KEYS TO CLIMATE ACTION

How Developing Countries Could Drive Global Success and Local Prosperity

Amar Bhattacharya, Homi Kharas,
and John W. McArthur
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FIVE

Ensuring an Inclusive, Affordable, and Smooth Climate Transition in Indonesia

Muhamad Chatib Basri and Teuku Riefky

Introduction

Climate change is probably one of the most serious threats to humanity today. According to the Stern Review (2006), global warming will cause increased ocean levels, habitat destruction, disease transmission, changes in agricultural productivity, changes in water availability, increased natural hazards, and changes in ocean chemistry. The number of climate-related disasters has tripled in the timespan of the last 30 years, forcing more than 20 million people per year to leave their homes (GRID, 2022). The entropy caused by human carbon emissions has been seen in drought in East Africa and floods in South Asia during 2022. As a result, collaborative efforts must be made to mitigate man-made climate trends while also successfully adapting to them (Sachs, 2008). Sachs (2008) argues that the precise scale of this effect is not known with certainty, but the impact will be felt globally and affect human life if mitigation and adaptation efforts are not implemented.

Although many studies on the impact of climate change have been conducted and many meetings have been held to make progress on this issue, implementation has lagged. There are numerous impediments, ranging from the political economy to the risk of lost income for natural resource-producing countries. Because fossil fuels have served as the main engine of economic growth in industrial societies for so long, there is a reluctance to abandon them. The "polluter pays" principle has been ignored, effectively subsidizing fossil fuels for government, businesses, and consumers. Therefore, global action

toward mitigating climate change has always fallen short since the early days of climate awareness.

One of the main reasons for the discrepancy between global agreement and global action is a difference of views on who should do what. For instance, many lower- and middle-income countries, despite their commitment toward decarbonization, find themselves constrained by their limited fiscal space, binding external financing constraints, and prioritization of adaptation. Even before COVID-19, large-scale decarbonization efforts in lower- and middle-income countries often meant sacrificing other budgetary spending on items that are essential to long-term economic development, such as basic infrastructure, schools, and health care. COVID-19 further exacerbated the fiscal constraints faced by low- and middle-income countries, as these countries now have to prioritize short-term economic recovery over financing longer-term development projects or decarbonization. In addition, their domestic financial markets are not sufficiently deep to finance a full-scale decarbonization effort, and there are limits in their access to international finance.

Leaving low- and middle-income countries to shoulder the full cost of climate change mitigation is not only unfeasible, given their fiscal constraints, but also unfair. Low- and middle-income countries generally face a higher cost of capital (both financial and economic) compared to advanced economies. They also have a higher opportunity cost of capital that could be used for a number of long-term economic development needs. Therefore, for countries such as Indonesia, decarbonization is just one of a number of developmental priorities.

As the fourth largest emitter of greenhouse gases (GHGs) (CAIT, 2020), Indonesia's decarbonization program has global significance. Furthermore, with a population of 275 million people, Indonesia is one of the countries most affected by climate change, facing issues ranging from disrupted life in its myriad coastal communities to food insecurity. This means that there is an urgent need for Indonesia to shift its policy toward green, for its own benefit and to fulfil its global responsibilities. But there is an issue here; the Indonesian economy is heavily reliant on nonrenewable fossil fuels. Exploiting these resources is a major pillar of its efforts to reduce poverty and unemployment. Indonesia therefore has a major challenge in transitioning to a green economy.

This chapter will be organized as follows: Following this introduction, the second section will take stock of Indonesia's economic and environmental conditions; the third section will discuss what policy steps have been taken to move toward a green economy; the fourth section will discuss the transitional risks and issues that have arisen; the fifth part deals with the political economy of transition; and the last part outlines the way forward.

Indonesian Economic and Environmental Situation

With a width that would stretch from London to Teheran, Indonesia spans more than 5,000 km across Southeast Asia with over 17,000 islands, giving it the third longest coastline on Earth. It is a vast archipelago located around the equator, with a rich biodiversity (Measey, 2010). However, it is positioned in the ring of fire, where 90 percent of worldwide earthquakes occur (Kramer, 1996). Indonesia is home to more than 275 million people, making it the fourth most populous country (Worldometer, 2022a), many of whom are vulnerable to climate change. According to Case, Ardiansyah, and Spector (2007), climate change will impact Indonesia through intense rainfall, sea-level rise, and food supply disruptions.

Dahuri and Dutton (2002) estimate that around 25 percent of Indonesian gross domestic product (GDP) takes place on its coastline, making it vulnerable to sea levels. Oktaviani and colleagues (2011) found that a one meter sea level rise could flood 405,000 Ha of coastal lands, particularly in the northern coast of Java, eastern coast of Sumatera, and southern coast of Sulawesi. This could impact agriculture through flooding, storm surges, and salinization of coastal aquifers. Indonesia's National Research and Innovation Agency (BRIN) estimates that at least 115 of Indonesia's small islands face a serious risk of sinking due to sea-level rise and land subsidence (Ramdhan et al., 2019).

Climate change could also damage Indonesia's food security. It could reduce rice supply by about 300,000 tons and maize output by up to 10,000 tons (Boer, 2010). Peng and colleagues (2004) suggest that rice yields could decrease 10 percent for every one degree Celsius increase in minimum temperature. Sari and coauthors (2007) estimate that 43,000 farm laborers could lose their jobs in the Subang region alone due to sea-level rise, and more than 81,000 farmers could be forced into other occupations. This is happening because of the changes in the Australasia monsoon and El Niño Southern Oscillation (ENSO) that are occurring (Naylor et al., 2007; Boer, 2010). During the period 1970–2000, ENSO was a major influence on annual rice production in Indonesia (Naylor et al., 2001, 2007). Specifically in Java Island, a strong ENSO in 1997–1998 resulted in a decline of 700,000 Ha of rice cropland and a cumulative production loss of around 3.2 million tons of milled rice, an equivalent of one-fourth of total rice traded annually in international markets between 1971 and 1998 (Naylor et al., 2001).

The poor harvest in 1997–1998 added to the political crisis of that year, further underlining the risks to social stability posed by weather events. As a country with the sixth largest cropland area (Worldometer, 2022b), almost 30 percent of Indonesian labor is working in agriculture-related sectors,

contributing around 12 percent of GDP (Statistics Indonesia, 2022). In addition, poor and vulnerable households are more exposed to high and volatile food prices. In Indonesia, households in the bottom decile allocate 64.3 percent of their spending to food while the top 20 percent of households only allocate 41.9 percent (World Bank, 2020). Higher incidence of malnutrition, which is closely related to insufficient calorie intake and health conditions, is also observed in poor households.

According to the Asian Development Bank, climate change is expected to cost Indonesia between 2.5 and 7 percent of GDP by the end of the century (Orecchia et al., 2016). The poorest people in the country will bear the brunt of the effects of climate change, particularly those who live in areas prone to flooding, landslides, and drought.

While its natural and geographical features dictate some priorities, Indonesian policymakers must also cater to the demands of a growing middle class and an ambition to transform Indonesia into a high-income country by 2045. Economic activity is driven by manufacturing, which is highly carbon intensive. In 2019, Indonesia was the fourth biggest polluter in the world, with around 1959 $MtCO_2e$ produced (CAIT, 2020). However, Indonesia must also worry about adaptation. It is ranked in the top third of countries in terms of climate risk, with high exposure to all types of flooding and extreme heat (World Bank, 2021).

Maintaining a steady 5 percent rate of economic growth in the last two decades came at a high price for Indonesia from an environmental perspective. Major deforestation has taken place to accommodate the needs of increasing production activity. From 2001 to 2020, Indonesia experienced forest cover loss of around 17 percent, or around 227.7 Mha, contributing to 6.7 percent of global tree cover loss during that period (Global Forest Watch, 2021). Unsurprisingly, the forestry sector serves as the largest contributor to GHG emissions in Indonesia. These emissions amounted to 830 $MtCO_2e$, or almost half of Indonesia's GHG produced, stemming from the conversion of forests to cropland and from peat decomposition.

Substantial steps have been taken by the government of Indonesia to tackle the deforestation issue, and it succeeded in reducing the annual rate of deforestation by 75 percent in 2019.

However, this effort might not last. The Ministry of Energy and Mineral Resources' strategic plan has placed explicit emphasis on biofuel utilization reaching 17.32 million kL to meet demand from the domestic market, most of which will come from palm oil. Furthermore, the ambition to achieve food self-sufficiency also poses risks to land conservation as the government plans to establish multiple food estates across Indonesia.

Other significant pollutants are produced by electricity generation and transportation, with estimated emissions of around 261 and 157 $MtCO_2e$, respectively, in 2018. In terms of electricity generation, Indonesia relies heavily on coal. In 2020, coal-fired electricity amounted to 63 percent of total electricity generated in Indonesia, having risen steadily since 1990, when its contribution was only around 30 percent (IEA, 2022). Indonesia is now the third largest producer of coal in the world, after China and India. Excluding the negative externalities on health and carbon emissions, coal has been the cheapest option for electricity generation. However, this implies that a smooth and viable transition plan from brown to green technologies is essential to avoid significant damage and cost increases for households and businesses in Indonesia.

Similarly, Indonesia's transportation sector also relies heavily (92 percent) on fossil fuel combustion, particularly gasoline and diesel fuel (IEA, 2022). A relatively cheap cost of vehicle ownership, alongside low investment in a public transport system, has meant that the most common mode of transport is via personal motor vehicles.

Indonesia is also a country with high dependency on coal, which has serious negative effects on welfare. Several noncommunicable diseases (NCDs) are considered to be directly caused by air pollution from coal. Furthermore, a study by Koplitz et al. (2017) attributed about 7,500 premature deaths in Indonesia to coal in 2011 (25,000 by 2030 if no serious measures are taken). In terms of economic value, coal is a main contributor to air pollution, which leads to respiratory diseases. Respiratory diseases could cost Indonesia up to U.S. $805 billion between 2012 and 2030 (Bloom et al., 2015). Treating coal-related disease is by no means affordable and might pose a significant burden on low-income households. Anwar, Yusi, and Afdal (2016) estimate that chronic obstructive pulmonary disease (COPD), one of the most common coal-related NCDs, could cost up to U.S. $1,125 per person annually, almost half of the yearly income of low-income families (U.S. $2,400 according to a 2014 estimate by Deloitte).

Obstacles and Current Policy Steps Toward Smooth Climate Transition

Managing a smooth climate transition in Indonesia is necessary, but a difficult challenge. To start with, the size and phasing of the green transition must be defined. Next, policies must be put in place to achieve those targets. Climate change mitigation and adaptation will take time and be costly. The dilemma for policymakers is that the cost is immediate but the benefit is long term. A transition that only focuses on long-term issues while ignoring the fact that the political cycle revolves around the short term will struggle to gain support from

politicians, leaders, and the business community. This may explain Indonesia's rather slow progress in the past despite articulation of various long-term plans.

Setting the Goal

As part of its commitment to the Paris Agreement, Indonesia published its first nationally determined contribution (NDC) in 2016 and updates in 2021 and 2022. The enhanced NDC (2022) document highlighted the specific goal that Indonesia is willing to commit to reducing its GHG emissions by 31.89 percent by 2030 compared to its business-as-usual scenario. This is the bare minimum or unconditional commitment. With international support in financing, technology, and capacity building, the commitment to GHG reduction could reach up to 43.20 percent by 2030. To align the NDC commitment with the development goal, the government has announced an effort to integrate actions on climate transition into the National Medium-Term Development Plan (RPJMN) 2020–2024 with three national priorities: environmental quality, disaster and climate resilience, and low-carbon development. Achieving these priorities will depend on the result of various strategies in the NDC on climate mitigation, adaptation, and disaster risk reduction that will be implemented in a comprehensive manner until 2030 (Ministry of National Development Planning, 2020).

This policy commitment, however, even if done properly, is not enough to bring about a fully decarbonized state in Indonesia. Indonesia has also submitted a Long-Term Strategy for Low Carbon and Climate Resilience 2050 (Ministry of Environment and Forestry, Republic of Indonesia (2021b), LTS-LCCR, 2050) to give a long-term horizon to its GHG reduction goals. Together with the updated NDC, Indonesia has set a goal to achieve "the peaking of national GHG emissions in 2030 with a net-sink of forest and land-use sector, reaching 540 $MtCO_2e$ by 2050, and with further exploring opportunities to rapidly progress toward net-zero emissions in 2060 or sooner." Indeed, President Joko Widodo committed to looking for additional opportunities to reduce GHG emissions at COP26 in Glasgow in 2021.

Although Indonesia has not yet communicated a clear and explicit net-zero target, it is currently exploring scenarios that could lead to net zero by 2060. Based on an assessment by Climate Action Tracker, the current climate ambition of Indonesia is considered as "highly insufficient," a rating that suggests that Indonesia's current climate commitment and policies would instead lead to a rise, rather than a reduction, of emissions, jeopardizing the Paris Agreement's 1.5 degrees Celsius temperature limit (Climate Action Tracker, 2022). This assessment stems from a lack of clarity around its unconditional and conditional NDC targets and Indonesia's intense reliance on fossil fuel support.

Indonesia's ambitious emission reduction target stated in its NDC has also raised some skepticism domestically. For one, a closer look suggests that Indonesia aims to achieve a large share of its climate commitments through emission reduction in the forestry sector, at almost 60 percent of the total contribution (Climate Action Tracker, 2022). The lack of clarity of the submitted documents raises a question about the commitment to greening other sectors.

Giving policymakers the benefit of the doubt, the current commitment might be justified as the most cost-efficient solution, given that the cost of cutting carbon emissions through deforestation abatement in Indonesia is substantially lower than costs would be in other sectors or activities.

Another issue is that Indonesia's NDC document is based on a comparison to a business-as-usual scenario that is well above the current growth projections. That makes it easier for Indonesia to achieve its stated goals without much additional effort, even if it doubles today's emissions in all sectors except forestry. Already, based on the Climate Action Tracker Assessment, Indonesia's National Energy Policy (NEP) sets more ambitious targets than the NDC and, if achieved, it will surpass the unconditional and conditional targets of the NDC (Climate Action Tracker, 2022). However, the NEP may be unrealistic in its targets for renewable energy. Indonesia's government aims to increase the contribution of renewable energy to 23 percent of the aggregate energy mix by 2025, which is unlikely to be achieved as renewable energy only accounted for 11.2 percent of the energy mix in 2020. In the last decade, the development of renewable energy has been slow, and the installed renewable energy plants also have a very low utilization rate, ranging from merely 0.03 percent for solar power to only 5 percent for hydropower. Furthermore, current documents of Indonesia's government officials also fall short in conceiving a shift away from the coal-fired power plants that will still account for the generation of 14 GW until 2030 and are expected to meet 64 percent of its demand.

Indonesia's ambitious low carbon scenario also expects coal to contribute around 58 percent of the energy mix in 2030 and 38 percent in 2050, a relatively high amount of dependency toward emission-producing power sources. This clearly contradicts the Paris Agreement, as Indonesia is required to limit coal-fired power generation to 10 percent by 2030 and completely phase it out by 2040 (Climate Action Tracker, 2022).

Financing the Green Economy

The Third Biennial Update Report (BUR) 2021 of Indonesia's NDC estimated that it would require around U.S. $28.5 billion annually to achieve its NDC target by 2030 (Ministry of Environment and Forestry, Republic of Indonesia [2021b]). To put this number into perspective, the annual financing needs

to achieve the 2030 NDC are higher than the amount of central government allocated spending for education, social security, and health spending combined. Furthermore, the estimated financing needs in BUR only include the costs of the low-carbon program and policy implementation without transition costs. Considering the current state of the Indonesian economy, transition costs include supporting the green sector in Indonesia; compensation for affected stakeholders in realizing just transition—such as compensation for coal-fired power plant shutdowns and financial support for poor and vulnerable groups that are at risk of welfare loss due to rising energy prices. A similarly bleak picture of the financing needed to achieve net-zero emissions appears in the Low Carbon Development Initiative (LCDI) report of the Ministry of National Development Planning of Indonesia (Ministry of National Development Planning, 2021). There, the estimated financing needed to decarbonize the economy amounts to up to U.S. $200 billion per year until 2030. This is equivalent to 20 percent of Indonesia's 2021 GDP, 97 percent of realized national government spending, and, cumulated to 2030, 165 percent of total financial assets in Indonesia. This number is estimated to steeply rise to around U.S. $2.2 trillion per year in 2051–2070.

Limited Fiscal Capability

Adding to the finance challenge, Indonesia, in common with most other developing countries, has limited fiscal space. In terms of spending, the central government's budget allocation for climate-related issues increased from around U.S. $4.85 billion in 2016 to U.S. $7.03 billion in 2021. However, the spending only amounted to around 3.7 percent of total central government budget allocation on average during 2016 to 2021 (Ministry of Finance Indonesia, 2022). A similarly small share is also observed in subnational government spending allocations.

Due to various mandatory spending items, necessary countercyclical fiscal measures to weather the COVID-19 pandemic, and a sizable amount of brown energy subsidies, Indonesia's public spending is currently unable to prioritize climate-related projects without significant reform. Specifically, on fuel subsidies, the government of Indonesia allocates more than IDR500 trillion, or around 13 percent of the 2022 state's budget, that is mostly leaning toward dirty energy. This number is also very likely to increase substantially following higher energy prices in the aftermath of the Russia–Ukraine war. Not only is the current subsidy scheme far from environmentally sound, it is also inefficient. Fuel subsidies in Indonesia are universally enjoyed by the rich as well as poor and vulnerable people. The government has taken steps to prevent a larger increase in

the burden of fuel subsidies by raising prices in September 2022. However, the burden of fuel subsidies remains relatively high (see subsequent discussion).

The Indonesian government also does not wish to increase the deficit substantially due to concerns over debt sustainability. Even before COVID-19 hit, interest payments as a share of government expenditure more than doubled between 2013 (7 percent) and 2022 (15 percent). Because of its relatively high government bond yield, any increase in fiscal spending without a similar increase in revenue means more debt and a higher portion of future expenditure will have to be allocated to interest payments, further deteriorating debt sustainability. The fiscal authorities have sought to cap this through liability management tactics, but the scope for savings through these means is limited.

One major breakthrough, however, is the implementation of climate budget tagging (CBT). CBT is a set of climate-related finance mechanisms designed to spur mainstream public financing for climate change. Currently implemented in 11 provinces across Indonesia since 2017, the budget has only reached U.S. $4.8 billion per year, with 61 percent of the allocation toward adaptation and 39 percent toward mitigation purposes (Fiscal Policy Agency, 2021).

The challenge of pushing the state budget to accommodate the financing needs of climate transition is no less difficult on the revenue side. In the past, Indonesia experienced a long period of steady high economic growth driven by a commodity boom, which ended in 2012/2013. With the cycle of world energy prices reaching a high point in early 2022, Indonesia experienced a windfall in terms of state revenue, making the March 2022 budget the first to be in surplus since 2014. This dependence of government revenue on fossil fuel commodity prices makes Indonesia's transition harder. Overall, Indonesia's tax revenue only reached 9.1 percent of GDP in 2021, substantially lower than the Asia-Pacific average of 21 percent or even the OECD average of 33.4 percent. If it transitions away from fossil fuels, it will have to put in place other taxes to maintain, let alone raise, state revenue.

Financing Outside of the State Budget

Two years into the pandemic, Indonesia has nearly doubled its debt-to-GDP ratio and has yet to fully recover fiscal capacity from pandemic lows. Given the situation, forcing the state budget to shoulder the burden of climate change mitigation and adaptation without a significant and systematic contribution from other financiers is neither fair nor feasible.

Accessing funds for a green transition beyond the state budget is not easy. One factor that plays a part is the relatively shallow financial market in Indonesia, dominated by the banking sector, which accounts for 76 percent of total

financial sector assets. Bank lending, however, is not well designed to fit the risk–return profile of green energy projects with their long-term project cycles and high risks compared to their brown counterparts.

The government has established various institutions to help channel funds for decarbonization purposes, including the Indonesia Climate Change Trust Fund (ICCTF), the Indonesian Environment Fund (Badan Pengelola Dana Lingkungan Hidup/BPLDH), SDG Indonesia One, and the Indonesia Investment Authority (INA). In addition, Indonesia has launched a country platform Energy Transition Mechanism (ETM), in collaboration with the Asian Development Bank (ADB), to attract more financing, especially toward phasing out coal-fired power plants.

Nonfinancial barriers also play a part in the lack of adequate financing flows toward green projects, especially from international investors. In Indonesia, the price of several renewable energy sources is still higher than brown energy. Partly, this is due to long-standing subsidies to brown energy, and partly it is due to the high cost of establishing renewable energy in Indonesia. A study by UNDP published in 2013 found that the financing costs of selected green power generation is higher in developing countries compared to developed ones; the cost of equity is 80 percent higher and cost of debt is 100 percent higher.

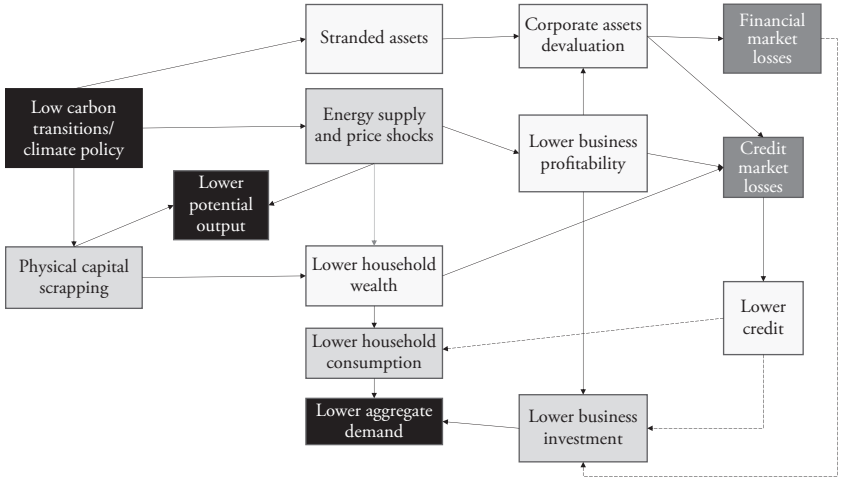
Adding to the higher renewable energy investment cost for the power sector in developing countries are structural problems such as the lack of the infrastructure needed to establish renewable energy power generation sites, the higher cost of providing or procuring technology, and inefficiency and uncertainty in the permit and procurement system as well as unattractive pricing schemes. In terms of financing cost, there is lack of innovative financing tailored to addressing the risk specific to renewable energy projects. This condition limits project developers' financing choices for renewable energy, eventually leading to higher financing costs. Additionally, the transaction cost to finance smaller projects, which are relatively common in Indonesia, can further increase the total financing cost. The relatively higher cost of establishing renewable energy in Indonesia has made the sector less attractive for investment compared to the brown sector.

Weathering the Transitional Risks

Batten, Sowerbutts, and Tanaka (2020) present a macroeconomic framework for assessing potential transitional risks associated with climate policy policies.

As previously discussed, climate change can have a negative impact on both the economy and human life. For example, Batten, Sowerbutts, and Tanaka show how extreme weather will have a negative impact on demand, such as investment, consumption, and trade. Natural disasters will have an impact on

Figure 5.1. Transition risks, macroeconomic impacts, and transmission to the financial system



Source: Batten, Sowerbutts, and Tanaka (2020).

the supply of labor, food, and other goods. These risks can be avoided or mitigated with sound climate policy. However, the solution assumes that the climate policy adjustment process is insignificant. In fact, there are transaction costs associated with this adjustment process.

Figure 5.1 demonstrates this. We can see how a low-carbon transition policy can have a negative impact on energy supply and price shocks in the short term, lowering potential output, causing losses in financial markets, and lowering aggregate demand. As a result, the critical questions that must be addressed are how to carefully carry out this energy transition and how to mitigate the negative impacts and resistance that may arise during the transition process. In this regard, the impact of a policy's distributional gain or loss must be carefully considered. This is where the topic of political economy comes into play.

The figure depicts the main issues confronting developing countries and natural resource producers such as Indonesia, which are transitional risks. Indonesia can commit to achieving net-zero emissions, but the question is how to do so. Indonesia will transition from an equilibrium in which natural resources dominate the economy to a new equilibrium, namely a green economy. But any transition path must ask: Is this transition financially feasible? Is it feasible from a political and economic perspective? What is the short-term impact before we reach a green economy? These are the most important considerations. They give rise to practical questions of what will be done with stranded assets. State-owned utilities must, of course, retire coal-fired power plants and transition to green

power plants from those that use fossil fuels. But there is a burden for the company here. Who will foot the bill? To address this issue, the Indonesian government has begun to work with multilateral institutions such as the ADB.

Political Economy

Aside from the financial and fiscal impacts, political economy considerations are critical. As a lower–middle-income country, Indonesia continues to struggle with core development issues such as poverty, a high number of workers in the informal sector, education quality, low productivity, inadequate infrastructure quality, and so on. Given this situation, it is not surprising that environmental concerns have devolved into a "luxury item" rather than a top priority. As a result, in order to gain more political support, environmental issues, including a green fiscal stimulus, must be framed in terms of development (World Bank, forthcoming). We argue that it is critical to tie the transition to a green economy to development issues or government priorities. During the current COVID-19 pandemic, government priorities in many developing countries, including Indonesia, moved to health issues, social assistance for vulnerable groups, and support for small and medium enterprises (SMEs). The implication is that green economy programs must also be directed to support these priorities.

In this context, we propose fiscal policies that are environmentally and fiscally sustainable, that benefit vulnerable groups, and that remain consistent with the Indonesian government's priorities.

In terms of revenue, the government can implement green policies such as carbon taxes, fossil fuel excise, plastics excise, and reduced tax expenditures for the dirty sector. Funds saved or obtained as a result of the policy are then used to finance the health sector, social assistance, and SMEs. This synergy between development and environmental concerns will be more economically and politically acceptable.

Furthermore, fiscal consolidation efforts can be made in terms of expenditure by improving the quality of spending. Improving the quality of spending can be accomplished by allocating funds to sectors with a high multiplier and that are environmentally friendly.

Of course, policy recommendations must take into account a variety of factors, including political sensitivity, institutional constraints, existing regulations, and the coordination process. They must also account for the ability of government institutions to carry out the policy. The problem is that it is difficult to expect changes in institutions, regulations, and improvements in coordination or bureaucratic quality in the short term. As a result, we can see that any transition path must be properly phased and sequenced. In the short term, policy recommendations must take into account the existing institutional conditions

(Basri, 2017). When institutions and laws can be changed in the medium term, policy recommendations can become more flexible. We can create a roadmap and a sequence of policies using this framework by taking into account political and economic factors, institutional conditions, and timing.

Policy implementation necessitates political support. Regrettably, political capital is also scarce. Because of the political cycle, policymakers do not always have the luxury of time. As a result, reform must be implemented in a relatively short period of time while working within the constraints of available resources. Quick wins or success stories play an important role here. The success of a reform often depends not on whether the reform agenda is good or bad, but on political support to make the reform sustainable (Basri, 2017). The problem with reform is that the cost is immediate, but the benefit is only long term. Reforms that only address long-term issues without considering the political cycle will face difficulty gaining support from politicians or leaders.

Because environmental issues are still regarded as a luxury item, political support for them is also limited. The policies of raising income through a carbon tax, imposing a tax on fossil fuels and a tax on plastics, and reducing fuel subsidies are undoubtedly unpopular. However, if the extra income generated by some of these policies, as well as the reallocation of fuel subsidies, is used for public health; social assistance programs; micro-, small, and medium-sized enterprise (MSME) support; or cash for work programs for green projects such as mangroves, then these policies will be more politically acceptable (World Bank, 2010; Basri, Hanna, & Olken, 2020).

Public awareness of and support for climate action can also serve as social capital that helps put pressure on the government and politicians. Fortunately, Indonesia is well equipped in this front as it has some of the greatest public support for climate action (Dechezleprêtre et al., 2022). This study also highlights that Indonesian society is highly optimistic about the effectiveness of climate action, perceives climate policies as positively impacting the economy and employment, and positively perceives the distributional impacts of the green infrastructure.

One critical step in implementing the policy is identifying the winners and losers that emerge as a result of a green fiscal stimulus policy implementation (World Bank, forthcoming). From here, resistance can be expected: What concerns should be addressed? It is possible to plan what mitigation is required so that resistance from the aggrieved sectors is reduced and the policy recommendation is accepted. Understanding this allows us to see the policy holistically and provide mitigation recommendations, allowing the policy to be implemented despite political and institutional constraints.

We recognize that the government must implement a variety of policies to mitigate and adapt to the effects of climate change. The issue frequently collides with the fact that political will or commitment to implement the policy is still lacking. We must carefully examine why governments in many developing countries do

not appear to prioritize climate change, and what steps can be taken to make it a priority. Table 5.1 gives an overview of who gains and who loses from a green stimulus, in terms of government, businesses, and other groups in society.

Of course, government is not a singular entity. A ministry with close ties to the business world will have its key performance indicators disrupted. Several policies relating to environmental taxes or excise, for example, will benefit the

Table 5.1. Policy impact on stakeholders

Policy	Winners	Losers	Policy Mitigation
Carbon tax	Green sectors; this policy helps Ministry of Finance, Ministry of Environment, and Ministry of Development Planning to achieve their key performance indicators (KPIs)	Dirty sectors; this policy may not be supported by Ministry of Industry, Ministry of Trade, or Indonesia Chamber of Commerce (KADIN)	Gradual implementation of carbon tax to ensure broad participation and setting up right framework of carbon market
Excise on fossil fuel	Poor/vulnerable groups (if they get compensation); this policy helps Ministry of Finance, Ministry of Environment, and Ministry of Development Planning to achieve their KPIs	Vulnerable groups (lower- and middle-income groups who do not receive compensation, SMEs, middle- and upper-income classes, oil importers; smugglers	Expansion of social protection program for poor and vulnerable
Excise on plastics	Increase revenue of Ministry of Finance, helps Ministry of Environment to achieve their KPI, green sectors	Plastic producers, industries who are consuming plastics for intermediate products; affect Ministry of Industry and Ministry of Trade KPIs	Subsidies for plastic substitutes
Removing all dirty sector subsidies	Provide more room for fiscal; this will help Ministry of Finance, Ministry of Environment, and Ministry of Development Planning to achieve their KPIs; green sector	Dirty sectors	Provide incentives to transition toward low-carbon production activities

Table 5.1. *(Continued)*

Expanding green tax incentives	Helps Ministry of Environment, green sector, Ministry of Development Planning, Ministry of Industry, and Ministry of Trade to achieve their KPIs	More burden for Ministry of Finance	Exploring new sources of fiscal revenue
Reduction of fuel subsidy	Poor/vulnerable groups (if they get compensation); Ministry of Finance, renewable energy sector, Ministry of Environment, Ministry of Development Planning	Lower- and middle-income groups who do not receive compensation, SMEs, middle- and upper-income class, oil importers, smugglers	Expansion of social protection program and subsidies for MSMEs.

Source: Authors.

Ministry of Trade and Industry, while expanding incentives to the green sector could be costly for the Ministry of Finance.

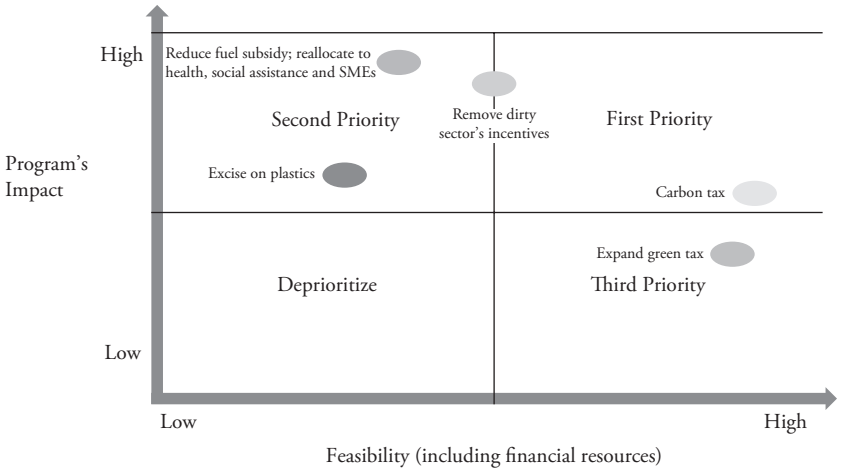
It is easy to predict that the government's mitigation and adaptation efforts will have an impact on natural resource entrepreneurs ("dirty sector"). The imposition of taxes or emission restrictions will have an impact on their companies' profitability. Natural resource businesses, like many others in resource-rich countries, are heavily regulated, with starting a business requiring a special license or concession. And, as in many resource-rich countries, rent is an issue here. That is why natural resource entrepreneurs have political relationships with decision-makers or are politically well connected with them. This occurs in a number of countries, including Indonesia.

Figure 5.2 illustrates the feasibility of policy recommendations, taking into account political economy factors based on the foregoing description.

Figure 5.2 shows that the carbon tax is feasible because it has been approved by Parliament, but its impact on the green stimulus and economy is limited because the amount is still small. The policy of removing incentives from the dirty sector has a relatively large economic impact, but its political feasibility is moderate. Reducing fuel subsidies has a significant impact on green fiscal stimulus, but it will be politically difficult unless the savings are then allocated to health, social assistance, and MSME support. Political support can be obtained in this manner because vulnerable groups will benefit from this policy. The steps taken by the Indonesian government in September 2022, such as reducing fuel subsidies and allocating them to vulnerable groups, are consistent with this framework.

Furthermore, changes in the behavior of the affected sectors take time. As a result, there is a risk that economic growth and employment will suffer during

Figure 5.2. Green fiscal stimulus under political constraints



Source: Authors.

the transition period. However, the positive impact of the transition to the green sector takes time. Focusing on transitional risk becomes critical in this situation. The conundrum of economic reform is that the costs are immediate, but the benefits appear only in the long run. As a result, opposition to this policy may emerge in the short term, before people realize the benefits. As a result, the time frame and policy phase must also be considered.

Fiscal Transition

Through mid-2022, the Indonesian government has already taken action to address fiscal issues. Although challenging and rather slow in the process, fiscal transition is gaining momentum and moving in the right direction.

To expand fiscal space through revenue, the Ministry of Finance (MoF) has recently implemented tax policy reforms through the issuance of the Law on Harmonization of Tax Regulations (Undang-undang Harmoninsasi Peraturan Perpajakan/UU HPP). Covering various items of revenue, ranging from income tax to excise on several products, UU HPP is expected to broaden the existing tax base, increase tax revenues, and make the overall system more fair, transparent, and efficient in the future. Specifically, the legislation also includes carbon tax regulations. The carbon tax in Indonesia serves as a component of Indonesia's broader Carbon Pricing Roadmap, which also includes a longer-term plan for introducing an emissions trading system (ETS) and carbon crediting mechanism. Passed by Parliament in October 2021, the law specifies the carbon tax will be imposed as a levy for coal power plant operators of IDR30,000/$MtCO_2e$

(around U.S. $2.09/tCO$_2$e) above a set limit. However, the launch of the carbon tax is currently facing some delays. Initially set to commence in April 2022, it has been delayed twice, first to July 2022, and then again in September 2022.

The initial rollout of the carbon tax is a step in the right direction, despite its limited sector coverage and substantially lower price of carbon compared to other countries. It will, however, serve as the basis for setting up a carbon market by 2025. The framework of carbon tax and carbon market set up is crucial to create a market mechanism that effectively addresses the externalities of emission and market failures emerging from the brown economy. If done properly, the framework of a carbon market in Indonesia will create the right incentive mechanism while pushing for the "right" level of carbon prices. The report of the High-Level Commission on Carbon Prices indicates that the carbon price needs to be in the U.S. $50-100/tCO$_2$e range by 2030 to keep global warming to 2 degrees Celsius (Carbon Pricing Leadership Coalition, 2017). The closer the actual carbon price to its "right" level, the smaller will be the need for other incentives to decarbonize the economy.

Beyond a carbon tax, the fiscal transition should also widen the capacity to generate revenues to finance green investments. The government of Indonesia could explore the possibility to expand the excise on plastics, taxes on water pollution and waste, tree removal, landfill, and incineration. Kosonen (2012) shows that higher environmental taxes, with revenues used to reduce labor taxes to limit the regressive impact on income distribution, would have positive impacts on growth, jobs, and real incomes. In addition, increasing central government revenue is also feasible without actually increasing the tax rate or implementing new instruments. A study by Basri, Felix, Hanna, and Olken (2021) has shown that administrative reform of tax collection in Indonesia in the form of reallocating taxpayers' handling to medium-sized tax offices could enhance tax revenue without increasing the tax rate.

Expenditure components also play a role in optimizing the fiscal transition. A major breakthrough has been achieved recently as the government of Indonesia announced a fuel subsidy reform in September 2022. The Indonesian government raised fuel prices to prevent further increases in fuel subsidies and to better allocate subsidies to vulnerable groups.

Specifically, the government reduced subsidies and compensation on major fuel products. The subsidy reform in Indonesia, however, should be complemented with the effort to enhance quality spending. The windfall revenues and potential savings from subsidy reform provide the government with necessary momentum and resources to improve quality spending. To cushion the purchasing power of vulnerable and poor households amid inflation pressure, the government increased its spending on the social safety net through higher cash transfers.

Continuing this momentum, government should aim to increase productive and well-targeted spending. Several key areas highlighted by the World Bank (2020) for

Indonesia's fiscal spending include health, education, social assistance, nutrition, housing, national roads, water resources, and sanitation. Spending for more productive use should also be supported by improvement in expenditure management, reform of the intergovernmental fiscal transfer system, and data utilization.

Beyond revenue and expenditure components of the national budget, medium-term fiscal rules and policy frameworks should be consistent with the transition to a green economy. The contribution and commitment toward financing climate action is contingent upon the fiscal capacity that a country has. Unfortunately, while conceptually fiscal policy should be flexible, Indonesia's fiscal posture is relatively inflexible. Various mandatory spending items and a high proportion of debt-related expenditure has left a relatively limited portion for discretionary spending. This has restricted Indonesia's fiscal policy options to not only finance the climate action in the long term but also to serve as a shock absorber in the short term to weather potential crises. Furthermore, the fiscal rule in Indonesia, as mandated by law no.2/2020, obliges the fiscal deficit to not exceed 3 percent of GDP from 2023 onward. Practically, fiscal policy in Indonesia tends to be procyclical. Although challenging, and perhaps entailing significant political cost, an improvement in Indonesia's fiscal rule is worth considering. An alternative fiscal rule that allows the state to widen its budget deficit and have higher flexibility will enhance its capacity to finance climate action and green transition.

One example of a more flexible fiscal rule comes from the experience of Chile. Chile has adopted an institutional fiscal framework that seeks to achieve structural balance. Its fiscal rule states that the central government's overall structural balance should, in every year, equal a surplus of 1 percent of actual GDP. Structural balance in Chile is defined as structural revenues and interest on net government assets (positive in Chile) minus actual expenditures. The term *structural revenue* refers to the amount of tax revenue that would have been collected if the economy had operated at potential rather than actual output, and if copper revenue had reflected the long-term reference world copper price rather than the actual price. The rule set up specifies discretionary spending as a residual, given the values of the structural balance target, structural revenues, the level of government assets, interest rates, and GDP. The rule is explicitly countercyclical as it isolates government expenditures on goods and services from revenue cycles and keeps them growing with trend output. By implementing this rule, Chile has enhanced its reputation for long-term sustainability through strong fiscal discipline and its ability to conduct short-term stabilization through fiscal policy actions (Marshall, 2003).

Coal Phase-Out

Coal phase-out is almost a nonnegotiable requirement in achieving net-zero emissions targets. However, coal has been playing a major role in many

countries' economic activity as a main source of energy, including in Indonesia. For countries with a relatively high dependency on coal, the process of green transition will be much more difficult and costly compared to countries with a lower percentage of brown energy sources in their energy mix. The difficulties are multiple, including the investment needed to replace electricity generation, compensation cost for retiring early coal-fired power plants, job and income losses, potential higher cost of electricity generated by green power plants, stranded assets, and tax revenue losses.

South Africa, China, India, Australia, and Indonesia have some of the largest coal endowments in the world. Unsurprisingly, coal is currently the biggest fuel source in electricity generation in Indonesia (63 percent of total in 2020). Indonesia is ranked seventh globally in the list of countries with the highest percentage of electricity generated by coal in 2020 (Ember, 2022). In addition, Indonesia currently has about 86 coal-fired power plants that are in operation with a total installed capacity of 40.2 GW, also placing it as the seventh largest source of coal-generated electricity.

High dependency on coal is not only bad for the environment, it also introduces macroeconomic cycles into Indonesia. Indonesia's economic business cycle is closely aligned with the dynamic of international coal prices (and palm oil). These cycles affect GDP growth, export performance, and tax revenue. The most recent episode of rising coal prices, following the outbreak of war between Russia and the Ukraine, has boosted Indonesian exports up to 37 percent on an annual basis in the first half of 2022 (Statistics Indonesia, 2022). In addition, state revenue has increased more than 50 percent in 2022 compared to 2021, mainly supported by commodity-related tax revenue increases (Ministry of Finance, 2022).

High coal dependency has put Indonesia in an unfavorable position. From an environmental perspective, growth fueled by coal is clearly unsustainable. Coal accounted for about 60 percent of the country's power sector CO_2 emissions in 2019 (IEA, 2022). But given that coal-fired power plants are responsible for such a high share of power, coal cannot be fully ruled out without a far faster implementation of renewables that in turn would need a more aggressive and strategic plan. Compared to other countries with lower dependence on coal, Indonesia's coal phase-out transition will have higher financial costs and must counter higher vested social and political interests.

However, the effort in pushing the agenda has borne some fruit. Renewable energy advances and stronger climate policies, such as the carbon tax, are tipping the scale toward faster phasing out of coal in Indonesia. One step in the right direction has been taken by the Ministry of Energy and Mineral Resources, which has announced a near-term target to retire 9.2 GW of Indonesia's coal-fired power plants by 2030. Perusahaan Listrik Negara/PLN, a state-owned

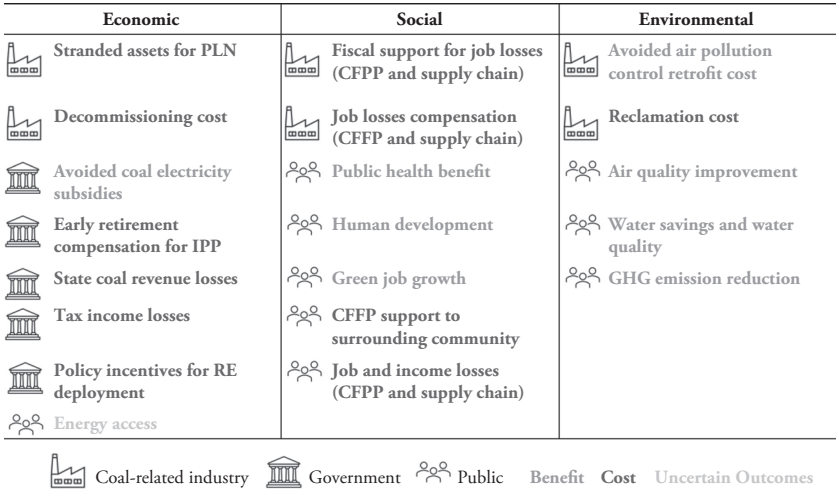
electricity company, also proposed a plan to phase out coal-fired power plants completely by 2056, and restrict new coal projects beyond 2023, except projects that are already under construction or reaching their financial close.

In terms of financing, the Energy Transition Mechanism (ETM) initiated by ADB represents another notable effort to reduce coal reliance. Jointly launched with Indonesia and Philippines as key partners during COP26, the ETM partnership is intended to implement the transition of coal to clean energy in Southeast Asia, with pilot projects in Indonesia, the Philippines, and Vietnam. The Ministry of Finance of Japan has announced a first tranche of seed financing up to U.S. $25 million for the ETM platform.

Although promising, the existing government coal-use reduction target and utility phase-out plans are considered inadequate to keep the global average temperature below 1.5 degrees Celsius. Within the planned-to-be-retired coal-fired power plants list, only 40 percent of those will be replaced by renewables (Katadata, 2021). A more aggressive and ambitious plan is certainly required to ensure adequate coal phase-out. A study by Institute for Essential Services Reform (IESR) (2022) shows that there is a possibility of achieving a complete coal phase-out by 2045. Using a framework shown in Figure 5.3, IESR provides an analytical framework to assess the economic, social, and environmental impact toward various stakeholders in implementing the coal phase-out agenda.

Based on its analysis, IESR found that accelerating coal phase-out is economically and socially feasible and beneficial (IESR, 2022). Specifically, the shared

Figure 5.3. Analytical framework of the coal power phase-out



Source: Institute for Essential Services Reform (2022).

benefits from eliminating coal power subsidies and improved health impacts are 2–4 times larger than the costs of stranded assets, decommissioning, employment transition, and the losses of state coal revenue. The more aggressive coal phase-out in this plan could reduce emissions by 341 $MtCO_2e$ through 2030 and 2,297 $MtCO_2e$ through 2050 cumulatively, significantly reducing average mitigation costs to around U.S. \$12–13/tCO_2 removed.

Phasing out coal in Indonesia requires enormous support from all stakeholders. Domestically, political support and policy coherence is of utmost importance to sustain the plan over the long term and overcome short-term obstacles. International financial support would be crucial in the short term to provide adequate resources and compensation to retire coal-fired power plants. Furthermore, the government also needs to take into account the risks of power system security that emerges from coal-fired power plant retirement. Thus, it is crucial to harmonize the retirement plan and coherently integrate it into the National Electricity Supply Business Plan/RUPTL by PLN.

PLN and IPPs need to consider the potential additional cost of the transition plan in any new contract negotiations. This needs a consistent and certain regulatory framework to ensure a smooth transition while also not putting the investment climate of Indonesia at risk. It would need to factor in the potential impact on society in general and specific local communities of the coal phase-out. Strengthening social protection programs is crucial to maintaining the welfare of poor and vulnerable people along the retirement schedule, considering that the number of affected workers is substantial. The impact on various industries along the supply chain should also be taken into account to ensure the transition proceeds smoothly.

There is now a process for advancing the agenda of climate transition in Indonesia. During the G20 Summit in Indonesia, President Widodo of Indonesia and the leaders of the International Partners Group (IPG) launched a Just Energy Transition Partnership (JETP). The establishment of JETP will help Indonesia in pursuing an accelerated and ambitious just energy transition trajectory. JETP will help Indonesia forward its power sector emissions peaking date by approximately seven years and result in a reduction of more than 300 megatons in GHG emission through 2030 and well above two gigatons through 2060 compared to Indonesia's current trajectory (White House, 2022).

To finance such an ambitious agenda, the partnership intends to mobilize U.S. \$20 billion within the next five years, with equal public and private financing contributions. Financing will include a mixture of grants, concessional loans, market-rate loans, guarantees, and private investment. The U.S. \$10 billion contribution of private financing will be coordinated by a consortium of global banks under the Glasgow Financial Alliance for Net Zero (GFANZ) (European Commission, 2022).

The establishment of JETP marked a vital legacy and concrete deliverable of Indonesia's G20 presidency in the realm of climate action, specifically on the issue of the supply of climate financing. However, the success of JETP in delivering its ambition will also be determined by the demand side of this financing and will require the involvement of relevant domestic stakeholders to ensure optimum project preparation. Therefore, the JETP process will need to coordinate the political dialogue, reform strategy, roadmap, and investment and policy plans. It has set an initial timetable for the finalization of these within six months after the G20 Summit of Indonesia.

Way Forward

It is undeniable that climate change is bringing real harm to Indonesian families and therefore should be addressed in an urgent manner. Given the urgency, speed is critical.

Historically, Indonesia has been a major polluter by virtue of its heavy reliance on nonrenewable sources of energy and having dirty sectors as the main engines of growth. That said, implementing a smooth transition toward greener energy and more sustainable sectors is especially difficult because of the long timeframe needed to ensure a sound and smooth transition. In addition, Indonesia will find it hard to raise the financing to make a quick and complete switch toward green energy, as a result of years of limited fiscal space and a relatively shallow domestic financial market, thereby limiting options for public and private sectors to access adequate financing for decarbonization plans.

Looking forward, the transition strategy needs to gather support from all stakeholders to ensure a transition that is just and affordable not only to those wielding the most power but also to the laggards. Therefore, the outlining of the necessary strategy must take the interests of all parties involved into consideration and uphold the spirit of burden-sharing to help create a smoother transitional pathway.

For this recommendation to work, the fiscal stimulus should run in line with the nation's development issues, government's priorities, and political interests. In the case of developing nations, their governments are putting health issues, social assistance for marginalized groups, and MSME support first. Green programs that are adopted into government policy can and should serve these priorities. But how?

First, they should increase revenue by taxing the negative environmental externality of fossil fuels. As discussed previously, Indonesia is going toward carbon taxation and a green excise levy on plastics and fossil fuels. Combined with the decrease of expenditure for dirty sectors such as fossil fuel subsidies, these could create a substantial amount of saving for the fiscal budget.

Second, on the spending side, fiscal consolidation could be enhanced further by improving spending quality in terms of both economics and the environment. Funds should be oriented toward green sectors with a high economic multiplier so that growth accompanies decarbonization. This should be complemented with a broader fiscal transition to ensure that poor and vulnerable groups are well-protected during the transition through a more productive and well-targeted spending and budget allocation.

These options, however, need political support if they are to be implemented. Going forward, the green economy needs to be framed as a part of economic development. Treating it as an issue integrated into a bigger development picture will help the movement shed its supposedly elite stature and will hopefully build support from the general public.

There is a limit to what Indonesia can do by itself. It can move faster with more support from global stakeholders. Access to affordable finance and greater ambition from advanced economies are some areas where the international community could help ease the burden of greening the economy by developing countries such as Indonesia.

No doubt greening our economy incurs costs in the short term. However, it would certainly pay dividends in the long term. Therefore, we need to communicate the message of reaching net zero as a must-do priority very clearly. Political incentives need fixing. In today's world, policymakers and public officials have little incentive to work on environmental issues, which they fear would be unpopular. In the future, public advocacy will play a more important role in shaping the way policymakers act. Mainstreaming the issues pertaining to the green economy will help raise awareness and build a public consensus, which will naturally bring the issues into national electoral debates and pressure politicians into doing something concrete in response.

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About the Center for Sustainable Development at Brookings

The Center for Sustainable Development generates leading research, insights, and convening to advance the economic, social, and environmental challenges of global sustainable development and help implement the Sustainable Development Goals (SDGs) within and across all countries.

To set a more robust global path to net-zero emissions by 2050, the world needs to pay greater attention to the needs of emerging markets and developing economies (EMDEs), even when holding aside the special case of China. Over the coming several decades, no part of the world will play a greater role in both experiencing and affecting global climate change outcomes than EMDEs themselves. They need greater international support to tackle growth-enhancing sustainable development strategies.

In *Keys to Climate Action*, twenty-five authors describe new economic narratives and global actions that can help catalyze progress toward inclusive, sustainable, and resilient growth in EMDEs. The volume begins with the stark reality of climate change's devastating consequences already hindering economic development around the world. It underscores the need for urgent investments in adaptation, resilience, and nature to avoid development setbacks while paying heed to the world's narrow window for climate action. It requires empathy for many developing countries' profound energy conundrum: a tension between the need to expand access for people who need it most while facing pressures to pursue low-carbon opportunities, often in the face of local political and financing headwinds. It implies practical urgency in tackling the broken threads of the international financing system for climate and development.

The volume brings together a cross-section of distinguished academics and leading policy voices from a variety of developing country geographies and contexts. It presents perspectives on the country-specific climate and development challenges and opportunities in Bangladesh by **SALEEMUL HUQ** and **MIZAN KHAN**, Egypt by **HALA ABOU-ALI**, **AMIRA ELAYOUTY**, and **MAHMOUD MOHIELDIN**, India by **MONTEK SINGH AHLUWALIA** and **UTKARSH PATEL**, Indonesia by **MUHAMAD CHATIB BASRI** and **TEUKU RIEFKY**, Nigeria by **BELINDA ARCHIBONG** and **PHILIP OSAFO-KWAAKO**, and South Africa by **RICHARD CALLAND**. Then, broader case studies focus on regional issues in East Africa by **NJUGUNA NDUNG'U** and **THÉOPHILE AZOMAHOU**, across the African continent as a whole by **VERA SONGWE** and **JEAN-PAUL ADAM**, in Latin America and the Caribbean by **DANIEL TITELMAN**, **MICHAEL HANNI**, **NOEL PEREZ BENITEZ**, and **JEAN-BAPTISTE CARPENTIER**, and among the Vulnerable Twenty Group of Ministers of Finance of the Climate Vulnerable Forum by **SARA JANE AHMED**. A final chapter by MONTEK SINGH AHLUWALIA and UTKARSH PATEL focuses on systemic issues in financing development and climate-driven prosperity.

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