



The Urgency of Implementing Carbon Tax in Indonesia

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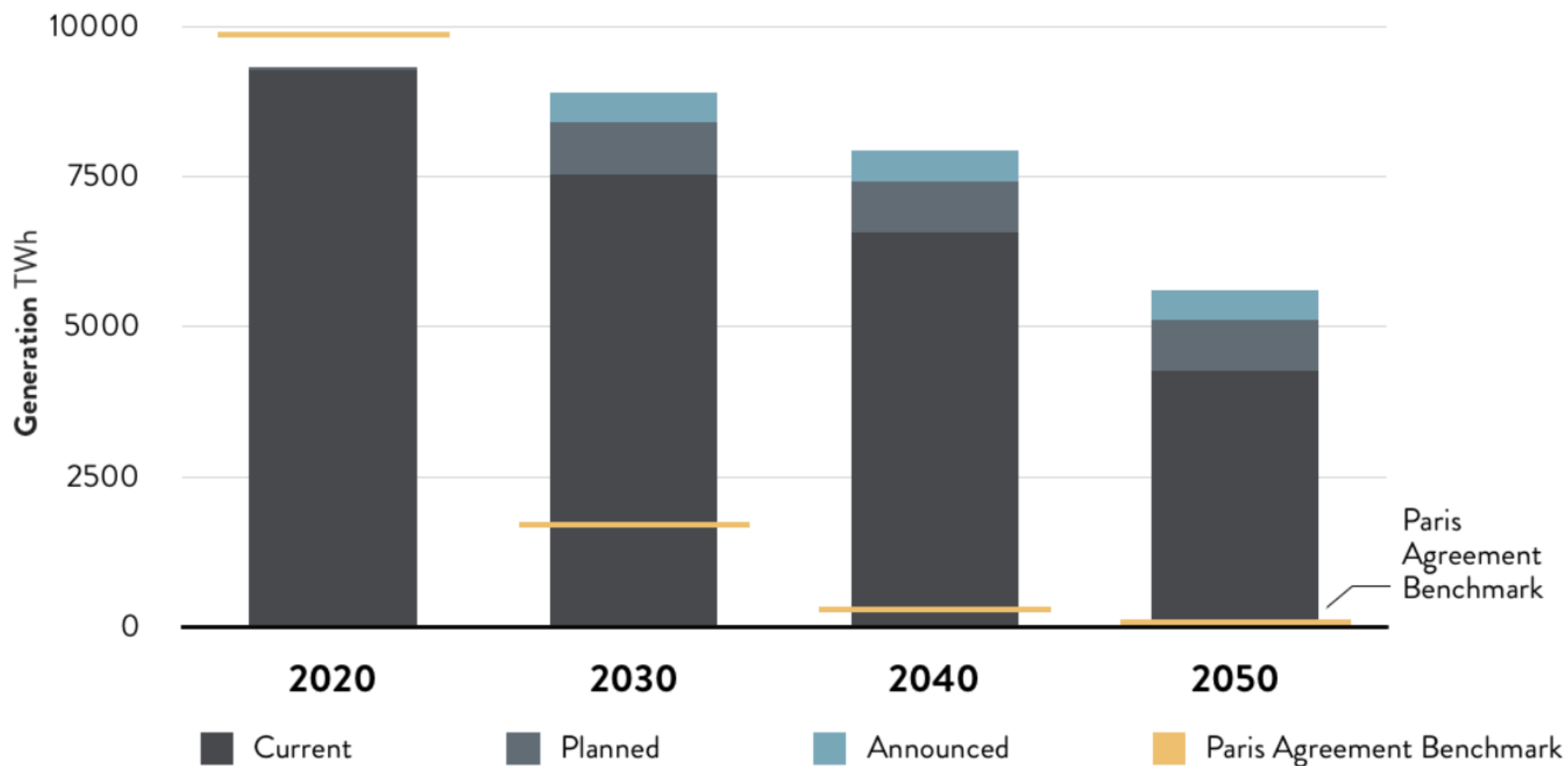
Global Trends on Decarbonization

Global Trends on Decarbonization

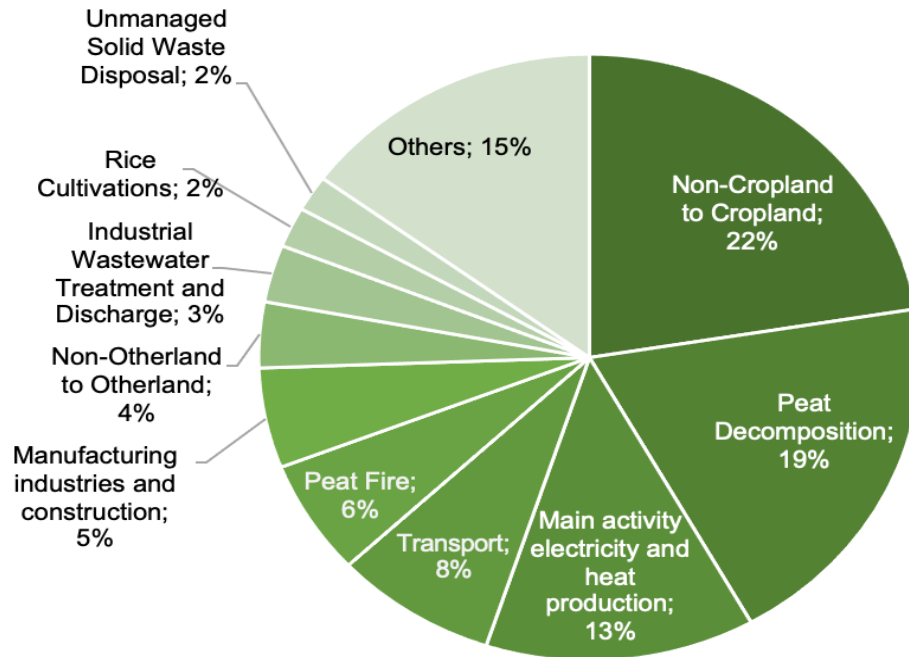
Paris Agreement COP21
2015: Global Climate Target,
Climate Financing

Global target of NZE (Net
Zero Emission) by 2050 to
reaching a global warming
maximum of 1.5⁰c

WORLD'S COAL BASED POWER GENERATION INCOMPATIBLE WITH PARIS AGREEMENT BENCHMARKS



Indonesia's Current Emission Status and Decarbonization Pathways



Source: Ministry of Environment and Forestry (2019)

- ✓ Indonesia has lost 27.7 Mha of its tree cover by 2020, about 17% of its tree cover in 2000;
- ✓ 47 percent of electricity in Indonesia by 2038 would still be generated from coal combustion.

Various established plans

- ✓ RAN-GRK (National Action Plan for Reducing Greenhouse Gas Emissions) (2011)
Targets a 26% reduction in GHG emissions in the 2010-2020 period in accordance with RPJP (the Long-Term Development Plan) and RPJM (the Medium-Term Development Plan)
- ✓ NDC (2016)
committed to reduce 29% of its GHG emissions against the BAU or 41% of its emission with international support by 2030
- ✓ RPJMN: three environmental-related national priorities
 - LCDI (2019)
Includes development strategies that can assist Indonesia in accomplishing the country's climate goals and protect and improve its natural resources

Indonesia has initiated strategies to pursue more ambitious climate targets

LTS-LCCR

Long term strategies from Ministry of Environment and Forestry to achieve **net zero emission by 2060 or faster**.
Updated version of NDC + longer projection (up to 2050)

Bappenas' Scenarios

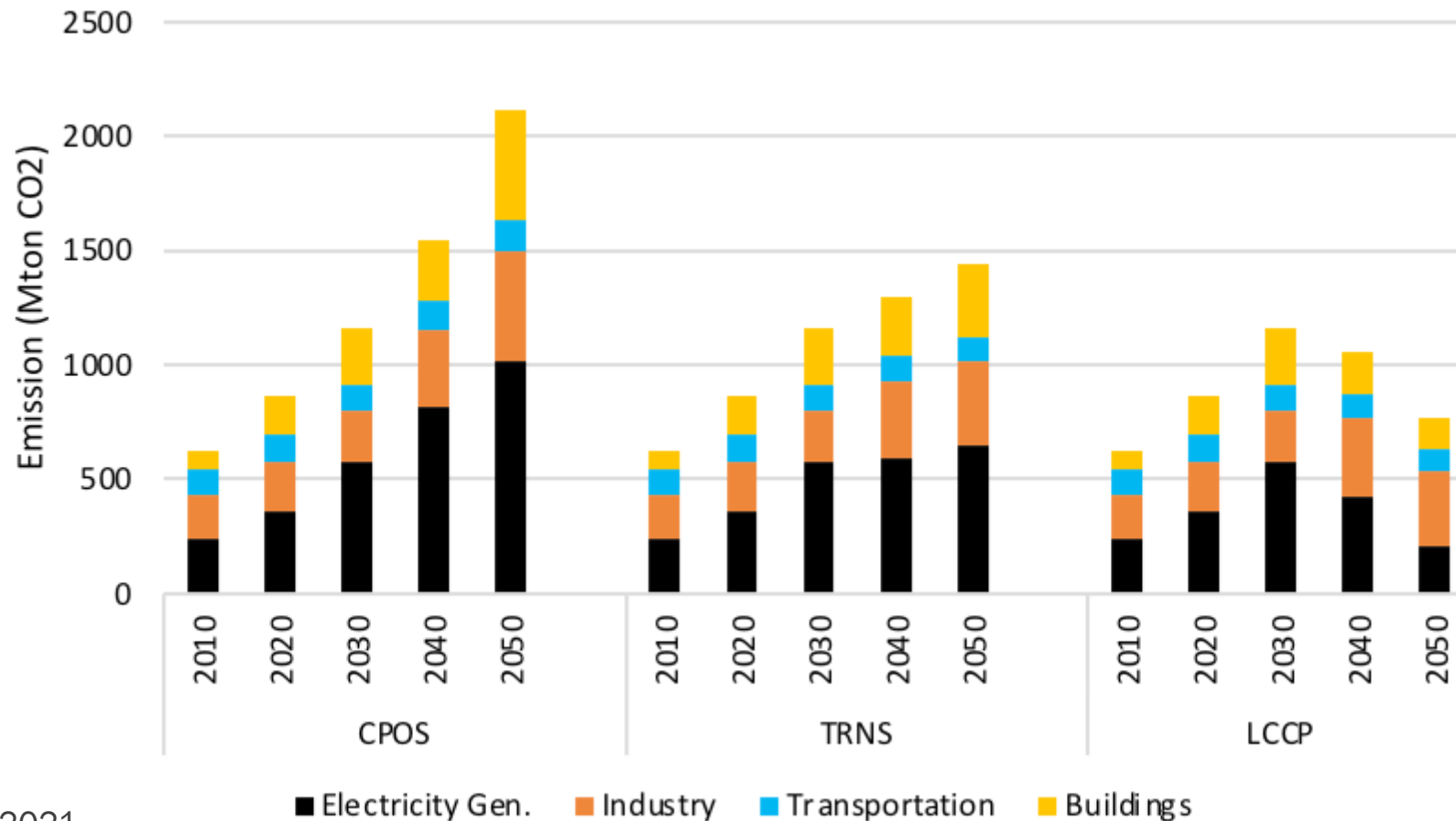
Ministry of National Planning, or Bappenas, has prepared four more ambitious scenarios to achieve net- zero-emission, namely **NZE-2045, NZE-2050, NZE-2060, and NZE-2070**.

Carbon Pricing

Ministry of Finance (MoF) currently considers the introduction of **carbon tax** to support sustainable economic recovery from the COVID-19 pandemic. (proposed at USD5/ton CO₂)

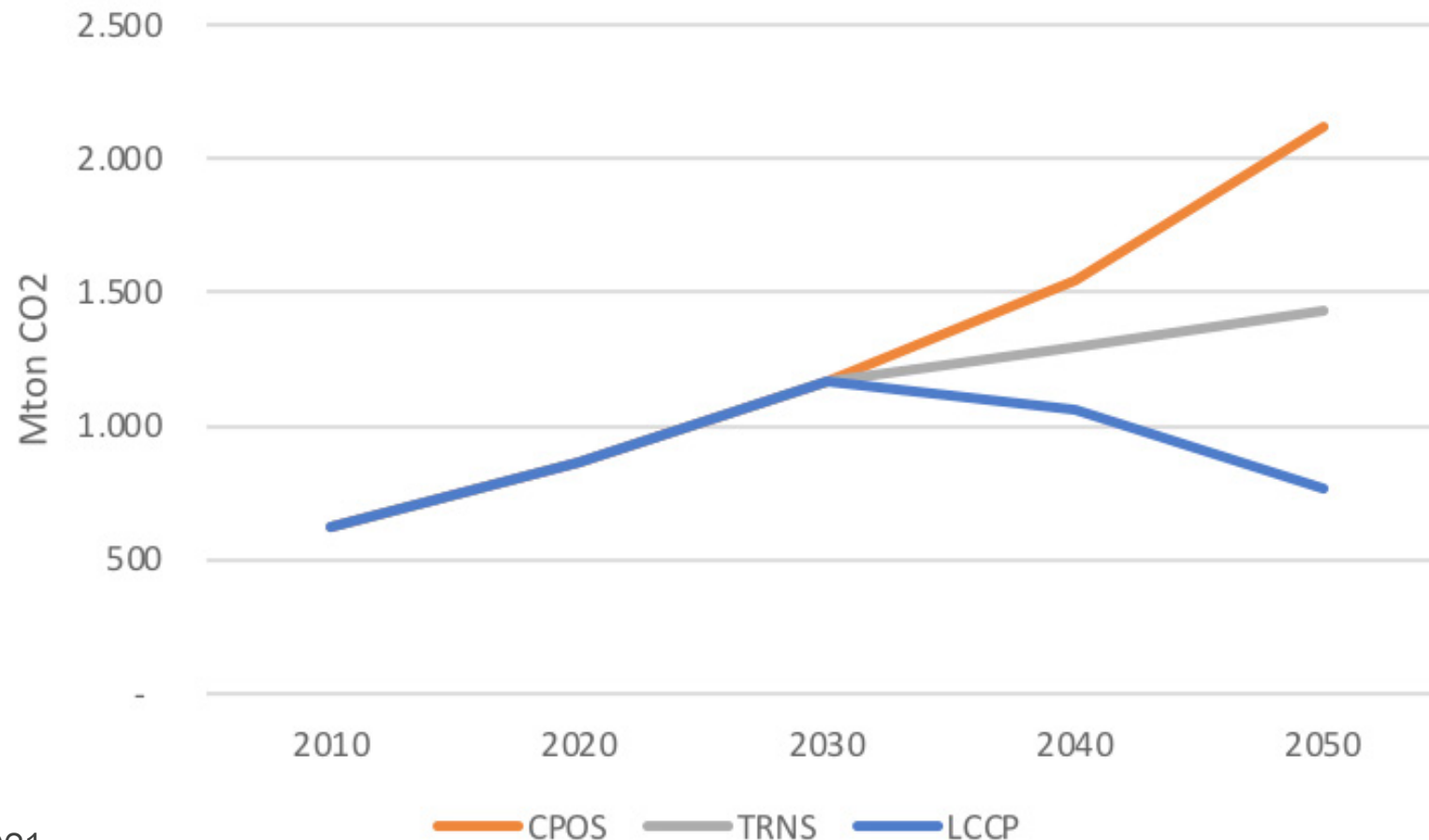
Indonesia's climate target from the energy sector

Projection of energy sector emissions – LTS LCCR



Source : LTS-LCCR, 2021

Projection of energy sector total emissions – LTS LCCR

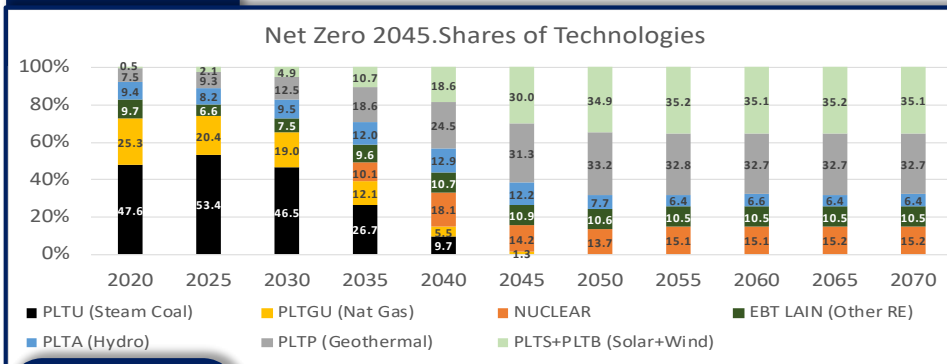


Source : LTS-LCCR, 2021

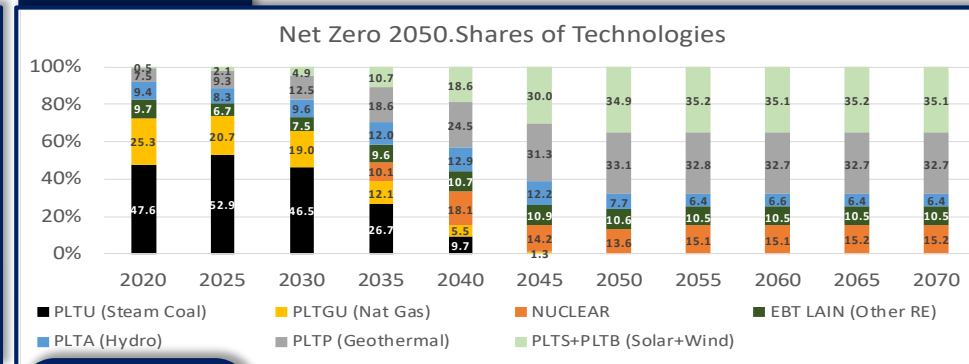
New plan: Net Zero Emission

Sumber EBT untuk Pencapaian *Net Zero Emission* 2045, 2050, 2060 dan 2070 (Skenario Pembangunan Rendah Karbon)

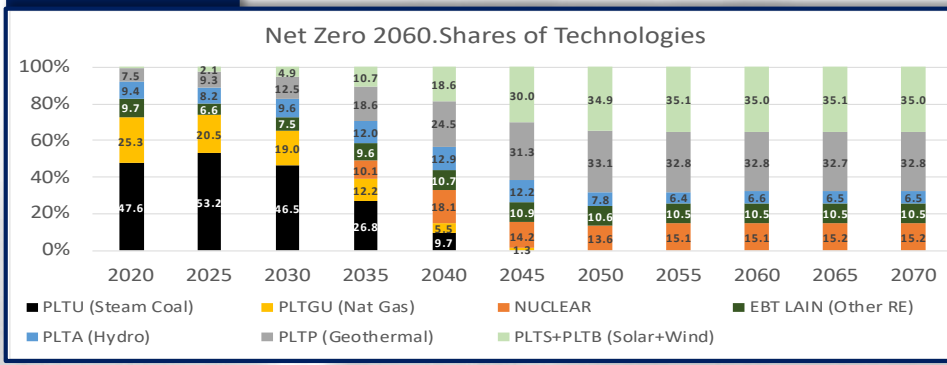
2045



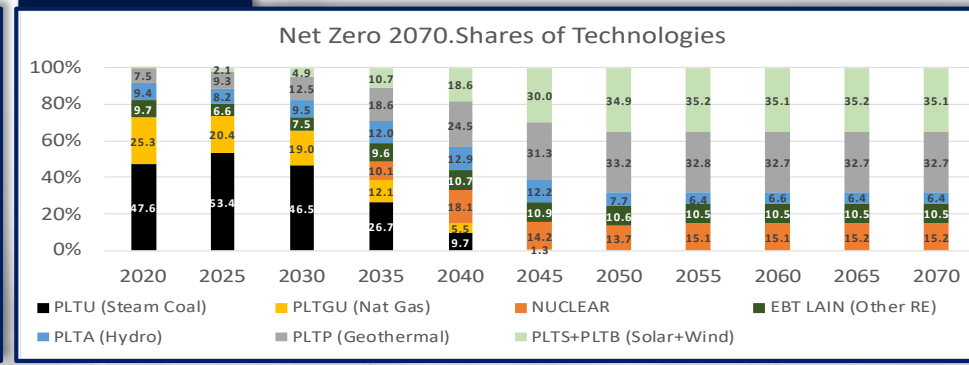
2050



2060



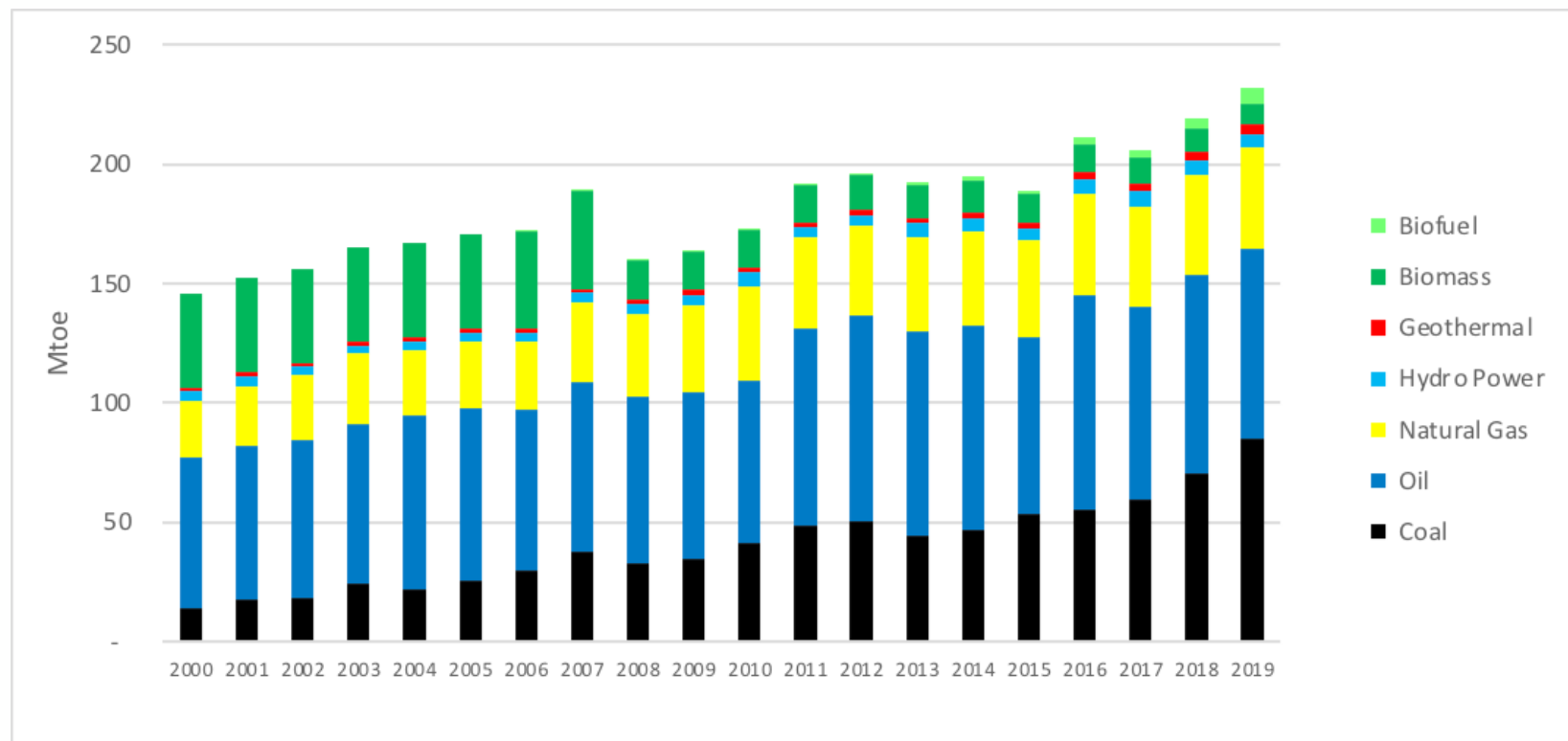
2070



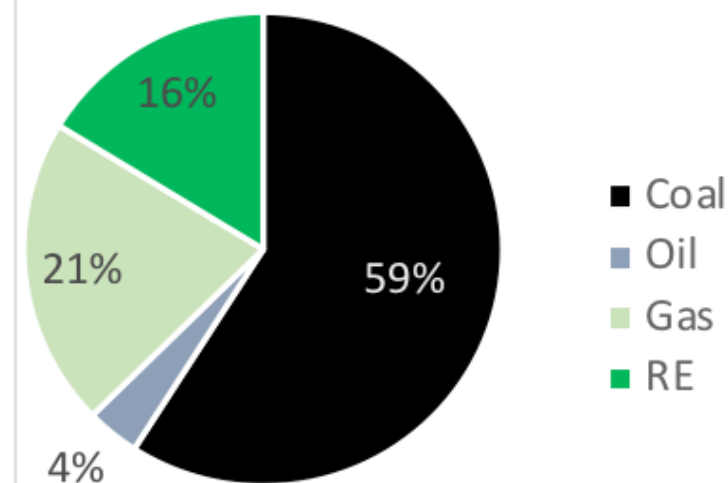
Pembangkit listrik EBT (termasuk PLTN) harus mencapai 100% dari *primary energy mix* di setiap tahun target *Net Zero Emission*

Indonesia's climate target from the Energy Sector: Problems and Challenges

Development of primary energy supply



Electricity generation mix 2019

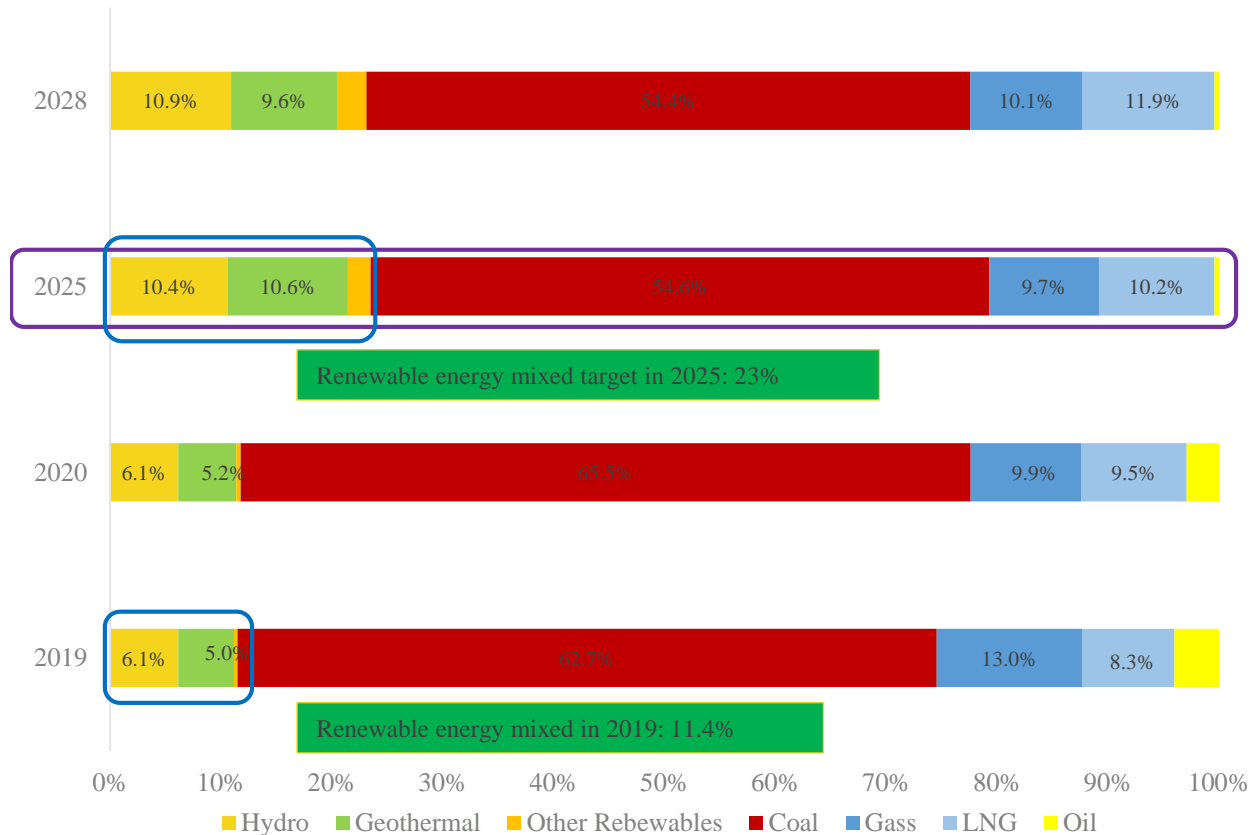


Source : LTS-LCCR, 2021

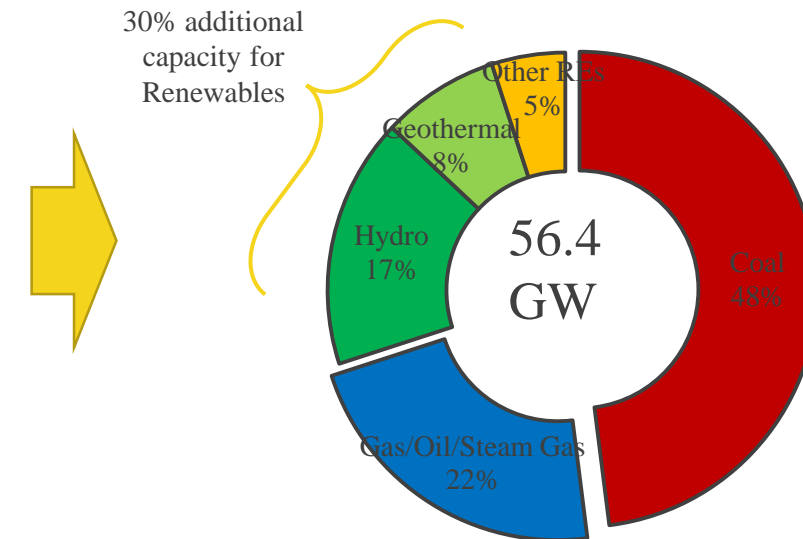
National's Emission Reduction Commitment and RE Target

Indonesia has committed to reduce greenhouse gasses (GHG) emissions as of **29% (unconditional)** or **41% (conditional)** by 2030 compared to business as usual scenario. **Energy sector** has become one of essential aspect in achieving the target.

Projection of Energy Mix in 2019-2028



Incremental Capacity by 2028



Source: National Electricity Supply Plan (RUPTL) 2019-2028

New and Renewable Energy Potentials

No	Jenis Energi	Potensi	Kapasitas Terpasang	Pemanfaatan
1	Panas Bumi	29.544 MW	1.438,5 MW	4,9%
2	<i>Hydro</i>	75.091 MW	4.826,7 MW	6,4%
3	<i>Mini-micro Hydro</i>	19.385 MW	197,4 MW	1,0%
4	Bioenergi	32.654 MW	1.671,0 MW	5,1%
5	Surya	207.898 MW (4,80 kWh/m ² /hari)	78,5 MW	0,04%
6	Angin	60.647 MW ($\geq 4\text{m/s}$)	3,1 MW	0,01%
7	Gelombang Laut	17.989 MW	0,3 MW	0,002%

Catatan: Status Tahun 2015

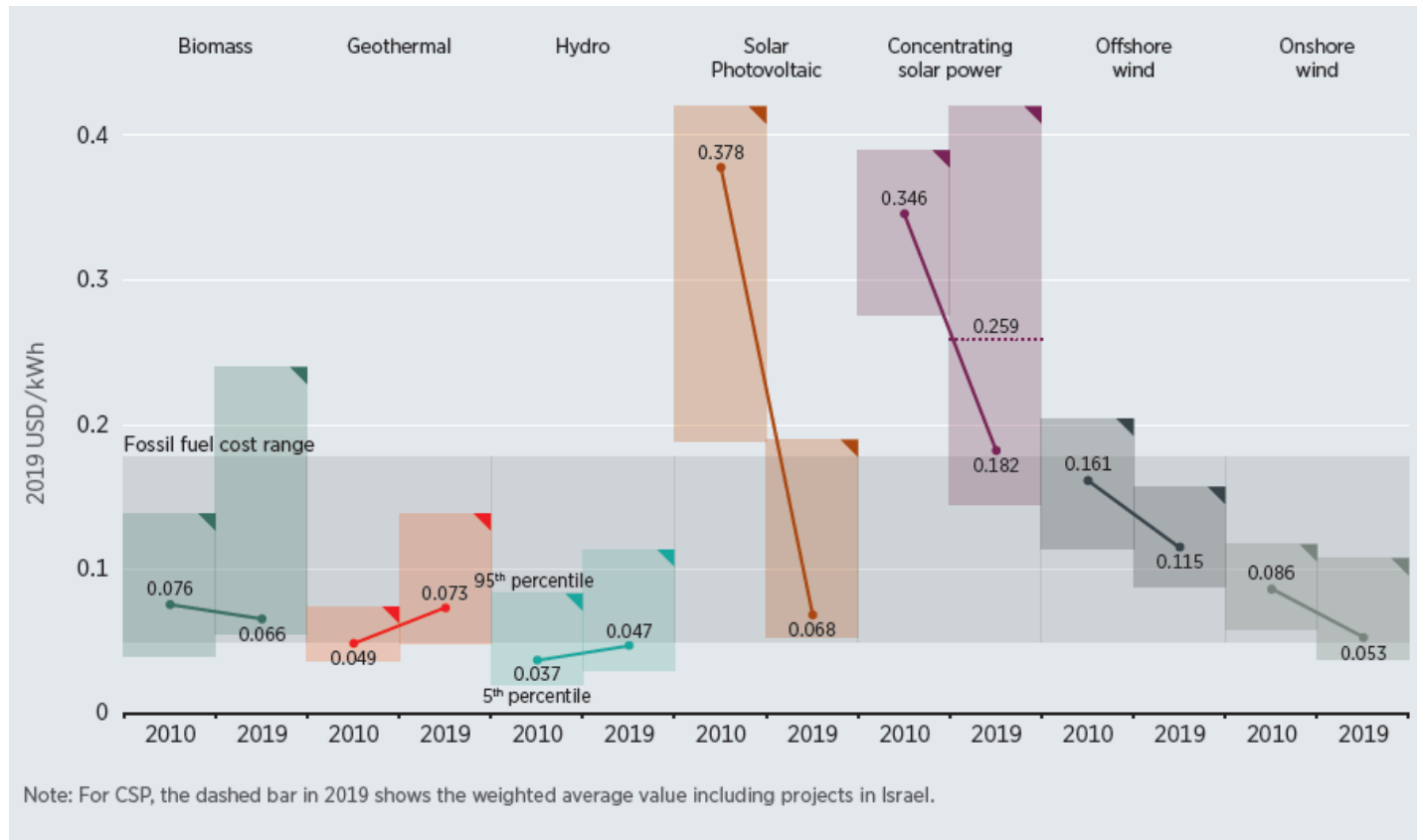
Sumber: Peraturan Presiden Nomor 22 Tahun 2017 tentang Rencana Umum Energi Nasional (RUEN)

Source: RUPTL 2021-2030



Global Renewable Energy Outlook

Global Weighted Average Levelized Cost of Electricity from Utility-scale Renewable Power Generation, 2010 and 2019



Source: IRENA (2020)

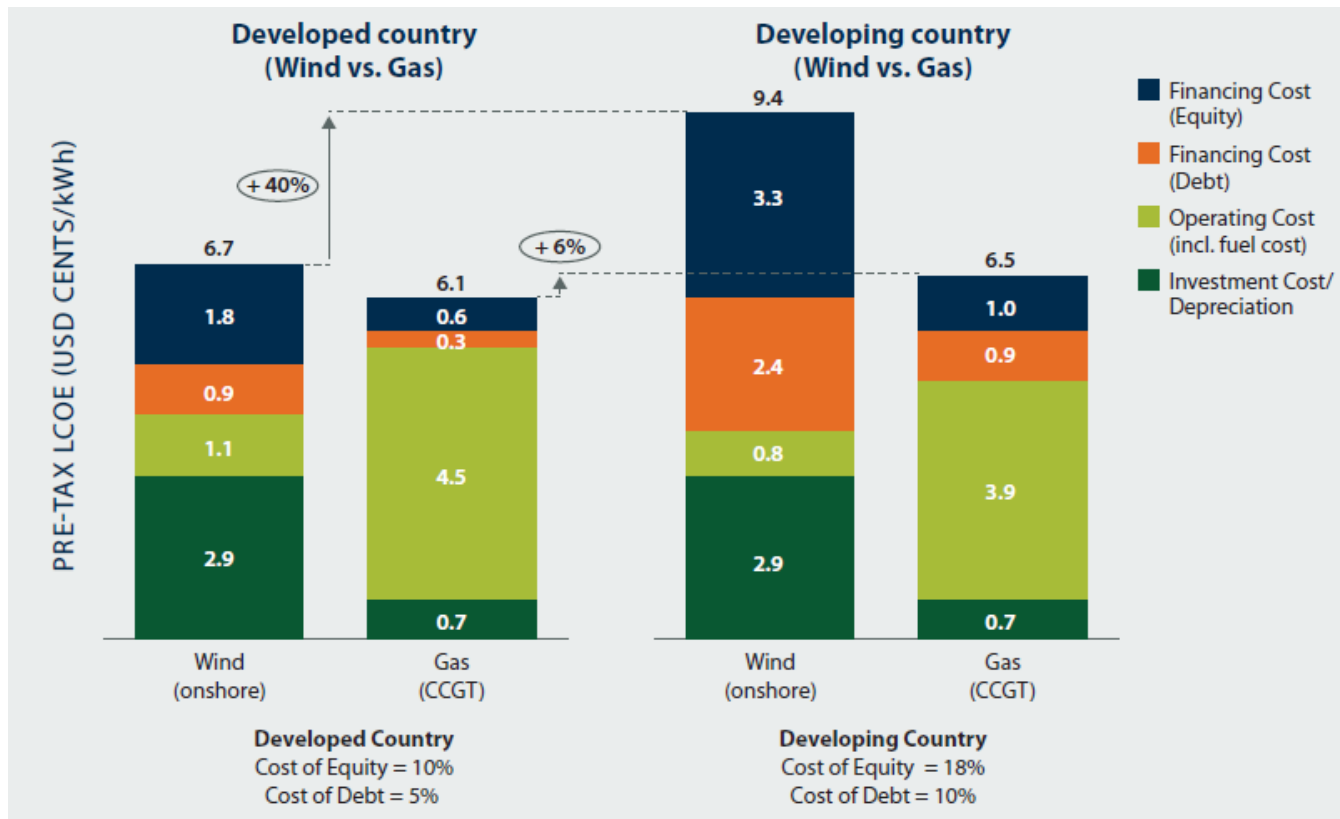
Indonesia's relatively lagging renewable energy sector happens despite the trend that renewable energies, especially in developed countries, are growing increasingly cheaper in production and out-compete conventional energies in costs.

Source: IRENA (2020)

The Challenge of Renewable Energy Sector in Developing Countries

Impact of Financing Costs on Wind and Gas Power

Generation Costs in Developed and Developing countries



Source: UNDP (2013)

While in developed countries renewable energies are becoming more competitive, the same trend is not happening in developing countries. UNDP (2013) describes how differences in financing costs and terms dramatically to affect the competitiveness of renewable energy investments versus fossil-based technologies in developing countries.

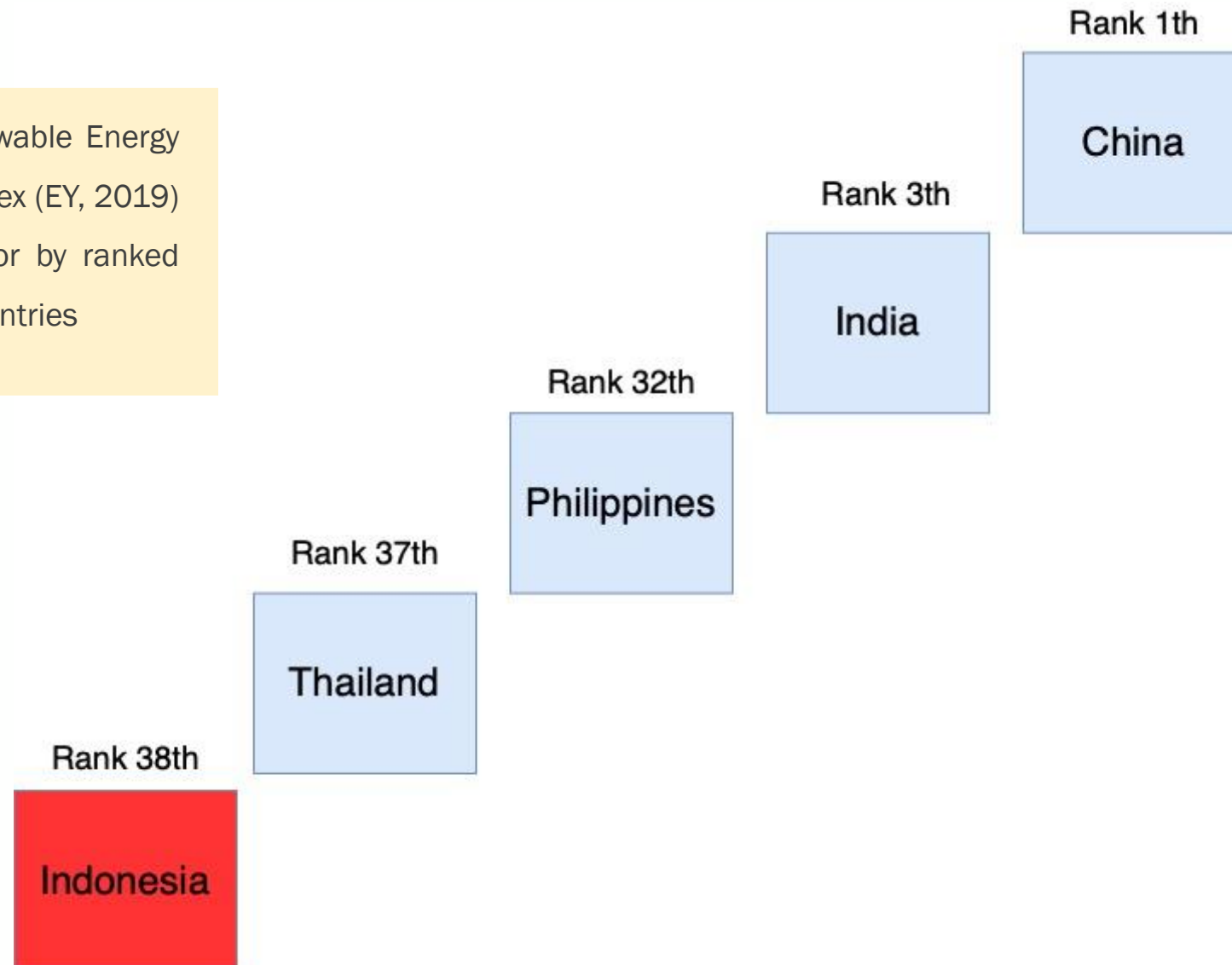
Project developers in developing countries often face struggles to access upfront financing for renewable energy investments and when available the cost of financing is often substantially higher than in developed countries. Banks in some developing countries also provide only short-term credits to manage lending risks, which challenges renewable energy projects that require long-term financing due to their lifecycle periods.

The figure on the left is an illustrative figure of the challenge with a case of wind vs gas energy.

Source: UNDP (2013)

Barriers for RE development in Indonesia

Indonesia's Renewable Energy Attractiveness Index (EY, 2019) is remarkably poor by ranked 38th out of 40 countries



The Urgency of Carbon Tax to Reaching More Ambitious Climate Target

State Budget Pressure due to the Covid-19 Pandemic

Deskripsi (dalam triliun Rp)	APBN		
	2019*	2020*	2021
Penerimaan Negara	1,960.63	1,647.78	1,743.65
1. Penerimaan Perpajakan	1,546.14	1,285.14	1,444.54
2. PNBP	408.99	343.81	298.20
3. Hibah	5,497.34	18.83	0.90
Belanja Negara	2,309.29	2,595.48	2,750.03
1. Belanja Pemerintah Pusat	1,496.31	1,832.95	1,954.55
2. TKDD	812.97	762.53	795.48
Defisit	(348.66)	(947.70)	(1,006.38)
(% PDB)	(2.20)	(6.14)	(5.70)
Pembiayaan Anggaran	402.05	1,193.29	1,006.38

*Realisasi

Source: Ministry of Finance, 2021

- The Covid-19 pandemic has put tremendous pressure on the state budget. With the weakening of the purchasing power of the public and the business world, state revenues were depressed.
- On the other hand, the government's form of handling the pandemic through the National Economic Recovery (PEN) program as a form of countercyclical measures has made the expenditure side soar.
- The limited fiscal space, even before the pandemic conditions made the need for restructuring the State Budget, especially in terms of taxation, was necessary.
- Carbon Tax is one of the potentials that can be encouraged to increase state revenues, which in turn helps widen the fiscal space of the State Budget.

Carbon Tax Revenues in Various Countries

Country	Government Revenue (2020)	Country	Government Revenue (2020)
Finland	US\$1420 million	Japan	US\$2438 million
Poland	US\$1 million	United Kingdom	US\$852 million
Norway	US\$1455 million	France	US\$8968 million
Sweden	US\$2295 million	Mexico	US\$254 million
Denmark	US\$535 million	Spain	US\$120 million
Slovenia	US\$81 million	Portugal	US\$520 million
Estonia	US\$3 million	Chile	US\$166 million
Latvia	US\$18 million	Colombia	US\$117 million
Liechtenstein	US\$2 million	Argentina	US\$180 million
Switzerland	US\$1214 million	Canada	US\$3011 million
Iceland	US\$47 million	Singapore	US\$134 million
Ireland	US\$580 million	South Africa	US\$97 million
Ukraine	US\$48 million		

Source: Carbon Pricing Dashboard (2020)

- The Carbon Tax implementation initiative has been implemented in various countries around the world.
- Even in a pandemic, various countries in the world, both developed countries such as the United Kingdom, and developing countries such as Mexico, have benefited from the implementation of the Carbon Tax.
- Indonesia, with an energy mix whose contribution from green energy is still relatively low, has the potential to gain substantial fiscal benefits from implementing a carbon tax.

Why Carbon Taxes? Carbon Tax vs ETS

- ✓ **Carbon tax:** Tax on units of carbon dioxide emitted (in IDR/tCO₂e)
- ✓ **Emission Trading System (ETS):** A market-based instrument in which the government sets emission limit permits in one or more sectors, and entities within it are permitted to trade emission permits.

Carbon Tax	ETS
Opportunity to get “ double dividend ”: <ul style="list-style-type: none">• Positive impact on the environment• Generate state revenue	Does not generate state revenue
Opportunity for redistribution : <ul style="list-style-type: none">• Redistribution from the brown sector to the green sector• Redistribution from high economic rent sectors to the low one	Run by market mechanism, no redistribution mechanism
The implementation mechanism is simpler . Tax collection is relatively easy because it can be applied to entities upstream with a small number of players (eg PLN, Pertamina).	More complex mechanism: <ul style="list-style-type: none">• Emission limit permits are obtained through direct allocation from the government, purchases at auction, or purchases on the secondary market• There needs to be a special agency that oversees• Complicated verification process

Carbon Tax Implementation in Various Countries

Country	Implementation Year	Carbon Price in the 1st Period (USD/tCO ₂ e)	Carbon Price in 2020 (USD/tCO ₂ e)	Yearly change
Afrika Selatan	2019	7.38	7.38	0%
Argentina	2018	6.24	5.94	-2,4%
Chili	2017	5.00	5.00	0%
Denmark	1992	15.58	27.70	2,8%
Finlandia	1990	1.75	72.24	134,6%
Jepang	2012	1.15	2.76	17,5%
Kanada	2019	14.50	22.63	50,9%
Liechtenstein	2008	11.92	105.69	65,6%
Mexiko	2014	3.69	2.79	-4,0%
Norwegia	1991	38.98	57.14	1,6%
Singapura	2019	3.69	3.66	-1,0%
Spanyol	2014	27.58	17.48	-6,1%

Source: *The Climate Reality Project (2017)*

Implementing Carbon Tax in Indonesia (1)

1. Implementation must be carried out in stages (staging) both in terms of targets and in terms of the amount of tax (rate).
 - Finland set a tax rate of US\$1.76 per tCO₂e in 1990 and increased to US\$72.24 per tCO₂e in 2020 (Carbon Pricing Dashboard, 2021).
2. The scope of the carbon tax should start with the sector that is the dominant contributor to tCO₂e, has a large impact, and is easy to implement, e.g. the Power Generation, Transportation sector, Cement Industry.
3. The application of the tax amount must be iterative. The government in this case must evaluate the amount of tax after seeing the response from the market.
 - Singapore sets a tax rate of S\$5 per tCO₂e in 2019-2023. After that, the tax amount will be adjusted again according to the achievement and evaluation of that amount (National Climate Change Secretariat Singapore, 2021).

Implementing Carbon Tax in Indonesia (2)

4. Determining point in the regulation that must be regulated (upstream or downstream sectors), e.g. Power Generation is easier to regulate.
5. Monitoring and Evaluation must be carried out periodically by updating emission data.

State Revenue Potentials from Carbon Tax

Potential Sector	Estimated Emission (ton CO ₂ e)	Carbon Tax rate Plan	State Revenue Potentials
Power Generation	218.044.000	IDR75/CO ₂ e	IDR21.3 trillions
Transportation			
Land & sea	56.710.727		
Aviation	8.989.000		
Total	283.743.727		

Source: Kementerian Keuangan, 2021. Diolah oleh penulis.

1 *Just Transition consideration*

- Decarbonization efforts, including carbon taxes, can have adverse impacts on certain groups, including:
 - Brown sector industries
 - The obligation to pay a carbon tax can have an impact on the sustainability of the brown sector
 - It is necessary to consider the possibility of operational shutdowns (such as the rapid closure of the power plant due to losses) which must be avoided because of the large costs of this impact.
 - Even so, there are other impacts that need to be focused on the implementation of a carbon tax for the brown sector, including the encouragement of development & adoption of technology that can make the sector more efficient and neutralize rent-seeking practices.
 - Vulnerable groups
 - Among them are vulnerable people who are negatively impacted by the carbon tax
- The implementation of a carbon tax needs to consider these possible impacts and take steps to minimize negative impacts

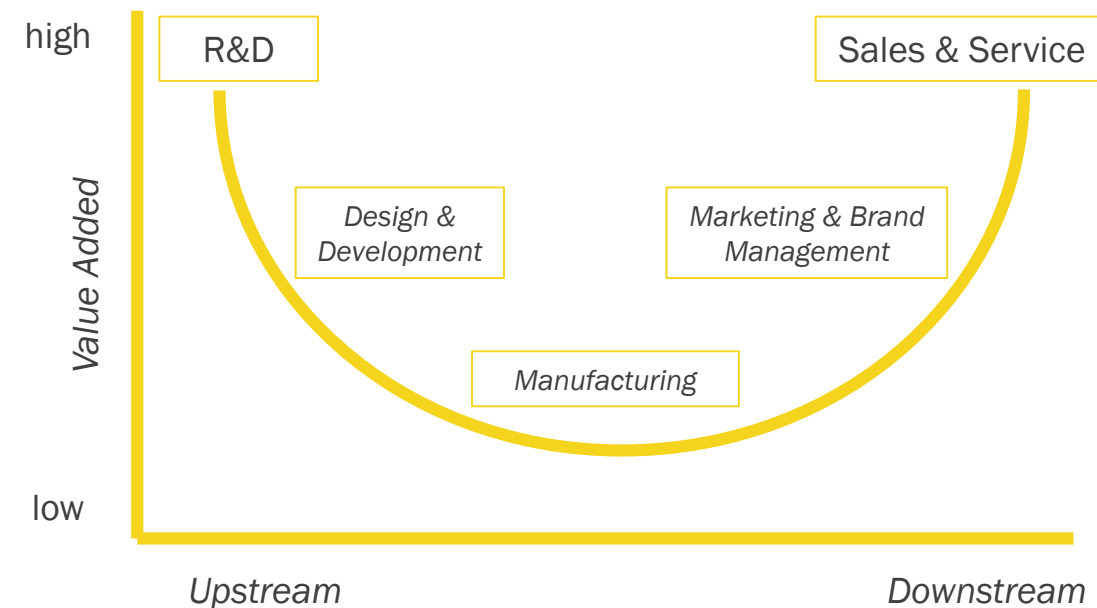
Key considerations to implement Carbon Tax (2)

2 Allocation of Carbon Tax Revenue

- Carbon tax revenues can support the just transition.
- Carbon tax revenues can be allocated to activities including:
 - Compensation for affected vulnerable groups
 - Green sector & renewable energy financing
 - Research & development support
- Earmarking for activities supporting SDGs
- Appropriate allocation of carbon tax revenue can be the basis of developing a strong narrative to get public support.

R&D can direct the green transition towards high value activities

Smiling Curve



Key considerations to implement Carbon Tax (3)

3 Flexibility

- The implementation of the carbon tax needs to take into account the possibility of changing conditions in the future
- The carbon tax regulatory framework needs to be ensured that it does not reduce the ability to adjust policies according to future needs

CARBON PRICING – A NECESSARY BUT NOT SUFFICIENT POLICY

- Carbon pricing can play a role in incentivizing low-carbon action by internalizing the cost of greenhouse gas emissions
- However, for it to work, several things are needed:
 - It must be sufficiently **AMBITIOUS**. Experts say prices of USD 40-80/tCO₂ e are needed to meet the 2°C goal.
 - It must be **WELL DESIGNED AND ADAPTED** to the jurisdictional context.
 - It must **FORM PART OF A SUPPORTIVE POLICY PACKAGE** – other policies are needed to drive research and development, unlock non-economic barriers to mitigation and to target emissions reductions with very high abatement costs

Source: State and Trends of Carbon Pricing, 2021

The End