

From Coal-Powered Growth to Green Growth: A Modelling Assessment of Jobs and Resilience in Indonesia's Net-Zero Path

AUTHORS

Soyoung Oh
Dr. Saidou Abdoulaye Sy
Dr. Travis Franck
Kate Hua-Ke Chi
Dr. Kelly Sims Gallagher
Agus Sari

INTRODUCTION

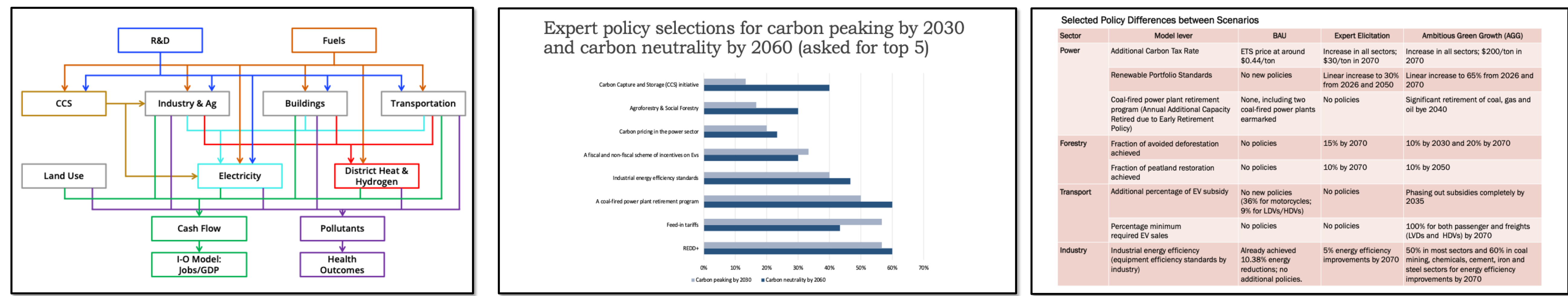
Coal-reliant emerging economies face difficult trade-offs between development, fiscal stability, and climate mitigation. We assess how Indonesia can achieve its net-zero emissions goal before 2060 while sustaining growth.

GOAL

Using a mixed-methods framework that integrates national policy analysis, expert elicitation, and system dynamics modeling linked with sectoral input–output projections, we compare business-as-usual, an expert-informed scenario, and an Ambitious Green Growth (AGG) scenario tailored to Indonesia’s emissions profile.

METHOD

- We used the Energy Policy Simulator (EPS) model by Energy Innovation, adapted to Indonesia, to evaluate the policy effects of the three scenarios.
- The Expert Scenario was informed by the expert elicitation that surveyed Indonesian experts from different organizations and sectors.
- The EPS model is an economy-wide model that includes all major greenhouse gases. It has endogenous energy supply choices driven by exogenous energy demand trends. An embedded input-output model estimates GDP and job impacts.



RESULTS

Accelerated coal retirement, rapid renewable deployment, transport electrification, and strengthened land-use measures under the AGG scenario deliver system-wide emissions reductions, reaching net-zero by 2056. The AGG pathway also yields substantial cumulative GDP gains (about US\$26 billion by 2030; US\$263 billion by 2060), alongside cumulative net job creation (about 4.2 million by 2030; about 30 million by 2060), and improved fiscal balances driven by carbon revenues. Distributional impacts are uneven as clean energy infrastructure, agriculture, and electric vehicle manufacturing are emerging as major winners, while coal mining, petroleum refining, and other carbon-intensive industries experience significant contraction. This highlights the need for just transition measures. Results show that coherent, high-ambition policy packages can transform Indonesia’s net-zero pathway into a driver of inclusive growth and resilience.



CONCLUSIONS

- With an ambitious green growth policy suite, Indonesia can achieve net-zero emissions before 2060.
- These policies lead to more economic growth (GDP) than current policies, leading to more jobs.
- Policies include accelerated coal retirement, rapid renewable deployment, transport electrification, and strengthened land-use measures.
- Government’s fiscal balances are improved, largely driven by carbon revenues.
- Distributional impacts are uneven as clean energy infrastructure, agriculture, and electric vehicle manufacturing are emerging as major winners, while coal mining, petroleum refining, and other carbon-intensive industries experience significant contraction. This highlights the need for just transition measures.
- Results show that coherent, high-ambition policy packages can transform Indonesia’s net-zero pathway into a driver of inclusive growth and resilience.

CONTACT INFORMATION

Travis Franck
Climate Modeling and Policy Director
Climate Policy Lab
Fletcher School, Tufts University

travis.franck@tufts.edu