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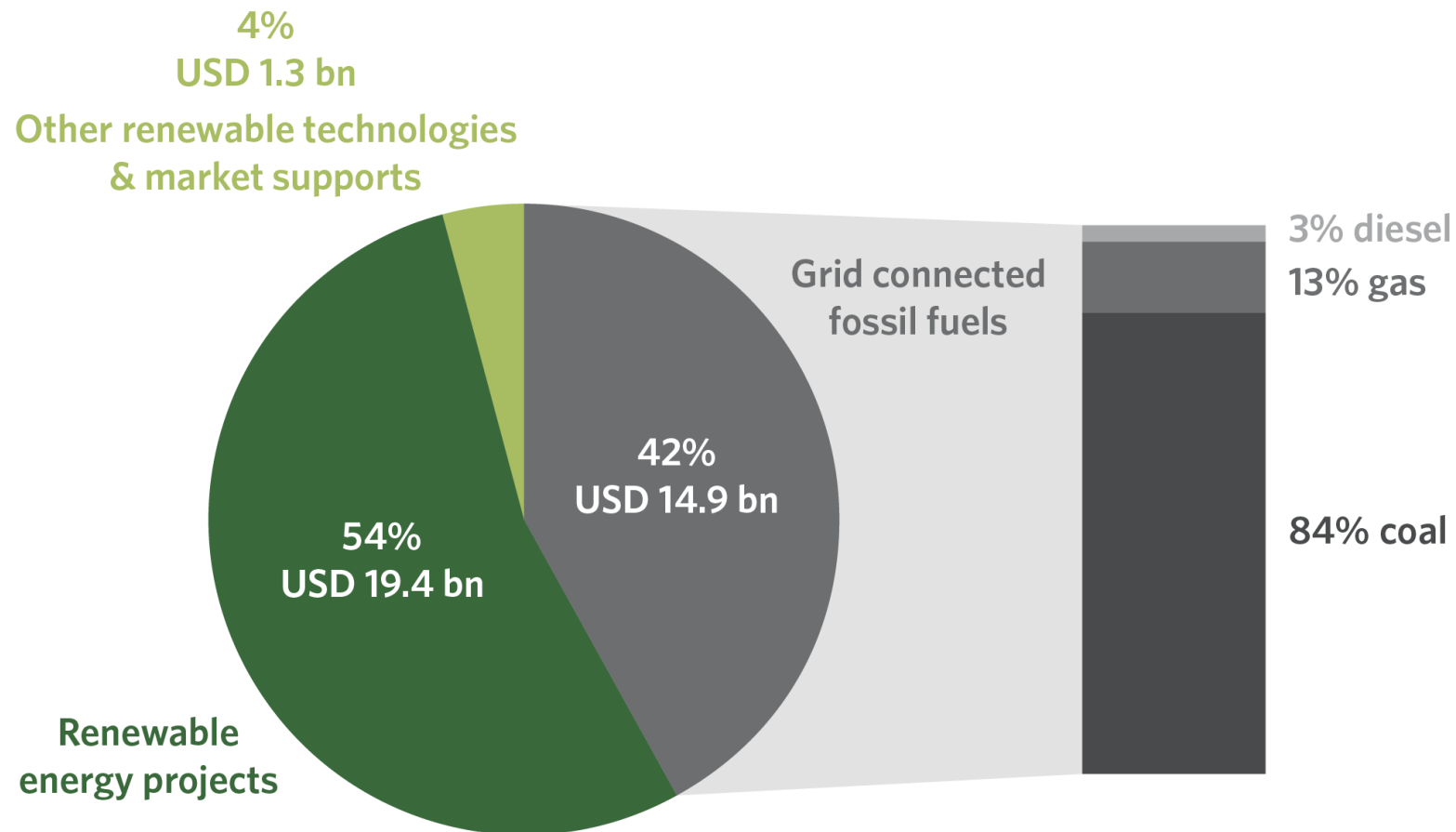
Landscape of Indonesia Power Sector Finance

August 2023

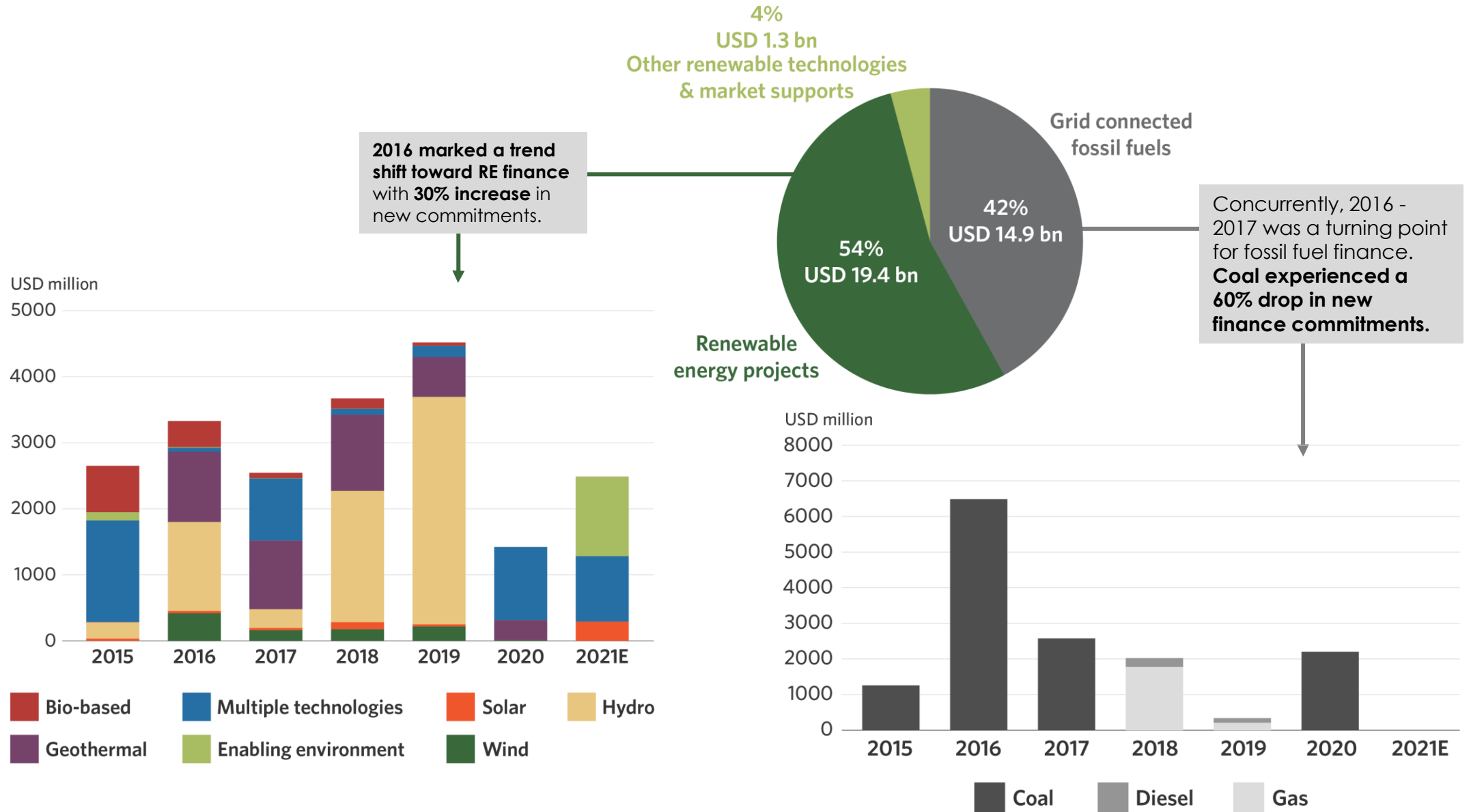
Indonesia's ambitious RE targets and the need to mobilize financing at an accelerated pace

- **Indonesia has ambitious renewable energy (RE) policy targets.** These include 23% RE mix by 2025 based on National Energy Policy (RUEN), 43% RE mix by 2050 based on Long Term Strategy and Low Carbon and Climate Resilient Development (LTS-LCCR) compatible with Paris Agreement scenario, and 87% RE mix by 2060 based on Indonesia Net Zero Emission (NZE) Energy Sector Roadmap.
- **Indonesia's Just Energy Transition Partnership (JETP)**, launched in November 2022, further drives the **urgency for power sector decarbonization**, capping its emission at no more than 290MT CO₂ by 2030 to reach NZE by 2050.
- To achieve the MEMR target of 87% of renewables by 2060, **Indonesia needs an average of USD 16.1 billion in annual financing to renewable energy.** However, **tracked finance only reached USD 2.7 billion per annum** over the period of 2015 to 2020.
- To close this gap, Indonesia will require **a fundamental transformation towards a clean and just energy transition.** Yet, this is currently hampered by uncompetitive feed-in tariffs for renewables, locked-in coal investments, fossil fuel subsidies at an annual average of USD 135 million since 2015 (CPI, 2021), and regulation silos.

Total tracked commitment for Indonesia's power sector from 2015 to 2021 was USD 35.6 billion; 58% for RE generation

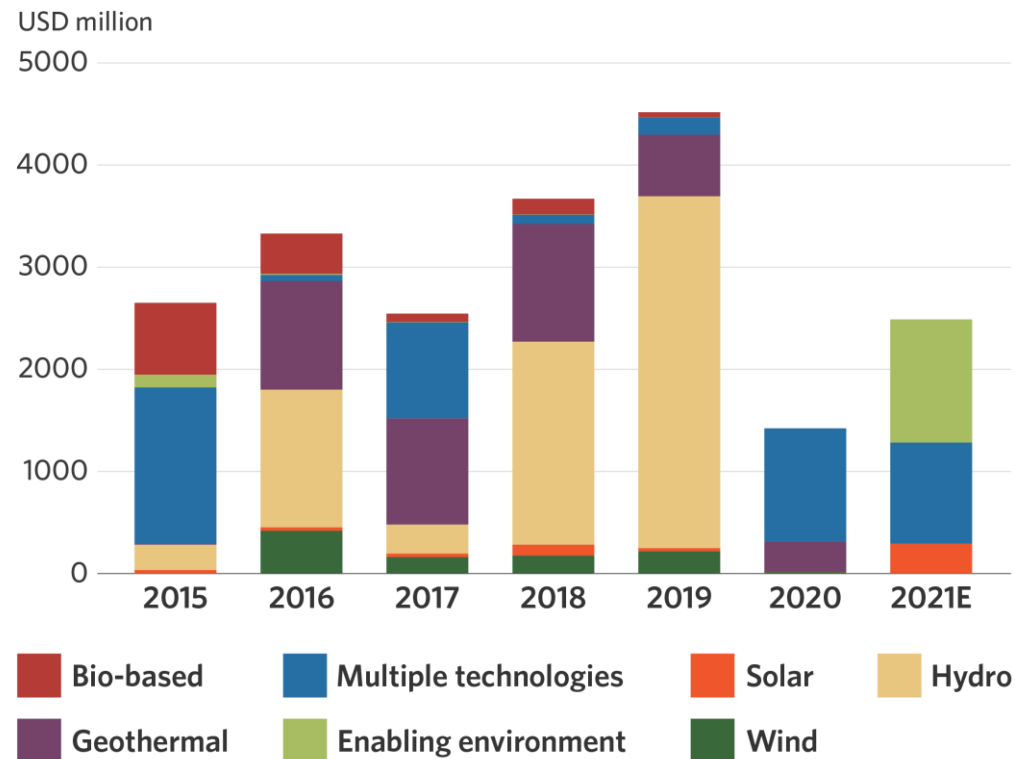


Snapshot: Renewable vs. fossil fuel financing in Indonesia



USD 2.9 billion annual RE finance commitment mostly for hydropower and geothermal, with 42% and 25% respectively

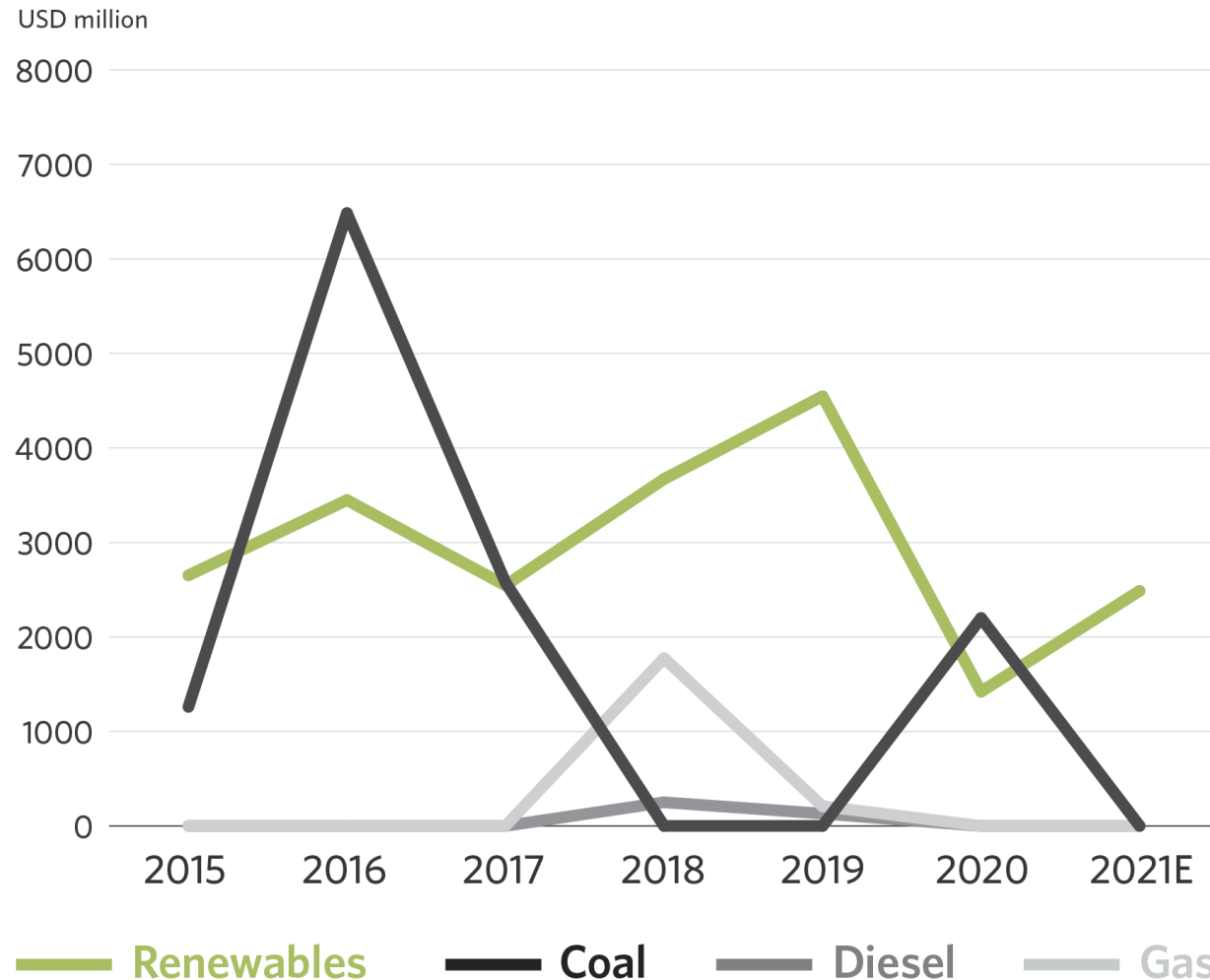
2016 marked a trend shift toward RE finance with **30% increase** in new commitments.



Since 2016, RE has started to attract new commitments, driven by regulatory redirection in the energy sector, such as:

- (i) Launch of the **National Energy General Plan (RUEN)** under Presidential Regulation No 22/2017 to achieve the targets of National Energy Policy (KEN) of at least 23% RE mix by 2025.
- (ii) Introduction of **Feed-in-Tariff (FIT)** along with new MEMR regulation No. 19/2016 on power purchase of solar PV power generators.
- (iii) Indonesia **Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050**
- (iv) OJK's **Sustainable Finance Roadmap Phase II**

Upward trend of RE finance in the past 6 years despite 2020 being a setback



The 2020 setback in RE financing is attributable to:

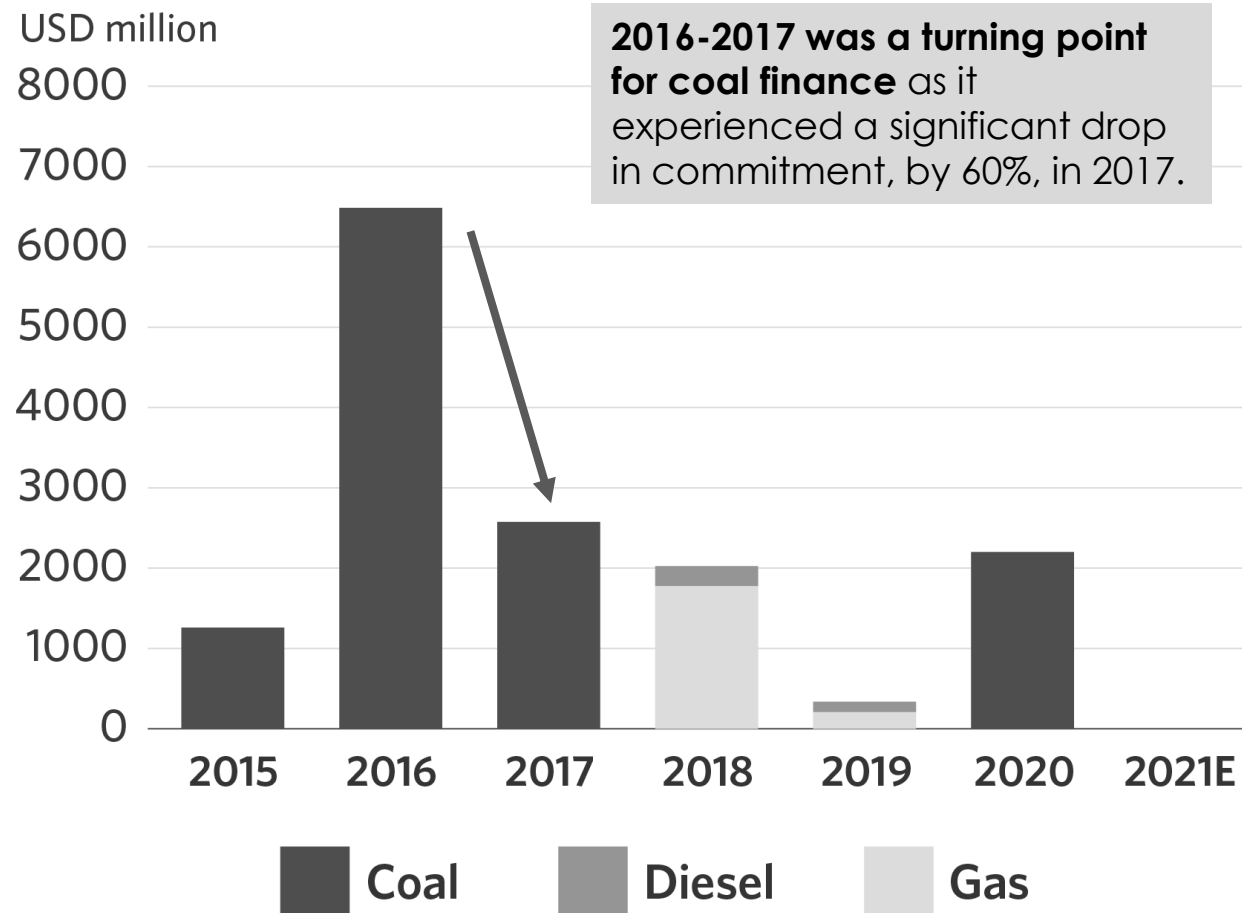
- (i) Adverse economic impact from Covid-19 and **lack of RE support** in the economic recovery stimulus
- (ii) **Increased fossil fuel finance** due to **policy signal from Indonesia's 2020 Omnibus Law** that eased coal mining permit extension and removed royalty obligations for downstream coal mining
- (iii) Indonesia's **35GW power generation program**, of which 46.9% is to be coal-powered

RE investment rebounded in 2021:

- (i) **No new financing commitment to fossil fuel**, mainly driven by new policy direction
- (ii) **COP26 reaffirmed redirection of direct public support** from the unabated fossil fuel energy sector and toward clean energy transition by the end of 2022

Source: CPI GLCF (2021), 2015-2021E Indonesia power sector tracking (2023)

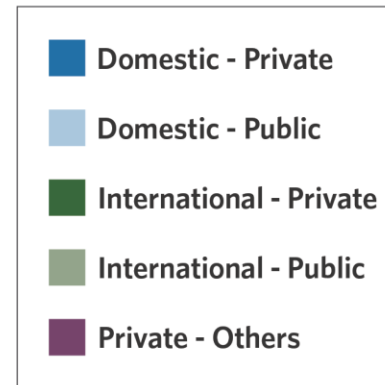
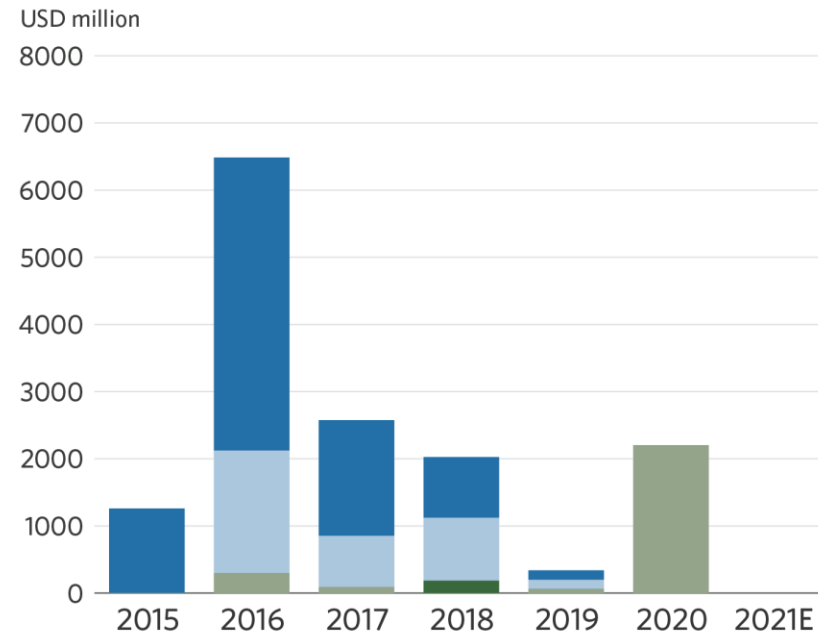
The remaining 46% of tracked commitment or around USD 2.4 billion annually for fossil fuel energy generation, mainly coal-fired power plants



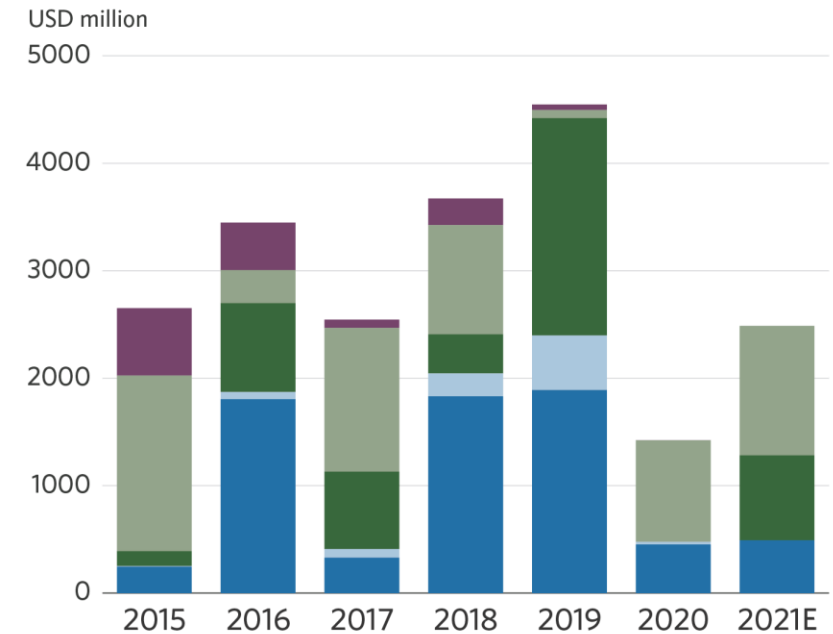
- **75% of finance commitment for coal-fired power plants**, the rest for gas and oil.
- Despite significant drop in 2017, there was still a **consistent flow of fossil fuel finance commitment** per year.
- Moreover, capacity of fossil fuel power plants had increased, evidenced by new commitment of USD 4.7 billion in 2018-2020.
- This is especially for coal-fired power, where over 60% of the existing fleet is ten years old or younger.

International finance constituted 65% of commitment tracked in 2015-2021, supporting both fossil fuel and renewable energy

Finance commitment for fossil fuel generation - by source



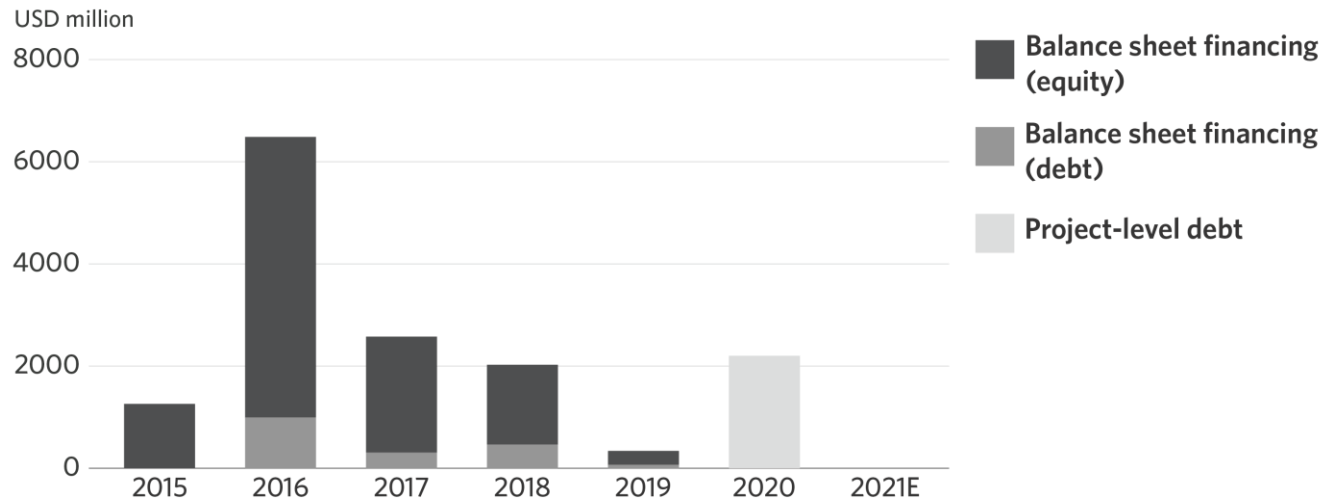
Finance commitments for RE generation - by source



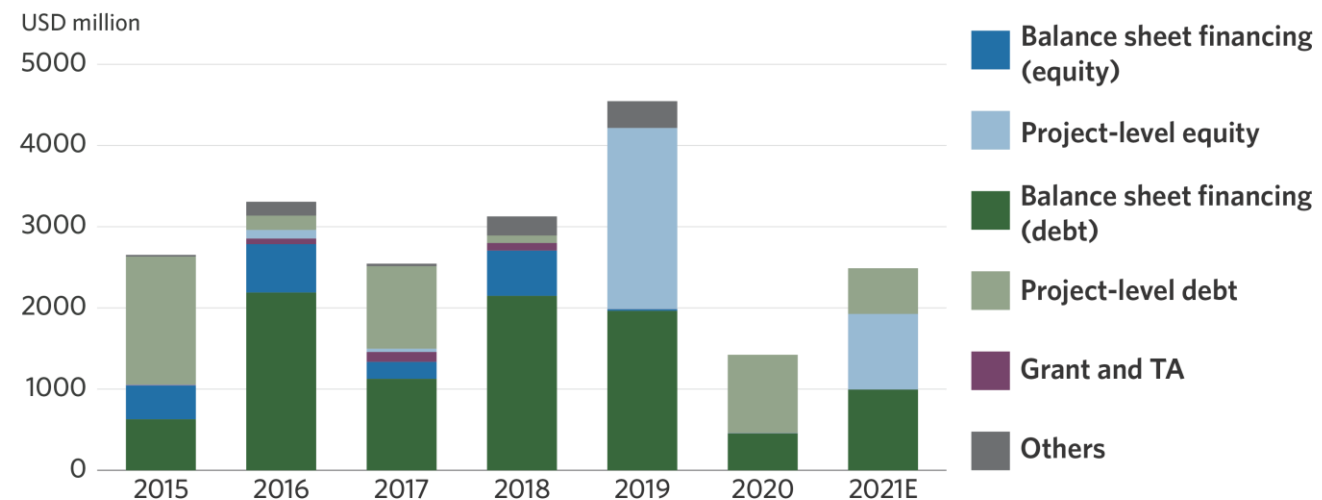
- **Key shift in 2017-2018 as international sources started to reduce the portion of fossil fuel finance by 67%** to finance gas and/ or diesel power plants with no new commitment for coal.
- **In 2021**, Indonesia announced pioneering **partnerships with the Asian Development Bank to support the early retirement of coal plants.**
- **An increase of 300% in RE financing from domestic finance in 2018**, largely on hydropower plants.
- Despite considerable overall drop in 2020, more **commitments were secured in 2021 driven by enabling policies on RE** (e.g., Presidential Decree in RE tariff, MEMR Regulation in Solar PV) and fiscal and non-fiscal incentives.

Debt instrument dominated power sector finance in Indonesia

Finance commitments for fossil fuel generation – by instrument



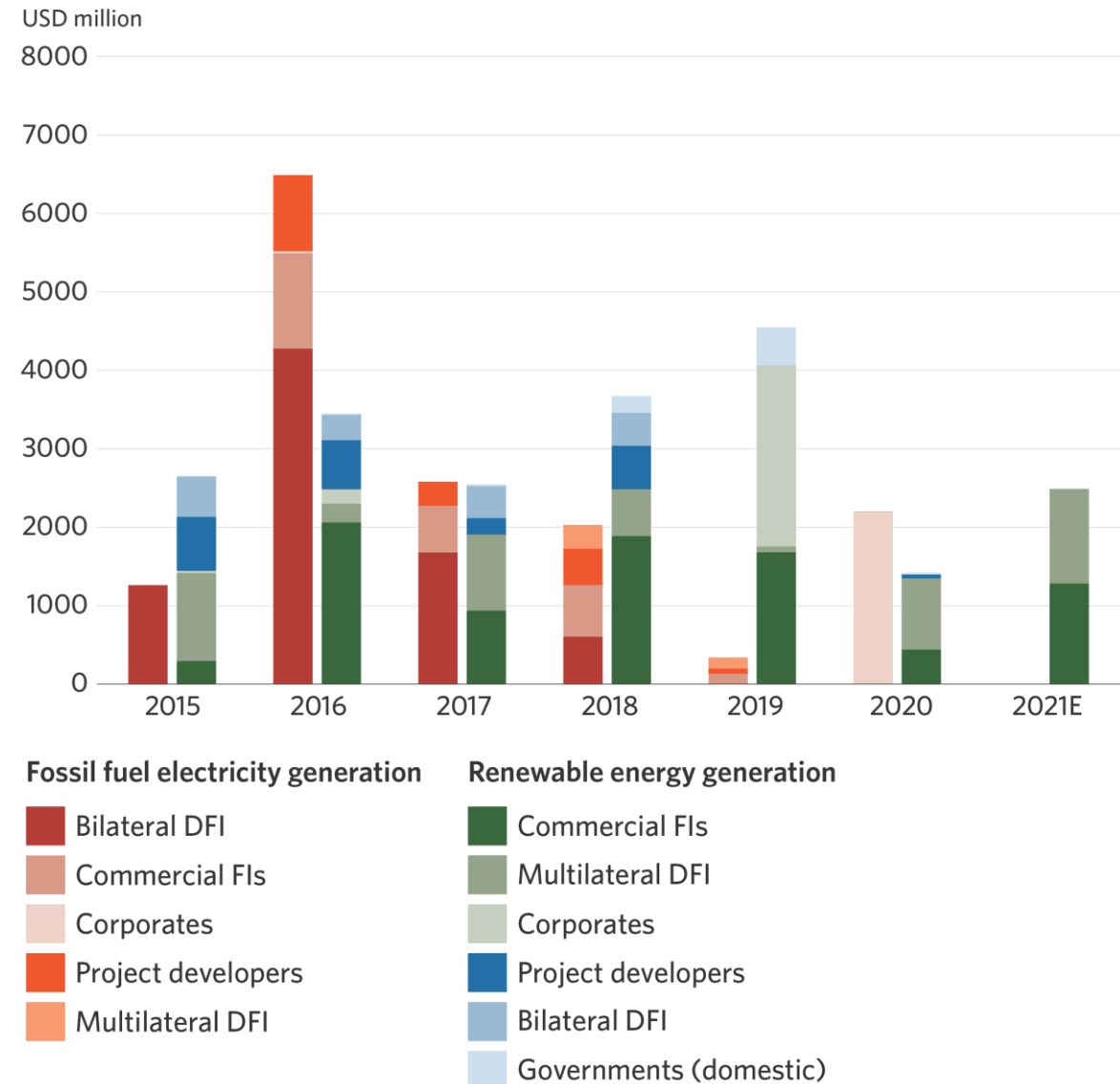
Finance commitment for RE generation – by instrument



- **Debt financing** (78% of total tracked commitment): **55% for fossil fuel energy generators** mostly made between 2015-2017, while remaining **45% for RE generators has gradually increased since 2018.**
- **Equity financing (18% of total tracked commitment)**, mainly from project developers and corporate actors.
- **Grants**, including technical assistance (1% of total tracked commitment), to **support enabling activities for RE generation** i.e., policy-making, and administrative management, mainly from multilateral donors.
- **The remaining 3% of for market supports**, such as feasibility study, due diligence, and research and development.






Commercial financial institutions provided 38% of RE finance in 2015 – 2021

- **Most of RE commercial finance** went to **geothermal and hydropower**, with less than 2% going into solar power.
- Commercial loans for fossil fuel have **decreased in the past five years**, as a result of
 - Shift in market preferences** i.e., global shift in energy supply, **PLN's announcement of moratorium on coal-fired power** starting in 2023
 - Regulatory signals**, both **in the financial sector** such as **POJK 51/2017** on the Implementation of Sustainable Finance, **POJK 60/2017** on Green Bonds and **in the energy sector**, such as **MEMR Regulation 4/2020** on Renewable Power Generation, **Energy Transition Mechanism (ETM) Initiative** in 2021
 - Alignment with national climate goals and Paris Agreement objective**, i.e., updated NDC in 2021, enhanced NDC in 2022, net-zero pledge by commercial FIs



Indonesia NZE roadmap, as modelled by MEMR, requires significant renewables capacity addition, as it targets 87% renewable energy mix by 2060

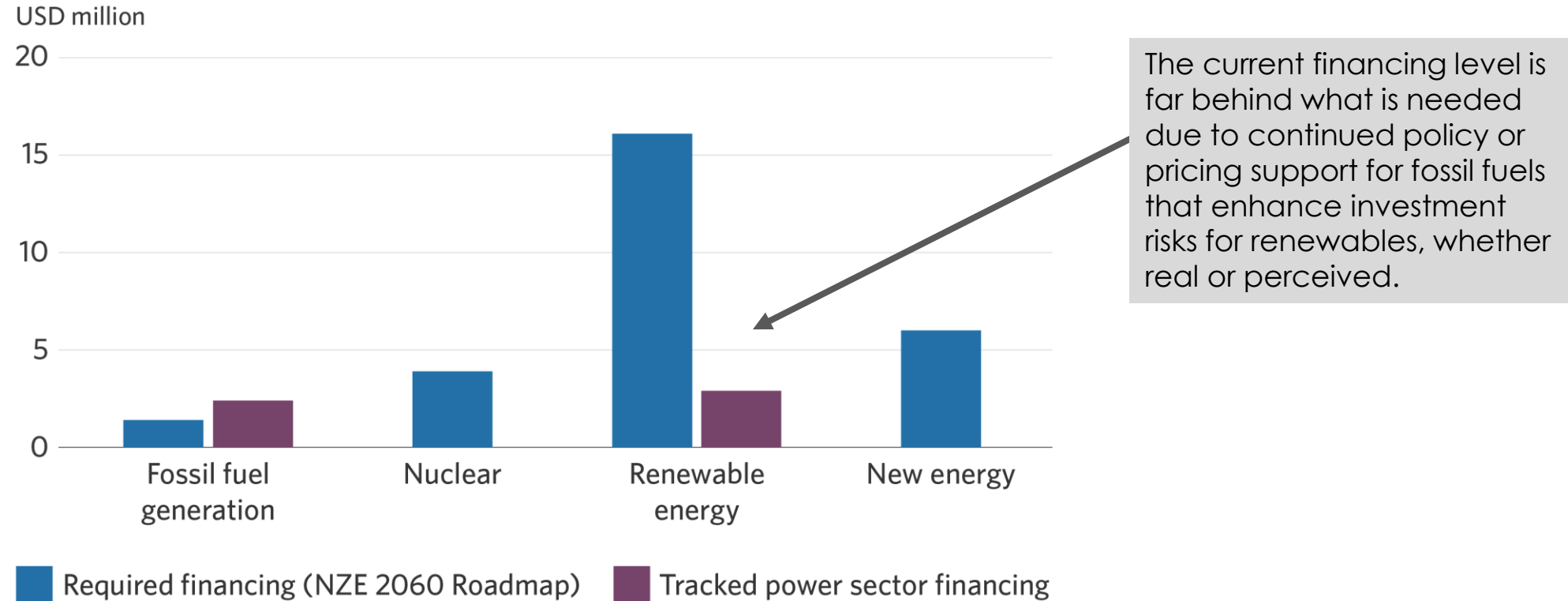
Renewables' capacity additions since 2010 vs. targeted capacity additions to meet MEMR's NZE 2060 scenario

Installed Capacity (MW)		2010 (actual)		2021 (actual)		2060 (MEMR's NZE)	How many times higher the annual capacity addition must be, to meet MEMR scenario?
Solar		0.19	+30 MW/year	332	+10,196 MW/year	398,000	339 X
Wind		0.34	+14 MW/year	155	+1,047 MW/year	41,000	75 X
Hydro		3,734	+260 MW/year	6,601	+1,933 MW/year	82,000	7 X
Geothermal		1,189	+99 MW/year	2,286	+402 MW/year	18,000	4 X
Bio-based		0	+197 MW/year	2,172	+1,046 MW/year	43,000	5 X

If annual growth of renewables capacity follows the current trend, the target will not be met

The financing need of USD 16.1 billion per year to meet MEMR's NZE 2060 scenario

Required financing based on MEMR's NZE 2060 Roadmap compared to tracked finance









Note: This estimate includes financing for the required power capacity addition from fossil fuel (e.g., coal, gas, oil), nuclear, renewables (e.g., hydropower, geothermal, solar, bio-based energy, wind), and other new energy sources (tidal, hydrogen, and battery energy storage systems).

Source: CPI GLCF (2021), 2015-2021E Indonesia power sector tracking (2023), MEMR presentation on Long-Term Strategy Energy Sector towards Net-Zero Emission August 2021 for required investment, MEMR's NZE 2060 Roadmap

Potential underinvestment of USD 13.1 billion annually in renewables, if following the current financing trend

Showing the widest gap, solar power financing alone needs to fill an investment gap of USD 4.6 billion annually to achieve 2060 targets.

Renewable Power Plants	Future Annual Investment (USD billion)		How much under-investment annually ? (USD billion)
	If based on stated commitment	What is needed to achieve MEMR's NZE 2060	
Solar 	0.08	vs 4.70	-4.62
Wind 	1.04	vs 5.70	-4.66
Hydro 	0.14	vs 2.60	-2.46
Geothermal 	0.59	vs 1.90	-1.31
Bio-based 	0.22	vs 1.20	-0.98
Enabling environment & multiple RE technology 	0.89	vs 0.00	0.89
	2.97	vs 16.1	13.13

Note: Committed investment in the future is assumed to follow what has been stated/announced by investors in the past (average 2015-2021)

Source: CPI Electricity Generation Finance Tracking, Ministry of Energy's presentation on LTS 2050 (presented in August 2021)

Streamlined policy and regulatory framework to reduce perceived risks and improve bankability of RE projects

Presidential Regulation No 112/2022 on **Acceleration of RE Deployment for Power Sector**

- Construction of power plants will be carried out selectively while RE power plants' construction will be aligned with Indonesia NZE target.
- Moratorium on new coal-fired power plants (CFPPs) and cap on maximum operation of existing CFPPs by 2050

Presidential Regulation No 98/2021 on **Carbon Pricing**

- Cap and tax on coal-fired power plants beginning July 2022, making it costlier for producing coal-based electricity

Government Decree No 4/2020 to revise MEMR Regulation No 10/2017 on **Power Purchase Agreement (PPA) Principle**

- Revision of the requirement to develop "build, own, operate, transfer" (BOOT) projects which caused difficulties for developers in terms of land ownership and ability to obtain finance, further allowing projects on simply "build, own, operate" (BOO) basis.
- Requirement for PT PLN to take RE generation on "must run" basis, therefore prioritizing the dispatch of such plants against available capacity from conventional/fossil fuel power plants.

Other considerations for improvement in enabling policy and regulatory framework

- Simplified permit and licensing process
- Ability of the grid to support the growing capacity of renewables through a build-out of smart grid infrastructure
- Alignment of energy transition initiatives, such as JETP and ETM, with the NZE/RE targets, i.e., National Energy General Plan (RUEN), National Electricity General Plan (RUKN)

Conclusion

- **Total tracked power sector finance in 2015-2021 was USD 35.6 billion, 58% of which was for RE:**
 - **International finance constituted 65% of commitment** tracked in 2015-2021, supporting both fossil fuel and renewables
 - **Debt instrument** dominated power sector finance (78%): **55% for fossil fuel energy generators** mostly made between 2015-2017, while remaining **45% for RE generators has gradually increased since 2018.**
 - **2016 marked the upward trend in RE finance** with **30% increase** in new commitments, driven by global shift in market preference and energy supply as well as national policies that increasingly incentivize investment in renewables.
 - **2020 was a temporary setback** due to **lack of RE investment support** following Covid-19 and the **Omnibus Law** that eased coal mining permit extension, therefore increasing fossil fuel finance.
 - **RE investment rebounded in 2021**, thanks to more **NZE focused policies and initiatives** such as Indonesia's LTS-LCCR 2050, Sustainable Finance Roadmap Phase II, ETM, and JETP.
- **Yet, current financing trends fall far short of the required financing to achieve MEMR's NZE target of 87% renewables by 2060**
 - Indonesia NZE roadmap requires exponential renewables capacity addition with estimated **financing need of USD 16.1 billion annually.**
 - Compared to Indonesia's latest tracked power sector finance, there is an **annual financing gap of USD 13.1 billion** for RE generation, the **widest gap being in solar and wind.**

Policy actions to narrow financing gap to achieve Indonesia's NZE 2060



Accelerate investment in renewables

- **Realign financing from high emitting sectors and technologies to RE infrastructure and technologies** e.g., smart grids and energy management systems to support the 35 GW power generation program, improve reliability and efficiency of power transmission and distribution, and help accelerate the electrification process.
- **Scale up investment in rooftop solar to unlock its potential and meet RE mix target.** The national energy plan (RUEN) targeting a 23% share of solar energy generators in the 2025 energy mix, based on the NZE 2060 scenario.



Divestment from fossil fuels

- **Phase down financing for fossil fuel power plants to avoid stranded asset risk**, given the 2023 Indonesia deadline for no new coal-fired power plants and the government's intent to explore early retirement of coal-fired power plants by 2040.
- **Realign financing policies and practices from financiers to:**
 - (i) meet the goal of Paris Agreement and NZE target
 - (ii) align with policy signals in accelerating transition i.e., **ASEAN Taxonomy for Sustainable Finance V2** and the enhancement in **Indonesia Green Taxonomy 1.0** that include the concept of transition finance.



Address RE capacity gap

- Facilitate a better-functioning procurement process and fair competition**, through:
- **Issuance of presidential decree on procurement issues** (e.g., centralization of procurement authority and direct appointment in the procurement process of electricity from renewable energy power plants).
 - **Higher feed-in tariffs** for RE projects below a certain capacity.
 - **Competitive auctions** for larger RE capacity projects.



Leverage various finance mechanisms

- Leverage various finance mechanisms**, such as:
- **Energy Transition Mechanism (ETM)**, via Indonesia country platform and / or blended finance (MoF, 2022)
 - **De-risking facilities** to lessen project risk and increase private sector participation in RE projects.
 - **Green bonds and sustainability-linked bonds**, as potential instrument to channel more investments in renewables.
 - **Indonesia's Just Energy Transition Partnership (JETP)** to expand access to finance – public, private, catalytic, and concessional – therefore scaling up investment in the entire energy systems.

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Thank You