalili Tohi, Tonga Power
- Chris Martell, GSES
- Janendra Prasad, Solomon Power

Lunch

2:15-4 Panel Presentations and Discussion: Financing, Policy and Governance Challenges and Opportunities

- Anthony Maxwell, Asian Development Bank
- Kamleshwar Khelawan, World Bank
- Vanda Faaso Chan-Ting, Ministry of Natural Resources & Environment, Samoa
- Muriel Watt, IT Power Australia
- Katerina Syngellakis, GGGI

4-4:30 Conclusions

- Key themes and issues emerging from the workshop, priorities, future work, opportunities for collaboration