

KEY POINTS

- A green recovery is critical for Southeast Asia to reduce the risk of future pandemics, mitigate and adapt to the impact of climate change, create jobs, increase competitiveness, and meet the Sustainable Development Goals.
- While several countries have implemented some policies to support a green recovery, more needs to be done.
- Pursuing green opportunities in agriculture, oceans, urban and transport systems, circular economy practices, and clean energy has the potential to create 30 million jobs.
- Implementing a green recovery will require mainstreaming environmental resilience in policymaking, undertaking policy interventions in the green opportunities, and identifying sources of finance for green growth.

Implementing a Green Recovery in Southeast Asia

WHY SOUTHEAST ASIA NEEDS A GREEN RECOVERY

As countries around the world rush to repair their battered economies wrought by the coronavirus disease (COVID-19) pandemic, policy makers must decide what type of economic recovery they want to promote. Will they choose measures that reinforce existing economic structures, particularly those with a negative impact on the environment? Or will they see the COVID-19 crisis as an opportunity to rebuild in a way that significantly improves environmental outcomes? As this brief will argue, a green recovery from the pandemic is crucial—especially in Southeast Asia—to ensure an economically and environmentally resilient future. Moreover, well-designed policy measures can simultaneously achieve socioeconomic and environmental goals.

A green recovery from the COVID-19 crisis is critical for Southeast Asia for four reasons.

First, the COVID-19 pandemic has illustrated the strong link between the environment and public health. Recent research finds that almost all known pandemics, including COVID-19, have been caused by animal microbes that spill over to humans because of contact with wildlife and livestock, especially in tropical forests where land-use change is prevalent (IPBES 2020). Southeast Asia's fast-growing cities and accelerating deforestation and forest degradation make the region particularly susceptible to future pandemics.

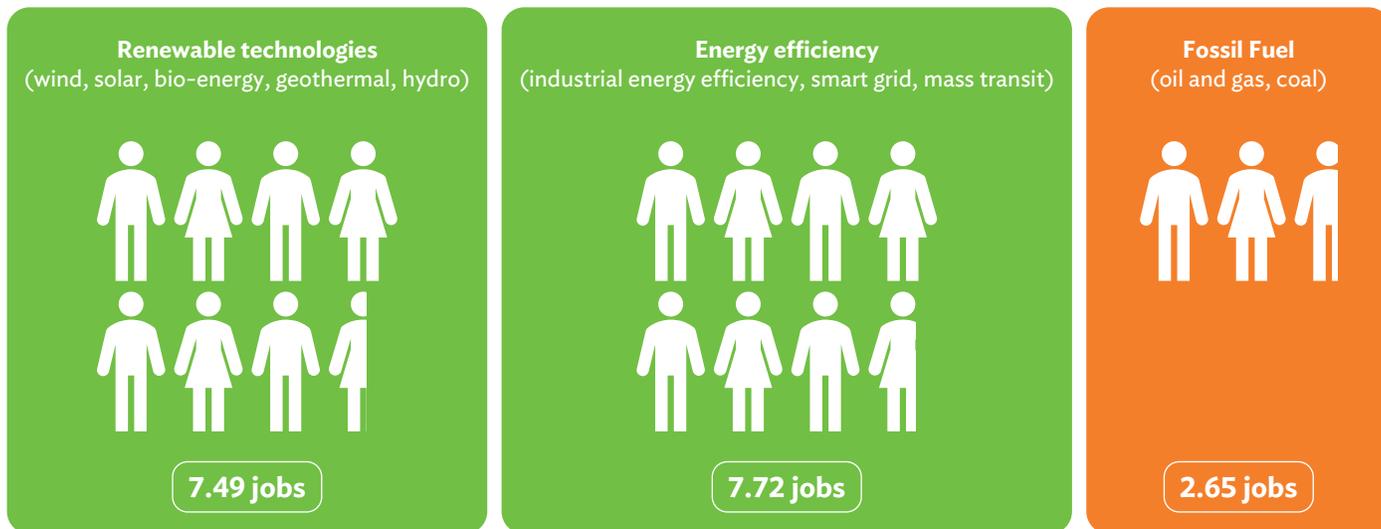
Second, the region needs to regain its battle on climate change interrupted by the pandemic. For this, a green recovery approach would address the severe and worsening impact of climate change and declining biodiversity in Southeast Asia. Heat waves, droughts, floods, and tropical cyclones have become more intense and frequent in the region (ADB 2015). Its biodiversity is also under serious threat—the region lost 14.5% of its forests between 2001 and 2016 (Hughes 2017). Recent research by the Asian Development Bank (ADB) finds that the impacts of climate change on agriculture, tourism, energy demand, labor productivity, catastrophic risks, health, and natural ecosystems could collectively result in a loss of 11% in Southeast Asia's combined annual gross domestic product by the end of the century (ADB 2015).

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Figure 1: The Efficacy of “Green” Spending versus “Brown” Spending

Government spending on renewable energy and energy efficiency has been shown to create more jobs than spending on fossil fuels

Jobs created directly and indirectly, per \$1 million in spending



Note: Jobs created excludes jobs, which refer to jobs that are created as a result of increased demand for goods and services, that in turn arise from the specific economic impact.
Source: Garrett-Peltier (2017).

Biodiversity loss could also have severe implications on economic output through its impact on business operations, supply chains, and markets (World Economic Forum 2020).

Third, green stimulus policies can generate many more jobs than spending in the fossil-fuel sector. For example, a study finds that every \$1 million spent on renewable energy would create on average 7.5 full-time jobs and every \$1 million spent on energy efficiency would create 7.7 full-time jobs, which is significantly more than the 2.7 jobs that would be generated from the same amount of investment in fossil fuels (Figure 1). Likewise, investing in nature-based solutions can provide job-intense economic and resilient recovery while having a multiplier effect in achieving the Sustainable Development Goals (SDGs).

Fourth, a green recovery can strengthen Southeast Asia’s long-term competitiveness in a global market that increasingly requires green practices and demands green products. Establishing green practices would allow countries to comply with ever more stringent regulations on the environmental footprint of imported products, such as an upcoming European Union law that

would ban imports of products from companies that engage in deforestation (Halleux 2020). Green investments would also ensure foreign direct investments from a growing number of multinational companies that have made public commitments to move toward renewable energy sources. Furthermore, a shift to green products would allow Southeast Asian manufacturers to take advantage of increasing demand for low-carbon technologies and products, such as smart grids, solar photovoltaics, and energy storage, markets that are projected to grow at 11% per year between 2020 and 2050 (ClimateWorks and Vivid Economics 2019).

GREEN POLICIES SO FAR

Support for a green recovery approach is evident in regional strategies such as the Association of Southeast Asian Nations (ASEAN) Comprehensive Recovery Framework (ASEAN Secretariat 2020), which emphasizes environmental sustainability as a key component of the region’s post-pandemic economic recovery process; and the Greater Mekong Subregion’s COVID-19 Response and Recovery Plan 2021–2023, which includes a focus on developing healthy cities,

crops, livestock, and communities as part of its overall strategy to enhance resilience against future pandemics (Greater Mekong Subregion Secretariat 2020).

Individual countries in Southeast Asia have also developed their own policy responses. While these countries have implemented several green policies, some have carried out measures with a negative impact on the environment, or a mix of both types of policies.

Green policies that have been implemented so far in Southeast Asia include green infrastructure finance, a moratorium on new coal-fired power plants, private sector incentives for large-scale renewable energy projects, import duties on crude oil and refined petroleum products, a carbon emissions trading scheme, and investments in solar panels for rural households and utility-scale battery storage for renewable energy. Conversely, policies in Southeast Asia that are likely to have a negative impact on the environment include subsidies that lower the cost of electricity generated from fossil fuels, substantial budget cuts for renewable energy projects, financial support for polluting state-owned enterprises, a rollback of some environmental regulations, and expanding land available for mining activities.

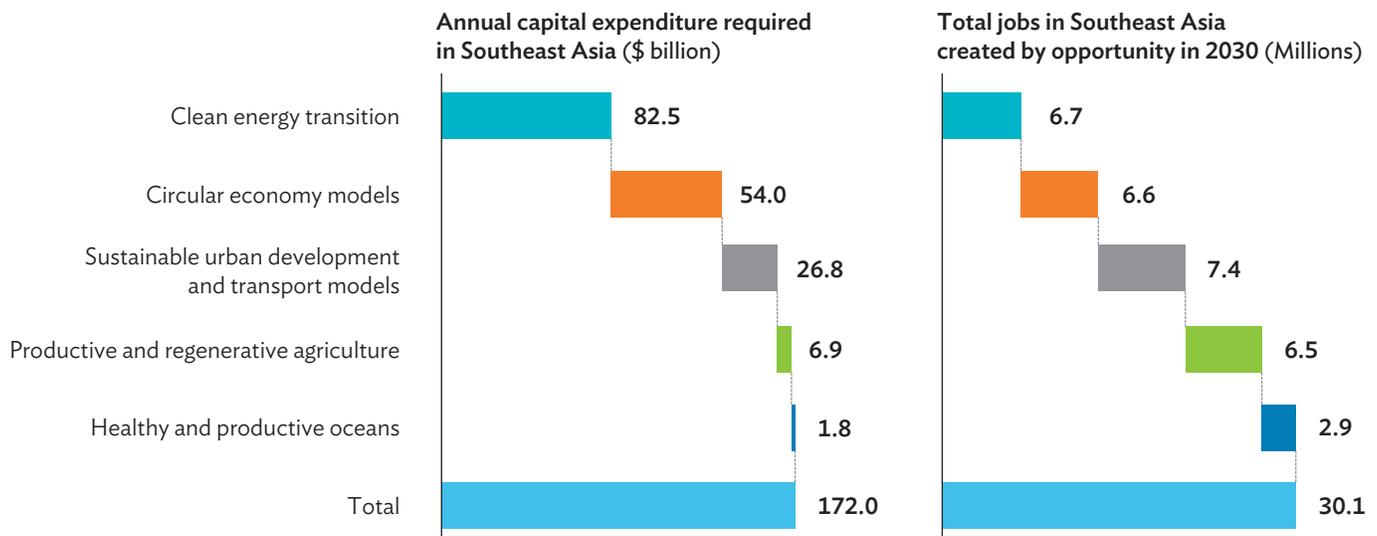
FIVE GREEN GROWTH OPPORTUNITIES

To help governments in Southeast Asia find green growth opportunities that are most relevant for the region, this brief identifies five priority opportunities based on economic potential and number of jobs that can be created, and the extent of environmental damage that can be reversed or addressed by each opportunity. If leveraged fully, the five green growth opportunities will require \$172 billion in capital investment and can create 30 million jobs in Southeast Asia by 2030 (Figure 2). These opportunities can also help toward meeting the Sustainable Development Goals.

Green growth opportunity no. 1: Productive and regenerative agriculture. This opportunity involves transforming agricultural landscapes and farming practices to improve yields while enhancing the health of surrounding natural ecosystems. These goals are vital to a region that depends heavily on the agriculture sector for income and employment. Opportunities are divided into two categories: (i) using innovative technologies to support precision agriculture and applying biotechnology innovations; and (ii) improving agricultural practices such as rotating crops and grazing, using biopesticides and microbial and organic fertilizers, and employing micro-irrigation.

Figure 2: Capital Investment Requirements and Job Creation Impacts of the Five Green Growth Opportunities

Five green growth opportunities, requiring more than \$172 billion worth of capital expenditure, could create 30 million jobs in Southeast Asia by 2030



Note: The estimate relates to 10 Southeast Asian nations: Brunei Darussalam, Cambodia, Indonesia, the Lao People’s Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

Sources: World Economic Forum; literature review; and AlphaBeta analysis.

Green growth opportunity no. 2: Sustainable urban development and transport models.

This opportunity aims to improve the environmental sustainability of cities and their transport systems, with the objective of reducing greenhouse gas emissions while enhancing overall livability and resilience. These goals are important given the size and continued growth of many Southeast Asian cities and the harmful environmental implications of unchecked urbanization. Opportunities include better urban planning and updating urban management models to help cities respond to disease outbreaks. Urban transportation can also be improved by developing sustainable public transport systems and last-mile connectivity options and encouraging shift toward electric vehicles.

Green growth opportunity no. 3: Clean energy transitions.

This opportunity involves developing renewable energy projects and enhancing energy efficiency. Initiatives include facilitating renewable energy projects, boosting energy storage capacity and grid connectivity, and enhancing energy efficiency. Foregoing investments in clean energy could have significant repercussions for the climate and public health. The International Energy Agency reports that the region currently registers among the world's fastest growth in electricity demand at 6% per year, but renewable energy currently meets only about 15% of this demand (IEA 2019). Without investments in clean energy, continued growth in electricity demand will increase carbon emissions and air pollution with potentially catastrophic effects on public health. In 2018, Southeast Asia recorded 450,000 premature deaths as a result of energy-related air pollution, and this number is expected to reach at least 650,000 by 2040 (IEA 2019).

Green growth opportunity no. 4: Circular economy models.

A circular economy is a closed-loop economic system where raw materials, components, and products retain as much of their value as possible. Opportunities in this area include investments and policies that support the processing of waste and by-products into usable and valuable end products across various sectors. Circular economy practices are important because of worsening environmental degradation, supply challenges, and unsustainable waste management practices across a variety of sectors in Southeast Asia. For example, a report finds that less than half of the waste generated in Southeast Asia is collected, and less than a quarter of this waste is recycled. The remainder of the collected waste is either illegally dumped after collection or treated and disposed of (Temasek and AlphaBeta 2018).

Green growth opportunity no. 5: Healthy and productive oceans.

This opportunity entails the sustainable management of wild fisheries by ensuring biologically viable fishing levels, while improving mariculture and aquaculture to replenish overexploited fish stocks.¹ Developing mariculture and aquaculture requires innovations in disease management,

adopting multi-trophic practices, and rethinking feed to expand the culture of species that do not depend on wild-caught fish for nutrition. As with the agriculture sector, the fishing industry is important in many Southeast Asian economies, but current unsustainable practices are undermining its productivity.

These five green growth opportunities are highly interconnected. Consequently, developing measures to capture one green opportunity can have implications for others, which offers the possibility to design strategies that maximize benefits across multiple opportunities (Figure 3).

THREE STEPS FOR A GREEN RECOVERY

Implementing a green recovery in Southeast Asia requires taking three key steps. Some general policy recommendations would include introducing carbon pricing, intensifying green technologies research, encouraging women entrepreneurs to participate in green business opportunities, and managing biodiversity better through open-data systems. Recommendations for Southeast Asia include the following:

STEP 1: Build mechanisms that can produce a lasting shift toward ecosystem resilience

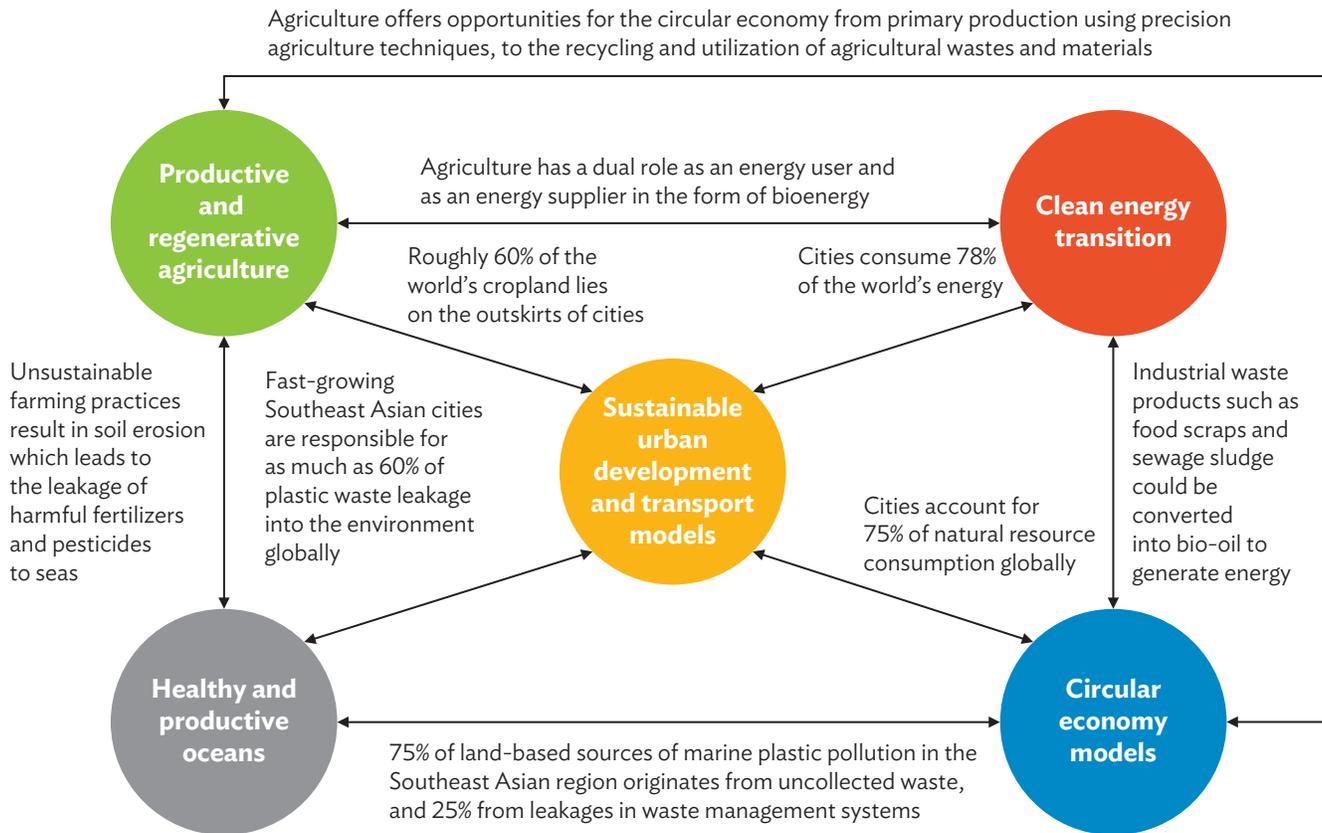
There are four mechanisms that policy makers can use to incorporate green objectives into government policies:

- (i) Develop a more integrated approach toward green growth, working across government agencies to assess trade-offs or possible shared benefits of green policies pursued by different agencies. This mechanism must be carefully designed to ensure coordination without unduly increasing government complexity.
- (ii) Assess all policy interventions with a green lens. For green recovery policies to have a long-lasting impact, they need to deliver nonambiguous market signals and incentives for greener growth. When designing green policy interventions, policy makers must
 - (a) ensure that “green” measures are not undermined by “brown” interventions, for example, by stipulating environmental conditions to go along with government bailouts of certain industries;
 - (b) understand how long it will take for different policies to make an impact, making sure that green policies are delivered both in the short and long term;

¹ Mariculture is a specialized branch of aquaculture that cultivates marine organisms for food and other products in an enclosed section of the ocean or in tanks, ponds, or raceways that are filled with seawater.

Figure 3: Links between the Five Green Growth Opportunities

The five green growth opportunities are highly interconnected



Sources: UN HABITAT; Ellen MacArthur Foundation; Proceedings of the National Academy of Sciences of the United States of America; Economic and Social Commission for Asia and the Pacific; Ernst and Young; Environment and Natural Resources Journal; National Ocean Service (United States); AlphaBeta analysis.

- (c) capture complementary benefits where possible when pursuing green growth, such as improvements in socioeconomic outcomes for women and rural households; and
 - (d) ensure transparency in contracts and processes in public-private partnerships.
- (iii) Build a rigorous approach to data collection and target setting. A consolidated database of information on environmental performance and potential impacts can help policy makers evaluate specific policies and programs and set targets. Clearly quantified environmental targets are a key component of COVID-19 green recovery plans.
- STEP 2: Implement targeted policy interventions focused on the five green growth opportunities**
- The five opportunities identified in section III represent the areas that are most relevant for Southeast Asia. Policy interventions corresponding to each green opportunity are listed below.

Although not an exhaustive list, these interventions provide a strong starting point for countries in the region to anchor their green recovery.

**Green Growth Opportunity No. 1:
Productive and regenerative agriculture**

- (i) Help farmers adopt more efficient micro-irrigation techniques to save water and improve yields, such as sprinkler and drip irrigation systems instead of flood irrigation especially for high value crops.
- (ii) Support smallholder farmers by improving access to capital and markets and by providing extension services, aggregation mechanisms to achieve economies of scale, and subsidies and training for climate-smart agriculture technologies.

**Green Growth Opportunity No. 2:
Sustainable urban development and transport models**

- (i) Incorporate “car-lite” concepts into urban planning and development to reduce city dwellers’ dependence on cars and encourage them to walk, cycle, or use public transport.
- (ii) Provide incentives for adopting electric vehicles and shared mobility services.
- (iii) Encourage owners of residential and commercial properties to retrofit buildings with energy-efficient features such as solar shading devices and smart utility meters.

**Green Growth Opportunity No. 3:
Clean energy transition**

- (i) Implement measures to reduce coal dependence by acquiring and retiring coal plants.
- (ii) Develop public-private partnerships to rapidly scale renewable energy.
- (iii) Establish more ambitious energy-efficiency benchmarks for manufacturers and create guidelines for public procurement that meet certain energy-efficiency standards.
- (iv) Provide access to off-grid solar power in remote areas, particularly for low-income households.
- (v) Invest in subnational and cross-national grid connectivity, particularly as the penetration of variable renewable energy increases. Investments in battery storage can further support integration of renewables into the energy grids.

**Green Growth Opportunity No. 4:
Circular economy models**

- (i) Establish extended producer responsibility frameworks for packaging waste, which would give manufacturers and importers significant responsibility for treating or disposing of postconsumer products.
- (ii) Review government procurement operations to encourage use of recycled materials.
- (iii) Develop waste management infrastructure to improve plastic waste collection rates and prevent plastic waste from leaking into the environment.
- (iv) Increase public awareness on waste segregation and sustainable product alternatives.
- (v) Increase awareness among small and medium-sized enterprises on how to convert waste streams and by-products into valuable end products.
- (vi) Bring together stakeholders from different sectors, nongovernment organizations, academia, and government to capture opportunities in the circular economy.
- (vii) Require businesses to report on different types and amounts of waste they place on the local market annually.

**Green Growth Opportunity No. 5:
Healthy and productive oceans**

Provide support for aquaculture innovation programs. This includes financing support for new technologies (e.g., sensor-based systems to feed shrimp on demand) and technical support (e.g., fish selection and use of alternative feedstocks).

STEP 3: Identify sustainable sources of financing for green growth opportunities

Governments must determine at the outset how they will finance these opportunities. Options include collecting green taxation revenue (e.g., carbon taxes), removing brown subsidies (e.g., fossil-fuel subsidies), mobilizing private sector finance (e.g., green finance catalytic facilities and sustainable impact bonds), and leveraging international finance sources (ADB 2020a, 2020b). In particular, Southeast Asian countries can use the ASEAN Catalytic Green Finance Facility to acquire loans and technical assistance for sovereign green infrastructure projects on sustainable transport, clean energy, and resilient water systems (ADB 2020c).

REFERENCES

- ADB. 2015. *Southeast Asia and the Economics of Global Climate Stabilization*. Manila.
- . 2020a. *COVID-19 Recovery: A Pathway to a Low-Carbon and Resilient Future*. Manila.
- . 2020b. *Green Finance Strategies for Post-Covid-19 Economic Recovery in Southeast Asia: Greening Recoveries for People and Planet*. Manila.
- . 2020c. *ASEAN Catalytic Green Finance Facility*. Manila.
- ASEAN Secretariat. 2020. *ASEAN Comprehensive Recovery Framework*. Jakarta.
- ClimateWorks and Vivid Economics. 2019. *Low Carbon Opportunities for Indonesia, the Philippines and Vietnam*. <https://www.climateworksaustralia.org/resource/low-carbon-opportunities-for-se-asia/>.
- Garrett-Peltier, H. 2017. Green versus Brown: Comparing the Employment Impacts of Energy Efficiency, Renewable Energy, and Fossil Fuels Using an Input–Output Model. *Economic Modelling* 61: 439–447.
- Greater Mekong Subregion Secretariat. 2020. *Joint Statement from 24th GMS Ministerial Conference*. Manila.
- Halleux, V. 2020. An EU Legal Framework to Halt and Reverse EU-Driven Global Deforestation. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/659279/EPRS_ATA\(2020\)659279_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/659279/EPRS_ATA(2020)659279_EN.pdf).
- Hughes, A. 2017. Understanding the Drivers of Southeast Asian Biodiversity Loss. *ECOSPHERE* 8(1): 1–33.
- Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES). 2020. *IPBES Workshop on Biodiversity and Pandemics: Workshop Report*. Bonn.
- International Energy Agency. 2019. *Southeast Asia Energy Outlook 2019*. Paris.
- Temasek and AlphaBeta. 2018. *Better Together: Business, Government, Society and our Sustainable Future*. Singapore.
- World Economic Forum. 2020. *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*. Geneva.

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