NDCs, Net Zero , SDGs and The Role of The Electricity Sector *Future is Electric*

Atul Raturi

The road to net zero

- 2015
- 2015-2017
- 2020-2021
- 2030
- 2050

2015

196 countries adopted the historic Paris Agreement to reduce global warming and build resilience to climate change. Its overall goal: limit warming to no more than 1.5 degrees Celsius.

The road to net zero

- 2015
- 2015-2017
- 2020-2021
- 2030
- 2050

2015-2017

Parties to the agreement began submitting climate action plans known as nationally determined contributions (NDCs). Initial commitments, even if fully implemented, would only be enough to slow warming to 3 degrees. Urgent calls for action and ambition gained momentum as the plans would not stop catastrophic impacts.

The road to net zero

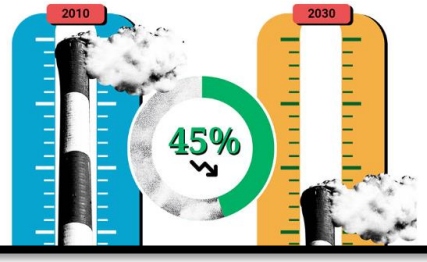
- 2015
- 2015-2017
- 2020-2021
- 2030
- 2050

2015-2017

Parties to the agreement began submitting climate action plans known as nationally determined contributions (NDCs). Initial commitments, even if fully implemented, would only be enough to slow warming to 3 degrees. Urgent calls for action and ambition gained momentum as the plans would not stop catastrophic impacts.

The road to net zero

- 2015
- 2015-2017
- 2020-2021
- 2030
- 2050



2030

To keep warming to 1.5 degrees, countries must cut emissions by at least 45 per cent compared to 2010 levels.

The road to net zero

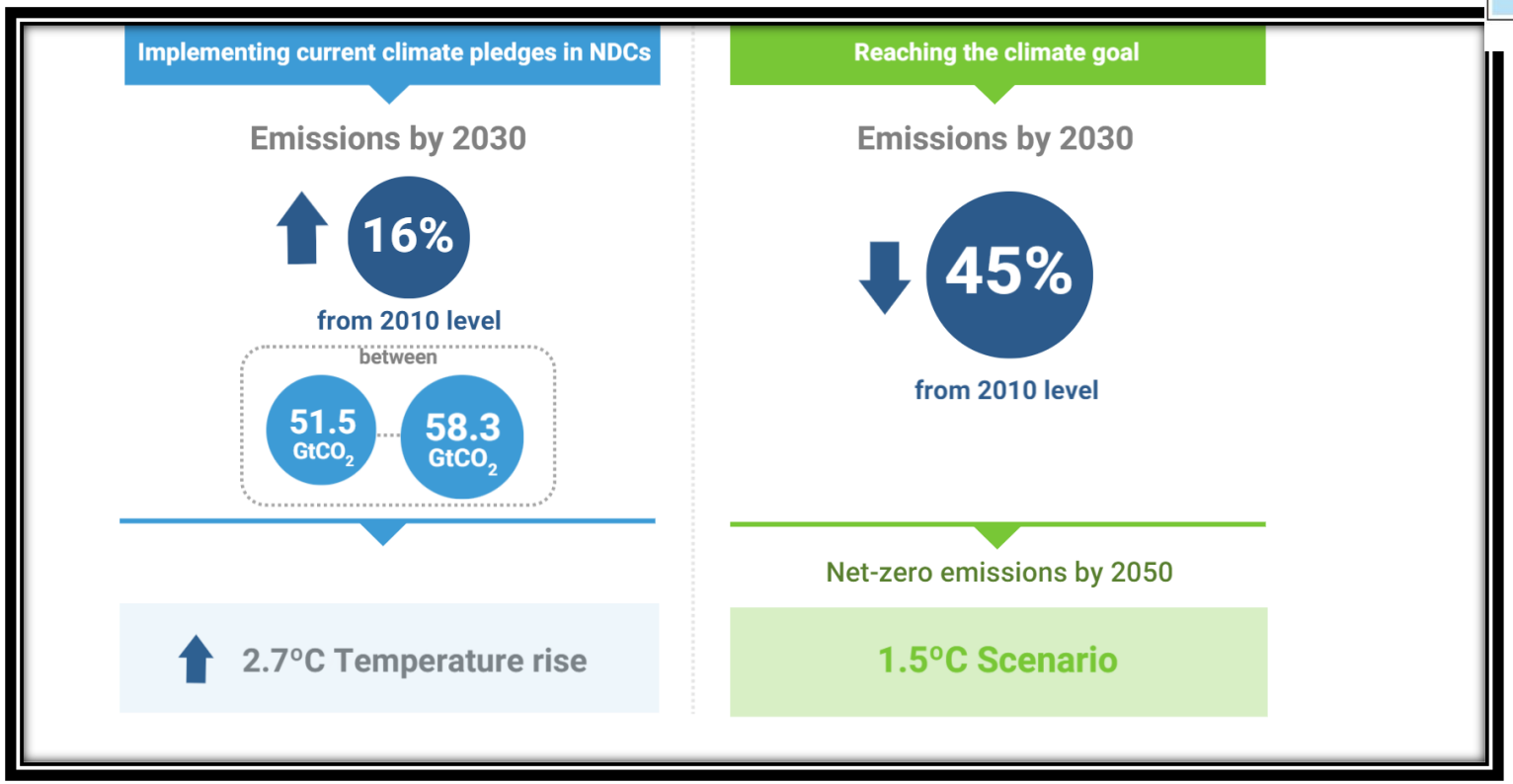
- 2015
- 2015-2017
- 2020-2021
- 2030
- 2050

2050

The transition to net-zero emissions must be fully complete.

UN: Net Zero Coalition

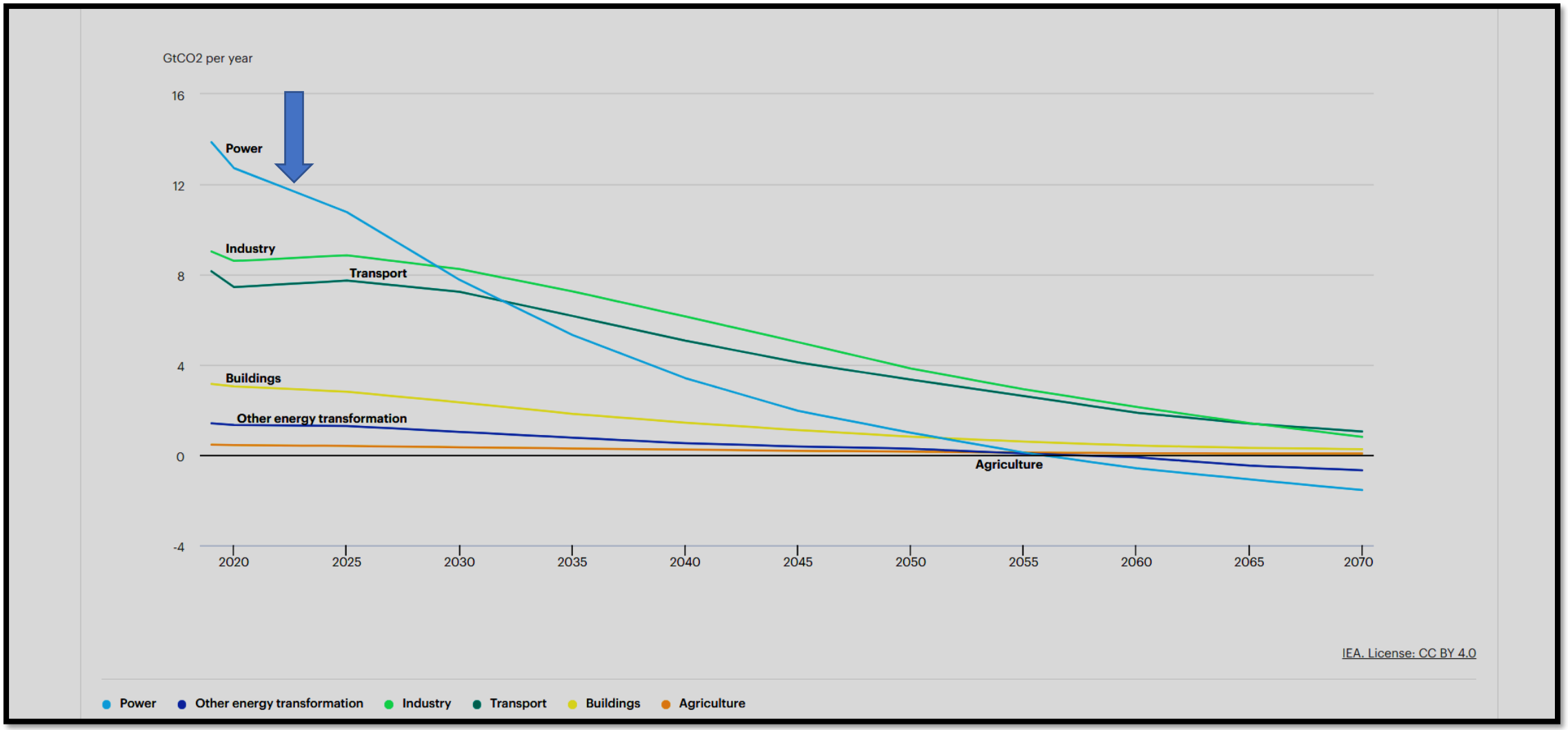
The Science is Clear: More Efforts Needed



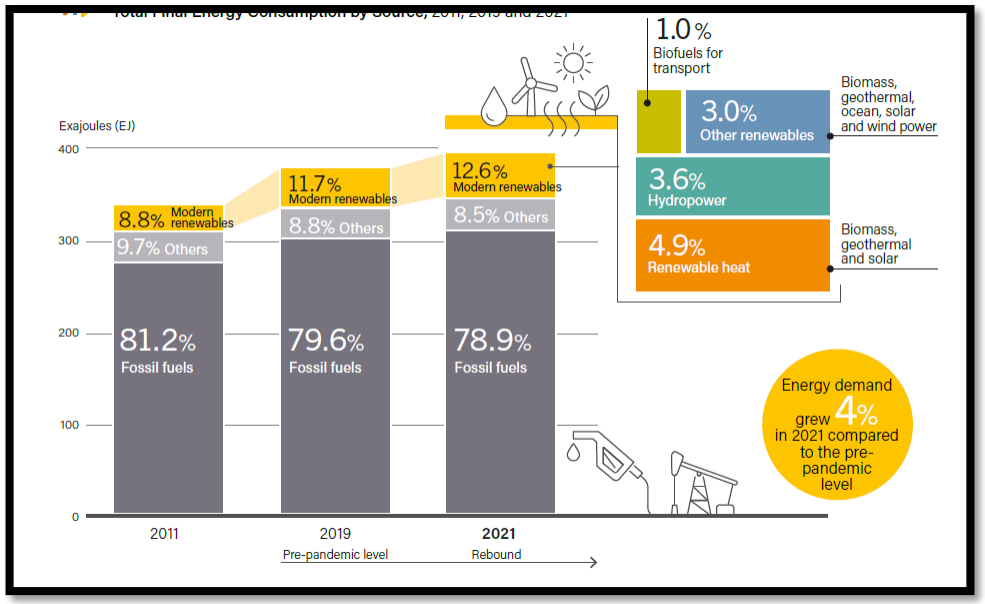
195 countries have submitted their NDCs

Climate change mitigation objectives should be achieved keeping sustainable development and poverty eradication into consideration. (The Paris Agreement)

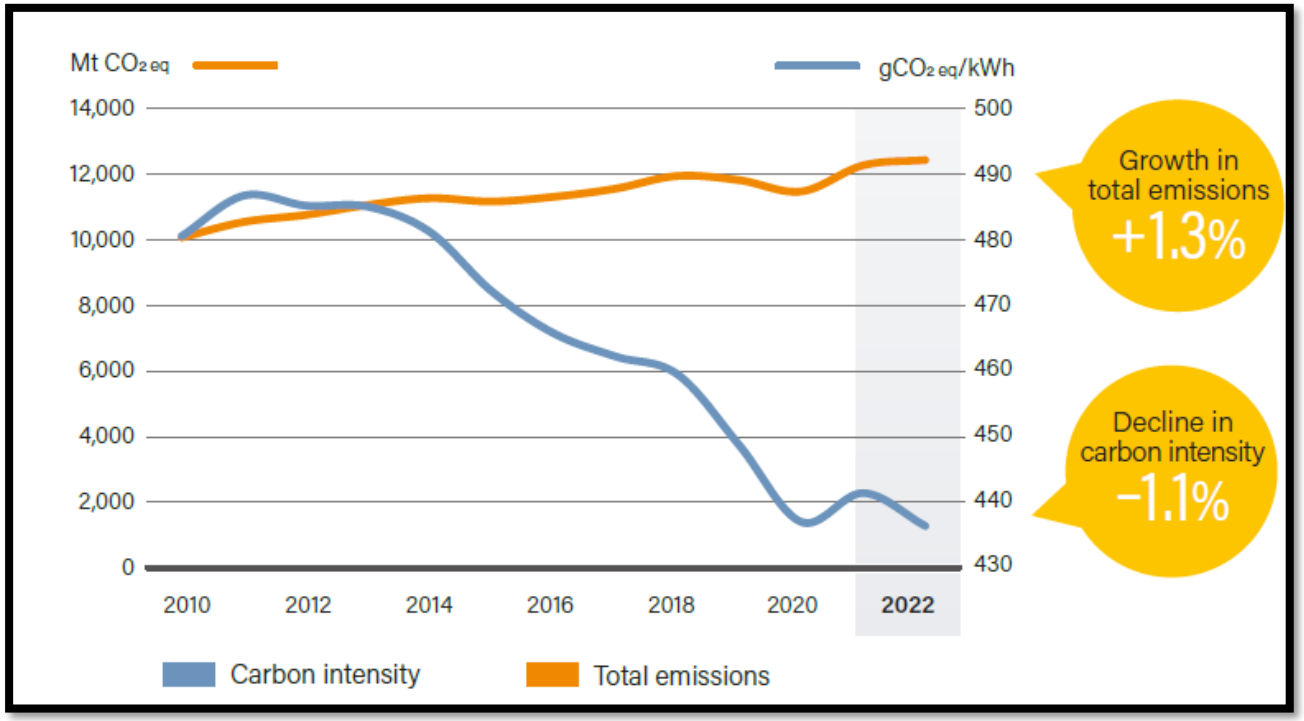
Required Sectoral GHG Reduction (IEA-SDG Scenario)



Global Energy Scene



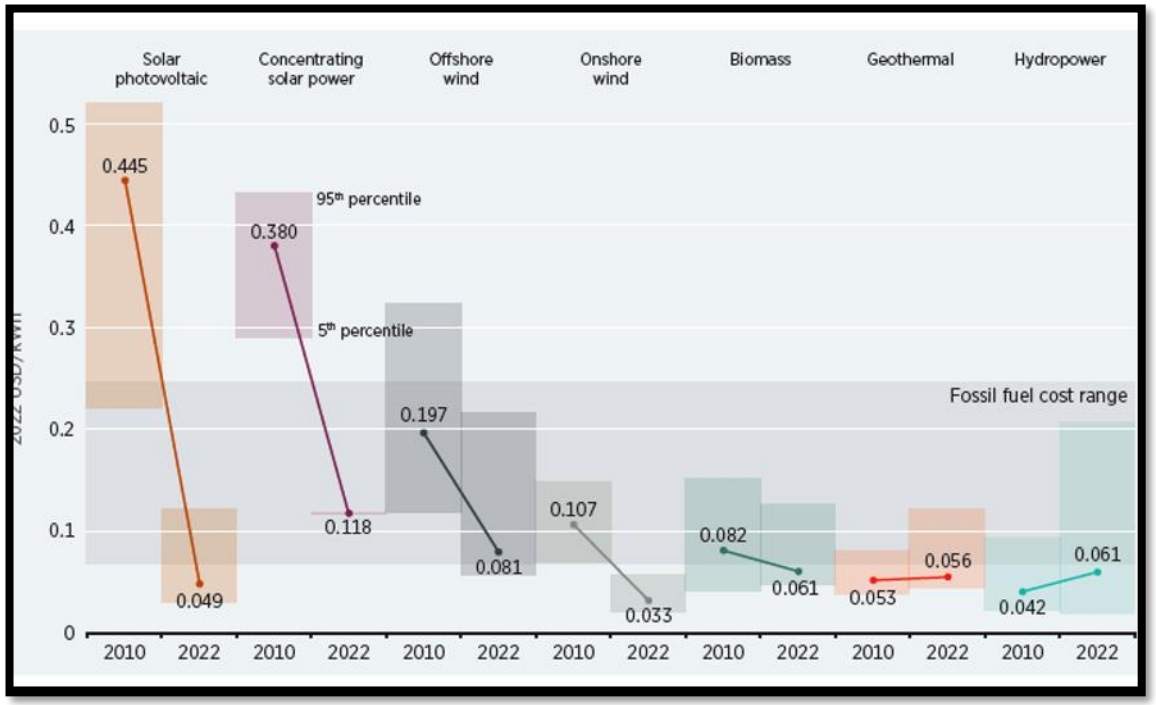
TFEC by Source



Power sector emissions over the years

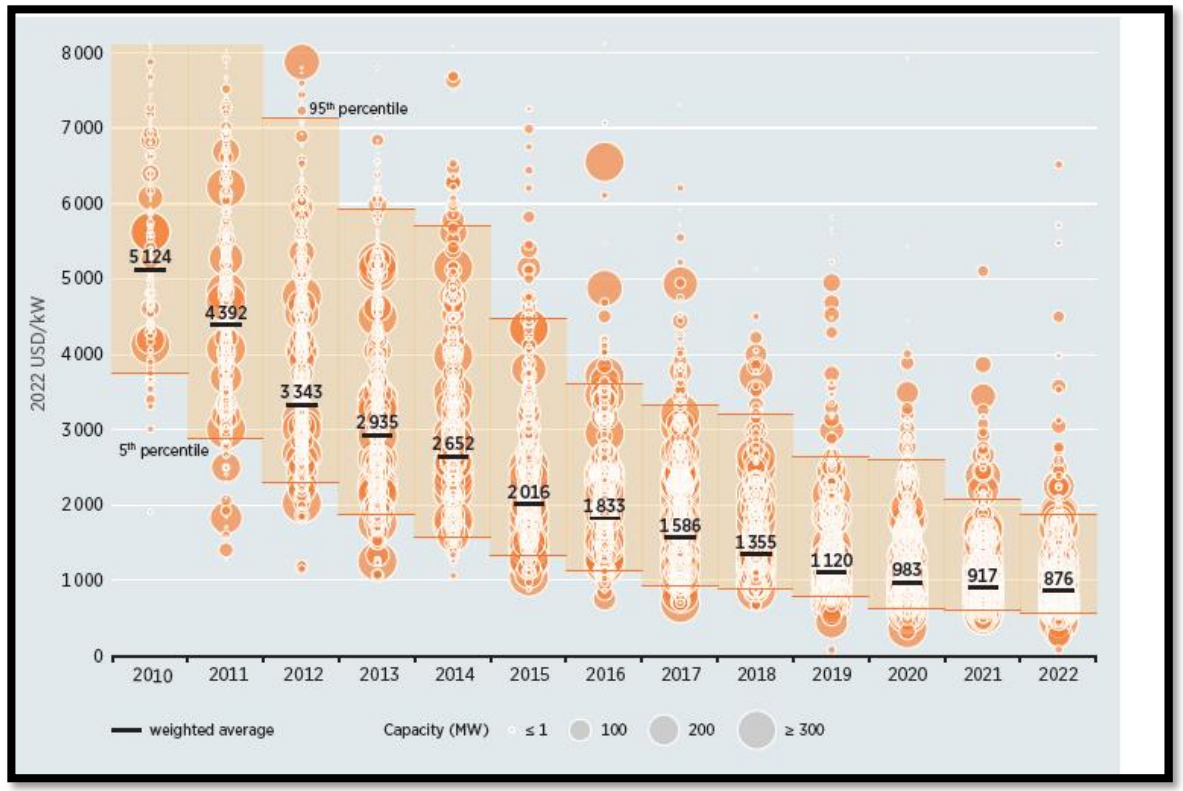
REN21

The Declining Costs of Solar PV



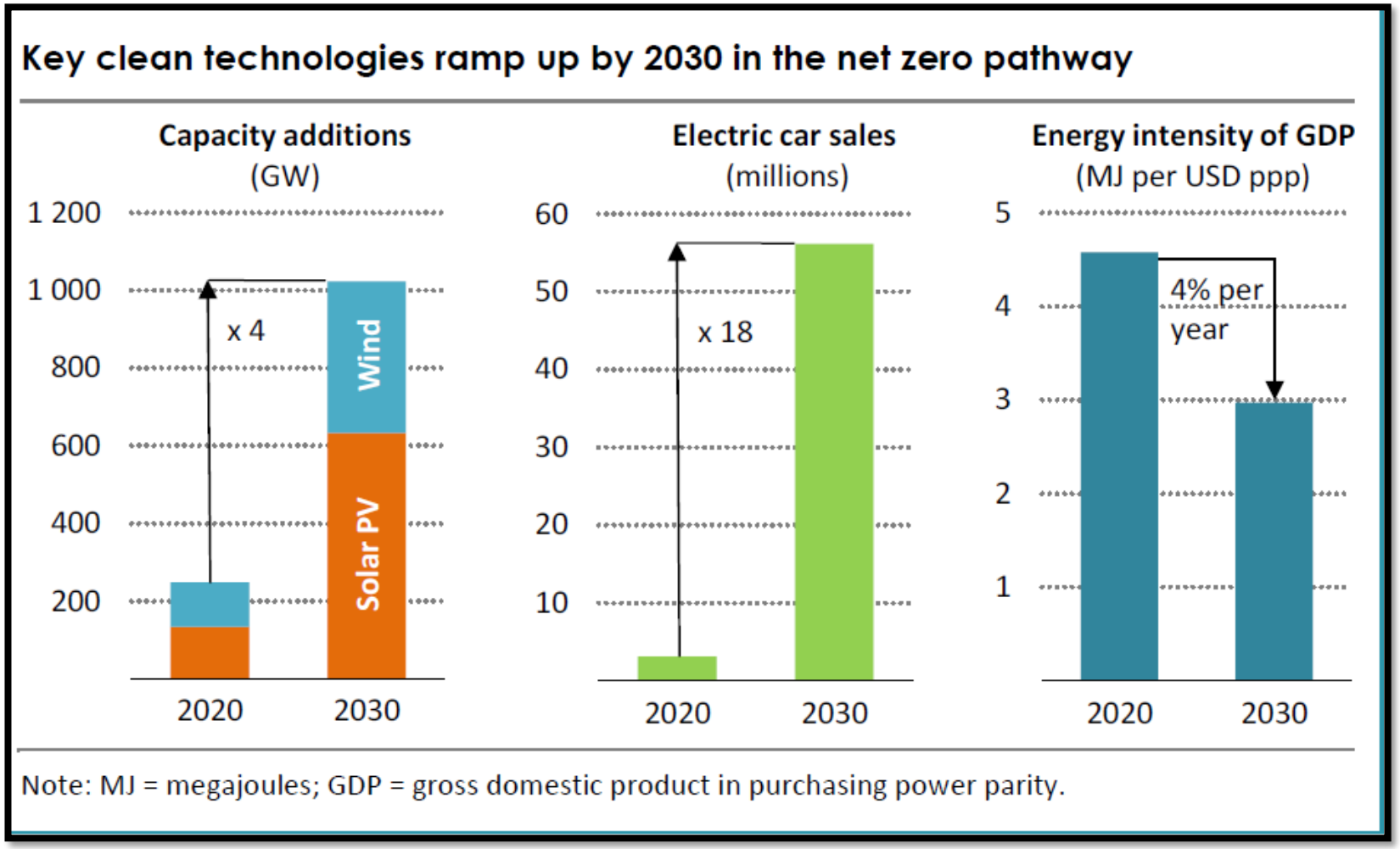
Global LCOE for newly commissioned utility scale systems (2010-2022)

Installation costs utility scale PV systems (2010-2022)



IRENA

Clean Energy Technologies Ramp Up Needed



Not forgetting more than 700 m people without electricity and 2.6 Billion without clean cooking technologies.

Good News! Solar Investment will exceed Oil investment in 2023

195GW new solar PV in 2022

IEA 2021

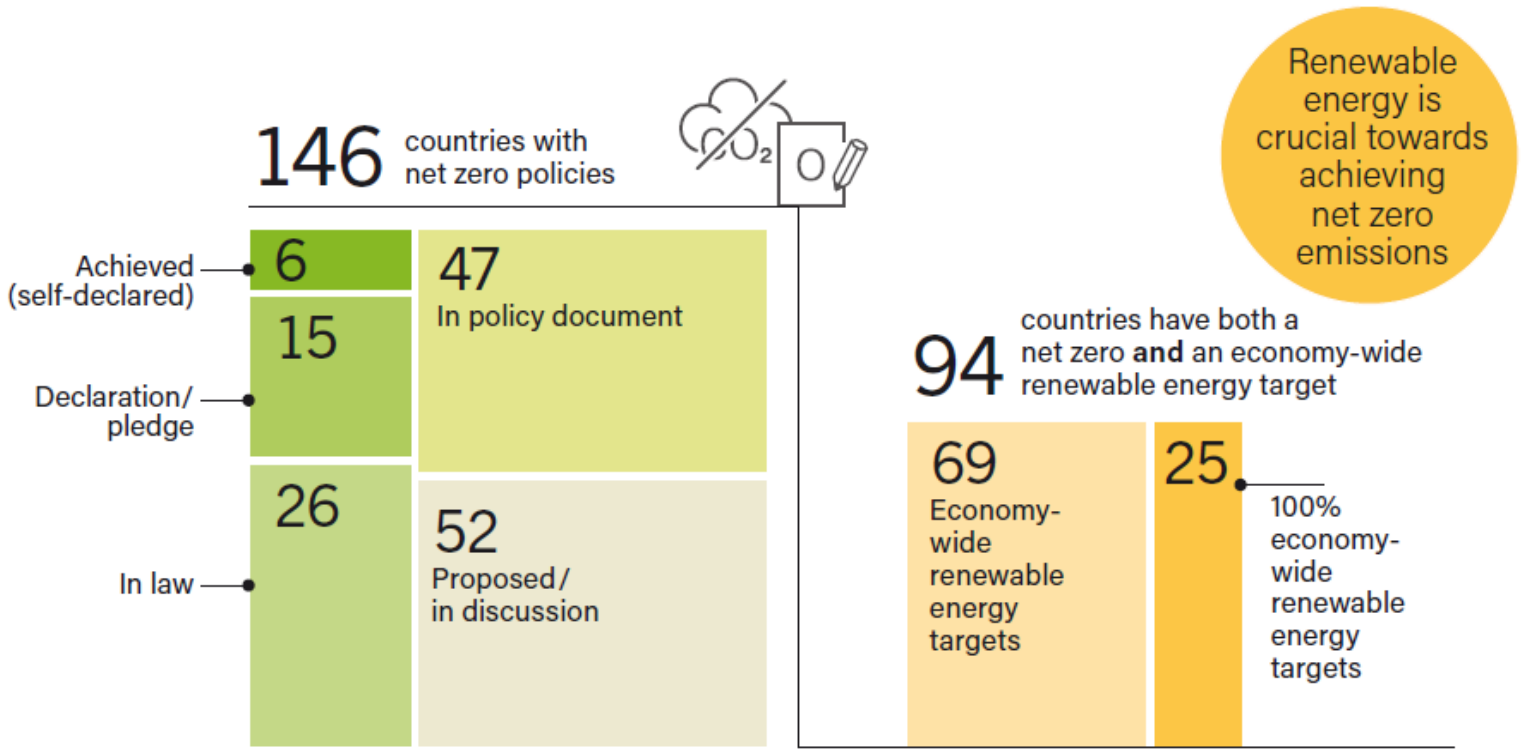
PICT NDCs

PICT	NDC Targets
Cook Islands	Reduce emissions from electricity generation by a further 43%, totalling an 81% emissions reduction by 2030 (relative to 2006)- Conditional
Fiji	30% reduction in GHG emissions (20% from RE in electricity conditional) . 10 % EE
Kiribati	Reduce emissions by 35,880tCO2e annually by 2025 and by 38,420tCO2e annually by 2030 (conditional)
Marshall Islands	Reduce GHG emissions to at least 32% below 2010 levels by 2025 and further to at least 45% below 2010 levels by 2030. (Conditional)
Micronesia (Federated States of)	35 % reduction in GHG (conditional). 28% reduction by 2025 - baseline 2006
Nauru	100% RE on grid by 2050 (61% conditional)
Niue	80% RE in electricity generation by 2025- 69% conditional
Palau	45% renewable energy , 35% energy efficiency by 2025, 22% energy sector emissions reductions below 2005 levels by 2025- 95% conditional
Papua New Guinea	78% of electricity from renewable energy sources by 2030 - 100% conditional
Samoa	100% Electricity from Renewables by 2025 (Conditional) (26% reduction by 2030 overall)
Solomon Islands	**27% reduction in GHG emissions by 2025 and 45% reduction in GHG emissions by 2030 (Conditional)**
Tonga	13% reduction in GHG emission by 2030 compared to 2006 through a transition to 70% RE electricity as well as energy efficiency measures (100% conditional)
Tuvalu	-
Vanuatu	**100% renewable energy in the electricity sector by 2030 (Conditional)**

Mostly conditional and involve the Electricity Sector

8 PICTs have submitted their Enhanced NDCs

FIGURE 8.
Countries with Net Zero and Renewable Energy Targets, 2022



Source: See endnote 145 for this module.

UN SDG - 17 Goals, 169 Targets (2015-2030)

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

Main driver for many other SDGs!

SDGs and NDCs

“ The SDGs are integrated and indivisible, balancing economic, social, and environmental dimensions of sustainable development, whilst the Paris Agreement aligns with the 2030 Agenda and demands urgent climate action, The alignment of these two agendas is imperative to reduce duplication and increase efficiency - maximizing resources, technical capacity, information, and expertise sharing “ UNDP 2017

NDCs Legally Binding

SDGs not Legally Binding

SDG 7 Progress (Global)

- **Access to electricity**

Globally, 91 percent of the population had access to electricity in 2020, leaving **733 million people unserved**

- **Access to clean cooking technologies**

In 2020, 69 percent of the global population had access to clean cooking fuels and technologies.

- **Renewable energy**

In 2019, the global share of renewable energy sources in total final energy consumption (TFEC), including traditional uses of biomass, was 17.7 percent,

- **Energy efficiency**

The primary energy intensity was 4.69 megajoules (MJ) per U.S. dollar in 2019. 1.5 percent improvement from 2018

- **International public financial flows to developing countries in support of renewable energy**

The international financial flows to developing countries in support of clean energy were USD 10.9 billion in 2019.

SDG 7 Indicator: Electricity Access

Sustainable Development Goal 07 - Affordable and Clean Energy						
	2016	2017	2018	2019	2020	
Indicator: 7.1.1 Population with access to electricity						
Cook Islands	99.9	99.9	100	100	100	
Fiji		96	99.3	99.7	100	
French Polynesia	100	100	100	100	100	
Guam		100	100	100	100	
Kiribati	84.9	86.2	53.9	90.0	91.9	
Marshall Islands	93.1	94.3	95.9	97.5	99.2	
Micronesia (Federated States of)	75.4	77.9	79.7	81.3	82.9	
Nauru	99.2	99.9	99.9	100	100	
New Caledonia	100	100	100	100	100	
Niue	98.7	99.3	99.4	99.5	99.7	
Northern Mariana Islands		100	100	100	100	
Palau		100	100	100	100	
Papua New Guinea	22.9	54.4	55.7	59.7	60.4	
Samoa	96.4	96.8	99.9	99.2	100	
Solomon Islands		62.9	66.1	69.8	73.3	
Tonga	97	98.4	99.1	98.4	100	
Tuvalu	97.3	98.9	99.1	99.7	99.6	
Vanuatu	57.8	62.8	61.7	64.6	67.3	

Some PICs still struggling with access issues

Is it affordable?
Is it clean?

https://stats.pacificdata.org/

SDG 7 Indicator: Clean Fuel and Technology

Indicator: 7.1.2 Population with primary reliance on clean fuels and technology						
			2018	2019	2020	2,021
Fiji						49.5
Kiribati			9.7			
Samoa				48		
Tonga				83.7		
Tuvalu				90		

Access to clean cooking still a major challenge

SDG Indicator: RE Share in Final Energy

Indicator: 7.2.1 Renewable energy share in the total final energy consumption	2016	2017	2018	2019	
American Samoa	0.3	0.49	0.49	0.5	
Cook Islands	1.93	2.31	4.05	3.69	
Fiji	27.68	28.55	25.8	26.48	
French Polynesia	8.08	8.07	7.72	7.67	
Guam	3.03	2.96	3.04	3.02	
Kiribati	46.49	41.15	41.03	41.03	
Marshall Islands	11.75	11.75	11.72	11.7	
Micronesia (Federated States of)	1.57	1.41	1.75	1.78	
Nauru	0.18	0.6	0.66	0.61	
New Caledonia	3.7	5.08	4.77	5.4	
Niue	22.07	22.36	23.4	22.38	
Northern Mariana Islands	0	0	0	0	
Palau	0.05	0.05	0.3	0.29	
Papua New Guinea	54.56	54.45	52.96	53.09	
Samoa	36.82	35.79	36.63	34.21	
Solomon Islands	48.7	48.98	48.64	48.39	
Tonga	2.03	1.96	1.78	1.77	
Tuvalu	9.46	8.74	8.32	8.2	
Vanuatu	33.4	36.13	29.96	31.86	
Wallis and Futuna	0.62	0.67	0.71	0.71	

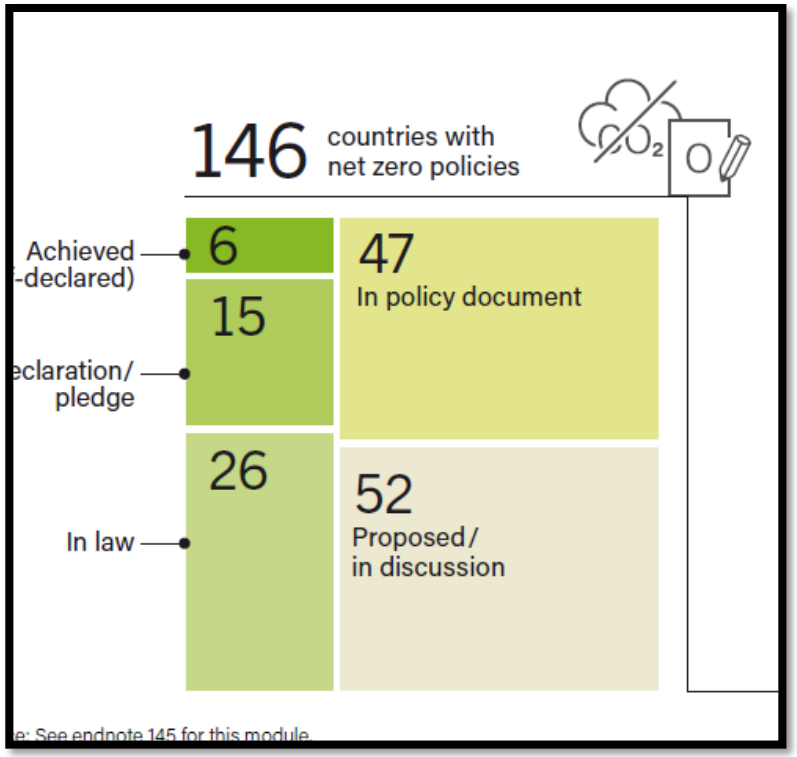
SDGs in NDCs ?

Member Country	SDGs in NDC	Energy Access	Renewable Energy	Energy Efficiency	Cooperation & Investment	Infrastructure & Technology	Aliign-ment
Australia	×	×	✓	✓	×	×	40%
Fiji	×	×	✓	✓	✓	✓	80%
Kiribati	×	✓	✓	✓	×	×	60%
Nauru	×	×	✓	✓	×	×	40%
New Zealand	×	×	✓	✓	×	×	40%
Papua New Guinea	×	×	✓	✓	×	×	40%
Samoa	×	×	✓	×	×	×	20%
Solomon Islands	×	×	✓	✓	×	×	40%
Tonga	×	✓	✓	✓	×	×	60%
Tuvalu	×	×	✓	✓	✓	✓	80%
Vanuatu	×	✓	✓	✓	×	×	60%
Total %		30	100	90	20	20	51%

FESRIP Vol.2

8 PICs have now submitted their enhanced NDCS.

A Net-Zero Plan



REN21, GSR

- 20 nations (including EU) emit about 75% of the global GHGs
- Many cities, Educational Institutes and Financial have joined the ;race to zero pledge
- **Four Pacific Island Countries (Fiji, Vanuatu, Tonga and RMI) have prepared their Low Emission development Strategies (LEDS)**
- **Port Vila call for Phase Out Fossil Fuels (PETMM 2023)-** Just transition

Future is Electric

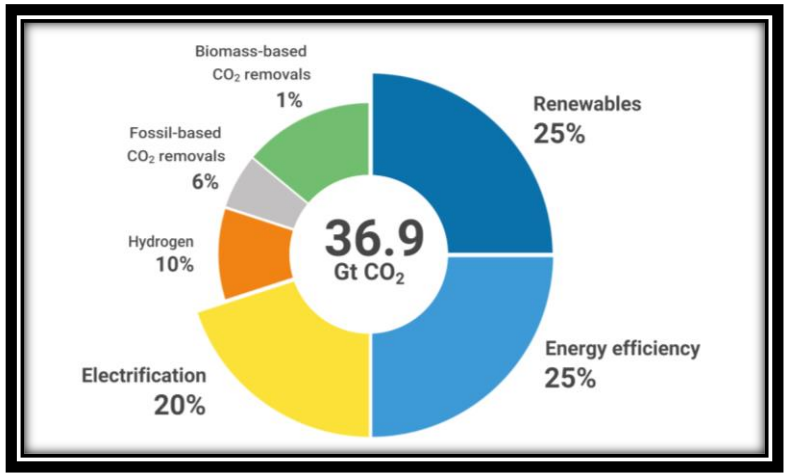
“Electricity is taking on an ever-more central role in the lives of consumers and, for an increasing number of households, it promises to become the energy source on which they rely for all their everyday needs: mobility, cooking, lighting, heating and cooling. The reliability and affordability of electricity is set to become even more critical to all aspects of people’s lives and well-being.”

IEA , WEO 2021

“(RE) Electricity is the new oil”

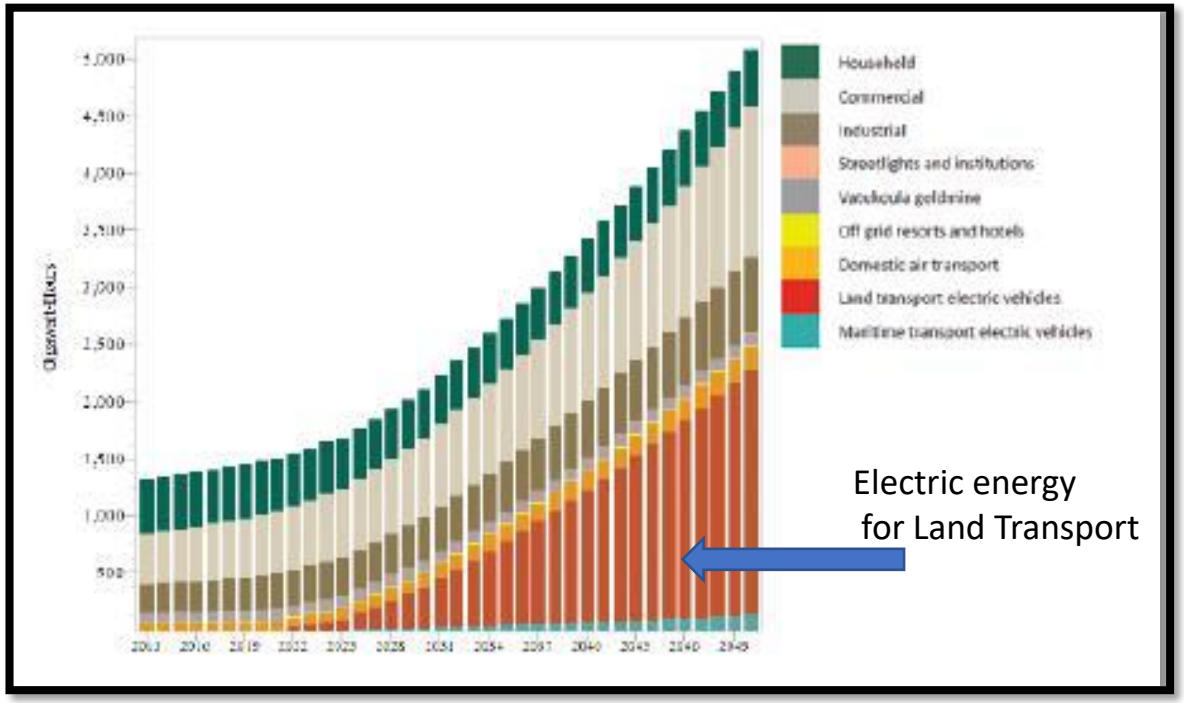
WEC

Synergising NDCs and SDGs

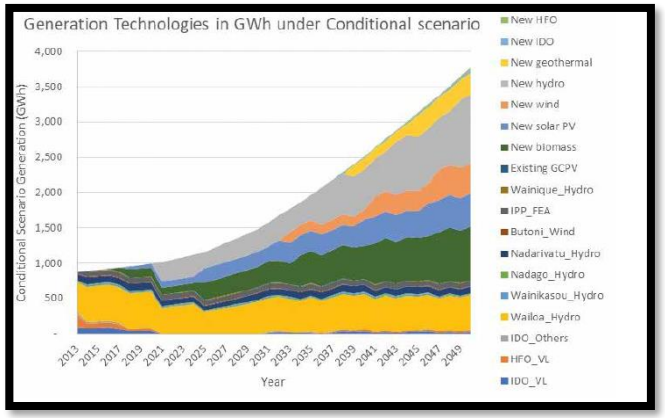


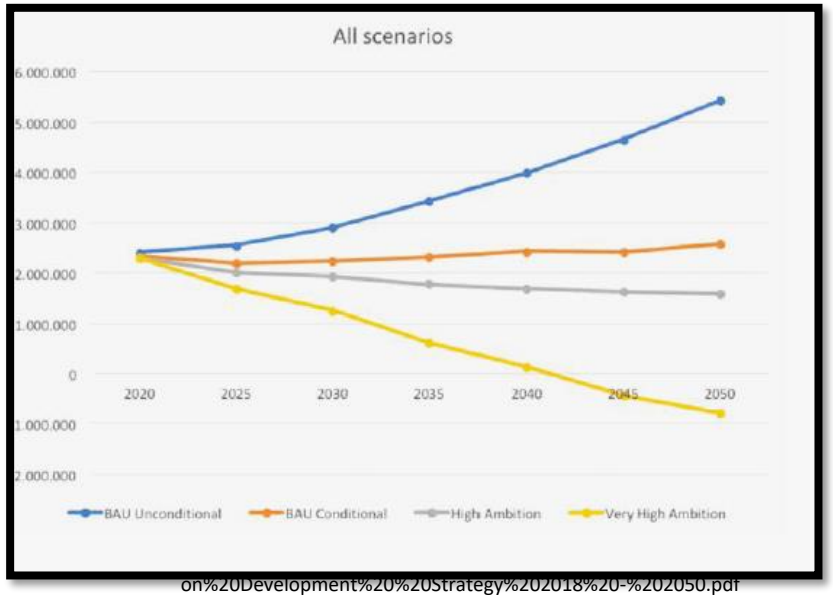
Emissions reduction (IRENA)

Future is Electric : Fiji LEDS



High Ambition Scenario : Electrify most energy processes

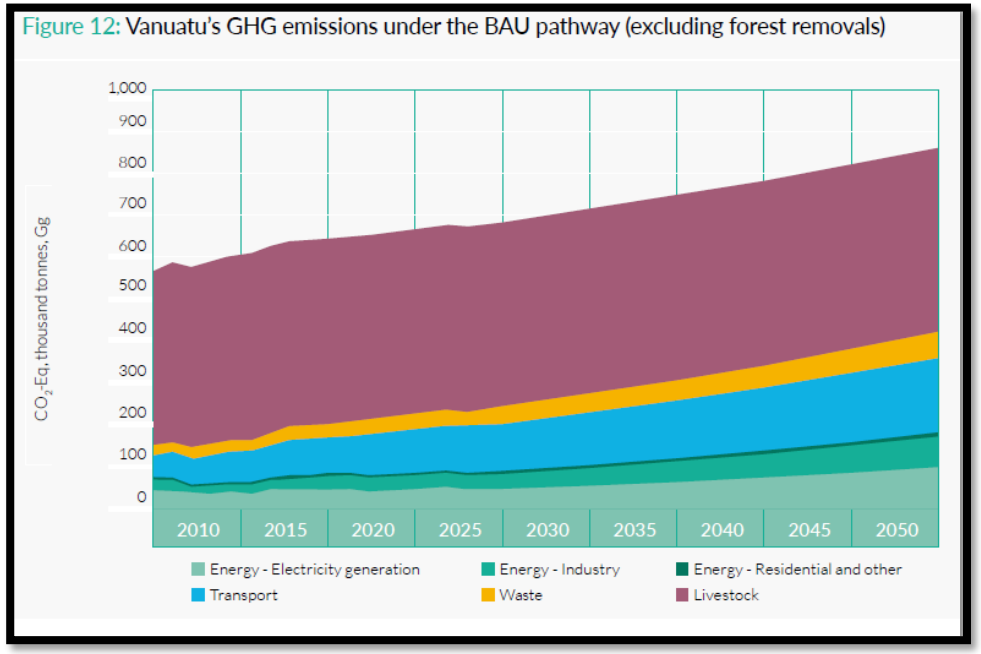


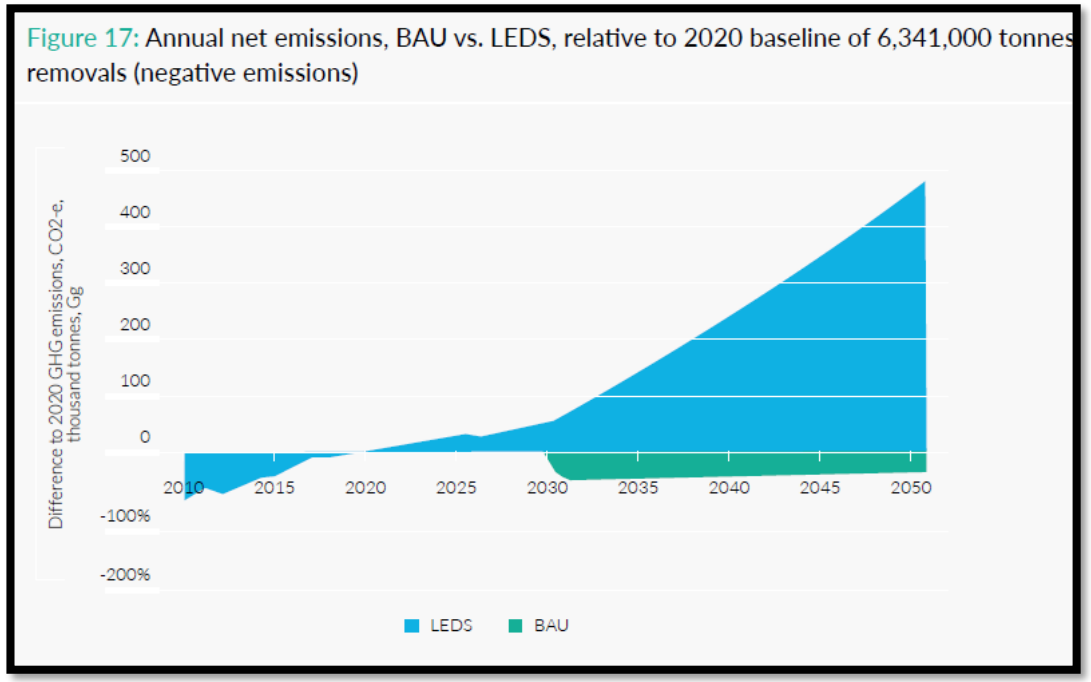


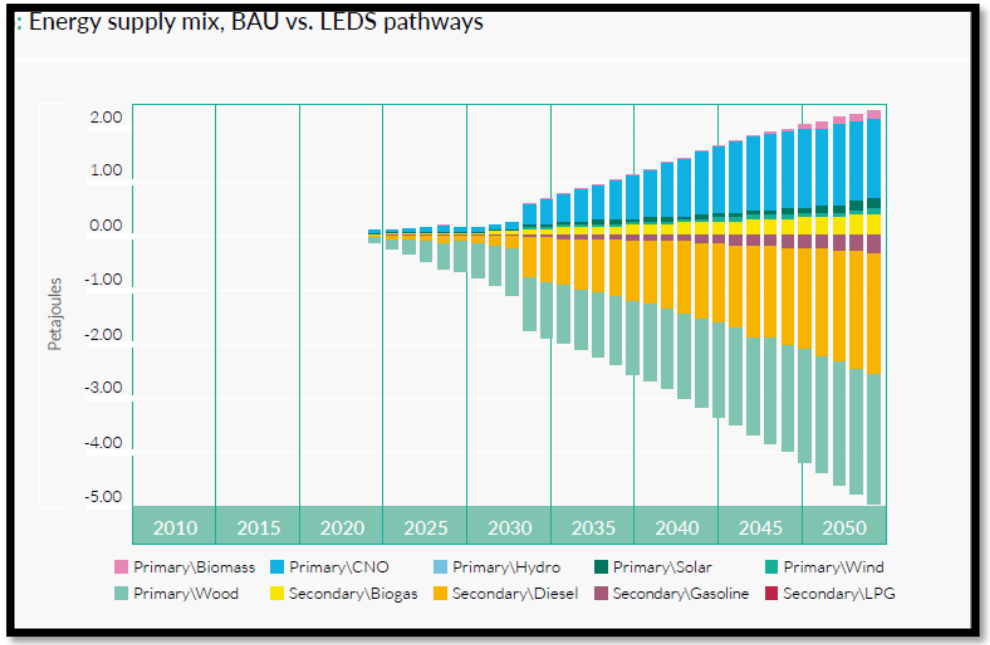
on%20Development%20%20Strategy%202018%20-%202050.pdf

Vanuatu LEDS

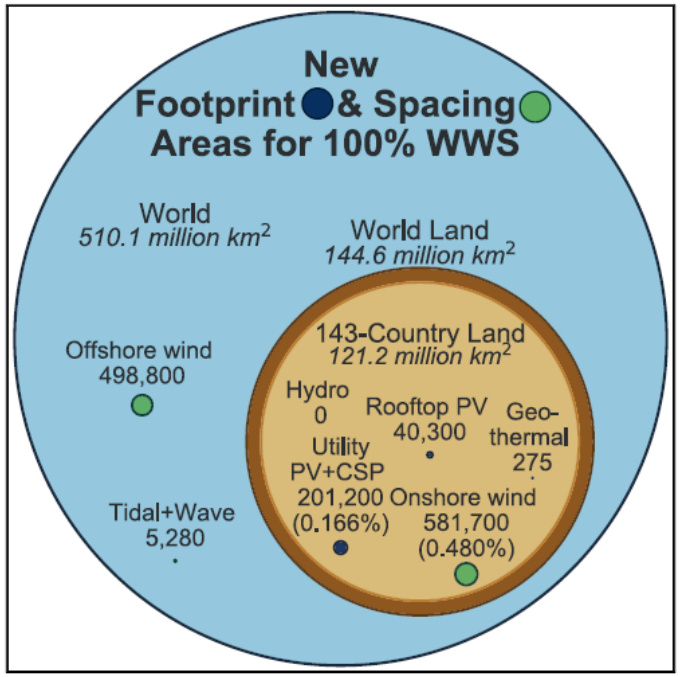
Vanuatu had a net negative emissions balance in 2015







100 % RE scenarios



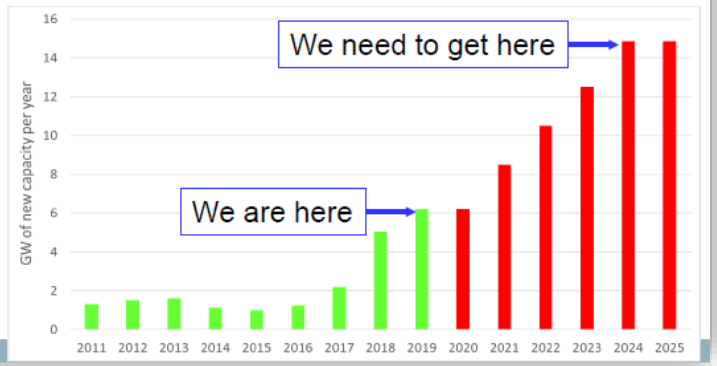
- 100% RE energy (WWS) based solutions proposed for 143 countries

(Jacobson et al, One Earth, 1(4), 2019

100% RE in Australia
(Bleakers et al, Energy 133, 2017

Zero oil, gas and coal in 2050

- **85%** reduction in emissions
- Electrify everything (transport, heating, industry etc)
- → **treble** electricity production
- → deploy ~**15** GW per year of solar & wind



Electricity Sector and NDCs, SDGs and Net Zero

- Power sector plays a crucial role in climate change mitigation
- Electricity providers should be part of all sectorial planning
- No ‘one size fits all’ : each country/utility is different
- Research and resource data needed to design/implement appropriate systems
- Innovative Financing , Carbon Credits. Productive use

  of energy, Human and technical Capacity
- COP27: The new Loss and Damage Fund : Cyclone/climate change related damages to power infrastructure

Question : Are the regional utilities/electricity providers equipped to support their governments’ ambitious commitments and targets? If not, what is the way forward ?

THE UNIVERSITY OF THE SOUTH PACIFIC

Capacity Building @USP

- Accredited BE programmes in Mechanical and Electrical Engineering.
- BSc in Physics and BE in Civil Engineering TNA
- PGD, Masters and PhD

Sustainable Energy Training Centre @ USP TAFE

- Grid Connected PV Systems - Design and Install
- Stand Alone Power Systems (Off-Grid) -Design and Install
- Battery Storage Systems for Grid Connected PV System - Design and Install
- Online with hands-on training : Accredited Certification

Centre being established in collaboration with SEIAPI (Funding needed for equipment for hands-on training).

UNEP- USP Technology Need Assessment (TNA) Project : A regional project aiming to develop tangible project concept notes by national stakeholders.

THE UNIVERSITY OF THE SOUTH PACIFIC

Thank you