

Malaysia speaker: Mr. Austin Lim

Working Experience

- Green Building Consultant, IEN Consultants Sdn Bhd
- Certified GreenRE Manager
- Area of Interest: Solar photovoltaic & thermal design, passive building design, building thermal transfer, etc.
- LEED (US), GBI (Malaysia), GreenRE (Malaysia) & Green Mark (Singapore)

Education background

- University Malaya, Master's degree (Renewable Energy)
- University Malaysia Pahang, Bachelor's degree (Energy & Environmental Engineering Technology)

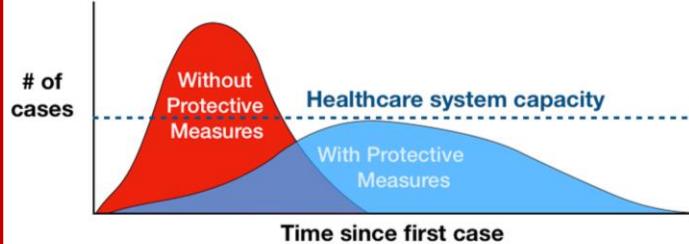


Transition to Renewable Energy

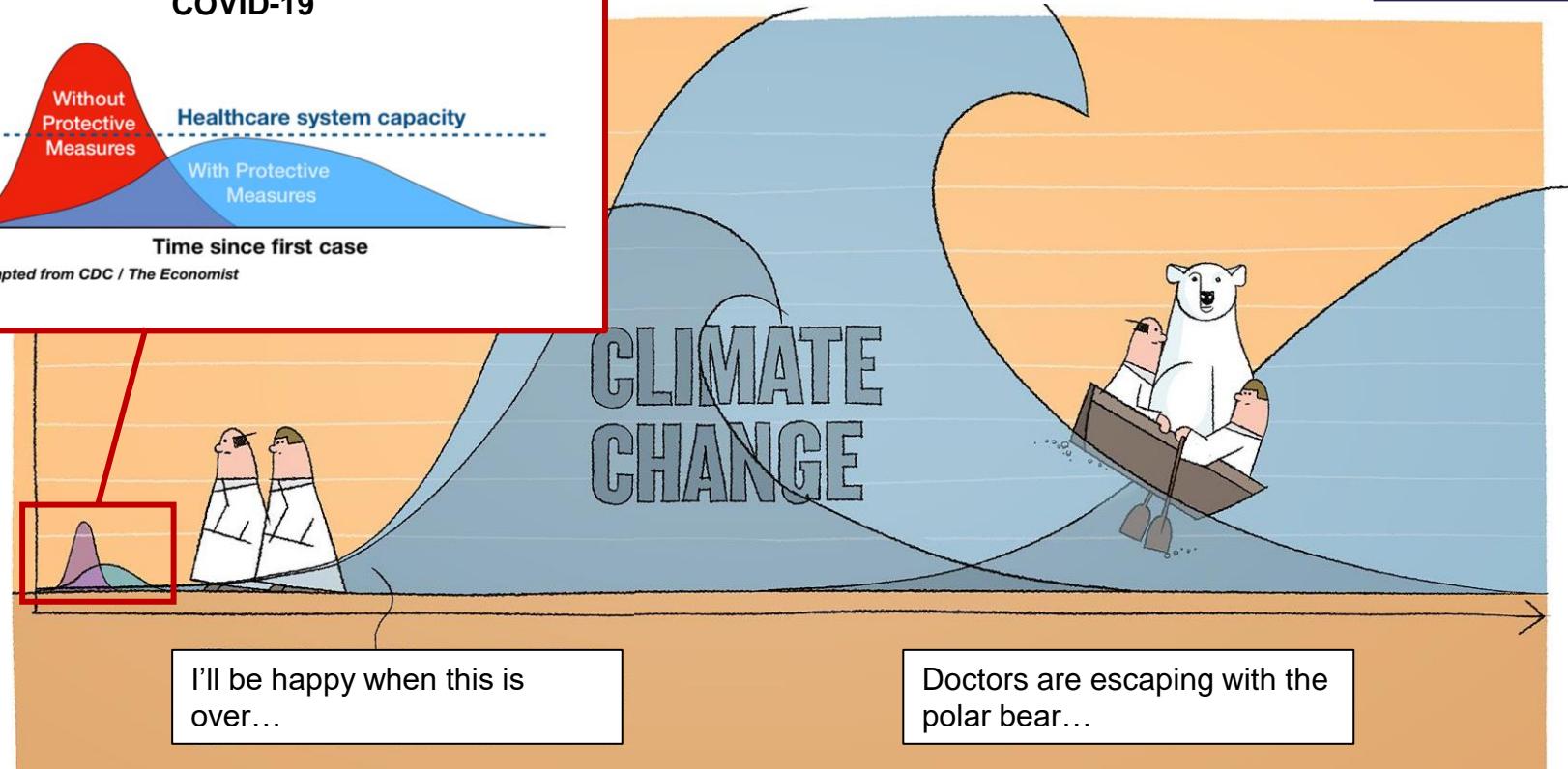
AUSTIN LIM

WHAT WILL HAPPEN NEXT?

COVID-19



Adapted from CDC / The Economist



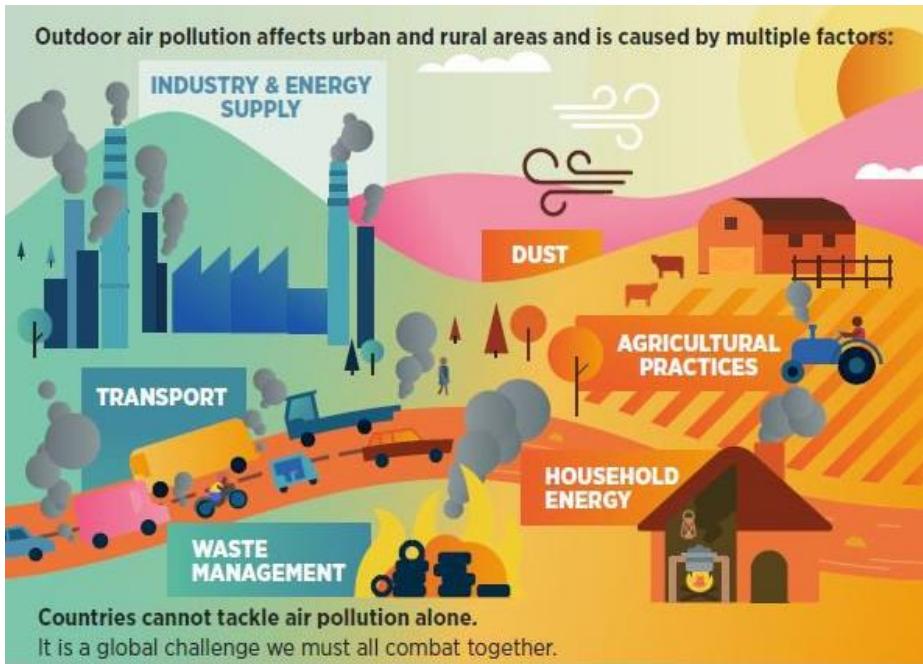
Are we able to handle the curve?

How about this?

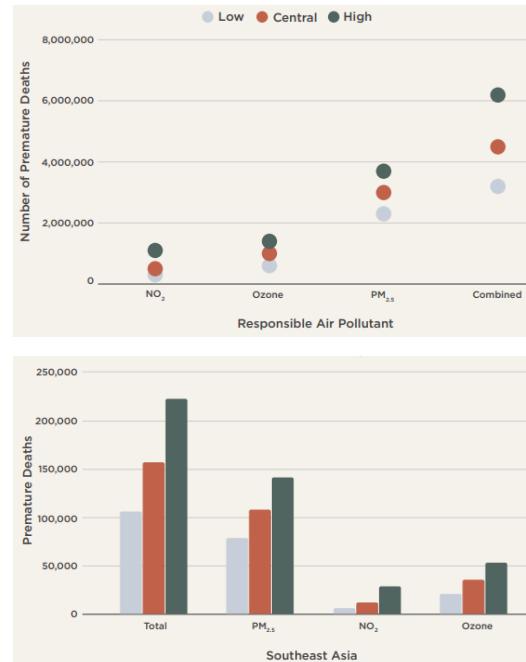
Are you ready for bigger trouble?

According to researchers of Harvard University,

- Air pollution linked to COVID-19 mortality
- 1 $\mu\text{g}/\text{m}^3$ increase in $\text{PM}_{2.5}$ is associated with an 8% increase in COVID-19 death rates



Estimated Number of Premature Deaths in 2018

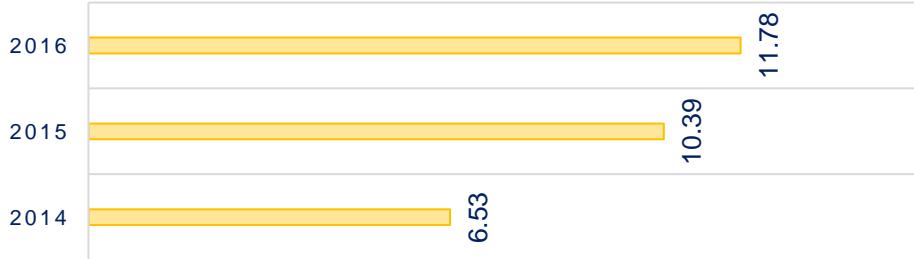


Estimated 4 million premature deaths each year contributed to cardiovascular disease, respiratory disease & lung cancer through exposure to $\text{PM}_{2.5}$.

(Source: Greenpeace)

TRUE COST OF FOSSIL FUEL

MALAYSIA FOSSIL FUEL SUBSIDIES IN BILLION U.S. DOLLARS



Source: *International Energy Agency*



Hidden costs of fossil fuels

Hidden costs of fossil fuels
New studies shed light on the substantial external costs of fossil fuels, arising mostly from air pollution.

For centuries humans have been extracting and using fossil fuels. This energy source is the backbone of our economy and the way we live. But it's not just the price of fossil fuels that matters. There are hidden costs that are not reflected in the price you pay at the pump. These costs are often referred to as 'externalities'.

For example, the cost of fossil fuels is not just the cost of fuel itself, but also the cost of the damage it causes to the environment and to human health. This damage is caused by the burning of fossil fuels, which releases greenhouse gases and other pollutants into the air. These pollutants can have a range of negative impacts, including respiratory problems, heart disease, and even death.

One of the most significant hidden costs of fossil fuels is the cost of air pollution. Air pollution from fossil fuel use is a major contributor to climate change, and it also causes a range of health problems, including respiratory problems, heart disease, and even death.

Another hidden cost of fossil fuels is the cost of energy efficiency. Fossil fuels are a relatively inefficient source of energy, and this inefficiency leads to a waste of energy and resources. This waste of energy and resources can have a range of negative impacts, including respiratory problems, heart disease, and even death.

Finally, there are also hidden costs associated with the extraction and transportation of fossil fuels. These costs include the cost of equipment, the cost of labor, and the cost of transportation. These costs are often referred to as 'externalities'.



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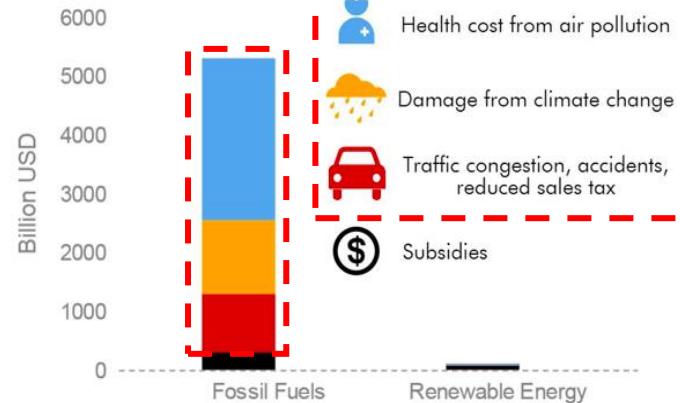
The real price: Cost of **damage to health & environment** is not reflected in current price of fossil fuel.

An IMF study from 2013 showed that annual cost to Malaysian society from **domestic fossil fuel use is RM 88 billion**, which makes the **RM 800 million cost in severe haze** years look minuscule in comparison.

(Source: IEN's article in *The Star Malaysia*)

THE TRUE COST

USD333 billion globally in subsidies annually translates to USD5.3 trillion in total cost, after factoring in externalities.



True Cost of Fossil Fuels are
USD 5.3 TRILLION per year
(6.5% of GLOBAL GDP)

Source: *International Monetary Fund (IMF)*

NO ONE IS PAYING

LEVELING THE PLAYING FIELD

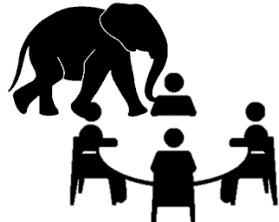
Energy pricing



"I have no comment on it."

"Let's move on to next topic."

"I think we have an **elephant in the room.**"



Fossil fuels are **subsidized & underpriced**



LEVEL PLAYING FIELD?

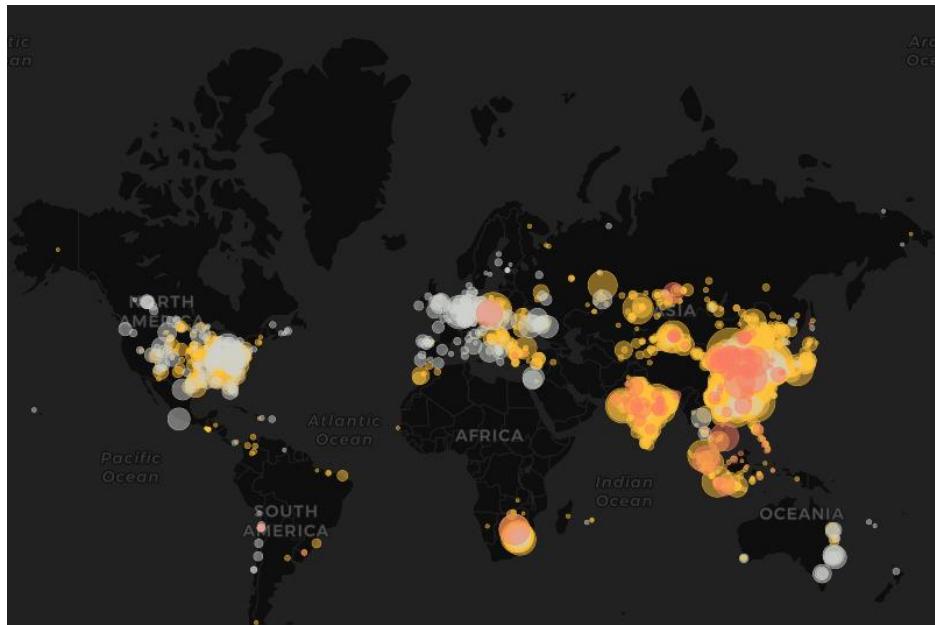
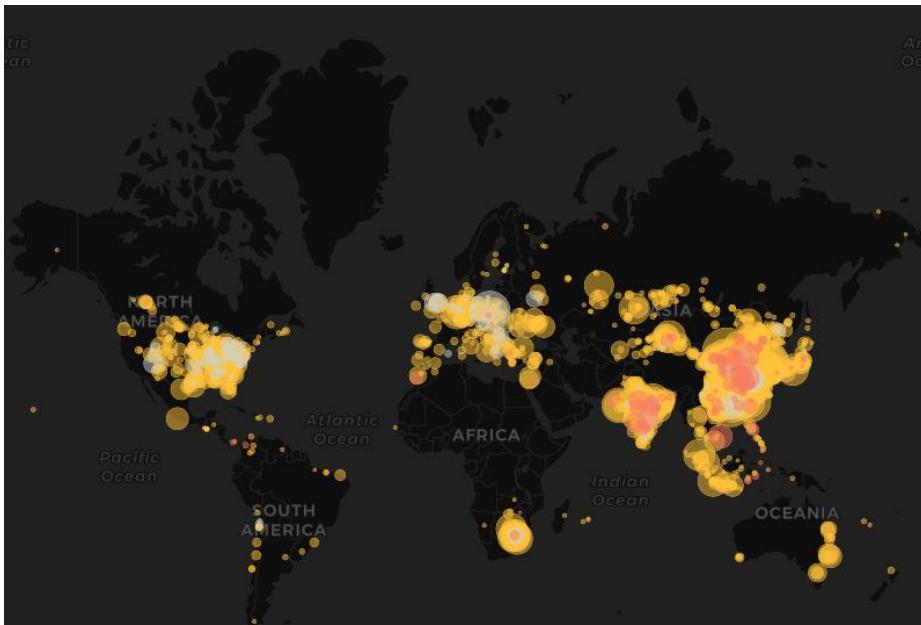


GLOBAL COAL POWER PLANT STATUS

2018

● Closing ● Operating ● New ● Under construction

2019



Source: Carbon Brief

Belgium quits coal power with Langerlo plant closure

Austria's last coal power plant shuts down

Sweden Shuts Down Its Last Coal Plant Two Years Early

Portugal ends coal burning two years ahead of schedule

U.S. coal-fired power plants closing fast despite Trump's pledge of support for industry

ENERGY MAJORS' TRANSITION STRATEGIES



MW of Total Renewable Energy



MW of Wind Energy



MW of Solar Energy

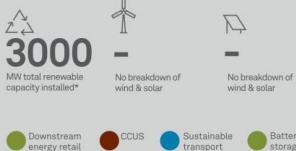
Total

Large focus on solar, with interests in batteries, wind, retail

Targets:
Goal of 25 GW of renewables installed by 2025.
Goal to reduce Scope 1 and 2 GHG emissions from 46 million mt in 2015 to less than 40 million tons of carbon dioxide equivalent by 2025 across oil and gas operations.

Power Plays 2020 ranking: 1

Ambition ranking: 1



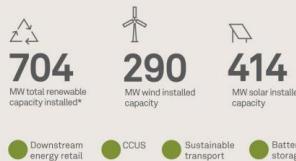
Shell

Inroads into retail power and sustainable transport

Targets:
Aims to cut net CO2 footprint by 20% by 2035 and 50% by 2050.
Capex guidance for 2021-2025 is average of \$2 billion-\$3 billion/year on power. No specific renewables target.

Power Plays 2020 ranking: 2

Ambition ranking: 4



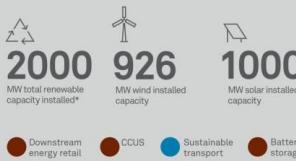
BP

Existing focus on solar, wind and EV charging, ambitious emissions targets from new CEO

Targets:
Net-zero CO2 emissions by 2050, including Scope 3.
10 GW globally by 2023 for Lightsource BP.

Power Plays 2020 ranking: 3

Ambition ranking: 2



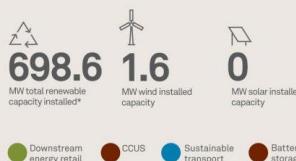
Repsol

Betting big on gas as transition fuel

Targets:
Net-zero emissions by 2050, including scope 3. Interim target of 40% reduction by 2040. Low carbon electricity generation capacity target of 7.5 GW by 2025. Includes existing CGGT and co-generation, but all new capacity will be renewable.

Power Plays 2020 ranking: 4

Ambition ranking: 6



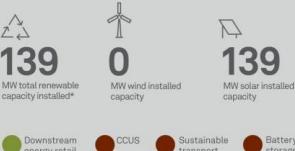
Eni

Large biofuels producer, with ambitions in solar and wind

Targets:
80% cut in net GHG emissions by 2050.
Potential installed capacity of 1.6 GW by 2022 and 5 GW in 2025, with ambition of 10 GW by 2030.

Power Plays 2020 ranking: 5

Ambition ranking: 5



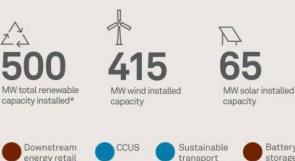
Equinor

Aims to become global offshore wind major

Targets:
Near 0 GHG emissions from operations by 2050
(40% reduction by 2030, 70% by 2040).
Aims for 12-16 GW renewables installed by 2035

Power Plays 2020 ranking: 6

Ambition ranking: 3



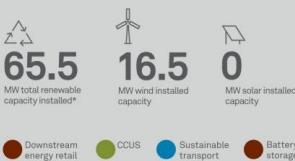
Chevron

Leveraging downstream networks for low-carbon liquid fuels

Targets:
Aims to cut net GHG emission intensity in upstream oil business by 5%-10% and upstream gas by 2%-5% from 2016-2023.
Hasn't disclosed specific targets for renewables investments.

Power Plays 2020 ranking: 7

Ambition ranking: 7



ExxonMobil

Focus on CCS and R&D on low-carbon technologies

Targets:
No CO2 reduction or renewables targets.
Reduce corporate-wide methane emissions by 15% by 2020, compared with 2016. Reduce flaring by 25% by 2020 compared with 2016.

Power Plays 2020 ranking: 8

Ambition ranking: 8



Large footprint

Moderate footprint

Minimal or no footprint

Source: S&P Global Platts Power Plays Database

Power Plays Ranking

- Existing footprint in renewable power generation
- Downstream energy retail
- Carbon capture, utilization & storage (CCUS)
- Sustainable transport
- Battery storage

Ambition Ranking

- Targets for scale of renewable power capacity
- Speed of further development
- CO2 emissions target

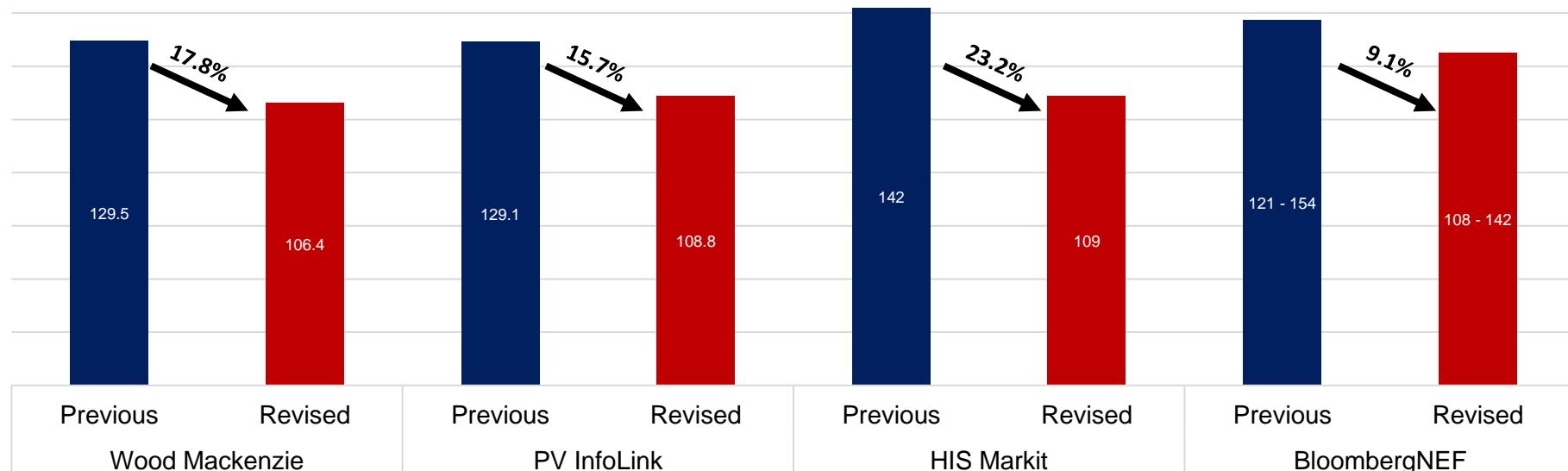
IMPACT OF COVID-19 ON RENEWABLE ENERGY GROWTH

- Project delays & cancellations
- Cutback in capital spending
- Complete or partial lockdowns - trigger supply chain disruption & commissioning works
- Restrictions on business activities, travel & border – Reduce energy demand in transport & industry

Country	Policy change	Impact year
Austria	Extension of the construction period for wind farms by 6 months	2020-2021
Denmark	3-5-month extension of commissioning deadlines for household wind turbines; 2-month extension for subsidy applications for biogas projects	2020
France	Extension of commissioning deadlines by 2-6 months	2020-2021
Germany	Federal network agency announced flexibility in project commissioning for previously auctioned projects	2020-2021
Greece	6-month extension for projects due to come online in mid-2020	2020-2021
India	30-day extension of commissioning deadlines for renewable projects after the lockdown	2020-2021
United Kingdom	6-month extension of the FIT completion deadline for community solar projects	2020
United States	Extension of PTC/ITC safe harbour provision proposal	2020-2021

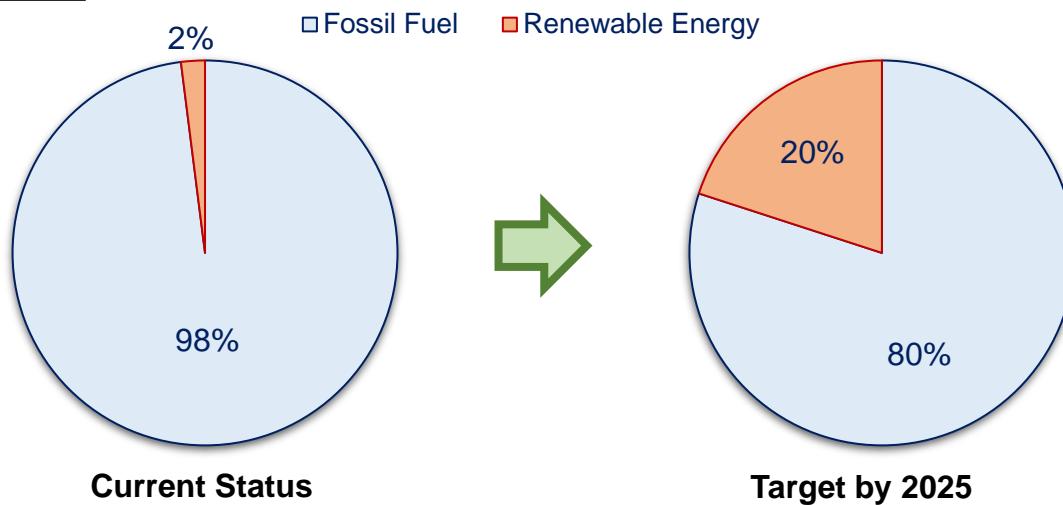
Source: International Energy Agency

Latest Solar Market Estimates of Leading Analyst (GW)



Source: *Taiyang News*

CAPACITY MIX TARGET



Think Deeply, Today Onwards

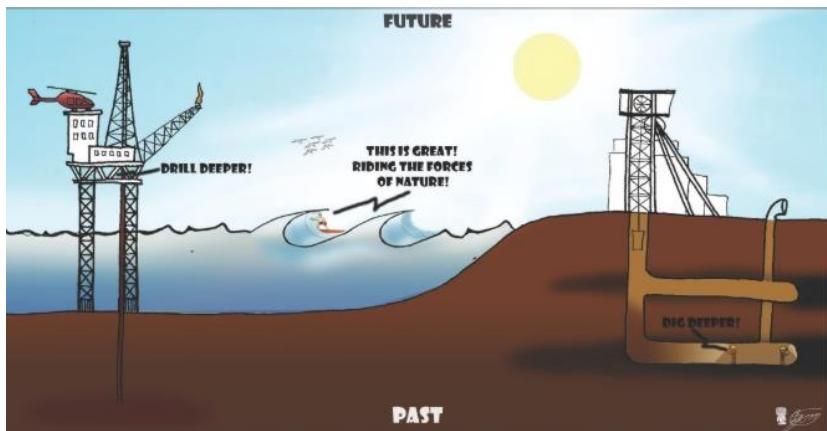
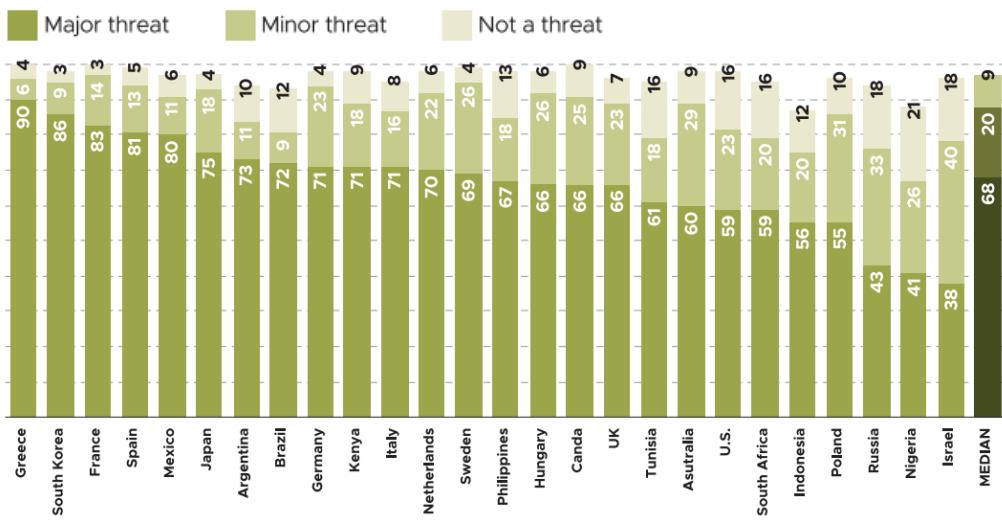
- Stop Fossil Fuel Subsidy programme?
- Less road congestion?
- More developed public transit?
- Reduce carbon emissions?
- More fund for economic stimulus package & RE growth?
- Improve rural electrification?



GREEN WAVE IS COMING

In most surveyed countries, majorities see climate change as a major threat

Global climate changes is a _____ to our country



The energy solutions of tomorrow are no longer found below the ground. Time to utilize renewable energy like wind and sun

– and to ride the Green Wave!

Source: IEN's article in *Green Plus Magazine*

Climate change is an "**existential threat**" to humanity (António Guterres, UN Secretary-General, Vienna, 2018)

The climate crisis is our "**third world war**" and needs a bold response because we **cannot afford not to act**, as our **civilization is at stake**" (Joseph Stiglitz, Chief Economist of the World Bank, 2019)

Thank you.

Questions?

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