

Energy resilience and disasters in the South Pacific: political economy dynamics, community responses and planning

4th December 2020

Second Urban Resilience Asia Pacific Conference

Anna Bruce, UNSW

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Session plan



Share work we
have been doing



Workshop
outcomes



Panel discussion

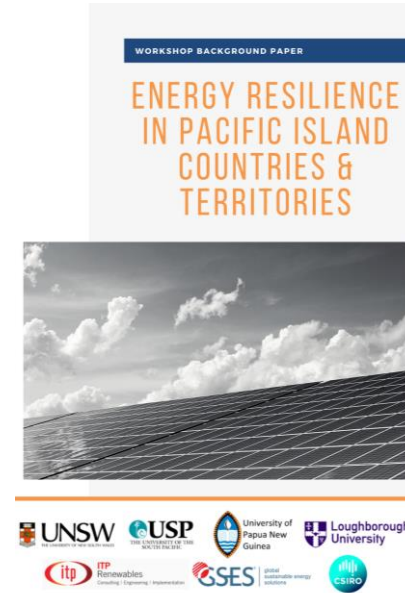
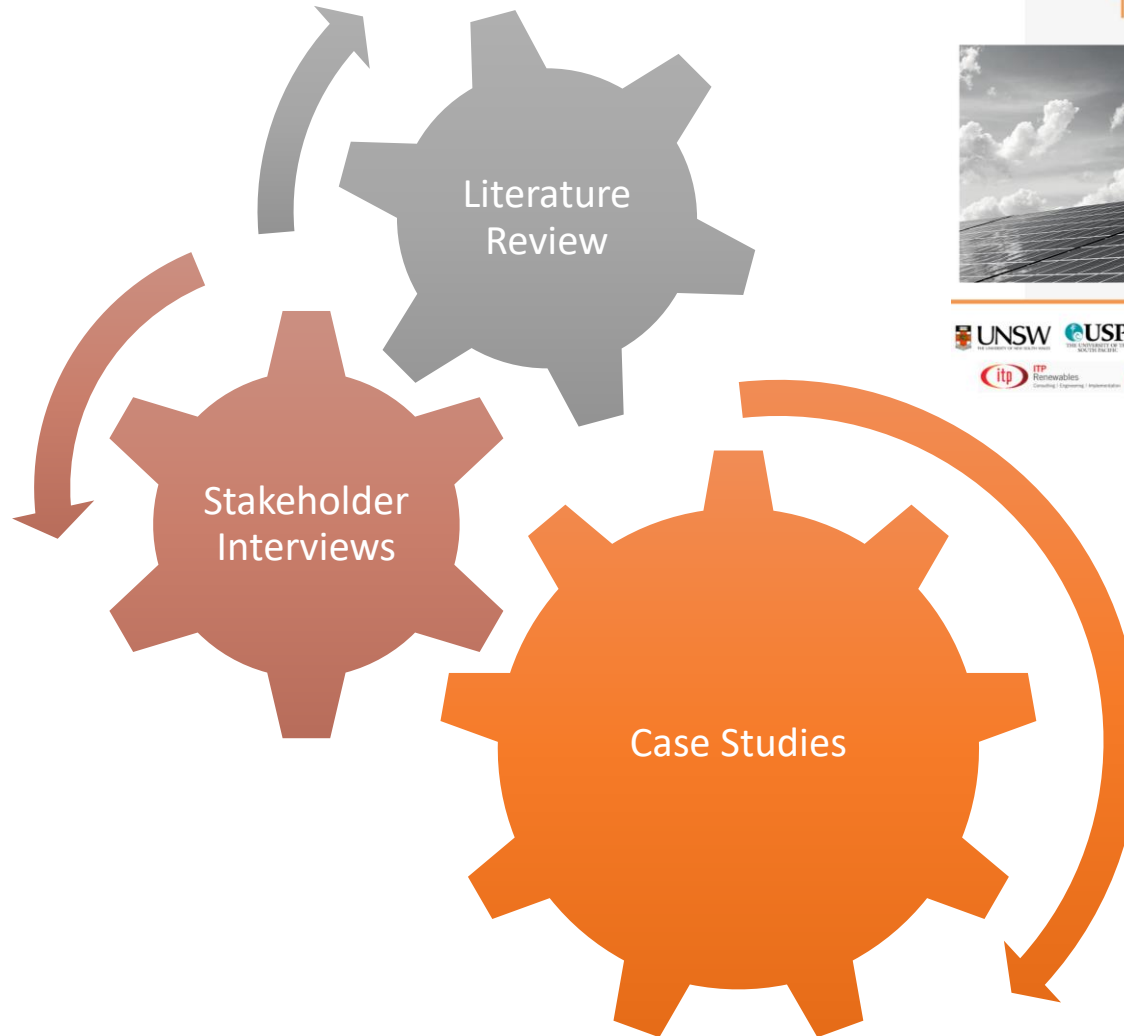
‘Resilience in an energy system can be defined as its ability to reduce the impact of shocks and stresses, including the capacity to anticipate, absorb, adapt to, and rapidly recover from such events and to transform where necessary.’ (ARUP 2019)



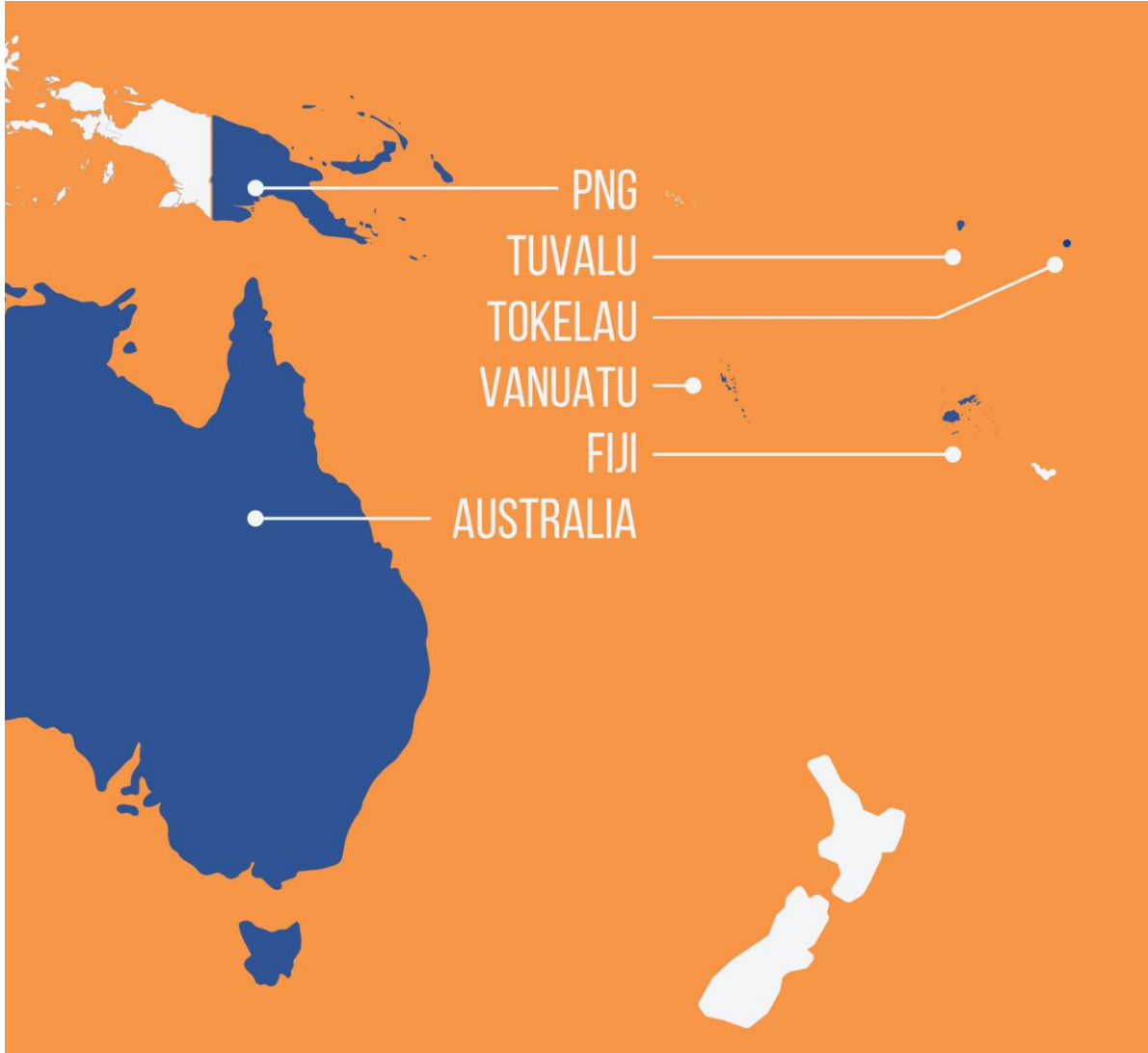
Workshop Series



Background Paper



Authors: Darcy Small, Ashleigh Nicholls, Thomas Jeffrey, Anna Bruce, Iain MacGill, Paul Munro, Atul Raturi, Manu Rawali, Long Seng To



Case Studies

- PNG: abundance of energy sources
- Tuvalu: community-based initiatives and champions
- Tokelau: transition to 100% solar
- Vanuatu: community resilience framework
- Fiji: response to cyclones
- Australia: recent bushfires

Planning and investing in more resilient energy systems

Part 1 of a series on Energy Resilience in Pacific Island Countries and Territories

Anna Bruce, Iain MacGill, Atul Raturi, Manu Rawali

Collaboration on Energy and Environmental Markets (UNSW Sydney), University of the South Pacific,
University of Papua New Guinea



1st December 2020

Framing

- What is planning in the electricity industry context? Setting goals and trajectories, making decisions now for the future, investments.
- Resilience – a new buzzword?
- Planning processes (not plans) are what we need
 - NREL energy resilience planning framework is multi-stakeholder and process driven
- Many planning frameworks – mainly focused on industrialised economy perspective – context matters

Scope of the workshop

- Electricity industry planning: generation -> distribution -> end-use
- On-grid and off-grid
- Interactions between technology, communities, broader institutions and resilience



Apisake Soakai, Independent
Consultant

Akuila Tawake, Geoscience,
Energy and Maritime (GEM)
Division of SPC

Julia McDonald, ITP Renewables
Australia

Manu Rawali, University of PNG
and UNSW Sydney

Atul Raturi, University of the
South Pacific



Fiji
Australia
Tokelau
PNG

Panel Discussion

Case Studies

Key Vulnerabilities, Opportunities and challenges

Key Vulnerabilities and Challenges for Energy Resilience in PICTs

- Challenging conditions – climate & weather, remoteness
- Dependence on imported fuels
- Small scale, lack of capacity
- Land scarcity/conflict
- High VRE penetrations increasing complexity for planning
- Planning across grid and off-grid
- Donor driven project-based delivery

Key Strengths

- Existing regional orgs
- Existing resilience
- Strong customary and kinship ties

Insights emerging from the workshop

- We need planning and planning trajectories (not one-off plans) and a review process
- Leveraging a regional approach with interface to national planning to overcome challenges of scale and capacity (via existing regional mechanisms)
- Tie energy with other goals, water, health, education, income-generating applications which meet priorities and increase resilience
- Build capacity, autonomy, transparency and accountability for decision making
- Improve ongoing data collection and tools for planning
- Quality (cat 5 cyclone rating) vs self-sufficiency, diversity

Energy Resilience and the Political Economy of Off-Grid Solar

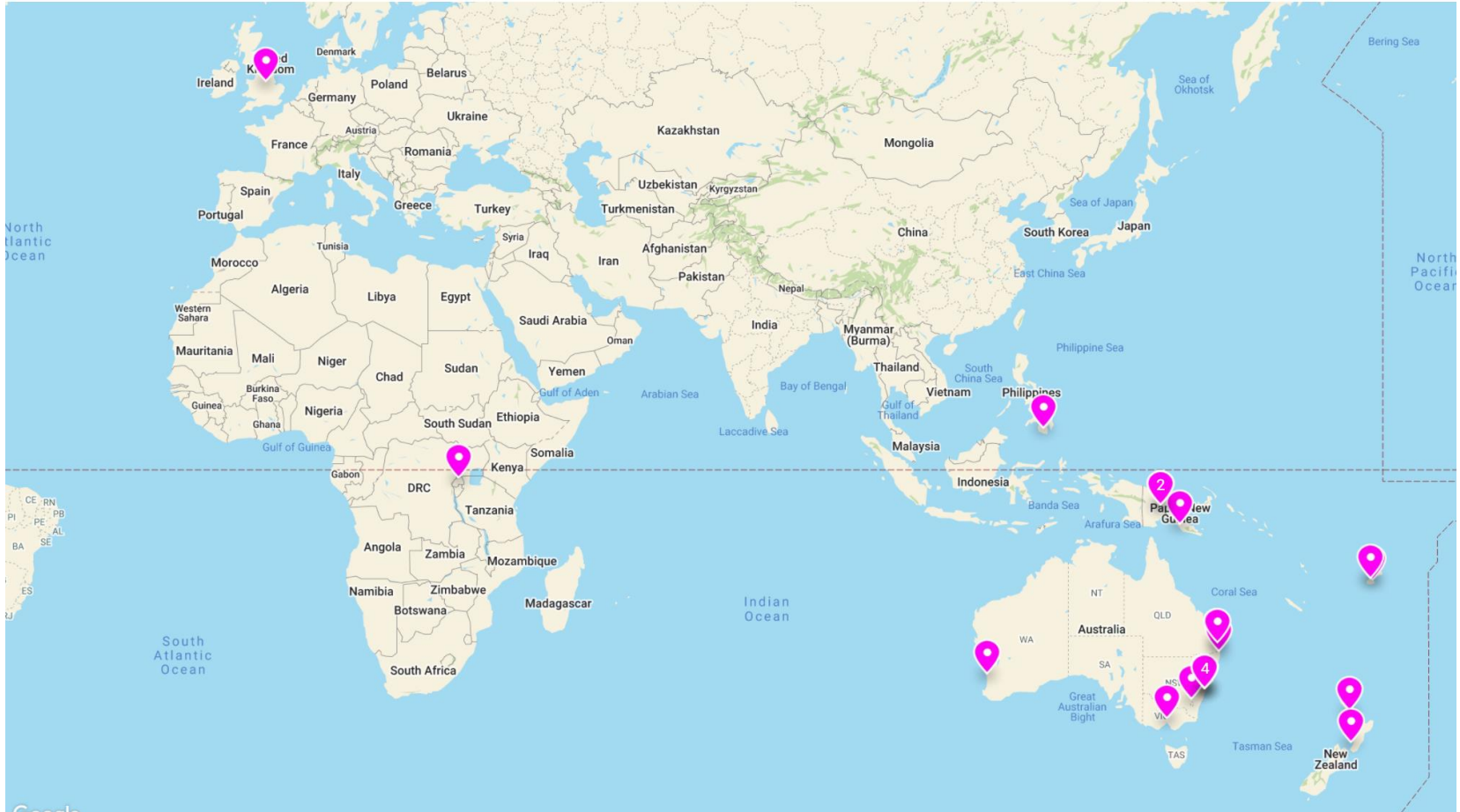
Part 2 - Workshop Series: Energy Resilience in Pacific Island Countries and Territories

Paul Munro

Faculty Arts, Design and Architecture
University of New South Wales

Merian Institute for Advanced Studies in Africa
University of Ghana





Google

Panel Discussion



Dr Iwona Bisaga

Research Associate, Loughborough University



Sam Grant

Director of Energy Access, CLASP



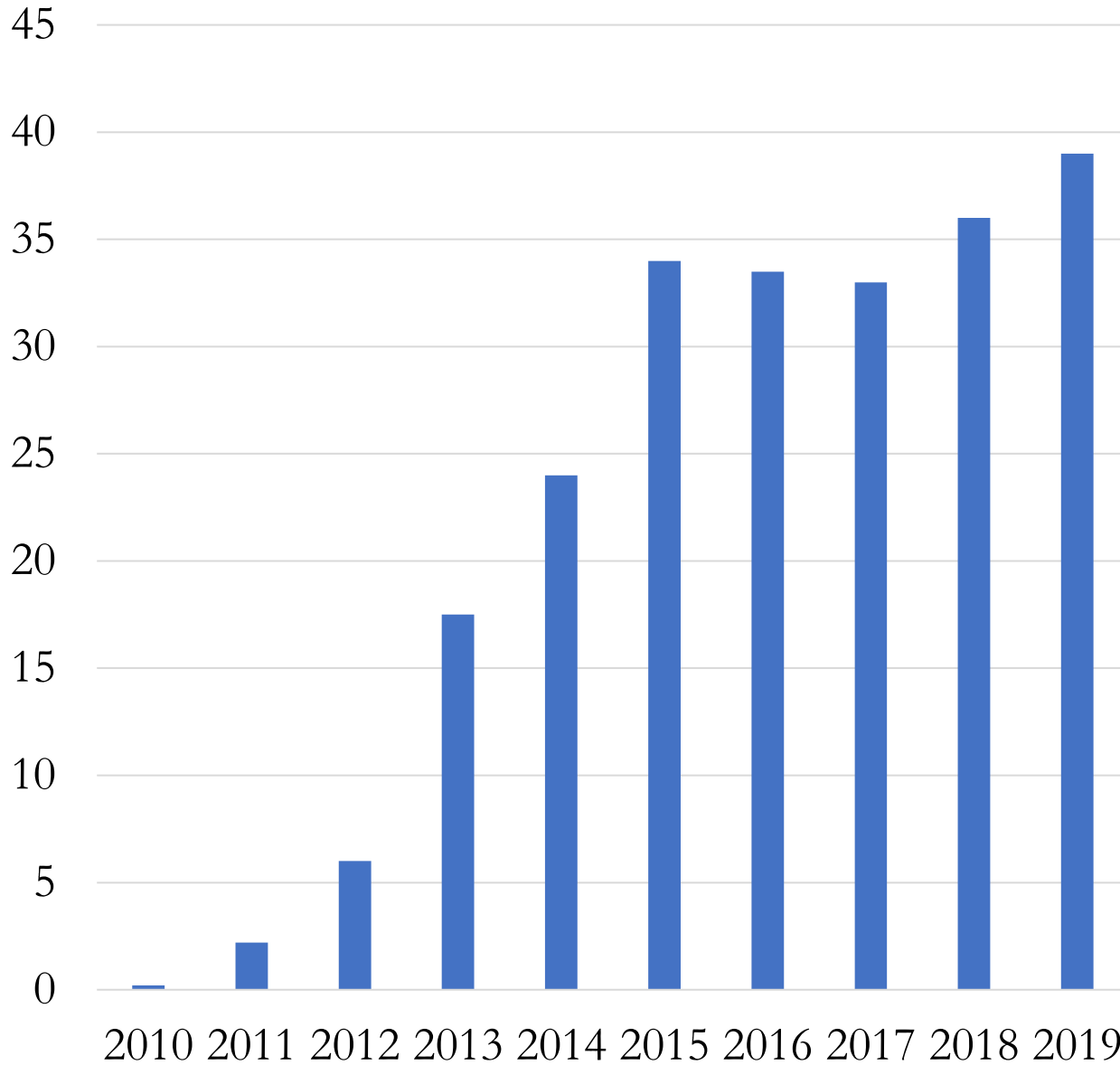
Shanil Samarakoon

Director / Co-Founder, Zuwa Energy

PhD Candidate, University of New South Wales

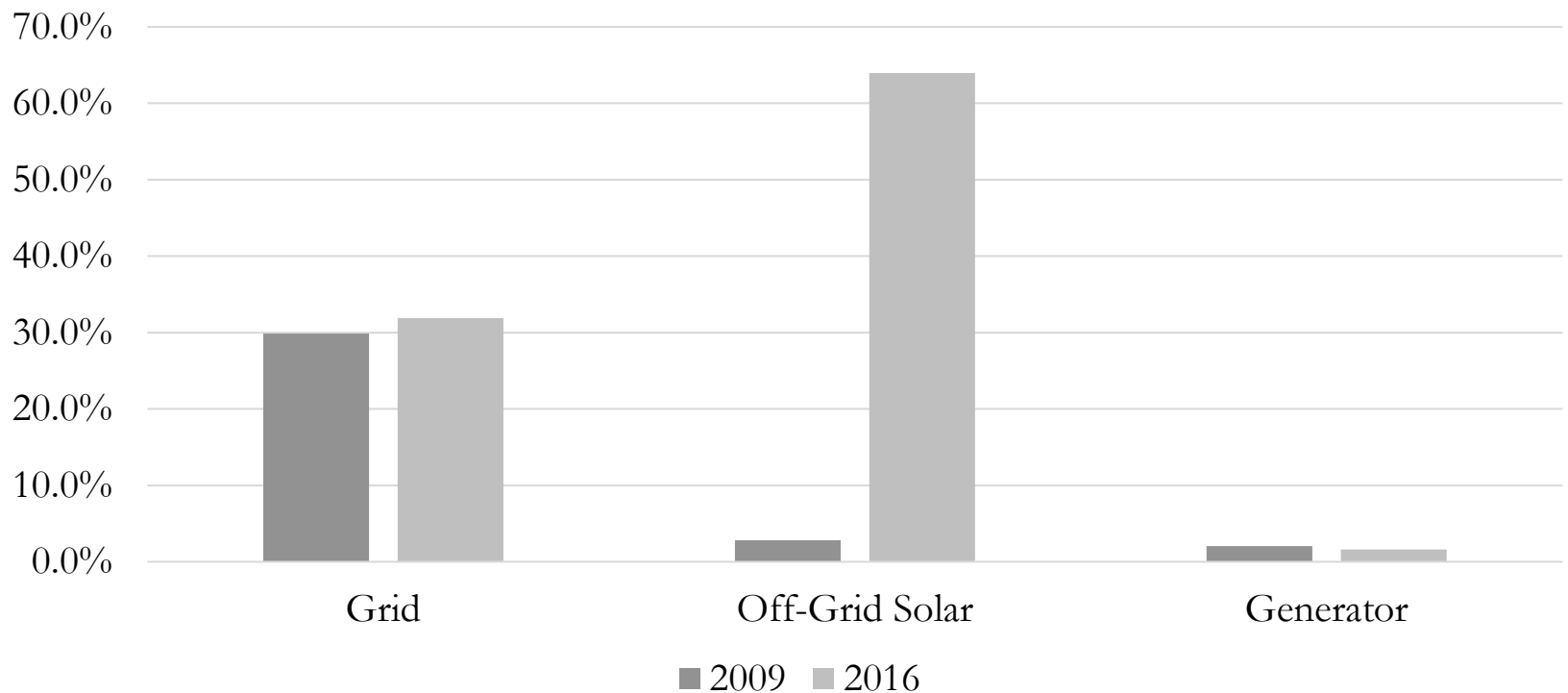
Off-Grid Solar





Off-Grid
Solar
Sales (in
millions)

Vanuatu: Main source of electricity for lighting (2009 versus 2016)



Off-grid solar and energy resilience: some initial observations

- Government programs or subsidies needed to ensure that off-grid solar products reach the poor of the poor. Otherwise – levels of energy resilience is mapped across socio-economic levels.
- Off-grid solar can often be an urban phenomenon – households use SHS to economise grid electricity use, or as a backup (a form of energy stacking).
- Certification and standards needed to ensure that products people are buying are of quality.
- Problem of maintenance – an individual (rather than government) responsibility – differs from grid.



Workshop – 3

Community energy resilience strategies in response to disasters

3rd December 2020
Chairs : Long Seng To and Atul Raturi



Workshop Rationale

- Communities in PICTs face multiple short-term shocks and long-term stresses including cyclones, ecological degradation, global climate change and COVID-19. These factors threaten progress towards the Sustainable Development Goals (SDGs), including the SDG 7. There is an urgent need to address energy resilience. Communities have their own understanding of resilience and act strategically to gain or maintain energy access in the face of disasters.
- In this workshop, we discussed the role of communities in creating greater energy resilience and the contribution of energy systems to community resilience. The workshop was an opportunity to share experiences, collectively identify research priorities and contribute to a briefing on the role of community energy resilience in the region.

Panel Members

Speakers:

- Ms. Pauline Komolong : Independent WASH consultant
- Ms. Makereta Lomaloma : Secretariat of the Pacific Community
- Ms. Katerina Syngellakis : Global Green Growth Institute

Discussant:

Mr. Peter Johnson : Independent consultant

Community Engagement

Pauline

Community Engagement Process *(Community engagement in the Water and Sanitation experience)*



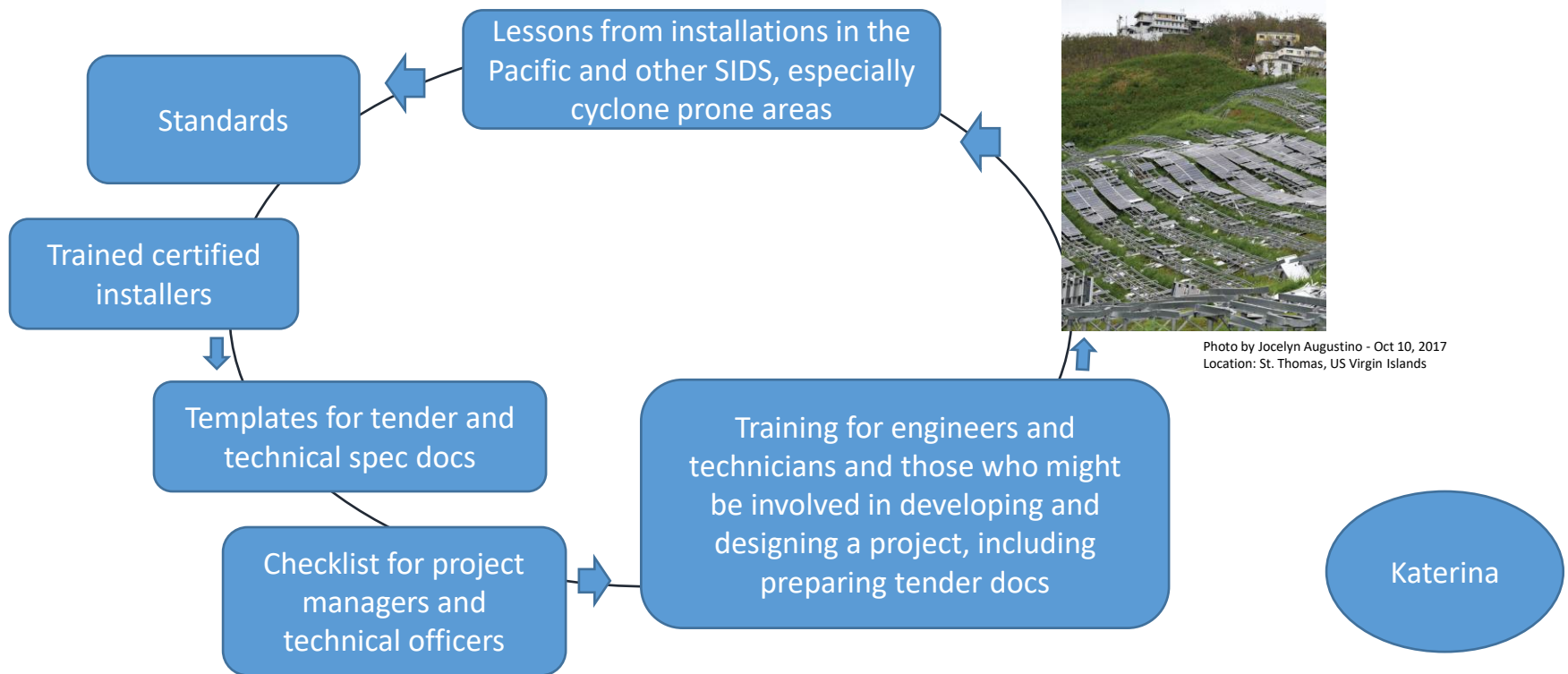
- ❑ **Level of discussion with the community?**
 - Community expectations, designs, community contribution, local knowledge, local capacities, land boundaries and agreements, timeframes, community by laws
- ❑ **Tools and approaches used in the community consultation process**
 - PRA (Participatory rural appraisal)
 - Transect walk
 - Maps
 - Pictures
 - Technical feasibility information

Community engagement a must

Communities should co-own, co-design energy systems

Productive use and Payment for services leads to sustainability

Planning for resilient off-grid solar systems



Centralized vs decentralized rural solar systems

Katerina



Credit: Matt Capper



Credit: Vanuatu Department of Energy

Energy as the enabler for creating resilient, diversified livelihoods

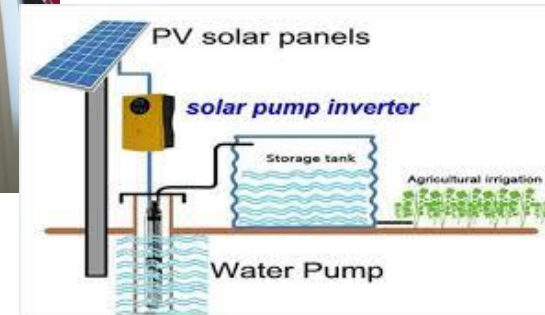
Katerina



Photo: GGGI



Photo: GGGI



Gender and Energy

Makereta



Women more involved in cooking, cleaning, washing, gardening

Women are usually not part of community consultations (Pauline)

3. What are the key areas for research or data collection?

Cooking

use of biomass in community, including energy for cooking

Use of biogas for cooking - why aren't the majority of communities (that have abundance of livestock) making use of this technology when it is working well in some communities?

What cooking is current being undertaken (what fuels, how much, when, who is cooking, who is collecting fuel, what food is being cooked)?

Data on cooking fuel preferences? Why they use certain fuels? And their flexibility in terms of adopting new technologies? Knowledge of technological options?

clean cooking data in communities

3 research. Why has there been so little attention to improved cooking methods & fuels (SDG 7) which is a serious health issue for women & children in the region?

Gender & diversity

data on women engagement at various levels

Updated gender surveys for selected communities that need the most development assistance

community gender and energy research

How are disabilities (and other diversity groups) being incorporated into the resilience dialogue?

Business models

Research potential business-models that can function in remote areas/communities.

What is the future role of off-grid mini-utilities and what business models could work?

Demand-side surveys for rural villages and maritime islands. How has demand changed over the years, is there suppressed demand? What is the willingness and ability to pay?

What are people willing to pay?

What does resilient design mean? ie is it high cost/ high quality, does this delay or inhibit access to energy?

Technical innovations

Peter's idea of linking up small RE based systems to create more resilient larger systems. Do we need actual pilot projects or are tools and modelling enough to begin?

How can digitisation and mobile technology be used to maximum effect for more efficient, reliant rural electricity systems

Needs assessment - Education, training, scholarship gaps and needs & opportunities in these areas (innovation driven investments too)

Best practices

How are people in Small Island State vs larger countries adapting energy solutions during disasters?

need to go and look at communities where projects have succeeded (how, what did it take), we also need to go and do brutally honest reviews of projects that went horribly wrong (failures are ophans but many

Review of off-grid solar systems that have been in place, with a focus on how community engagement has supported (or not) sustainability

Are SHS building resilience? How significant? e.g. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11955.pdf>

Repair times for grid vs off-grid systems after disasters

Filming of good practice case studies to create awareness, advocacy and encourage other communities that they can take ownership and make community-based projects work.

how do we all make it stick

Data for monitoring & planning

Using mobile phone technology to collect data. [note privacy issues]

More granular data on energy use? [too much is at a macro level] Community level; household level, etc.. They allows for more nuanced planning.

still assuming the future looks like the present - tools to assist communities to understand what the future for their area actually looks like

topic 3. It is really hard to use SDG 7 indicators to measure improvements. How to improve them for practical use?

Next steps

- 
- Background paper

- 
- Workshops

- 
- **Journal paper on research priorities identified**
 - **Policy briefs & papers from individual workshops**

- 
- Further collaboration

Further information:

<http://www.ceem.unsw.edu.au/event/workshop-series-energy-resilience-pacific-island-countries>

Feedback and comments:

[www.slido.com event # energyresilienceinpacific]

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Thank you everyone



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Loughborough
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ITP
Renewables
Consulting | Engineering | Implementation



global
sustainable energy
solutions



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