

AMBITIOUS GREEN GROWTH FOR INDONESIA: INSIGHTS AND POLICY IMPLICATIONS

Authors: Saidou Abdoulaye Sy, Soyoung Oh, Travis Franck, and Kelly Sims Gallagher



This analysis assesses Indonesia's climate policies and their influence on several economic sectors. The study looks at the effectiveness of national policies in meeting Indonesia's Nationally Determined Contribution (NDC). The new potential policies are bundled together in an Ambitious Green Growth (AGG) scenario, which is compared to Indonesia's current policy trajectory.

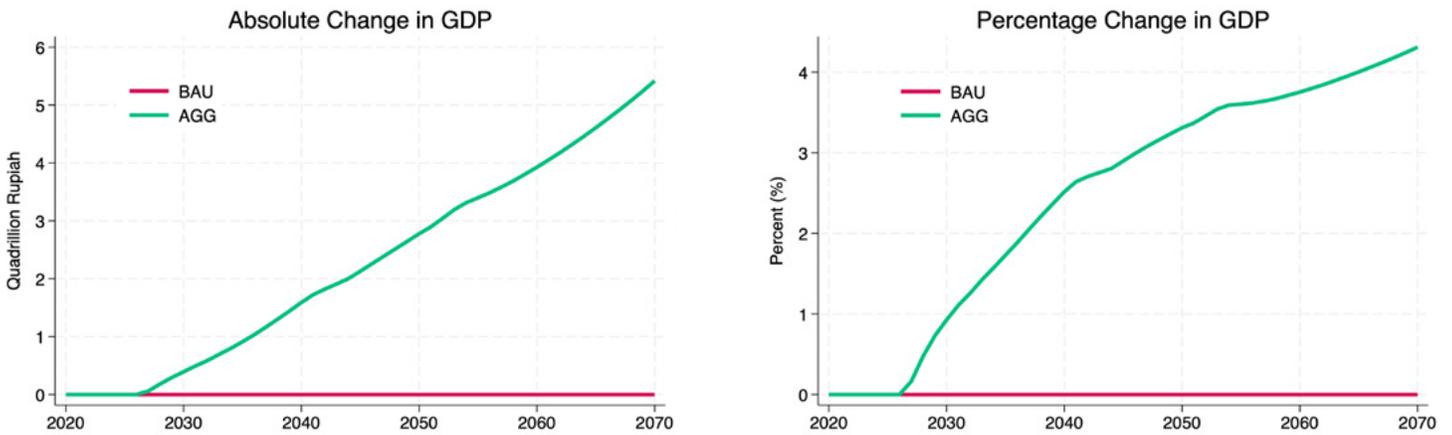
Key Messages

- The AGG suggests that Indonesia can achieve net zero by 2060 by reducing emissions from energy, agriculture, industry, and waste by 71%, and capturing the remaining emissions in forest and peatland carbon sinks.
- In this scenario, net zero emissions are achieved while simultaneously increasing GDP, creating more jobs, and reducing national debt.
- Despite making progress, the AGG scenario does not achieve Indonesia's 2030 NDC targets.
- The AGG scenario saves more money than required for implementation, leading to better fiscal health for the government.

Methodology

Using the Energy Policy Simulator (EPS) model, this analysis compares two scenarios from 2020 to 2070: a Business-as-Usual (BAU) scenario, which mirrors Indonesia's current policies, and an Ambitious Green Growth (AGG) scenario, which strengthens existing policies and enacts new legislation. The AGG scenario was constructed by the authors based on expert elicitation and prior scholarly literature. The model estimates economy-wide emissions from industry, transport, land-use and forestry, buildings, electricity, agriculture, and waste. For each scenario, the model assesses the economic impact of emissions reductions. The goal is to provide Indonesia's decision-makers with low-carbon policy options that promote both climate goals and socioeconomic gains.

Figure 1. Absolute change and percent change in Gross Domestic Product (2020 – 2070)



Results

ECONOMIC IMPACTS - JOBS AND GDP

The ambitious policies contained in the AGG scenario are estimated to increase Indonesia's GDP from around Rp 58 trillion in 2027 to Rp 4 quadrillion by 2060, thanks to land-use and forestry policies, renewable energy programs, energy efficiency, and the transition to electric cars (Figure 1). Employment will increase compared to BAU. The AGG adds 1 million in 2027 and a cumulative 30 million new jobs by 2060 (Figure 2). While job losses occur in areas such as coal mining, non-metallic mineral products manufacturing, and chemicals manufacturing, new opportunities emerge in green businesses such as sustainable agriculture

and renewable energy. Under the AGG scenario, Indonesia's cumulative national debt decreases by Rp 13 trillion by 2060, boosting fiscal health and allowing for future investments in climate solutions (Figure 3).

In addition to reducing national debt, the government's cash flow improves, primarily because of new carbon tax revenue and the phase-out of EV subsidies (Figure 4). Carbon tax revenue is expected to be Rp 181 billion by 2030, with savings from EV subsidies totaling Rp 1.1 billion. By 2060, carbon tax revenue is estimated to reach Rp 1.2 trillion, while EV subsidies will save Rp 8.4 billion. The improvements in these two cash flows counteract a decrease in fuel tax income, which is lower than BAU as Indonesia

Figure 2. Change in jobs (2020 – 2070)

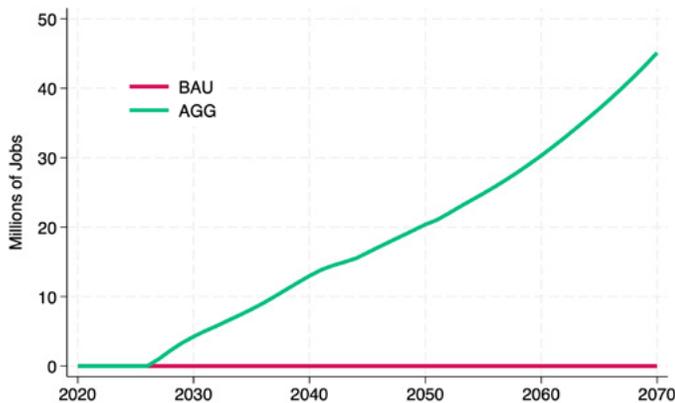


Figure 3. Cumulative change in national debt (2020 – 2070)

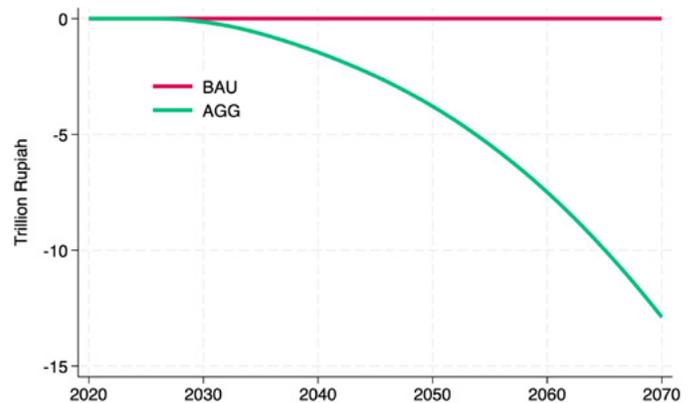
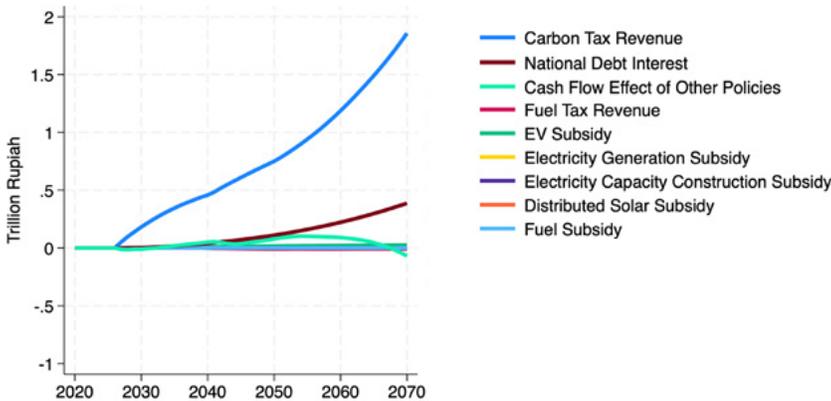


Figure 4. Change in government cash flow (2020 – 2070)



shifts away from fossil fuels. Overall, the AGG policies strengthen the government's budgetary position and provide a chance to undertake climate-smart investments for both reduction and adaptation.

HEALTH BENEFITS

The AGG provides significant health advantages, with an estimated 6,339 premature deaths averted by 2060 (Figure 5). These advantages underscore the need for climate policies that preserve public health.

COSTS AND SAVINGS

The implementation of the AGG scenario involves increasing total costs, including capital expenditures and operation and maintenance, starting from Rp 214 billion in 2027 to about Rp 9.5 trillion by 2070 (Figure 6). These costs reflect

the upfront investments needed for cleaner technologies and more efficient infrastructure. However, the savings significantly outweigh the costs over time. Starting at Rp 154 billion in 2027, total savings, comprising household savings and economic benefits from emission reductions, steadily rise to Rp 26.5 trillion by 2060. This gap between costs and savings demonstrates the economic and societal advantage of pursuing ambitious climate policies, as the long-term gains in public health, lower energy bills, and avoided climate damages surpass the investment needed to implement AGG.

GREENHOUSE GAS EMISSIONS

By 2030, the AGG scenario reduces projected Indonesian greenhouse gas emissions to approximately 986 Mt CO₂e, compared to 1,225.9 Mt CO₂e under the BAU scenario (Figure 7). This represents a reduction of around 20% (21% excluding land use, land use change, and forestry (LULUCF)), which falls short of Indonesia's updated NDC targets of 29% (unconditional) and 41% (conditional) below BAU levels. This gap highlights the need for stronger near-term policy measures. However, the AGG demonstrates stronger long-term ambition, reaching net-zero by 2056 (70% excluding LULUCF). This trajectory is consistent with Indonesia's Long-Term Strategy, which aims to achieve net-zero emissions by 2060 or sooner. While short-term targets require reinforcement, the long-term pathway is well aligned with national and global climate goals.

Figure 5. Avoided deaths (2020 – 2070)

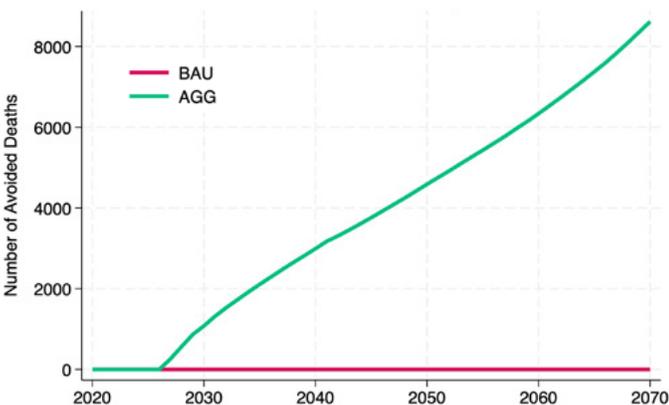


Figure 6. Savings and cost of AGG scenario (2020 – 2070)

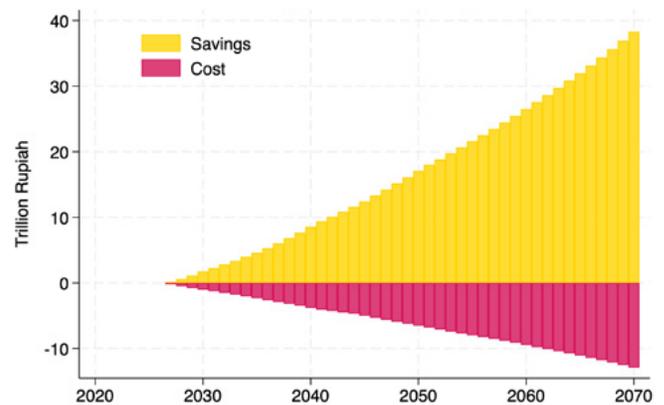
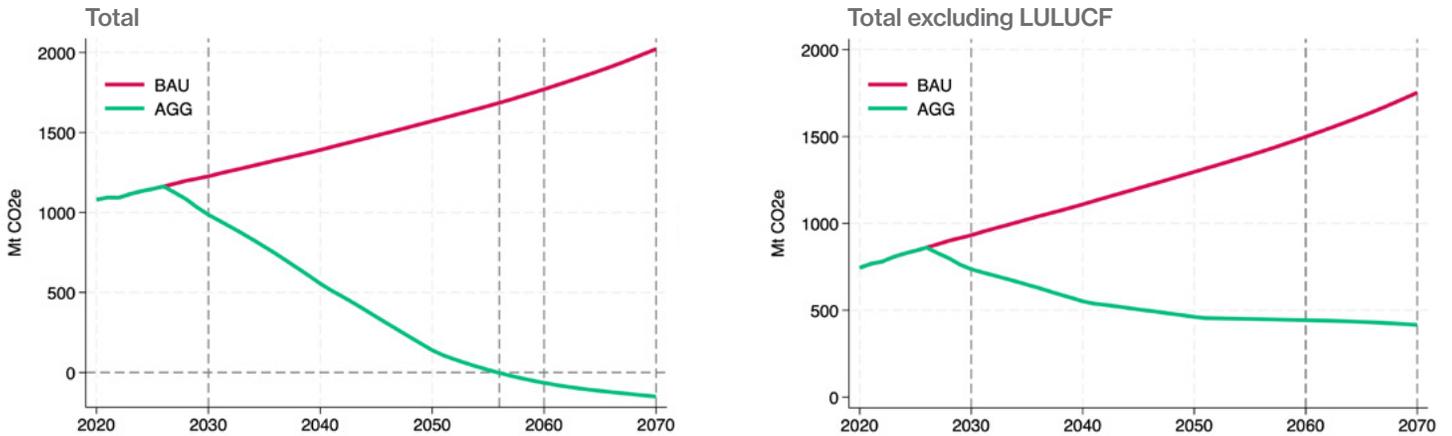


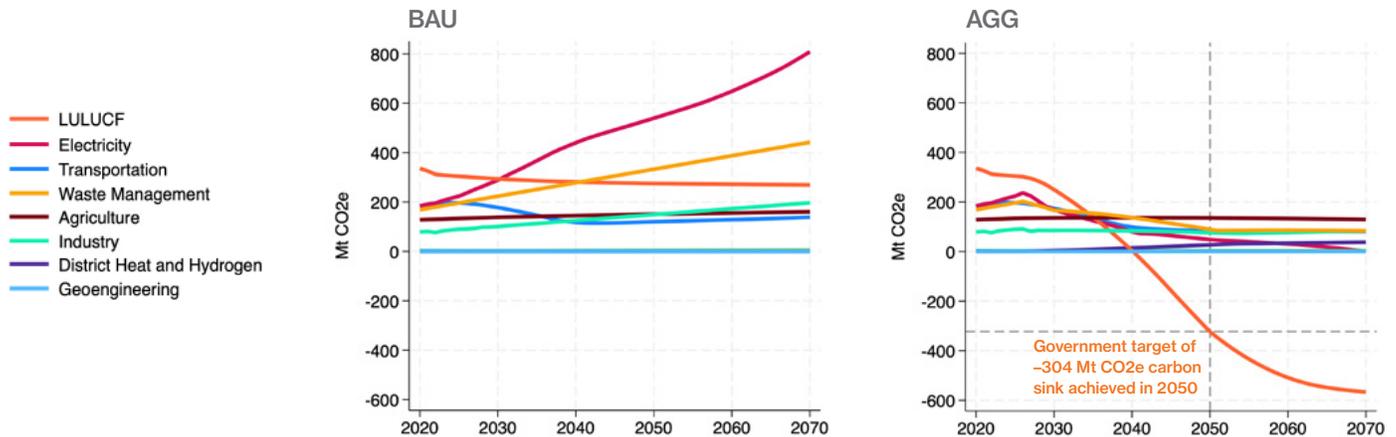
Figure 7. Total greenhouse gas emissions and total greenhouse gas emissions excluding LULUCF (2020 – 2070)



Analyzing emissions by sector shows that the electricity, waste management, and LULUCF sectors are the largest sources of emissions in the BAU scenario (Figure 8). In the AGG scenario, the electricity and LULUCF sectors achieve zero emissions by 2070, while other sectors need to be offset. This outcome

reflects a complete decarbonization of power generation, supported by renewable energy deployment and carbon capture technologies. Additionally, the LULUCF sector consistently acts as a carbon sink, increasingly offsetting emissions from other sectors.

Figure 8. Total greenhouse gas emissions by sector (2020 – 2070)

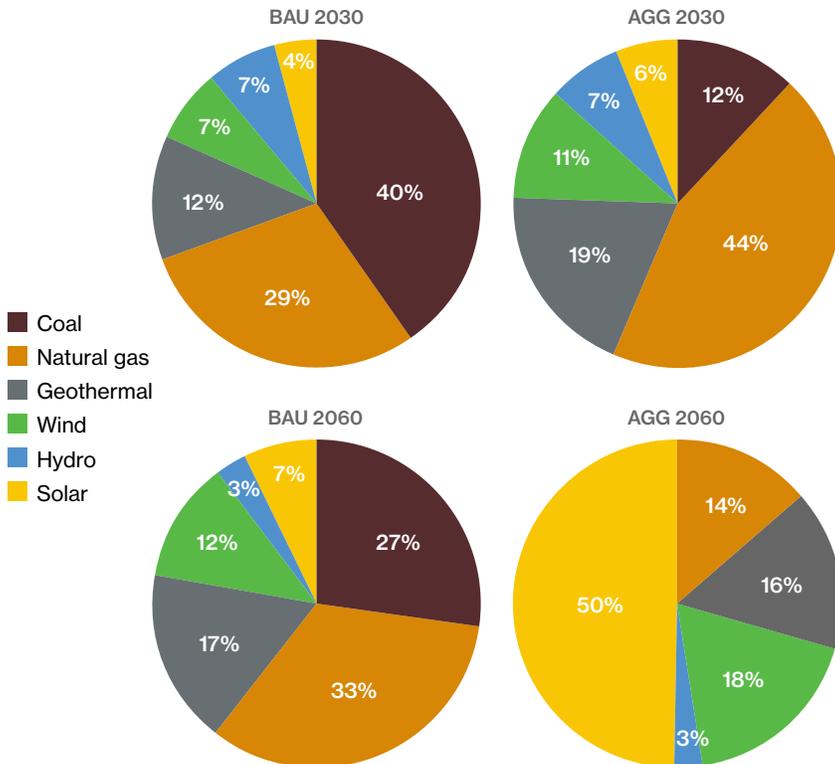


ELECTRICITY GENERATION

The generation of electricity differs between the BAU and AGG scenarios, particularly in the role of renewable energy over time (Figure 9). Under the BAU scenario, fossil fuels, especially coal and natural gas, continue to dominate the energy mix through 2060. Renewables increase modestly from 30% in 2030 to 39% in 2060. In contrast, the suite of policies bundled in the AGG

causes a significant shift toward clean energy, with renewables accounting for 43% of electricity generation by 2030 and nearly 86% by 2060. This transition is driven by policies including: completely phasing out coal and oil, scaling up of solar, wind, and geothermal energies, and putting a price on carbon. While coal is phased out, natural gas is still used in AGG, but CCS is increasingly adopted for gas plants until 100% of carbon emissions are captured in 2070. These findings highlight the critical importance of ambitious policy actions in transforming the power sector and achieving long-term climate goals.

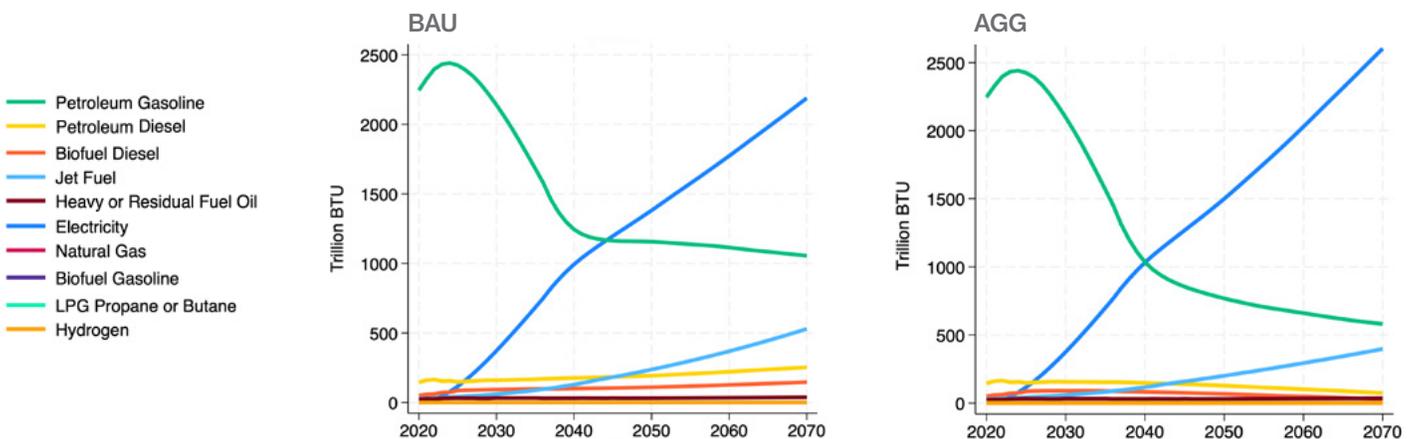
Figure 9. Projected electricity generation for BAU and AGG in 2030 and 2060



TRANSPORTATION

Indonesia's current policies (BAU) support a shift from fossil fuels to cleaner alternatives over the period from 2020 to 2070 (Figure 10). The transport-related policies of the AGG accelerate the speed of electrification. Electricity use rises sharply in the AGG because of the adoption of electric vehicles, and there is a corresponding decline in petroleum, diesel, and gasoline consumption. Biofuels remain low but relatively stable, and hydrogen use stays negligible. This transformation in fuel mix reflects a decarbonization of the transportation sector. Meanwhile, travel demand for both passengers and freight continues to grow throughout the period, though passenger travel grows more moderately under the AGG compared to the BAU scenario because of travel demand management policies, such as encouraging public transportation.

Figure 10. Transportation fuel used by source (2020 – 2070)



**FOR ACADEMIC
CITATION:**

Sy, S. A., Oh, S., Franck, T., & Gallagher, K. S. (2025, December). *Ambitious Green Growth for Indonesia: Insights and Policy Implications* (Policy Brief). Climate Policy Lab, The Fletcher School at Tufts University.

ABOUT THE AUTHORS:

Saidou Abdoulaye Sy is a research affiliate and former Postdoctoral Scholar at the Climate Policy Lab at The Fletcher School, Tufts University.

Soyoung Oh is a Predoctoral Research Fellow at the Climate Policy Lab and PhD candidate at The Fletcher School, Tufts University.

Travis Franck is an Assistant Research Professor at The Fletcher School and Climate Modeling and Policy Director at the Climate Policy Lab.

Kelly Sims Gallagher is Dean and Professor of Energy and Environmental Policy at The Fletcher School. She is also the founding director of the Climate Policy Lab.

Policy Recommendations to Achieve Indonesia's Updated NDC

Indonesia has numerous pathways to expedite its energy transition and meet its updated NDC goals. The proposals below are just one set of policy choices for achieving decarbonization and green growth.

- Strengthen short-term LULUCF policies to meet the 2030 and 2050 targets.
- Accelerate the shift to renewables and phase out coal in power generation.
- Support electric vehicles and cleaner transport options.
- Invest in climate actions that boost jobs, health, and the economy. ●

ACKNOWLEDGEMENT: We wish to thank Landscape Indonesia for their input into this analysis and helpful review of the modeling results.

FUNDING FOR THIS RESEARCH:

Research for this policy brief was supported by Sequoia Climate Foundation, the William and Flora Hewlett Foundation, and Rockefeller Brothers Fund.

Any errors or misrepresentations are the sole responsibility of the authors.

Photo: IrHan Photography / Shutterstock.com