Pacific Island Countries and Territories Electricity Utility Boards Directors Workshop

Jay Prasad, Professor Iain MacGill, Edoardo Santagata, Associate Professor Anna Bruce, and Dr Maria Balatbat
Collaboration on Energy and Environmental Markets (CEEM)
UNSW Sydney

Utility Board members workshop
31th Pacific Power Association Conference
30th September – 4 October, 2024
Nuku'alofa, Tonga

Welcome to Tonga and the 31st Annual PPA conference

Opening Remarks

Mr Maliu Makali

Deputy Chairman, Tonga Power Limited

Introductory remarks

Mr Sam Wagstaff

Director, Indo-Pacific Partnerships
International Climate and Energy Division
Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Our UNSW and regional Team

Jay Prasad

MBA, Grad. Cert. in Electricity Supply Engineering, BE, Diploma of Contract Mngt, MIEAust, CPEng, NPER, RPEQ

Researcher PhD Candidate, UNSW

Expertise Areas: Regional Energy Sector, Strategic Planning, Energy Transition, Renewable Energy Integration, Electricity Utility Operations, Leadership and Capacity Development.

Associate Professor Anna Bruce
Ph.D., Photovoltaic Engineering, B.Eng (Hons)

School of Photovoltaic and Renewable Energy Engineering and Research Coordinator (Engineering) at the Collaboration on Energy and Environmental Markets, UNSW Sydney, Australia

Expertise Areas: Analysis and modelling of renewable and distributed energy systems, Energy transition modelling, Integration of RE,, Energy access in developing countries, Energy policy and regulation

Edoardo Santagata
ME (Renewable Energy), BE (Renewable Energy)

PhD Candidate, UNSW

Expertise Areas: Research and Strategy, Renewable Energy, Energy Resilience, Energy Transition Modelling

Associate Professor Atul Raturi
PhD, SMIEEE
Academic, consultant to SEFP (WB), IUCN, ADB and UNEP among others. Atul is a member of Pacific Energy Technical Working Group, Expert Group on Energy's Interlinkages with Other SDGs (UNDESA) and ESCAP-APNETT.

Professor Iain MacGill
Ph.D., Electrical Engineering, M.Eng.Sc., B.Eng.

School of Electrical Engineering and Telecommunications and Joint Director (Engineering) for Collaboration on Energy and Environmental Markets (CEEM), UNSW, Australia

Expertise Areas: Energy Sector Planning, Renewable Energy Integration, Policy and regulatory frameworks, Open-source data and tools

Andrea Loli
BE (Electrical Engineering)

Senior Project Officer

Expertise Areas: Sustainable Energy Solutions, Energy Planning and Stakeholder Engagement, Project Management

Ashneel Deo
BE Mechanical Engineering

Engineer/Project Officer

Expertise Areas: Renewable and Sustainable Energy Solutions, Feasibility Studies, Project Management, Advanced software skills, Teamwork and problem solving

And Growing

Vacant

Project Officer- Solomon Islands

Day 1 Monday 30/09/2024: Utility Board Directors Workshop	
Presenter	**Topic**
Registration	
Session Moderator(s): Iain MacGill & Jay Prasad	**Session 1: Welcome, Introduction and Scene Setting**
TPL	Formal Welcome - Utility Board of Tonga
Sam Wagstaff	Opening Remarks- DCCEEW
Jay Prasad	Agenda
Iain MacGill	Introduction. Discussion on Key Concerns and Common Issues. Expectations for the two days?
Morning Tea	
Session Moderator(s): Anna Bruce	**Session 2: Transition to RE in the PICTS**
Iain MacGill	1.2.1 Complexity of the electricity sector transition globally, capacity development needs
Jay Prasad	1.2.2 Renewable Energy Trends in the Pacific - Barriers to RE Uptake, Technical Capacity Constraints, Grid Readiness for VRE, NDC/SDG's: A sectoral review
Jay Prasad	1.2.3 Roof Top PVs - Technical Potential, Challenges, Standards
Moderator	Reflections and Discussion
Lunch	
Session Moderator(s): Jay Prasad	**Session 3: Policies, Governance, Performance**
Abe Simpson	1.3.1 Performance Management of Power Utilities
Anna Bruce	1.3.2 Tariff Design and DER
Maria Balabat (Online, 10:50 - 11:40 AEST)	1.3.3 Governance, Policies, Board members/Board director's responsibilities, accountabilities, clear sense of role, setting strategic direction- where do utilities need to go?
	1.3.4 Business and Financial Reports, Green House Gas Emissions Measuring Societal Values, Compliance, Risks, Audit risks - Emerging Trends, Annual Reports, Budgets and Budget Review, Opportunities
Moderator	Reflections and Discussion
Afternoon Tea	
Session Moderator(s): Anna Bruce	**Session 4: Energy Transition Planning, Scenarios, Roadmapping**
Edoardo Santagata & Iain MacGill	1.4.1 Energy Planning Frameworks to support Energy Transitions in PICTs
Moderator	Discussion and Wrap-up
Session Ends	

Day 2 Tuesday 1/10/2024: Utility Board Directors Workshop	
Presenter	**Topic**
Registration	
Main Event: Opening Ceremony	
Morning Tea	
Session Moderator(s): Anna Bruce	**Session 1: Integrating VRE to Grids, New and Emerging Technologies. Utility Board Directors and Engineers Combined Technical Session**
Edoardo Santagata	2.1.1 Multi-sectoral Energy Transition Modelling for PICTs - ETM
Jay Prasad	2.1.2 Capacity Expansion Modelling for Transition to RE in PICTs
Industry Panel	Grid Studies and Role of BESS for Renewable Energy Integration
Moderator	Reflections and Discussion
Lunch	
Session Moderator(s): Iain MacGill & Jay Prasad	**Session 2: Capacity Development and Financing for RE Transition**
Damon Schmidt	2.2.1 Capacity Building on Renewable Energy Integration in Pacific Island Countries
Jay Prasad	2.2.2 Capacity Development Framework for Transition to RE
Development Partners	Financing for the RE Transition
Moderator	Workshop Wrap Up - Discussion, Recap, Workshop Survey Questionnaire
Afternoon Tea	
Session Moderator(s): N/A	**Session 3: Pacific Women in Power (PWIP)**
Lilika Fusimalohi & Inka Ivette Schomer	2.3.1 Pacific Women in Power (PWIP)
Session Ends	

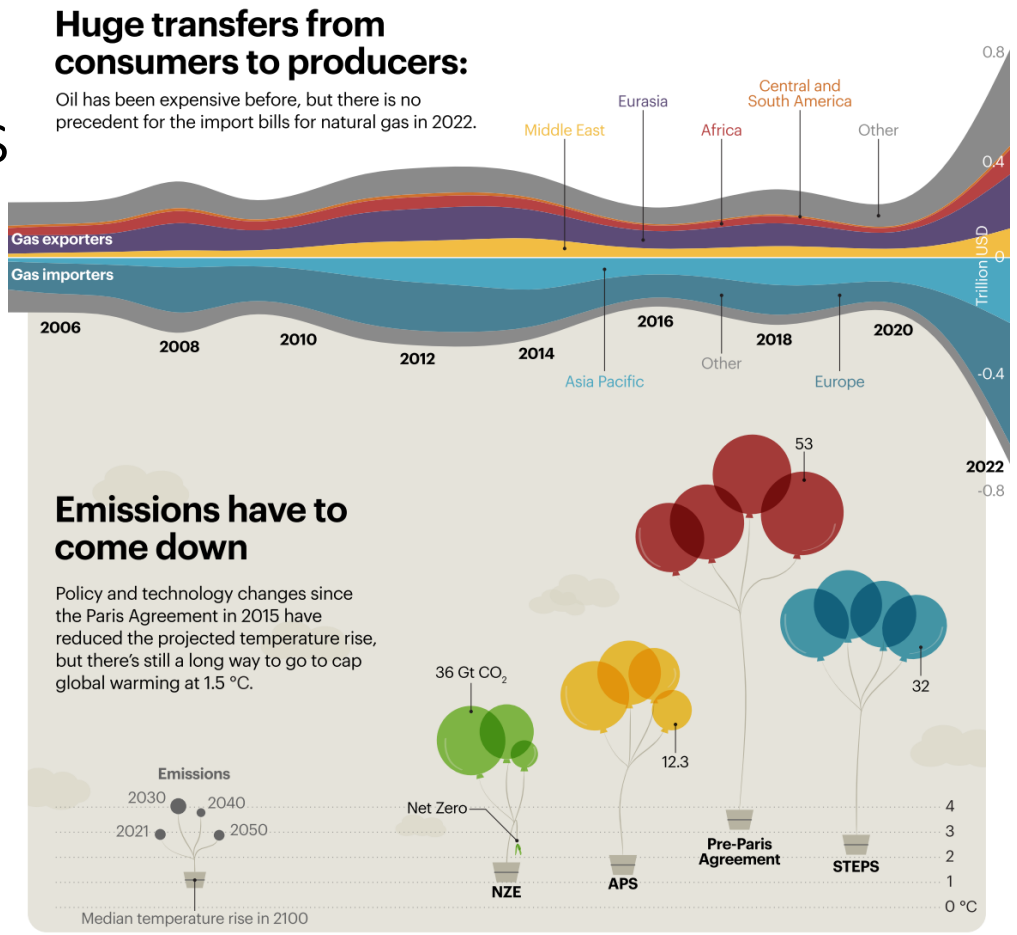
Maximising the value of this workshop

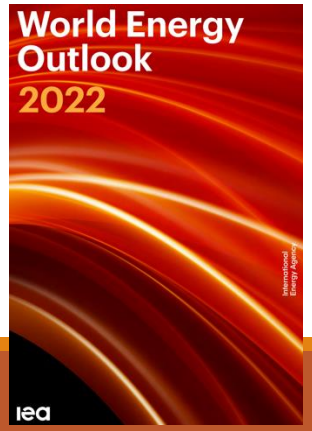
- Please feel free to ask questions at any time
- Fill in your workshop feedback form as we go – it will be collected at the end of the workshop
- Add comments, suggestions, questions at any time on the workshop slido
  - Go to www.slido.com
  - Enter code #

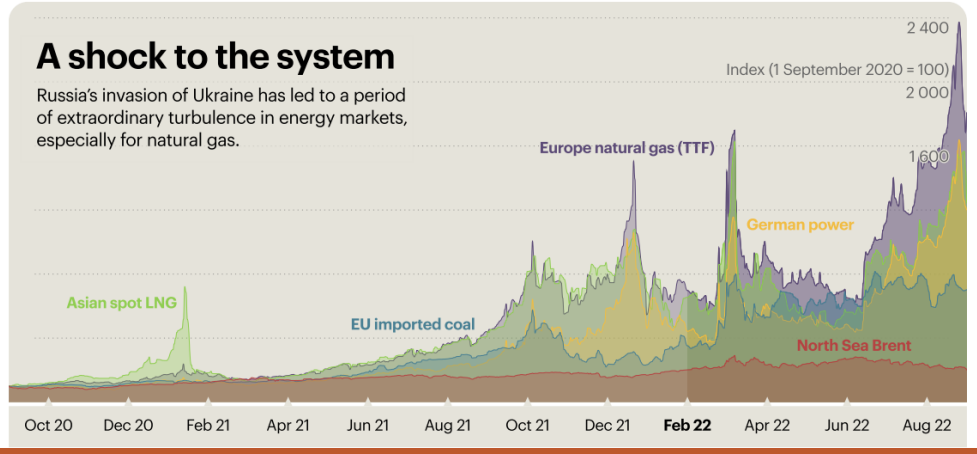
What's the problem?

Three global energy crises to navigate

- Recent unprecedented gas + coal prices, high + volatile oil prices
- Enormous wealth transfers, adverse impacts on societal progress in developing + emerging economies, recession risks in industrialised nations
- Growing climate change impacts, inadequate efforts to date avoid dangerous warming



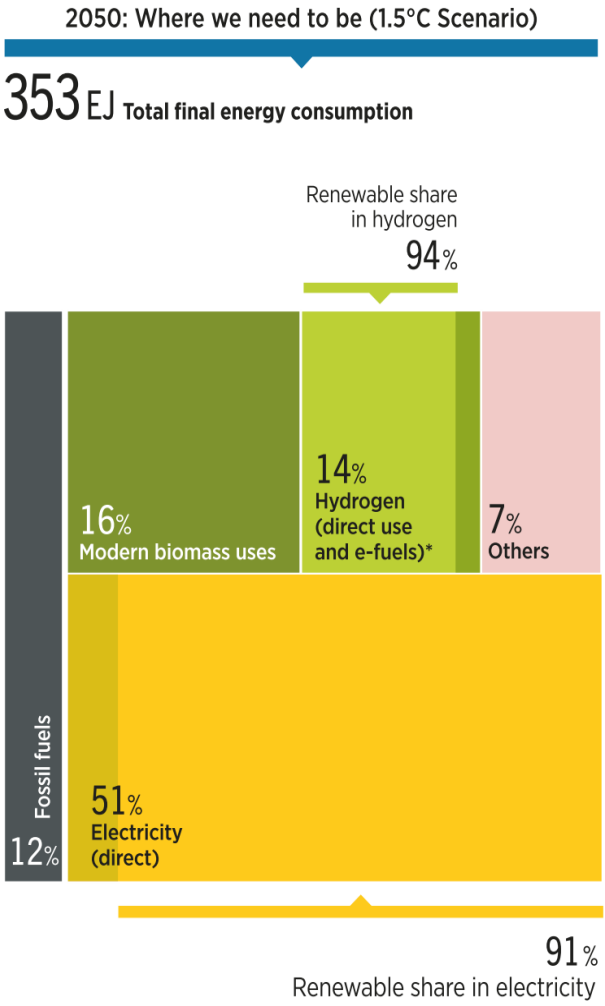




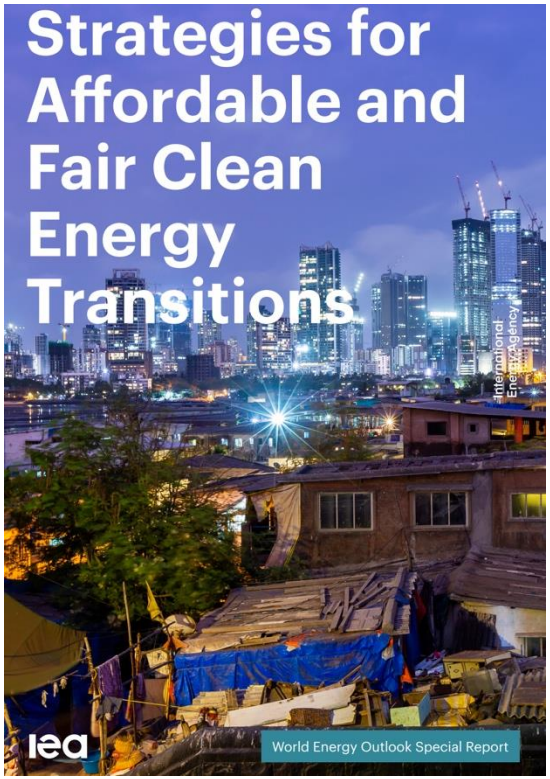
What needs to be done?

General agreement on desirable global energy pathways but also uncertainties

- Electrification of current non-energy sectors
- Greatly expanded, mostly renewables electricity sectors
- Key uncertainties – what future role for fossil fuels, biomass, hydrogen



How do we have to do it?
Growing focus on affordable & fair energy transition



Foreword

The last few years have been tough for many energy consumers around the world, with high energy prices putting a lot of pressure on the cost of living. The effects have been most severe for low-income countries and households. This has rightly put issues of affordability and fairness at the centre of the energy debate.

For an honest assessment of the situation, we need to be clear about where these pressures on the cost of living have come from. The global energy crisis that escalated in early 2022 was not caused by clean energy. Since the early days of the crisis, I have been speaking regularly with energy policy makers from around the world. None of them have complained of relying too much on clean energy. On the contrary, they wish they had more, because the result of investing in these technologies today is a more affordable energy system for consumers tomorrow – as well as less severe impacts from climate change, major improvements in air quality and greater energy security.

That said, there is still an important debate to be had about affordability and fairness in clean energy transitions – notably in terms of how the costs and benefits will be shared. And that is why we have produced this important new analysis. We wanted to provide an evidence base and actionable advice for policy makers as they consider their strategies for the future.

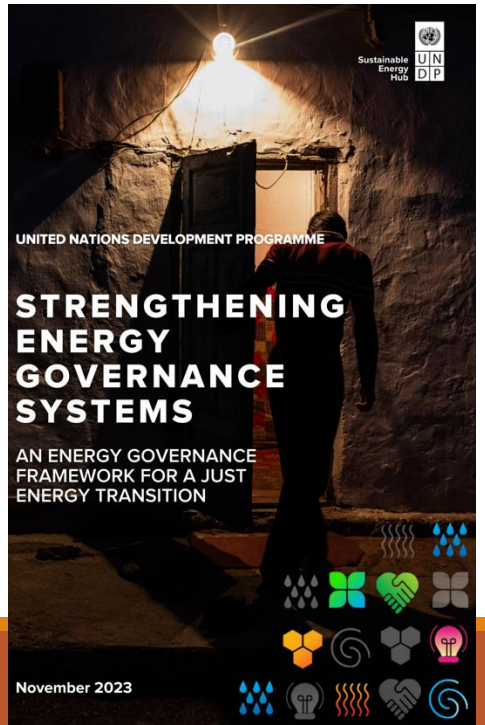
A key risk is that poorer households, communities and countries are excluded from the new clean energy economy that is emerging around the world because they cannot pay the upfront costs of the switch to a safer and more sustainable energy system. As a result, they remain vulnerable to swings in fuel prices, which already disproportionately affect their budgets and well-being compared with their wealthier counterparts.

Energy governance

Effectiveness	*Accountability*	*Inclusiveness*
Competence Sound policy making Collaboration	Integrity Transparency Independent oversight	Leaving no one behind Non-discrimination Participation Subsidiarity Intergenerational equity

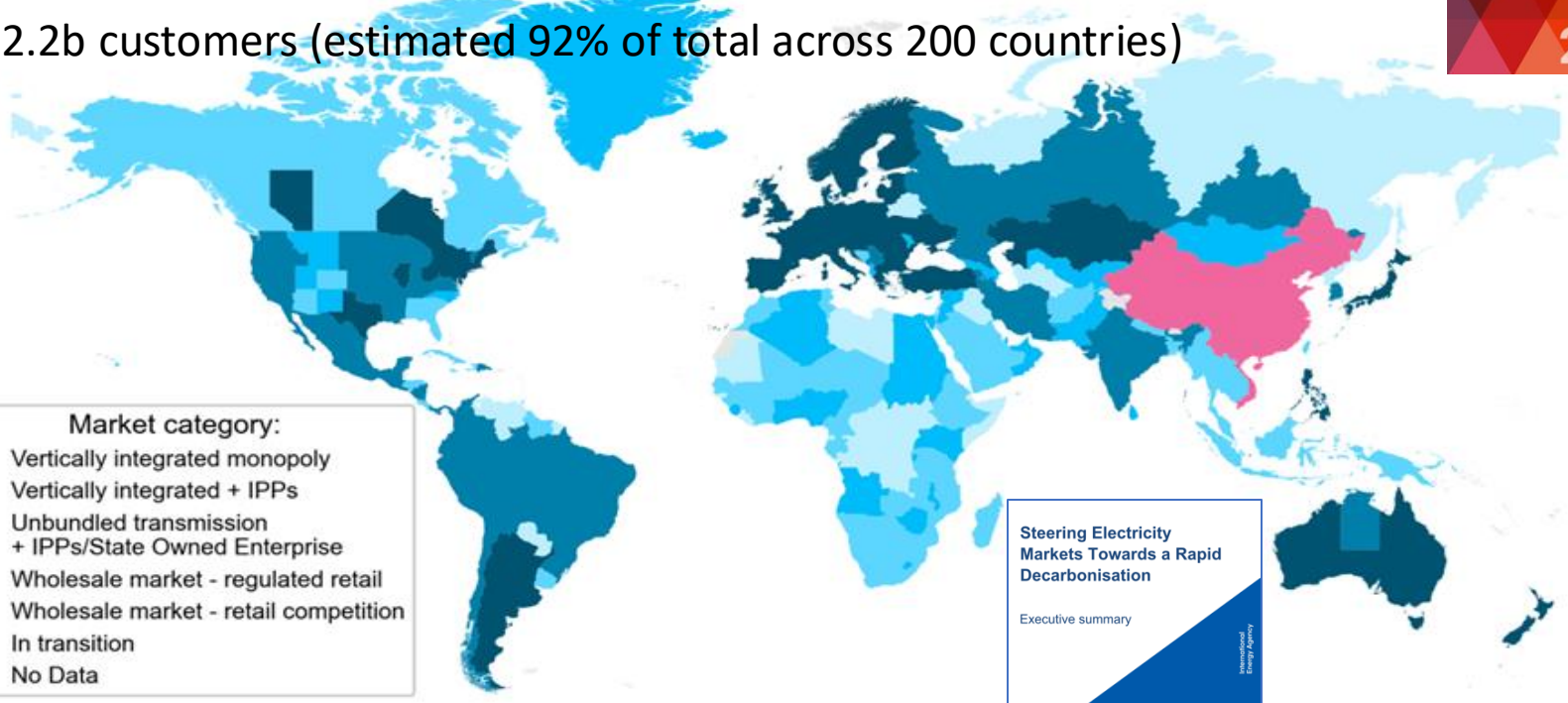
What is energy governance?

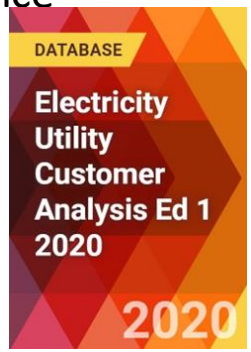
Energy governance is the exercise of economic, political, and social authority to manage the spatial planning, production, transmission, distribution, storage, access to and use of energy. It includes the ways by which decisions are made about where and how energy resources are developed, regulated, and consumed. It comprises the mechanisms, processes, and institutions through which governments, people, communities, and corporations articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences in relation to energy.



Electricity utilities around the world

- Near universal electricity industry arrangement for more than 100 years
  - Provision of essential services/infrastructure, contribution to social and economic welfare, natural 'wires' monopoly, economies of scale in engineering, finance
  - More market based arrangements over past 30 years in some jurisdictions
- Estimated 900 electricity tx utilities, 7200 dx utilities globally
  - 38 utilities > 10m customers, 41 with 5-10m customers, 237 with 1-5m customers, 6,865 < 1m customers
  - 2.2b customers (estimated 92% of total across 200 countries)





What role must electricity utilities play in achieving our clean energy an climate goals?

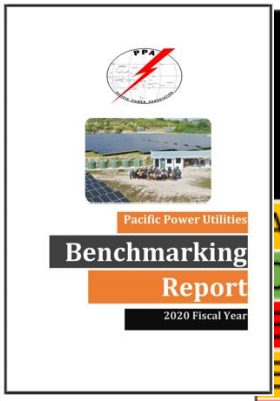
Deploy and integrate renewable energy

expand electricity provision to supply a growing range of economic sectors currently not supplied through electricity sector, including transport

Do this quickly and wisely, ensuring affordability, security as well as environmental outcomes

Pacific Island Countries and Territories electricity utilities

Utility	Country/ Territory
ASPA	Amercian Samoa
CPUC	Fed. Staes of Micronesia (FSM)
CUC	Commonwealth of Northern Marianas
EDT	French Polynesia
EEC	New Caladonia
EEWF	Wallis & Futuna
ENERCAL	New Caladonia
EPC	Samoa
EFL	Fiji
GPA	Guam
KAJUR	Marshall Islands (RMI)
KUA	Fed. States of Micronesia (FSM)
MEC	Marshall Islands (RMI)
NPC	Niue
NUC	Nauru
PPL	Papua New Guinea (PNG)
PPUC	Palau
PUB	Kiribati
PUC	Fed. States of Micronesia (FSM)
SCE	Santa Catalina Island
SP	Solomon Islands
TAU	Cook Islands
TEC	Tuvalu
TPL	Tonga
UNELCO	Vanuatu
YEPSC	Fed. States of Micronesia (FSM)



Utilities	Peak Demand (for largest Grid)	Size Category	Smaller Grids Serviced	Total Annual Energy Produced (MWH)	Renewable Energy Contribution (%)
ASPA	25.00	medium	Yes	173,582	2.3%
CPUC	2.97	small	Yes	16,894	5.1%
EEC	86.49	large	Yes	490,011	12.0%
EPC	29.99	medium	Yes	192,410	44.4%
EFL	180.22	Large	Yes	977,150	64.2%
GPA	247.00	large	Yes	1,686,618	3.0%
KUA	1.29	small	No	6,927	3.2%
MEC	9.40	medium	Yes	65,141	0.8%
NUC	5.75	medium	No	39,151	7.7%
PPL	131.40	large	Yes	1,500,704	44.7%
PPUC	11.50	medium	Yes	86,239	2.0%
PUB	5.60	medium	No	32,993	6.8%
PUC	6.15	medium	No	37,482	4.1%
SCE	5.60	medium	Yes	27,418	0.0%
SP	15.91	medium	Yes	98,950	1.7%
TAU	5.53	medium	No	31,207	13.7%
TEC	1.42	small	Yes	9,649	15.7%
TPL	11.49	medium	Yes	76,016	11.8%
UNELCO	13.20	medium	Yes	59,736	14.7%
YEPSC	1.90	small	Yes	10,646	19.5%
Total				5,618,924	17.10%

Possible measures of governance

Utilities	Power Quality Standards	Self-Regulated or Externally regulated	Public or Private Ownership
ASPA	Self	Self	Public
CPUC	US	Self	Public
CUC	US	External	Public
EDT	concession contract	External	Private
EEC	EN50160	External	Private
EPC	AUS/NZ	External	Public
EFL	AUS/NZ	External	Public
KAJUR	self	Self	Public
KUA	KUA	Self	Public
MEC	MEC	Self	Public
NUC	AUS/NZ	Self	Public
PPL	AUS/NZ	External	Public
PPUC	JIS, NEC	Self	Public
PUB	Self	Self	Public
PUC	Self	Self	Public
SCE	US	External	Private
SP	Self	Self	Public
TAU	AUS/NZ	External	Public
TEC	AUS/NZ	Self	Public
TPL	Self	External	Public
UNELCO	Concession contract	External	Private
YEPSC	NEC	Self	Public

Governance Indicator	Good Governance	Poor Governance	Score
Are Ministers appointed to the Board?	No	Yes	12%
Are Ministers/ public servants representing line/ sector Ministry appointed to the Board?	No	Yes	12%
Is a Code of Conduct in place and implemented?	Yes	No	8%
Is a commenrcial mandate in place and implemented?	Yes	No	19%
Is the CEO on a performance contract with annual reviews?	Yes	No	8%
Has a Strategic Plan (at least 3 years forecasts) been adopted and implemented?	Yes	No	15%
Is the Annual Report (audited) completed within four months of the end of the reporting year?	Yes	No	19%
Does the Annual Report disclose performance against Plan?	Yes	No	8%
Total Score			100%

Workforce Gender Make-up	
Total Employees	5,126
% Male employees	80.3%
% Female employees	19.7%
Total Technical Employees	2,630
% Technical Male employees	95.0%
% technical Female employees	5.0%
Total Management Staff	141
% Management Staff - Male	73.8%
% Management Staff - Female	26.2%

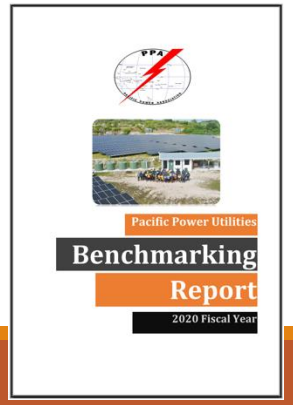
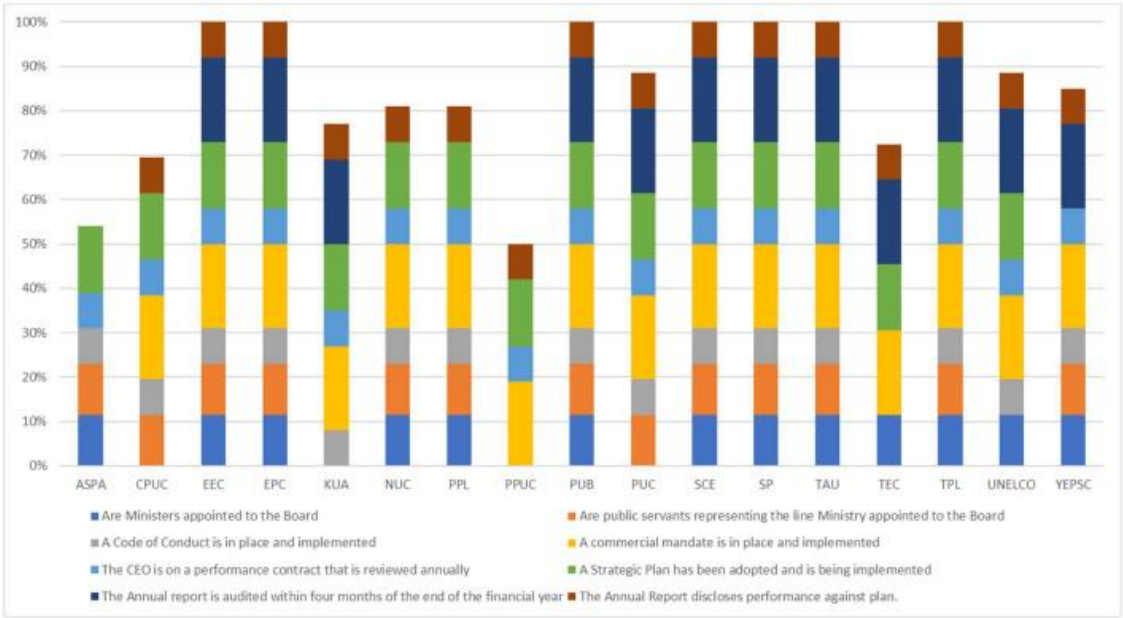
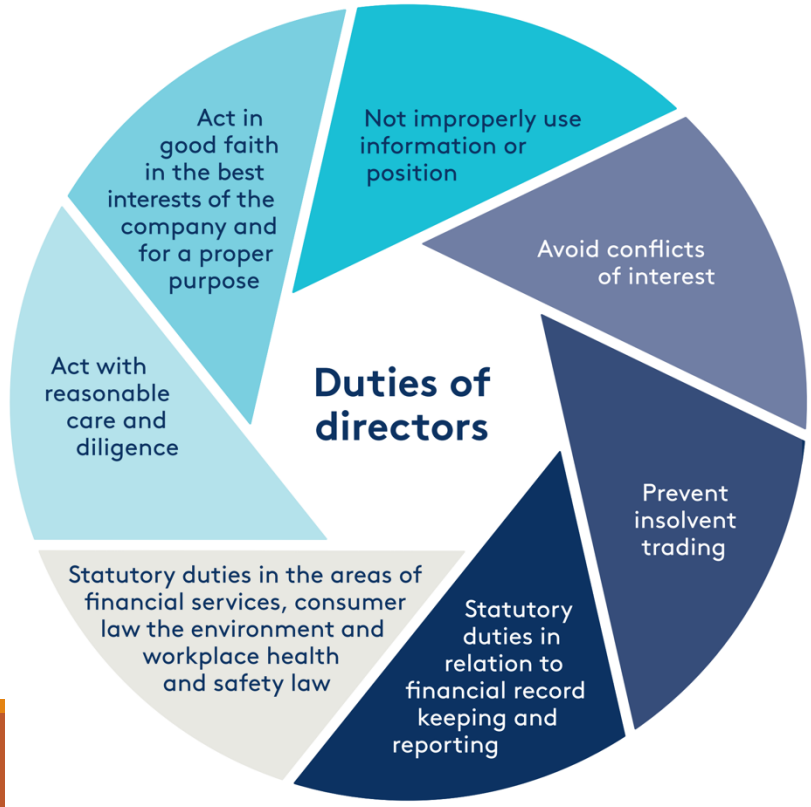


Figure 2.1: Composite Governance Score for 2020 FY



The role of boards

Boards of directors are responsible for the overall governance and strategic direction of an organisation. They provide "overall superintendence"[1] of a company, overseeing both performance and compliance in accordance with the organisation's purpose and objectives.



Electricity utility objectives – *Sustainable development goals (SDGs)*

Pacific ambitions

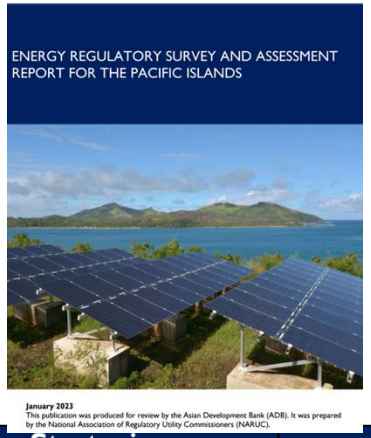


Table 12: RE Policies, Strategies, and Programs/Plans in the PICs, Fiji, and PNG

Country	Policies	Programs/Plans	Strategies	Roadmaps/Pathways
Fiji		20-year Development Plan	Low Emission Development Strategy (LEDS) 2018 – 2050	
Palau	2010 National Energy Policy			
Samoa	Renewable Energy Policy 2022	Energy Sector Plan 2017 – 2022 Samoa Nationally Determined Contribution	Low Emission Strategy 2021 – 2030	Pathway for the Development of Samoa FY 2021/22 – FY 2025/2026
Vanuatu		National Sustainable Development Plan 2016-2030		National Energy Roadmap 2016-2022
		Environment Policy Objective 2.3 to 'promote renewable sources of energy and efficient energy use'		
Nauru				Nauru Energy Roadmap
Tuvalu				
Solomon Islands				Renewable Energy Roadmap of April 2021
Cook Islands				
Niue		Niue National Strategic Plan 2016-2026 Niue NDC		The Niue Strategic Energy Roadmap 2015-2025 (NSERM)
PNG	RE policies are currently being developed			The PNG Vision 2050

Source: Surveyed countries' regulators and utilities (where regulators are not available)

Electricity utility objectives – *legislated, organisational Board requirements*

Meet the Board

- Role of the Board
- Directors' Duties
- Statutory Duties of the Board
- Here is the Current Board of Directors

Role of the Board

As required by Section 6 (4) of the State Owned Enterprises Act 2007, the Board is responsible for charting the Company's strategic direction, for the setting of objectives, policy guidelines, goals management, and for monitoring the achievement of these matters.

The Board is also responsible for reviewing the Business Plan, Corporate Plan and Statement of Corporate Intent, and approves Operating and Capital Budgets each year. The Board also reviews matters of a major or unusual nature, which are not in the ordinary course of business.

Directors' Duties

The role and duties of the Directors are defined in regulations 17 to 27 of the SOE Regulations, 2010. A key responsibility of the Directors is to achieve the principal objective of the Authority, as stated in Section 5 of the SOE Act: The principal objective of every State Owned Enterprise shall be to operate as a successful business and to this end, to be

a) As profitable and efficient as comparable businesses that are not owned by the Crown or established as statutory bodies by an Act of Parliament,
b) A good employer, and
c) An organization that exhibits a sense of social responsibility by having regard to the interests of the community in which it operates.

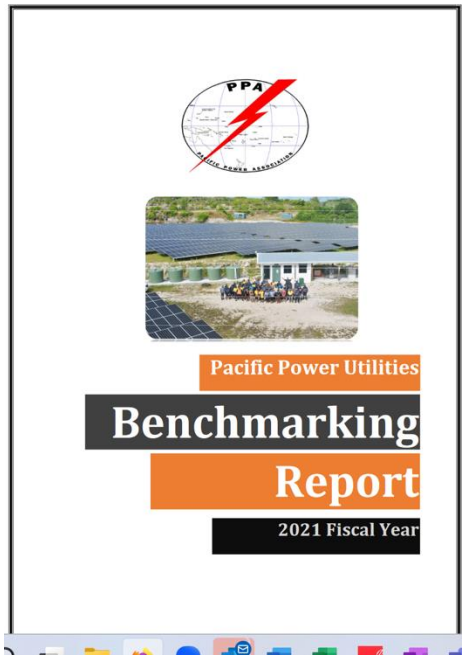
Statutory Duties of the Board

In addition to the above duties, the Board of Directors of SIEA collectively and individually have agreed on the fulfillment of the following duties toward the company:

- When exercising powers or performing duties, Directors must act in good faith and in what the Director believes to the best interests of the State Owned Enterprise.
- A Director of a State Owned Enterprise, when exercising a power as Director, must exercise that power for a proper purpose.
- A Director of a SOE must not:
  a) Agree to the business of the SOE being carried out on or in a manner likely to create a substantial risk of serious loss to the SOE creditors or,
  b) Cause or allow the business of a SOE to be carried out on or in a manner likely to create substantial risk of loss to the SOE creditors.
- A Director must not agree to the SOE incurring an obligation unless the Director believes at the time, on reasonable grounds, that the SOE will be able to perform the obligation when it is required to do so.
- A Director of a SOE, when exercising powers or performing duties, must exercise the care, diligence, and skills that a reasonable Director would exercise in the same circumstances.
- Another controlling measure imposed on Directors is the requirement to enter any conflict of interest in an interests register.

Possible measures of utility performance

Contents



Introductions

- Who are you and what organisation do you represent?

- What energy issues keep you **busy** at work?
- What energy **challenges** (might) keep you up at night?

- What is a key **question** that you have for other regional Utility Board Director colleagues? *Can you help me ….*
- What is a key piece of **advice** that you have for regional Utility Board Director colleagues? *From my experience…*

Professor Iain McGill
UNSW Sydney

Dr Iain MacGill is a Professor in the School of Electrical Engineering and Telecommunications at UNSW Australia, and Joint Director (Engineering) for the University's Collaboration on Energy and Environmental Markets (CEEM).

Iain's teaching and research interests at UNSW include electricity industry restructuring and the Australian National Electricity Market, sustainable energy generation technologies, distributed energy resources in the built environment, energy efficiency options, energy access in developing and emerging economies, energy and climate policy and environmental regulation. He has run industry short courses and workshops and consulted to industry and government clients in these areas in Australia and internationally.

Presentation Topic:

An introduction to electricity sector challenges and opportunities, what role for utility boards?

JANENDRA PRASAD

Researcher PhD Candidate

Janendra (Jay) is a Chartered Professional Electrical Engineer with 25 years' experience leading the delivery of innovative, technically sound, cost-effective, and safe engineering solutions for electrical infrastructure. He has held in senior engineering, management and capacity building roles in power system design and operations, asset strategy and project development in Australia and Pacific Islands.

Jay's research interest is in integration and optimisation of high penetration of renewable energy and sustainable energy solutions.

Presentation Topic:

Facilitation of High Penetration of Variable Renewable Energy in Pacific Island Country Utility Grids

Energy transition planning frameworks

Edoardo Santagata

PhD Student

Edoardo is a PhD student at UNSW researching the broad themes of energy security and resilience in Pacific Island countries and territories. The main aim of this research is to develop a framework to integrate energy resilience into modelling energy futures and developing sound energy policies which can help achieve the Pacific's energy targets. Some topics he has explored for the application of this framework include the decarbonisation of energy supply chains, transport, shipping and navigation, as well as novel financing approaches.

Edoardos' consultancy experience includes assessment of clean shipping technologies, bioethanol production, and fuel efficiency policies in various Pacific locations. His previous work also includes innovative energy access models for remote communities using nature-based designs that rely on geothermal energy.

Presentation Topics:

Decarbonising the Pacific: a national policy and sectoral target review

Open source tools for modelling energy transition

Associate Professor Anna Bruce

UNSW Sydney

Dr Anna Bruce is an Associate Professor in the School of Photovoltaic and Renewable Energy Engineering and Research Coordinator (Engineering) at the Collaboration on Energy and Environmental Markets at UNSW Sydney, Australia. She leads CEEM's research theme in Distributed energy systems, including 'smart grids' and 'smart' homes, distributed generation and demand-side participation. Her research focuses on modelling, analysis and integration of renewable energy and distributed energy resources into electricity industries; energy access in developing countries; and energy policy and regulation.

Presentation Topic:

Tariff design and Distributed Energy Resources

Dr Maria Balabat

Senior Lecturer- UNSW

Dr Maria Balatbat is a Senior Lecturer at the Business School and a Founding Member of the CEEM at UNSW Sydney. Her research interests include integration of environmental, social and governance (ESG) dimensions in investment decision making including, disclosure of climate change information. She is a recipient of several ARC grants with projects that examine the capital market implications of Integrated Reporting and use of environmental and social indicators to develop a valuation methodology for investment decisions. She is a Director at the Australasian Reporting Awards (ARA), Fellow at CPA Australia, and a member of the Chartered Accountants in Australia and New Zealand (CA ANZ). Maria has a PhD in Economics at the University of Sydney

Presentation Topics:

Sustainable Governance in the Utilities Sector

Trends in Sustainable Business Reporting