Climate Action Tracker

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How a COVID-19 recovery with less coal could benefit Indonesia

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Summary

While the social and economic effects of COVID-19 are likely to last for many years, careful recovery planning can mitigate negative long-term impacts. For Indonesia, reassessing its reliance on coal for electricity would be an important step in the country's green recovery.

In early 2021, Indonesia's Ministry of Energy and Mineral Resources indicated its intention to retire coal-fired power plants that have been in operation for more than 20 years (Reuters 2021). Other countries in the region are also on their way to reducing reliance on coal and propose reductions in their coal plant construction pipeline.

In this analysis we model two options for Indonesia to reduce its planned coal-fired capacity, and the resulting impact on projected emissions, as well as the impact on premature deaths from air pollution.

Reducing coal-fired installed capacity, and associated electricity generation, results in significant emission reductions. We find that if Indonesia were to phase out coal-fired plants that have been in operation for over 20 years and reassesses portions of its coal-fired power plant pipeline, it could reduce emissions by 7-11% below current policies. This corresponds to emissions 30% below Indonesia's current Paris Agreement Nationally Determined Contribution (NDC) emissions target. These measures provide opportunities for Indonesia to increase its target.

The implementation of an early phase out for old power plants and re-evaluation of the existing pipeline would also have spill over effects beyond mitigation. We quantify effects on premature deaths resulting from air pollution, and find that Indonesia could avoid over 45,000 premature deaths in the next decade (a reduction of almost 40%) by reducing its reliance on coal electricity.

The measures investigated in this analysis remain insufficient to align Indonesia's current policies with a 1.5°C Paris compatible pathway. A much stronger uptake of renewable energy technologies and coal phase out are necessary to curb Indonesia's emissions.

The reduced electricity demand projections induced by the pandemic provides an opening for Indonesia to reassess capacity expansion plans and the existing power plant mix. This would lead to multiple benefits for climate mitigation and the advancement of the sustainable development agenda. The forthcoming electricity supply plan (RUPTL 2021-2030) provides a concrete opportunity to reassess the role of coal and put Indonesia on a pathway towards decarbonisation.

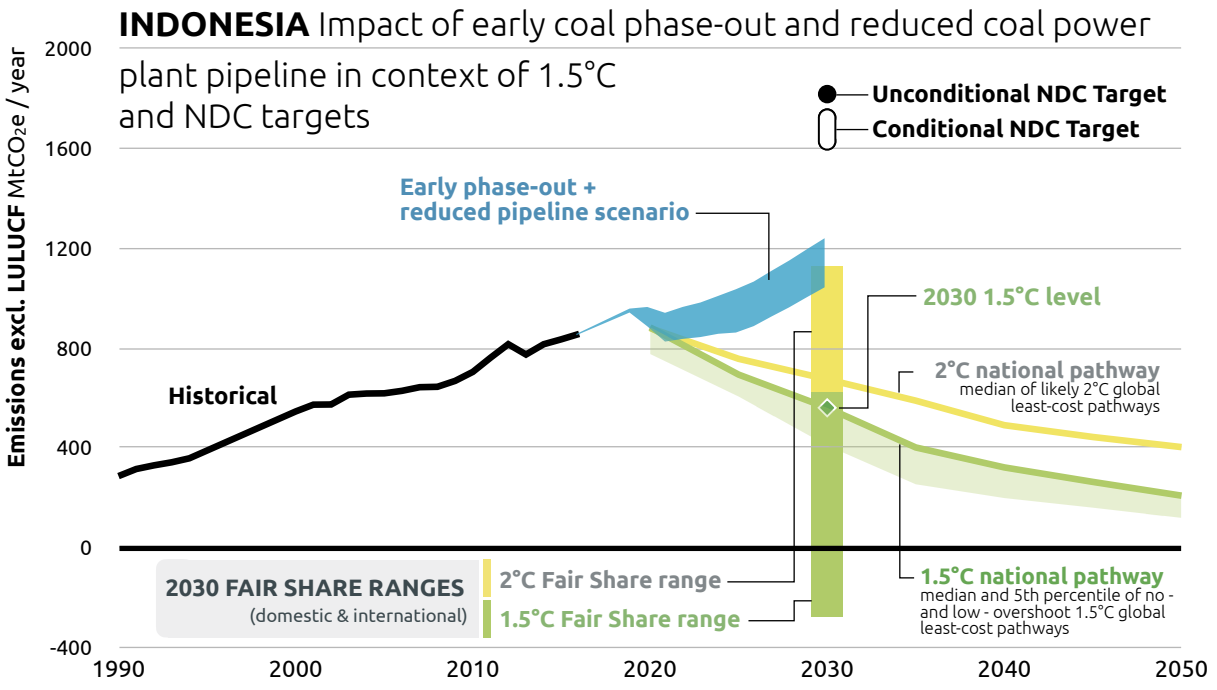

Figure 1 Economy-wide emissions trajectories after the implementation of an early phase out for old power plants and re-evaluation of the existing pipeline. We compare our analysis projections to NDC targets, least cost pathways, and equitable emissions reduction ranges.

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1 Introduction

COVID-19 has put a significant strain on Indonesia. The pandemic has hit the country hard, and the resulting economic slowdown is likely to reverse much of the nation's progress in achieving the sustainable development goals (Suryahadi, Al Izzati, and Suryadarma 2020).

A well-designed post-crisis recovery could mitigate the long-term negative economic and social impacts. A green recovery leads to benefits related to climate change mitigation, creates demand for new jobs and improves overall life quality for the population (Climate Action Tracker 2020a). However, such a recovery would require Indonesia to realign its public spending with the central goal of transitioning to a low-carbon economy and away from coal.

The reassessment of Indonesia's long-standing relationship with coal would be an important step towards a green recovery. COVID-19 made it evident that Indonesia's coal dependency is unsustainable. The pandemic triggered a revision of electricity demand forecasts, worsened the already deteriorating financial health of the biggest electricity utility, and highlighted structural issues with the coal exploration sector (Brown 2020a; Peh 2020a; Hamdi 2020; Rahman 2021).

The Ministry of Energy and Mineral Resources indicated in early 2021 its intention to retire coal power plants that have been in operation for more than 20 years (Reuters 2021).

Other countries in the region are also on their way to reducing their reliance on coal. The Philippines has announced a moratorium on new coal-fired plants, although this will not curtail its large pipeline of 22 already-approved new plants (Climate Home News 2020; Ahmed and Brown 2020; Department of Energy 2020; Chavez 2020). Bangladesh and Viet Nam decided to reduce sizeable portions of their coal power plant pipeline (Corbley 2021).

In this short analysis, we investigate the potential impact of re-evaluating coal capacity for electricity generation in Indonesia and analyse the impact of the phase-out of older power plants and a reduction of the pipeline considering recent policy developments in the country and region. We explore the implications of these measures in terms of greenhouse emissions and social co-benefits, especially those related to a reduction in air pollution.

2 Effect of COVID-19 on greenhouse gas emissions

COVID-19 had a marked impact on Indonesian emissions, but Indonesia looks set to miss an opportunity to lock in deep emissions reductions as it recovers from the pandemic. Without additional measures, emissions are projected to remain on an upwards trend between 2020 and 2030.

The CAT estimates that Indonesia's emissions decreased up to 6% in 2020 compared to 2019 due to the pandemic (Figure 2). To estimate the emissions' impact, we assume that emissions intensity over economic output will remain the same as pre-pandemic and the effect on emissions is a result of a reduction in GDP growth (see annex COVID-19).

In Indonesia, the economic decline was mostly due to a reduction in household consumption, a slowdown in investments and a reduction in both coal and palm oil exports – two major economic sectors (The Jakarta Post 2020; Jong 2020a; Christina and Ungku 2020; Bank of Indonesia 2020).

A reduction in international coal demand due to COVID-19, particularly in India and China, had a large impact on the coal sector – Indonesia is one of the top five coal exporters globally (Wilda Asmarini 2020; IEA 2020). This drop in international demand has put the already fragile books of many Indonesian coal mining companies at risk (Peh 2020b).

The full effect of the pandemic or recovery measures is still unclear. Despite this uncertainty, emissions are projected to rebound after the short-term dip and increase approximately 33-39% between 2020 and 2030. Emissions, excluding land use, land use change and forestry (LULUCF) are projected to reach 1,184-1,339 $MtCO_2e$/year in 2030 (Figure 1).

To be in line with the Paris Agreement's 1.5˚C long-term temperature goal, Indonesia's emissions (excluding land use, land-use change and forestry) would need to decrease by 22% below 2010 levels by 2030 (median estimates: Figure 1). The result of this analysis indicates plausible emission reductions that Indonesia could undertake domestically and does not determine whether this is a fair contribution to the Paris Agreement. However, fair share ranges would also require emissions reductions below current policies (Figure 1). See Appendix A1 for a summary of the methodology used.

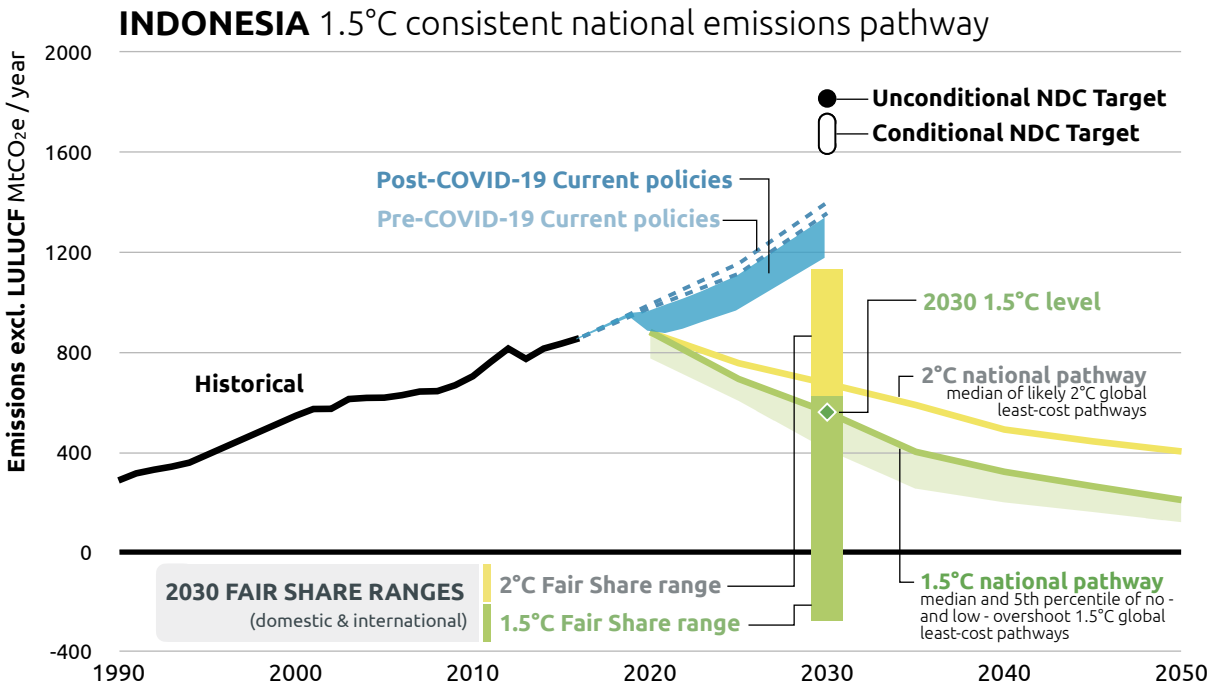

Figure 2 Effect of COVID-19 on emissions projections under current policies (dashed lines show post-COVID-19 emissions and full line, pre-COVID-19). We compare current policy projections to NDC targets, least cost pathways, and equitable emissions reduction ranges.

The reduction range is derived from global model runs of the IPCC special report on 1.5°C that distribute emission reductions across countries and sectors in a cost optimal way to limit global temperature rise to below 1.5°C by the end of the century (Huppmann et al. 2019).

2.1 Coal plants central to Indonesia's emissions projections

The increase in coal-fired power plant installed capacity is a main driver of emissions growth in Indonesia. At the end of 2020, Indonesia had approximately 34 GW of coal-fired power plants in operation (Figure 3), and plans to meet most its electricity demand in the coming years with additional coal-fired generation capacity (Republic of Indonesia 2019). Approximately 19 GW of coal-fired power plants are expected to come online in the next eight years (Global Energy Monitor 2020a). This corresponds to an increase of 75% in less than a decade (Figure 2). The nation's coal-fired power plant pipeline is one of the largest in the world and is one of the few to have increased since 2015 (Jakob et al. 2020).

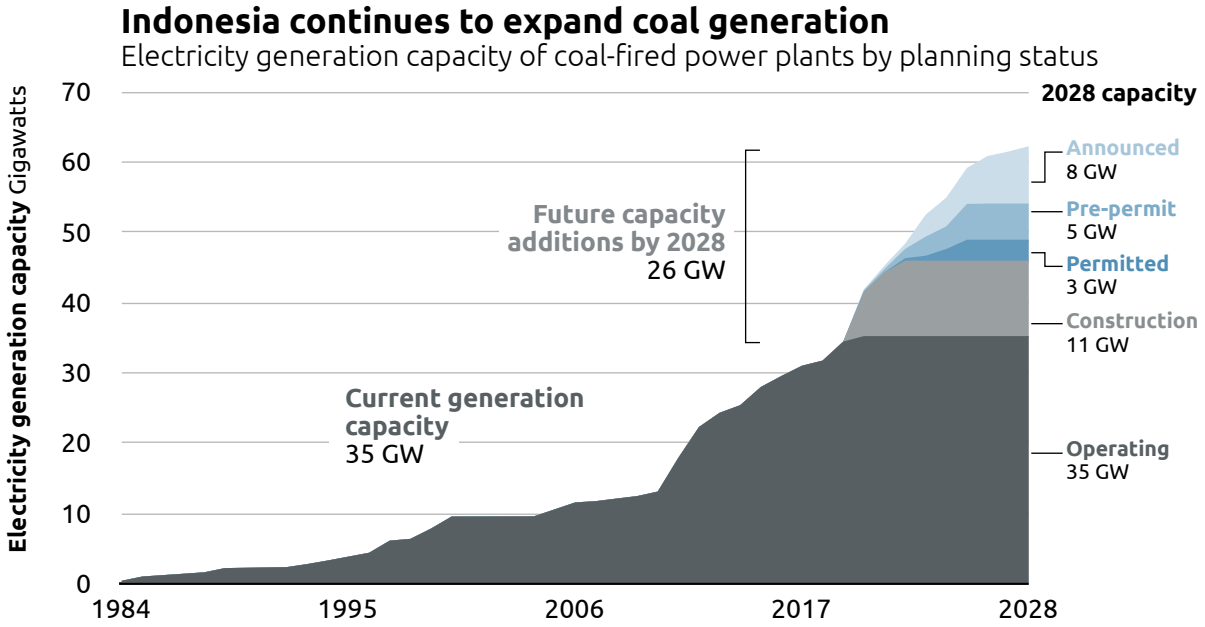

Figure 3 Indonesia's current coal installed capacity and pipeline as of November 2020 (Global Energy Monitor 2020a).

Indonesia's electricity supply plans in recent years have continually and significantly revised electricity demand projections downwards. The expected average annual demand growth between 2020 and 2030 has fallen from 10%, presented in the 2008 National Electricity Master Plan (RUKN), to 7% in 2019 (Republic of Indonesia 2019; 2008). The latest published planning documents have further reduced demand projections to account for the impact of COVID-19, but they do not yet outline concrete actions to reduce the use of coal (Republic of Indonesia 2020).

Electricity projections presented in the latest electricity supply plan (RUPTL 2019-2028) show only a slight decrease in coal electricity generation share by 2028 (Republic of Indonesia 2019)[1] . But a small reduction in power generation share is not enough to curb emissions. Additional investments in low-carbon industries are fundamental to lock in future emissions reductions (Shan et al. 2020). The post-COVID-19 economic recovery presents an opportunity to increase investment in low-carbon development and foster renewable energy development (Amri, Roesad, and Damuri 2020).

1 An update of the electricity supply plan (RUPTL 2021-2030) is expected for the beginning of 2021.

To minimise the effect of COVID-19 on the economy, the government has earmarked at least USD 50 billion to fund the National Economic Recovery - PEN (Ministry of Finance Indonesia 2020a; O'Callaghan et al. 2020; Diela 2021). This corresponds to approximately 4% of GDP in 2019. As part of this package, Indonesia has established numerous policy instruments such as tax incentives, direct investments and subsidies, and loans (Cabinet Secretariat of the Republic of Indonesia 2020; Ministry of Finance Indonesia 2020b; Media Indonesia 2020). Yet its current plans are only focused on economic rescue and make no attempt to steer the country towards a low-emissions pathway.

Instead, coal support picked up speed in 2020. To boost consumption, the government capped the price of domestic coal at USD 20 per tonne, below market value (Harsono 2020). The Indonesian government has used its PEN resources to subsidise fuel for industries and businesses (Kontan.co.id 2020). It has also introduced two new regulations (PP 36/2020 and PP 37/2020) to inject approximately USD 1 billion into state companies, including the coal-reliant national utility company, PLN.

Third-party estimates indicate that PLN may need up to USD 7.2 billion in subsidies from the government to address its financial issues, driven in part by an overestimation of electricity demand in the Bali-Java grid (Brown 2020b). The government also introduced other new laws in 2020 (Laws no. 3/2020 and 11/2020) to extend mining contracts and develop the downstream coal industry (Tampubolon et al. 2021). Continuous support for coal distorts electricity prices and reduce resources available to tackle important low-carbon and sustainable interventions.

3 The importance of rethinking the role of coal in Indonesia

The Paris Agreement created a framework in which almost all countries have agreed to a common goal of holding the global average temperature increase to well below 2°C above pre-industrial levels and pursue efforts to limit it to 1.5°C (UNFCCC 2015). To achieve this ambitious goal, emissions must be reduced to net zero by mid-century (Rogelj et al. 2018).

A global transition away from coal electricity is fundamental to achieving the goal of the Paris Agreement. Many countries plan to reduce their coal project pipelines. Even though multiple challenges for a successful transition away from coal exist, overcoming them leads to diverse benefits.

Coal should be phased out globally by 2040 to limit warming to 1.5°C (Cui et al. 2019). To that end, countries must halt new coal-fired power plant construction and reduce the utilisation of existing plants (Kuramochi et al. 2018; Climate Action Tracker 2016).

Multiple countries in the region take action against coal:

- The Philippines is the first country in the region to plan a moratorium on new coal. Energy Secretary Alfonso Cusi announced on October 2020 that new coal-fired power plants will no longer receive permits from the Department of Energy (DOE) (Climate Home News 2020; Ahmed and Brown 2020; Department of Energy 2020).
- Bangladesh is assessing how to 'move from coal-based power plants' given a reduction in finance available for such projects, even though 22 GW remain in the pipeline (Corbley 2021; Global Energy Monitor 2020b).
- Viet Nam's draft power development plan cancels seven power plants and subjects the remaining ones to reassessment by 2030 (Brown and Vu 2020). The latest draft intends to gradually reduce the share of coal in electricity generation from 34% in 2020 to 17-18% in 2045 (Burke and Nguyen 2021).

Indonesia's plans to expand coal capacity are off track compared to action by other countries in the region. It must reduce its grid emissions intensity and coal share to zero before mid-century to keep the collective goals of the Paris Agreement within reach (Figure 4). To scale climate change mitigation ambition in its power sector, Indonesia should revisit plans to build new coal power plants (Climate Action Tracker 2019).

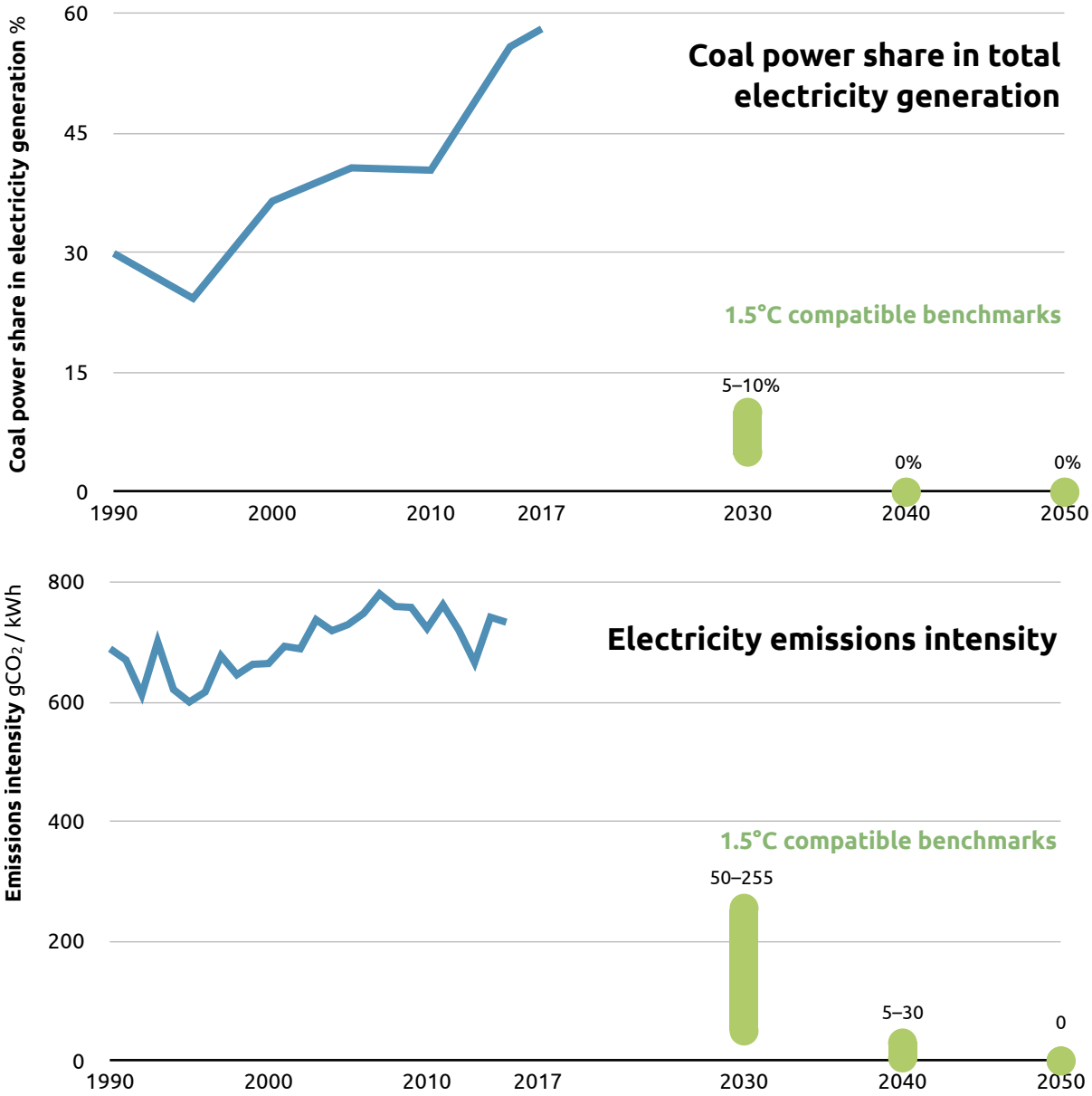

Figure 4 Benchmarks for grid emissions intensity and coal share in electricity generation in Indonesia necessary to meet the goals of the Paris Agreement, may require international financial support (Climate Action Tracker 2020b).

4 The effect of a reduction of coal-fired electricity on Indonesia's emissions

The reduction in electricity demand projections creates an opportunity to realign capacity expansion plans with the goal to reduce emissions. Here, the CAT investigates the effect of two possible means to re-evaluate the role of coal-fired electricity in Indonesia.

The first is based on the concept of an early phase out of old coal capacity in line with the latest statement from the Energy and Mineral Resources Minister: to replace coal-fired power plants that have been operating for over 20 years with renewable energy (Reuters 2021) – the 'Early phase out' scenario.

The second is to follow good practice examples of other coal-dependent Southeast Asian countries, e.g. the Philippines and Bangladesh, to reduce coal expansion plans – the 'Reduced pipeline' scenario. Both scenarios are quantified based on a reduction below current policy emissions projections:

- **Early phase out**: excludes emissions from power plants in operation for over 20 years. This results in an approximately 13 GW reduction in total installed capacity by 2030.
- **Reduced pipeline**: excludes emissions from subsets of the new coal plant pipeline, ranging from exclusion of the whole pipeline to the exclusion of announced power plants only. This results in a range of 8-16 GW reductions in total installed capacity by 2030.

While implementing these two scenarios would not be enough to curb emissions (Figure 5), they would at least delay an emissions increase and provide additional time for the government to prepare for a just transition away from coal. Each scenario individually could reduce emissions by 3-6% in 2030 below current policies (emissions in 2030 between 1,100-1,300 $MtCO_2e$):

- The 'Early phase out' scenario alone would result in reductions of approximately 5% below the current policies.
- The 'Reduced pipeline' scenario potentially has a higher impact on emissions but is more uncertain due to the distinct stages of the power plants in the pipeline. This scenario alone could reduce emissions by 3-6% below current policies.

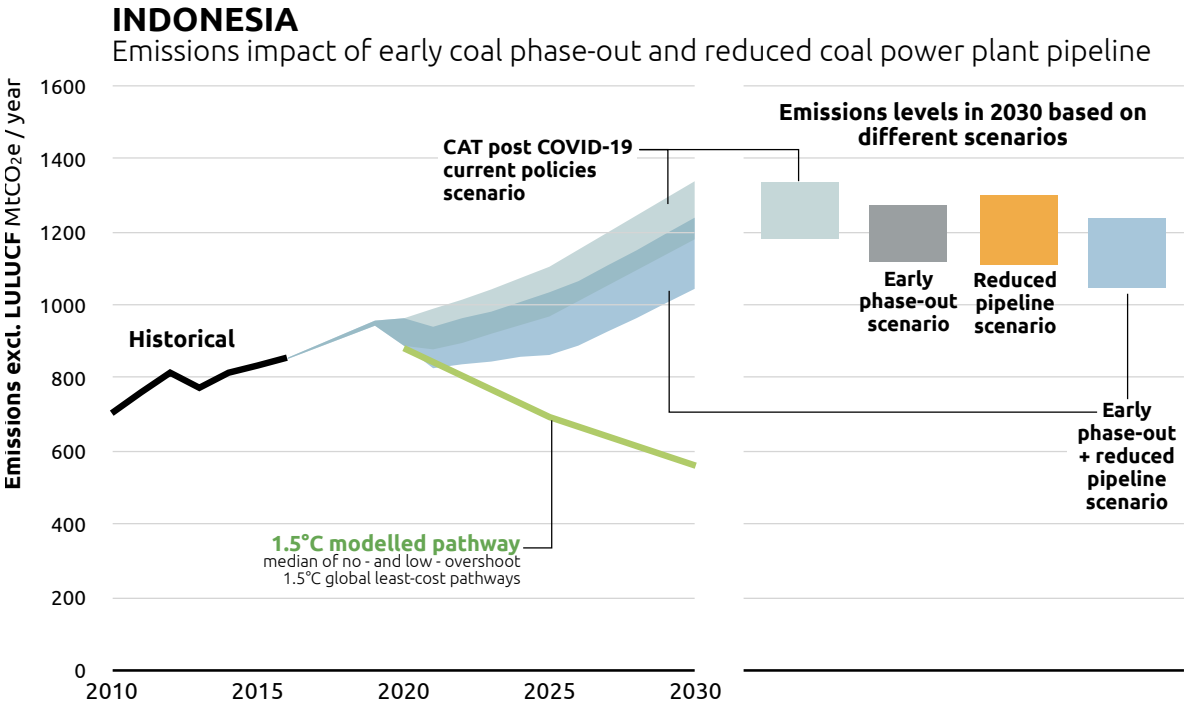

Figure 5 Economy-wide emissions trajectories, excluding LULUCF under distinct scenarios of coal-fired electricity generation capacity.

An early phase out combined with a reduction in the existing pipeline could reduce emissions to 1,050-1,250 $MtCO_2e$, which is 7-11% below current policies. This reduction remains insufficient to align Indonesia's current policies with a 1.5°C Paris compatible pathway, which requires emissions to fall below 560 $MtCO_2e$ in 2030 (excluding LULUCF). A much stronger uptake of renewable energy technologies is necessary to bring Indonesia's emissions within a 1.5°C compatible range.

Re-evaluating coal dependency presents a huge potential to scale up the ambition of Indonesia's NDC, which presents an unconditional, 2030 emissions target of 1,817 $MtCO_2e$, excluding LULUCF. Indonesia is very likely to overachieve its 2030 Paris Agreement targets, excluding the forestry sector, with currently implemented policies, despite the lack of additional climate change mitigation measures. The current target is not in line with any interpretation of a "fair" approach to the Paris Agreement's 1.5°C limit but Indonesia does not intend to update it before COP26.

5 Wider co-benefits of less coal for electricity generation in Indonesia

The pandemic has resulted in a reduction of air pollution in many countries. However, due to the number of coal-fired power plants in the vicinity of major urban centres, the effect is not observed in Indonesia (Jong 2020b).

South Tangerang, in Jakarta's metropolitan area, was the world's 25th most air polluted city in 2020 (IQAir AirVisual 2021), and its pollution levels have triggered protests and a civil lawsuit in recent years (Andapita 2019). A reduction in coal-fired electricity would have a positive effect on air pollution, reduce strain in the health system and help save thousands of lives (IISD 2018). The operation of a coal-fired power plant leads to negative effects throughout the plant's whole lifetime.

The CAT has also looked at the combined effect of the 'Early phase out' and 'Reduced pipeline' scenarios on air pollution and their impact on premature deaths. We quantify premature deaths avoided between 2020 and 2030. We focus on the effects of three major air pollutants (i.e. NO_x, SO_2 and $PM_{2.5}$), associated with negative impacts on human health, and the four leading causes of death: heart disease, stroke, lung cancer, and chronic obstructive pulmonary disease – for more on methods, see (Schiefer and Fearnehough 2020).

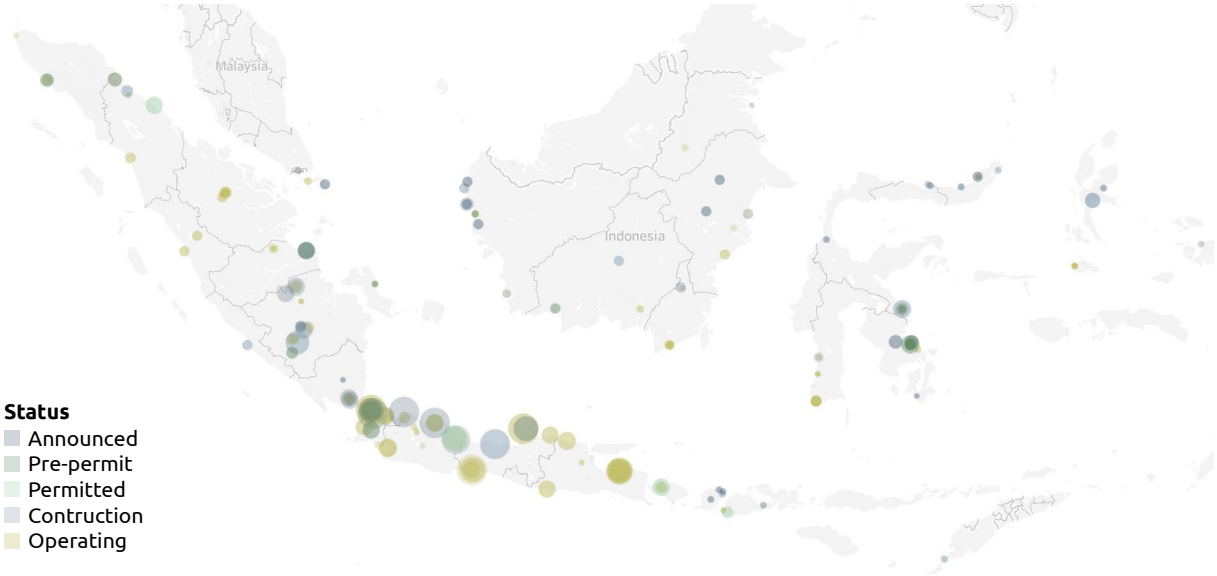

Figure 6 Location of coal-fired power plants, circle size refers to the installed capacity and colour to the operation status.

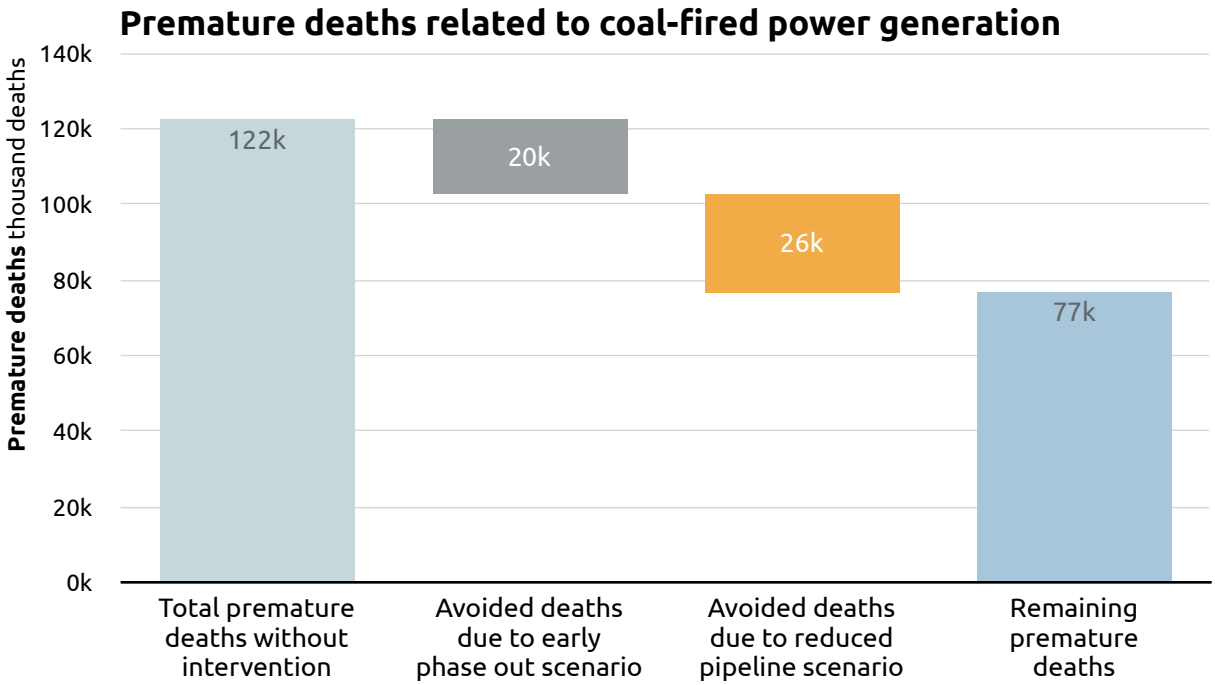

Figure 7 Premature deaths related to coal-fired power generation in Indonesia between 2020 and 2030.

Our results show that if current coal capacity expansion plans were fully implemented, at least 120,000 people would die prematurely over the next decade in Indonesia due to air pollution from coal-fired power generation.

Over 30% of these health impacts would be caused by coal-fired power plants not yet in operation and could potentially be replaced by cleaner energy sources. At least 16% of these premature deaths are due to power plants that have been operating for more than 20 years and which could be retired. The implementation of an early phase-out, combined with a reduction of the coal plant construction pipeline could avoid over 45,000 premature deaths in the next decade.

These results represent a conservative estimate. First, we have only quantified premature deaths caused by the four most significant causes. The inclusion of other diseases would increase the effect. Second, most of the existing and planned coal-fired power plants are located close to urban centres and, if urbanisation trends continue, premature deaths could substantially increase as more people would live and work closer to the power plants.

The reduction of coal-fired electricity and grid emissions intensity has other synergies with the sustainable development agenda, beyond climate change mitigation (Table 2). The displacement of coal capacity opens a space to explore Indonesia's vast renewable energy potential, especially for geothermal and solar-based electricity. In 2019, the CAT quantified the potential impact of transition away from coal in employment and has identified a net positive effect: more jobs are created than lost in the shift to renewable energy (CAT 2019).

Table 1 Selected sustainable development goals (SDGs) with significant links with the phase out of coal for electricity generation in Indonesia (Gonzales-Zuñiga et al. 2018; Climate Transparency 2019).

SDG	Synergies between coal electricity reduction and development goals
 SD3 **Good health and well being**	Phase out of polluting technologies can reduce air, water and soil pollution and thus non-communicable diseases.
 SD7 **Affordable and clean energy**	Renewable electricity prices are comparable to fossil fuels in most regions. Renewables also enable decentralised, modern and sustainable energy services for all.
 SDG8 **Decent work and economic growth**	Development of renewable energy industry supports full employment through creation of decent jobs. Expected reduction of international coal demand will probably trigger need for diversification of national sources of economic growth.
 SDG9 **Industry, innovation and infrastructure**	Development and integration of new clean technologies supports sustainable industrialisation and infrastructure upgrade. It supports a shift away from raw material exporter.
 SDG11 **Sustainable cities and communities**	The displacement of coal-fired power plants reduces environmental impact on Indonesian cities by reducing the amount of greenhouse gases and air pollutants from power generation in the vicinity of urban centres.
 SDG15 **Life on land**	The phase out of coal can help reduce degradation of natural habitats through reduced air and water pollution and reduced water consumption.

Indonesia's transition away from coal has multiple implications for the country's economic sectors and, consequently, the population depending on them. To identify and plan how to mitigate potential trade-offs can enable a just transition pathway. Specifically, the distributional effect of such a transition must be investigated in detail to ensure the transition does not disproportionally affect vulnerable groups (Rauner et al. 2020; Jakob et al. 2020).

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Assumptions

Current policy projections

We construct the range of *current policy projections* based on two main external sources. The scenarios are based on the reference "Business-as-usual" scenario from the Asia Pacific Energy Research Centre (APERC), which "assumes current policies and trends continue" (APERC 2019), and on Indonesia's 10-year electricity supply plan RUPTL 2019-2028 (Republic of Indonesia 2019).

According to APERC, the share of coal in power generation will decrease from 56% in 2016 to 55% in 2020, 50% in 2025 and then increase again to 51% in 2030. The APERC scenario is developed by an independent organisation and is used as an alternative development pathway since it is based on its own GDP and energy demand projections. The implementation of the RUPTL leads to coal shares of 66% in 2020, 55% in 2025 and 54% in 2028. Using time dependent emission factors from the IEA's Current Policies Scenario for non-OECD Asia, multiplied by the coal, oil, and gas shares for both total primary energy supply and electricity-related emissions according to the APERC BAU scenario, gives the upper bound of emissions in our Current Policy Scenario for the energy sector, representing continued use of coal.

The total electricity demand forecast by the RUPTL is higher than that in the APERC reference scenario, however the projected electricity generation has substantially decreased in comparison to previous years. It is to be noted that in our current policy scenario, the target of 23% renewables in TPES is not reached. The APERC BAU scenario is consistent with increasing installed capacity of coal by 5 GW between 2016 and 2025, in comparison to 22 GW under the RUPTL 2019-2028.

We subsequently add non-energy and non-CO2 emission projections from the Second Biennial Update Report and harmonise the resulting time series with energy-CO2 projections (Republic of Indonesia 2018). The emissions levels are sensitive to the method of harmonisation. Thus, we apply two methods:

- Apply growth rates of the calculated scenarios to the last historical year
- Adjust all future years by the difference of the calculated scenario and the inventory in the last available year (2016)

Both methods are included in the range presented for current policy projections.

COVID-19 effect

We applied a novel method to estimate the COVID-19 related dip in greenhouse gas emissions in 2020 and the deployment through to 2030. The uncertainty surrounding the severity and length of the pandemic creates a new level of uncertainty for current and future greenhouse gas emissions. We distil the emission intensity (GHG emissions/GDP) from the pre-pandemic scenario and apply it to most recent GDP projections that take into account the effect of the pandemic. We used the growth rates from our pre-COVID-19 current policy scenario to extend those projections to 2030.

The GDP projections from the OECD double hit scenario, which show a GDP retraction of -4% in 2020 and a growth of 2.6% in 2021, were used to create the lower bound of our current policy projections (OECD 2020). The most recent GDP projections from the BPPT Indonesian Energy Outlook optimistic scenario, which presents a growth of 2.3% in 2020 and 6.0% in 2021, were used create the upper bound of our current policy projections (BPPT 2020). We also considered the most recent GDP projections from the World Bank, Asian Development Bank, Ministry of Finance of Indonesia and the International Monetary Fund but these fell within this range (ADB 2020; IMF 2021; World Bank 2020; Brown 2020b).

Air pollution quantification

The air pollution impacts were calculated using the AIRPOLIM-ES tool. The AIRPOLIM-ES, developed by NewClimate Institute under the Ambition to Action project, is a spreadsheet-based model that uses an accessible methodology for quantifying the health impacts of air pollution from different sources of electricity generation and other fuel combustion. It calculates the impacts on mortality from four adulthood diseases: lung cancer, chronic obstructive pulmonary disease (COPD), ischemic heart disease, and strokes, the prevalence of which is increased through exposure to air pollution.

The health impact assessment is based on emissions of particulate matter ($PM_{2.5}$), NO_X, and SO_2. The model estimates the annual electricity generation (GWh) for each plant, as well as the corresponding emissions of air pollutants using plant-specific data and country-specific emissions factors from the GAINS model developed by International Institute for Applied Systems Analysis (IIASA). Depending on the type of emissions control equipment installed, the model multiplies the estimated fuel consumption with the corresponding country-specific emission factor. Where more detailed information is available, plant-specific emission factors can be entered into the model to improve accuracy.

The exposed population living within four distance bands (0–100 km, 100–500 km, 500–1,000 km, and 1,000–3,300 km) from each power plant is estimated using open-source Geographic Information System (GIS) software, also considering population growth using estimates from the UN World Population Prospects (UN DESA 2019). The model uses the intake fraction concept to estimate the change in $PM_{2.5}$ concentration in the ambient air based on the calculated pollutant emissions. Intake fractions indicate the grams of $PM_{2.5}$ inhaled per ton of $PM_{2.5}$, NO_X, and SO_2 emissions. These fractions - drawn from literature based on air dispersion modelling – enable estimation of the change in $PM_{2.5}$ concentration.

To calculate the increased mortality risk per additional ton of pollutant emissions, the estimated change in $PM_{2.5}$ concentration is multiplied with the respective concentration-response function. Concentration-response functions are estimated based on long-term medical cohort studies and indicate the increase in cause-specific mortalities per 10 micrograms per cubic metre increase in $PM_{2.5}$.

The Global Burden of Disease project provides mortality rates by disease for different age groups at the country level. The model obtains age-weighted mortality rates by disease using the share of the country's population in each age class. The risk estimates, age-weighted mortality rates, and exposed population are combined to calculate the number of premature deaths per ton of pollutant for each cause of death. Finally, these numbers are multiplied with the estimated pollutant emissions to obtain the total premature deaths per pollutant and cause for each power plant. Premature death refers to deaths that are attributed to exposure to a risk factor, e.g. air pollution, and could be delayed if the risk factor was eliminated.

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The Climate Action Tracker (CAT) is an independent scientific analysis produced by two research organisations tracking climate action since 2009. We track progress towards the globally agreed aim of holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C.

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Climate Analytics is a non-profit climate science and policy institute based in Berlin, Germany with offices in New York, USA, Lomé, Togo and Perth, Australia, which brings together interdisciplinary expertise in the scientific and policy aspects of climate change. Climate Analytics aims to synthesise and advance scientific knowledge in the area of climate, and by linking scientific and policy analysis provide state-of-the-art solutions to global and national climate change policy challenges.

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NewClimate Institute is a non-profit institute established in 2014. NewClimate Institute supports research and implementation of action against climate change around the globe, covering the topics international climate negotiations, tracking climate action, climate and development, climate finance and carbon market mechanisms. NewClimate Institute aims at connecting up-to-date research with the real world decision making processes.

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