Improving the impact of fiscal stimulus in Asia: An analysis of green recovery investments and opportunities

February 2021

CLIMATE POLICY INITIATIVE

:vivideconomics

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ACKNOWLEDGMENTS

The authors would like to thank and acknowledge our CPI colleagues: Rob Kahn, Angel Jacob, for their review and Angela Woodall for design support; Barbara Buchner and Tiza Mafira for their overall guidance.

ABOUT CPI

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has six offices around the world in Brazil, India, Indonesia, Kenya, the United Kingdom, and the United States.

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Vivid Economics is a leading strategic economics consultancy with global reach. We strive to create lasting value for our clients, both in government and the private sector, and for society at large.

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DESCRIPTORS

SECTOR

Energy, agriculture, fiscal policy

REGION

India, Indonesia, Singapore, South Korea, Philippines

KEYWORDS

Green recovery, renewable energy, fiscal stimulus, COVID-19

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EXECUTIVE SUMMARY

While early responses to the COVID-19 pandemic were focused on rescue efforts, governments are now transitioning into economic recovery efforts. The five Asian countries analyzed in this report — India, Indonesia, the Philippines, Singapore, and South Korea — have together announced a total of USD 884 billion in COVID-19 recovery stimulus packages since the outbreak of the pandemic in February 2020. But how effective will those public investments be in producing long-term, sustainable growth?

This study, jointly produced by Climate Policy Initiative and Vivid Economics maps the 'greenness' of these fiscal stimulus measures and their contribution towards country-level climate objectives. Compared to business-as-usual stimulus measures, green stimulus measures have been proven to provide both short-term economic gains and build national wealth in the long-term[1]. Green recovery measures, such as investment in renewable energy, low emission transport, energy efficiency, and nature-based mitigation and adaptation solutions provide higher employment intensity, along with other financial returns and wider social benefits[2], than policies that seek to prop up aging, more polluting means of production.

Growth models that rely on the depletion of natural capital and accelerate the climate crisis are not sustainable, because emissions-heavy and environmentally-harmful business models are now facing the risk of depleting raw materials, less demand, and ultimately stranding financial assets[3]. Restoring nature and biodiversity, aggressively transitioning into renewable energy, and investments in sustainable infrastructure are job-intensive activities that can help regions hard-hit by the economic crisis, while also contributing to each country's climate goals. The Coalition of Finance Ministers for Climate Action emphasized that following immediate action to manage the crisis, policymakers need to design and implement recovery strategies that support sustainable growth over the medium and long term[4].

The analysis presented in this study builds on the Greenness of Stimulus Index (GSI) developed by Vivid Economics to assess the sustainability implications of fiscal stimulus packages across the five Asian countries included in this study. **The index, presented in Figure 1, suggests that countries are not doing enough to incorporate climate considerations into their fiscal stimulus responses.**

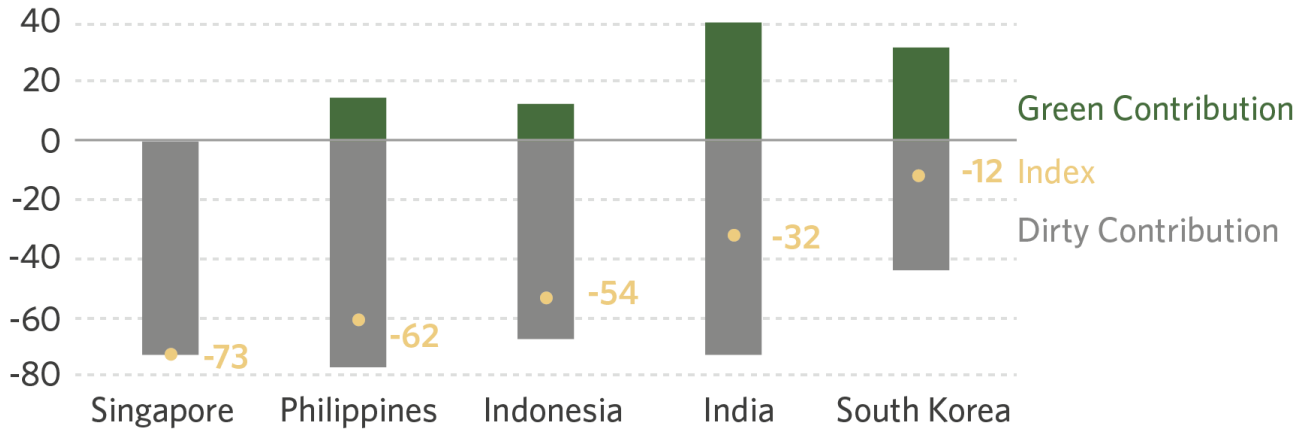
1 Green budgeting and tax policy tools to support a green recovery (OECD, 2020). http://www.oecd.org/coronavirus/policy-responses/green-budgeting-and-tax-policy-tools-to-support-a-green-recovery-bd02ea23/

2 "Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?" Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D., Oxford Smith School Working Paper No. 20-02, May 2020. https://www.smithschool.ox.ac.uk/publications/wpapers/workingpaper20-02.pdf; https://wwf.panda.org/?364346/Nature-based-solutions-post-COVID-19-recovery: https://www.wri.org/news/coronavirus-nature-based-solutions-economic-recovery

3 The decline of oil has already begun (Green Peace, March 2020)

4 The Coalition of Finance Ministers for Climate Action ("the Coalition") is a group of fifty-two finance ministers, engaged in efforts to address climate change through economic and financial policies. https://www.financeministersforclimate.org/news/better-recovery-better-world-resetting-climate-action-aftermath-covid-19-pandemic

Figure ES1. 'Greenness' index of stimulus packages in five Asian countries



Source: Vivid Economics and CPI analysis

South Korea has announced the largest stimulus package (USD 333.7 billion), followed by India (USD 332.9 billion), Singapore (USD 85.7 billion), Indonesia (USD 74.7 billion), and the Philippines (USD 17.0 billion). As a percentage of GDP (Gross Domestic Product)[5], Singapore has provided the largest share of recovery packages (24%), followed by South Korea (20%), India (12%), Indonesia (6%), and the Philippines (4%).

South Korea has the highest share of green stimulus measures as well, accounting for 53% of environmentally related measures. Meanwhile, India allocated 31% of its stimulus for environment related activities, and Indonesia directed 4% of its stimulus towards green outcomes. And based on our analysis, Philippines and Singapore have included no commitment towards green outcomes. Therefore, within the portion of environmentally relevant stimulus, the share of 'dirty' stimulus outweighs the stimulus directed towards green measures in almost all cases.

Table ES1. Summary of stimulus packages in five Asian countries

			Environmentally Relevant Stimulus			
Country	**Total Stimulus**	**Env. Relevant Stimulus**	**Green**	**Neutral**	**Dirty**	**Main Sectors**
Indonesia	USD 74.7bn	USD 6.3bn	4%	0%	96%	Energy
India	USD 332.9bn	USD 89.5bn	31%	21%	47%	Energy, Industry
Singapore	USD 85.7bn	USD 483m	0%	18%	82%	Transport
South Korea	USD 333.7bn	USD 70bn	53%	0%	47%	Industry, Energy
Philippines	USD 17.0bn	USD 689m	0%	50%	50%	Agriculture Industry

Source: Vivid Economics and CPI analysis

5 GDP refers to GDP current prices by the International Monetary Fund (IMF) in 2021. Available at: https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD/APQ

To ensure a sustainable recovery across the five Asian countries, there is a definitive need for governments to integrate green considerations into the design of their COVID-19 stimulus packages. These countries can pursue three recommendations to enable the desired outcome.

- First, countries should increase the size of stimulus packages that support environmentally beneficial outcomes across sectors.
- Second, countries should integrate green conditionalities when providing support and bailouts to environmentally-damaging activities.
- Finally, countries should introduce a broader range of green support measures, such as tax reductions for green products and subsidies for research and development (R&D), alongside investing in sustainable infrastructure.

Countries can lay the foundations for long-term sustainable growth only by implementing support packages that maximize stimulus effects in the short term and mitigate environmental degradation in the long term. Such measures offer governments a win-win solution, by maximizing the stimulus effects in the short term and mitigating environmental degradation in the long term.

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1. INTRODUCTION

The rapid spread of COVID-19 has put immense pressure on economic and social conditions in emerging countries in Asia. In response to the pandemic, governments have been rolling out emergency fiscal measures to strengthen healthcare systems, provide support to businesses, and bolster employment. However, government stimulus packages lack ambitious measures directed towards environmental outcomes and a sustainable recovery. Supporting a sustainable recovery is particularly important for Asia as the region is a significant global emitter, accounting for 47% of total global greenhouse gas (GHG) emissions in 2018 (Carnell, et al., 2020).

This study aims to map the 'greenness' of Asia's fiscal stimulus measures and its contribution towards country-level climate objectives. The analysis focuses on five Asian countries, namely, India, Indonesia, the Philippines, Singapore, and South Korea. This study builds on the Greenness of Stimulus Index (GSI) developed by Vivid Economics to assess the sustainability implications of fiscal stimulus packages across these five Asian countries. Subsequently, the report generates a set of recommendations to support a long-term sustainable recovery and build upon the support provided by governments across different types of policy measures and sectors of the economy.

This report is structured into six sections. Following this introduction, Chapter 2 lays out the methodological approach taken to assess the sustainability of stimulus packages in the five Asian countries. Chapter 3 presents a regional summary of analysis undertaken as part of the index. This includes a high-level assessment of the size of environmentally relevant stimulus packages for each country and the allocation across different sectors of the economy. Chapter 4 provides additional detail for each country, including a list of environmentally relevant policy measures and an indicative set of recommendations. Chapter 5 summarizes the recommendations presented at the country-level and identifies three overarching recommendations for long-term sustainable recovery in the region. Finally, Chapter 6 presents the trade-offs that countries face in designing stimulus packages and identifies a path towards a sustainable long-term growth plan.

2. METHODOLOGICAL APPROACH

The assessment of green stimulus packages in this report is based on the Greenness of Stimulus Index (GSI) methodology (Vivid Economics, 2020). The index assesses the effectiveness of COVID-19 stimulus efforts to ensure economic recovery that takes advantage of sustainable growth opportunities and builds resilience by protecting the climate and biodiversity. The GSI examines the environmental orientation of fiscal stimulus packages based on the total funds flowing into environmentally intensive sectors. This also includes the existing green orientation of those sectors such as the share of renewables in the energy sector, and the green orientation of new stimulus measures.

The index is constructed by combining the flow of stimulus into five key sectors with an indicator of each sector's environmental impact. The latter accounts for both historical trends and specific measures taken under the country's stimulus. The impact indicator assigns a greenness value (positive or negative) to each sector for every country. The overall GSI is an indicator of the total fiscal spending in response to COVID-19 categorized as having either a positive or negative impact on the environment. The final index for each country is an average of sectoral impact, normalized on a scale of -100 to 100. The five sectors are agriculture, energy, industry, waste, and transport. They are chosen for their historical impact on climate and the environment.

Two components of the stimulus were analyzed. These are the size of the fiscal flow (F value) of each environmentally intensive sector, and the overall impact of that stimulus on the climate and environment (B value). The B value differentiates between the underlying sector context (b1) and specific environmental measures (b2). Each environment-specific stimulus measure is categorized according to positive and negative archetype interventions based on its sector (agriculture, energy, industry, transport, waste). Table 1 and Table 2 describe these policy archetypes, respectively. Additional detail on the methodology is available in the appendix.

Table 1. Summary of positive policy archetypes

Sectors	Positive Archetypes
All sectors	Bailouts with green strings attached
All sectors	Loans and grants for green investments
All sectors excl. agriculture	Green R&D subsidies
All sectors excl. agriculture	Subsidies or tax reductions for green products
Agriculture	Nature-based solutions
Agriculture	Conservation and wildlife protection programmes

Source: Vivid Economics and CPI analysis

Table 2. Summary of negative policy archetypes

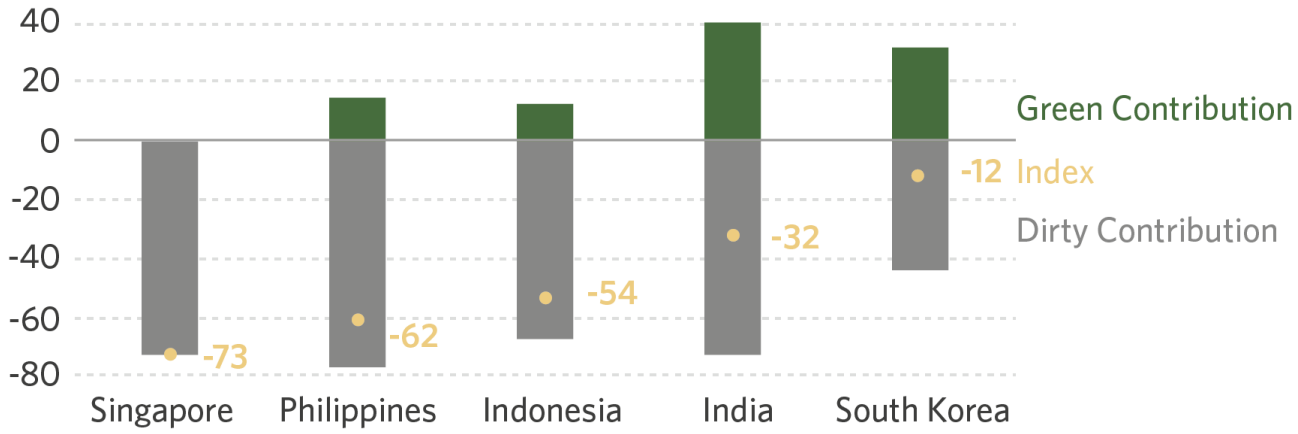
Sectors	Negative Archetypes
All sectors	Subsidies or waived fees for environmentally harmful activities
All sectors	Deregulation of environmental standards
All sectors	Environment related bailout without green strings
All sectors excl. agriculture	Environmentally harmful infrastructure investments
All sectors excl. waste	Subsidies or tax reductions for environmentally harmful products

Source: Vivid Economics and CPI analysis

3. REGIONAL SUMMARY

The index, presented in Figure 2, suggests that countries are not doing enough to incorporate climate considerations into their fiscal stimulus responses. While the current performance across countries varies, there are no net positive scores across the five countries. South Korea, supported by its government's substantial green policy measures under its Green New Deal, was the best performer. Across the countries, it is notable that those with poor baseline environmental performance and small positive stimulus contributions, such as Indonesia, failed to improve their index score. Meanwhile, large green stimulus packages, such as in South Korea and India, can elevate scores from a modest baseline.

Figure 2. 'Greenness' index of stimulus packages in five Asian countries



Source: Vivid Economics and CPI Analysis

India, Indonesia, the Philippines, Singapore, and South Korea have together announced a total of USD 884 billion in COVID-19 recovery stimulus packages since the outbreak of the pandemic in February 2020. South Korea has announced the largest stimulus packages (USD 333.7 billion), followed by India (USD 332.9 billion), Singapore (USD 85.7 billion), Indonesia (USD 74.7 billion), , and the Philippines (USD 17.0 billion). As a percentage of GDP (Gross Domestic Product)[6], Singapore has provided the largest share of recovery packages (24%), followed by South Korea (20%), India (12%), Indonesia (6%), and the Philippines (4%).

Across the five countries, the share of stimulus negatively impacting environment outweighed green measures in almost all cases.

Table 3 shows that environmentally relevant measures account for 1% to 28% only of the total stimulus packages. India has the largest share of environmentally relevant stimulus (27%) with South Korea in the second place (21%). This is followed by Indonesia (8%), the Philippines (4%), and Singapore (1%). Green stimulus packages, such as those that

6 GDP refers to GDP current prices by the International Monetary Fund (IMF) in 2021. Available at: https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD/APQ

support the development of renewable energy, are a subset of stimulus packages classified as environment-related. South Korea also has the highest share of green stimulus measures, accounting for 53% of environmentally related measures. Meanwhile, 31% of environmentally related stimulus measures in India and 4% in Indonesia are directed towards green outcomes, while the Philippines and Singapore have included no commitment towards green outcomes based on the analysis. Therefore, within the portion of environmentally relevant stimulus, the share of 'dirty' stimulus outweighs the stimulus directed towards green measures in almost all cases.

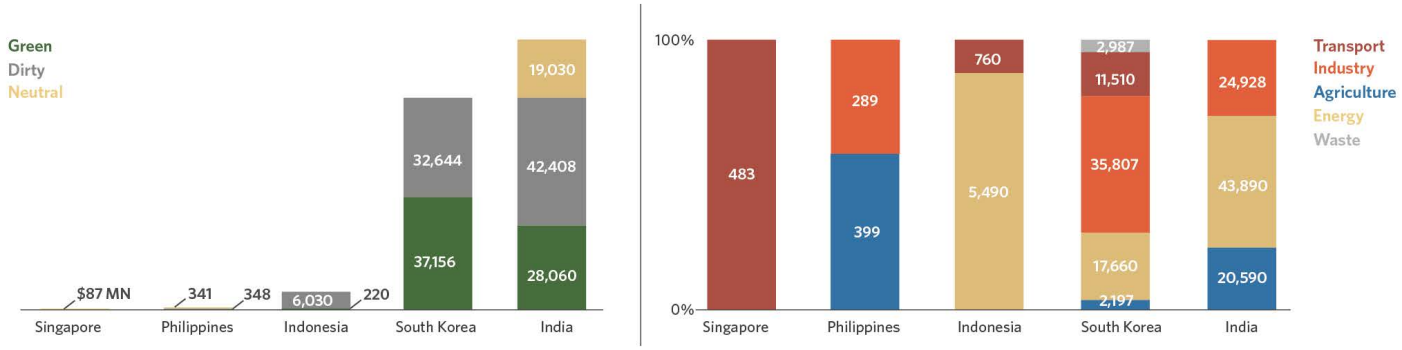
Table 3. Summary of stimulus packages in five Asian countries

			Environmentally Relevant Stimulus			
Country	**Total Stimulus**	**Env. Relevant Stimulus**	**Green**	**Neutral**	**Dirty**	**Main Sectors**
Indonesia	USD 74.7bn	USD 6.3bn	4%	0%	96%	Energy
India	USD 332.9bn	USD 89.5bn	31%	21%	47%	Energy, Industry
Singapore	USD 85.7bn	USD 483m	0%	18%	82%	Transport
South Korea	USD 333.7bn	USD 70bn	53%	0%	47%	Industry, Energy
Philippines	USD 17.0bn	USD 689m	0%	50%	50%	Agriculture Industry

Source: Vivid Economics and CPI analysis

The majority of environmentally relevant stimulus is directed towards the energy, industry, and agriculture sectors. South Korea has the largest relative contribution towards green outcomes as well as the most diversified support across environmentally relevant sectors (Figure 3). Significant environmentally relevant support is directed towards the energy sector, particularly in Indonesia, India, and South Korea. However, most of this stimulus tends to flow towards 'dirty' activities, particularly in Indonesia. The agriculture sector has seen notable support in the Philippines, and India, in particular.

Figure 3. Environmentally relevant stimulus packages based on greenness and sectors



Source: Vivid Economics and CPI Analysis

4. COUNTRY ANALYSIS

4.1 INDONESIA

Indonesia has approved USD 74.7 billion in fiscal stimulus packages in response to COVID-19

Composition of stimulus: The Indonesian government introduced a package of measures since the beginning of the pandemic to provide substantial support to healthcare and social welfare. More recent measures involve support for businesses including tax incentives, loans and guarantees. A large proportion of this amount is expected to be directed towards the energy and transport sectors. Additionally, some support has been directed towards citizens and businesses in the form of subsidies for electricity generation and fuel prices, as well as households in the form of social protection transfers. The Indonesian Government's 2021 infrastructure budget allocates USD 28.5 billion towards sustainable, labor-intensive infrastructure development. These infrastructure projects will strengthen digital infrastructure and support several sectors, including tourism, water, sanitation, housing, and national health. In the energy and electricity sector, projects will include the construction of natural gas networks for households and support for rooftop solar (Indonesia Ministry of Finance, 2020).[7]

Indonesia has implemented a mix of positive and negative policies, resulting in a net negative index score (-54) that is largely driven by poor underlying environmental performance. While Indonesia has introduced several positive measures, such as subsidies for biodiesel fuels, environmentally harmful measures are expected to have a net damaging impact on the environment. Indonesia's current stimulus packages demonstrate the lack of a clear roadmap towards a sustainable recovery with a significant portion allocated to carbon-intensive state-owned companies. Additionally, Indonesia's negative environmental performance is exacerbated by subsidies that will lower the cost of largely fossil fuel generated electricity and the price of industrial gas.

Table 4. Archetype policies announced in Indonesia

Policy Measure	Agriculture	Energy	Industry	Transport	Waste
Bailouts with green strings attached					
Green infrastructure investments					
Green R&D subsidies					
Subsidies or tax reductions for green products					
Nature-based solutions					
Conservation and wildlife protection programs					
Subsidies for environmentally harmful activities					
Environmentally harmful infrastructure investments					

7 Due to insufficient information on specific measures and allocation of the infrastructure budget, the distribution of US$ 28.5 billion could not be tracked across specific sectors or instruments at the time of writing. In future iterations of the work and as the Ministry of Finance provides additional detail, the total volume of finance allocated to green outcomes can be expected to increase.

Deregulation of environmental standards					
Environment related bailout without green strings					
Subsidies or tax reductions for environmentally harmful products					

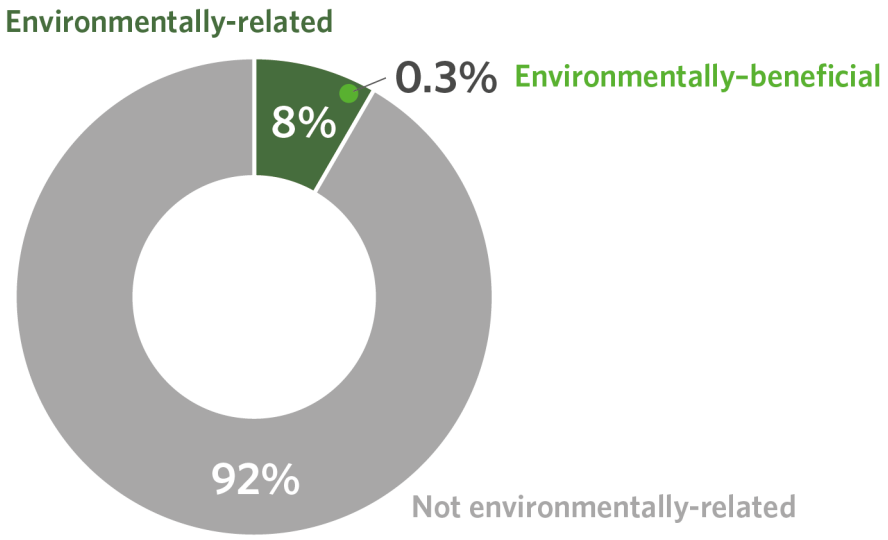
Source: Vivid Economics and CPI analysis

Legend: Positive Dirty Neutral

Indonesia has introduced several negative environmentally relevant policy measures, that are directed particularly towards the energy and industry sectors (Table 4). This includes the deregulation of environmental standards, unconditional bailouts, and subsidies for environmentally harmful products. There are, however, several policies that were introduced in the energy sector that are expected to contribute to positive environmental outcomes, such as R&D subsidies and subsidies for green products. Investment in green infrastructure is also seen in the transport and energy sectors. Despite the introduction of green policy measures, it is expected that 'dirty' policy measures will have a larger contribution towards Indonesia's index score, especially considering that the size of 'dirty' stimulus measures is larger and potentially more severe.

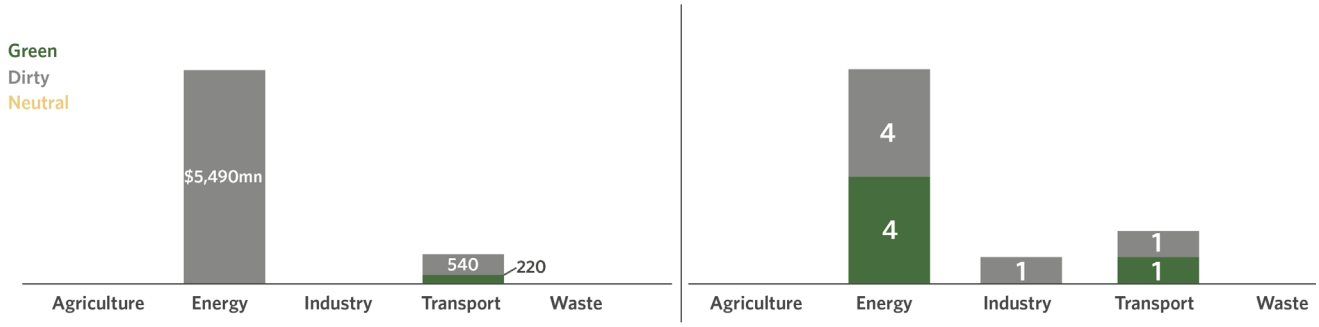
Of Indonesia's total stimulus packages, 0.3% support environmentally beneficial products or activities. Meanwhile, 92% of stimulus packages are categorized as not environmentally related, and 8% are considered to be environmentally related (Figure 4). The former figure includes stimulus packages targeted at non-environmentally relevant activities and outcomes, such as healthcare and social support.

Figure 4. Share of Indonesia's stimulus packages that are related to the environment



Source: Vivid Economics and CPI Analysis

Figure 5. Size and number of environmentally relevant stimulus packages in Indonesia



Source: Vivid Economics and CPI Analysis

The majority of stimulus packages are not environmentally related and focus on credit support for the private sector (USD 10.2 billion), social protection support (USD 7.5 billion), and healthcare support (USD 5.1 billion). Additionally, tax incentives and credit support amounting to USD 4.8 billion are also provided to support businesses. There is no specific sector targeted under business support, but small and medium-sized enterprises (SMEs) as well as larger firms most affected by the pandemic are likely to be the beneficiaries of this support.

Only c. 8% (USD 6.2 billion) of Indonesia's stimulus packages are channeled towards environmentally related sectors. In terms of magnitude, most of the environmentally relevant support is directed towards the energy sector (Figure 5a). This includes the unconditional bailout of a state-owned oil and gas company, PT Pertamina (USD 2.4 billion), and electricity subsidies to households (USD 240 million). There are, however, several unquantified policy measures that are expected to lead to positive environmental outcomes (Figure 5b). This includes value-added tax (VAT) exemptions for renewable energy projects, subsidies for biodiesel fuels, waived fees for independent power producer (IPP) procurement, and subsidies for solar PV installation. The transport sector is the second largest beneficiary of environmentally relevant stimulus measures, which includes green measures such as the bailout of a state-owned railway company (USD 220 million), and 'dirty' measures such as the unconditional bailout of a state-owned airline company (USD 540 million).

Underlying sector context (b_1): Performance on key indicators is categorized as highly insufficient.

Indonesia's underlying environmental performance is -59, which shows that the country's performance against key indicators is highly insufficient in achieving climate change and nature-related targets. Indonesia's annual greenhouse gas (GHG) emissions and GHG emissions per capita remain on an upward trajectory despite the country's commitment to an unconditional 29% reduction in emissions, and a 41% commitment that is conditional on support from international cooperation by 2030 (Carbon Brief, 2019a; World Bank, 2020a). Indonesia's underlying environmental performance is calculated based on four publicly available environmental indexes that consider performance against SDG 13 climate change, SDG 14 life below water, and SDG 15 life above land amongst other categories.

Specific environmental measures (b_2):

Agriculture – Two measures were introduced by the government that could have negative spillover impacts on the agriculture sector. The first is related to subsidies for the use of biodiesel fuels (MEMR, 2020). While biofuels are considered a renewable energy source, bio-based energy can have negative impacts on the environment due to reduced biomass and forest carbon sinks (Asia Times, 2019). This could have negative impacts due to unsustainable land use practices that are in use to produce biofuels in Indonesia. Burning of biodiesel produces carbon dioxide emissions similar to those from ordinary fossil fuels.

Second, a new mining law was passed to expand the land area available to miners to stimulate more value-added production of mined coal and minerals (MEMR, 2020). This law permits mining companies to allocate exploration funds and to increase exploration each year. It also extends royalty rates for large miners. The law has few provisions to reduce environmental impact, except for its requirement to complete land restoration projects.

Energy – Indonesia's broader stimulus packages do include smaller measures for renewable energy and biofuels. However, they are dwarfed by over USD 5 billion unconditional bailouts to state-owned emissions-intensive energy companies such as PLN and oil and gas company PT Pertamina (BPK, 2020). Several positive measures introduced by the government include broader VAT and income tax cuts in Indonesia's general tax relief package. It also includes renewable energy projects, and suspended loan instalments to spur renewable energy projects (MEMR, 2020).

Further measures such as subsidies for the installation of rooftop solar panels in households and fees waived for IPPs are expected to contribute positively towards environmental outcomes in the energy sector (Energy Policy Tracker, 2020 a). However, the lowered cost of electricity will have a negative impact on the environment as Indonesia's electricity is largely generated from fossil fuels (CNBC Indonesia, 2020).

Industry – There are no quantified environmentally-related measures allocated to the industrial sector. However, the reduction of gas prices to all industrial sectors, is a policy measure that is likely to negatively impact the environment (Energy Policy Tracker, 2020 a).

Transport – The transport sector received a total of USD 762 million in stimulus payments. This includes the bailout of the state-owned railway company (USD 220 million) that is expected to positively impact the environment. However, a USD 540 million unconditional bailout to the state-owned airline company Garuda Indonesia will result in negative environmental outcomes.

Waste – There are no specific environment-related measures linked to the waste sector.

POLICY RECOMMENDATIONS:

Green policy measures only represent c. 0.3% of Indonesia's total stimulus packages. There is substantial room to expand the share of green stimulus across the policy measures listed in Table 4. While a diversified mix of policies should be implemented across sectors, Indonesia must place particular emphasis on the agriculture, energy, and transport sectors. The agricultural sector is of key importance to Indonesia's economy and employment, accounting for 12.7% of the country's GDP and employing 27.7% of the population (Lloyds Bank, 2020 a). The government has indicated earmarking USD 2.3 billion for loan interest subsidies and loan repayment leniencies for farmers and fishermen through a microcredit

program (The Jakarta Post, 2020). Allocating such support to or making it conditional upon sustainable agriculture practices, nature-based solutions, and conservation and wildlife protection programmes would help support a sustainable recovery in Indonesia. In addition, we need to pay attention to the industry and waste sectors as well since no green fiscal stimulus currently goes to these sectors.

Indonesia should implement green conditionalities when providing support and bailouts to environmentally damaging activities. Given the large volumes of funding directed towards strategic state-owned enterprises (SOEs), reaching over USD 5 billion, the Indonesian government should consider including green conditions that require these companies to decarbonise. For example, green conditionalities for the aviation sector should include efforts to curb emissions. Alongside bailouts with green strings attached, there is an opportunity for Indonesia to support a sustainable recovery through green R&D subsidies and infrastructure investments in the industrial and waste sectors.

4.2 INDIA

India has approved USD 322.9 billion in fiscal stimulus packages in response to COVID-19.

Composition of stimulus: India's initial package focused on support for healthcare and welfare, but further measures include substantial support for small businesses and targeted support for the agriculture and coal sectors. The package offers support in the form of loans, capital investment, and incentives and subsidies. Specific sector support has been given to agricultural infrastructure development and electricity distribution companies.

India performed negatively in the index (-32) due to poor baseline environmental performance paired with environmentally harmful stimulus measures, including substantial support for the coal industry. While India has introduced several positive measures, including funding for afforestation, incentives for electric vehicles (EVs), and support for bio-gas plants, environmentally harmful activities are expected to have a severe impact on the environment. These activities include India's continued support for infrastructure development in the coal, mining, and power sectors. India plans to spend D6.8 billion to expand its coal transportation infrastructure as part of broader plans to support higher domestic production and curtail imports. Additionally, India is seeking to stock strategic reserves in oil products capitalizing on low global oil prices.

Table 5. Archetype policies announced in India

Policy Measure	Agriculture	Energy	Industry	Transport	Waste
Bailouts with green strings attached					
Green infrastructure investments					
Green R&D subsidies					
Subsidies or tax reductions for green products					
Nature-based solutions					
Conservation and wildlife protection programmes					
Subsidies for environmentally harmful activities					
Environmentally harmful infrastructure investments					
Deregulation of environmental standards					
Environment related bailout without green strings					

Subsidies or tax reductions for environmentally harmful products					

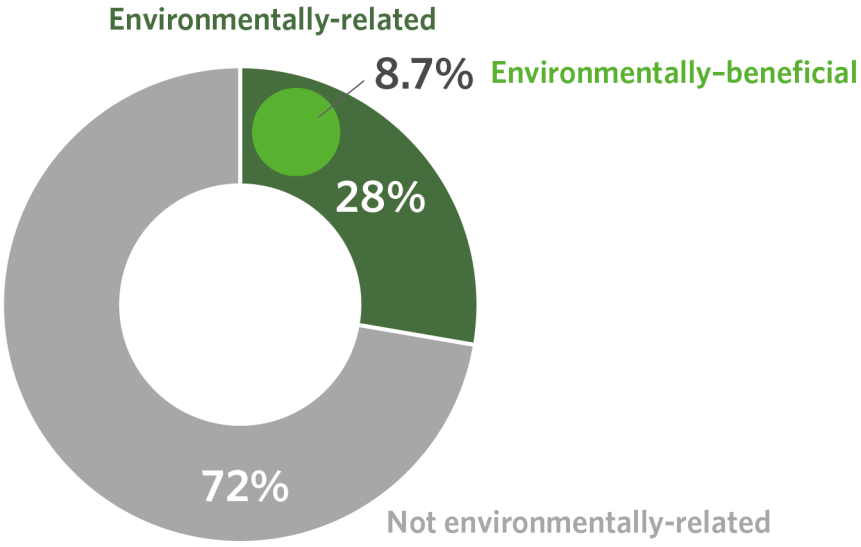
Source: Vivid Economics and CPI analysis

Legend: Positive Dirty Neutral

India has employed a mix of policy measures across sectors that have both positive and negative impacts on the environment (Table 5). Most of the 'dirty' policy measures are channeled towards the energy sector, including investment and subsidies for environmentally harmful activities, as well as deregulation of environmental standards. There are also 'dirty' policies that support the industry and transport sectors. Simultaneously, several green policy measures are available across multiple sectors, including green infrastructure investments and subsidies for green products.

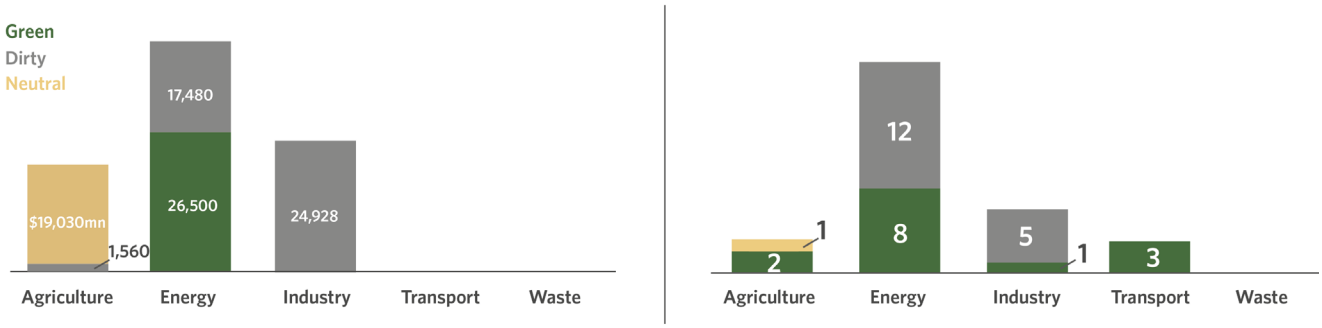
USD 28.1 billion or 8.7% of India's total stimulus packages can have a positive impact on the environment. Most of these green measures are directed towards the agricultural and energy sectors. This includes support for 5,000 compressed bio-gas plants (USD 26.5 billion), an afforestation program (USD 780 million), and an agricultural waste scheme (USD 780 million). Meanwhile, 72% of stimulus packages are categorized as not environmentally related, and 28% are categorized as environmentally related (Figure 6). The former figure includes stimulus packages targeted at non-environment relevant activities and outcomes, such as healthcare and social support.

Figure 6. Share of India's stimulus packages that are related to the environment



Source: Vivid Economics and CPI Analysis

Figure 7. Size and numbers of environmentally relevant stimulus package in India



Source: Vivid Economics and CPI Analysis

Most stimulus packages are not related to the environment and represent 72% of the total. The majority of these stimulus packages focus on cash transfers and support to households (USD 65 billion), credit support for businesses (USD 51.7 billion), and support to the healthcare sector (USD 2.7 billion). Poor households, particularly migrants and farmers, receive substantial support worth USD 43.5 billion. The government has also taken into consideration the health and well-being of lower-income households providing USD 5.4 billion of support.

28% (USD 89.5 billion) of India's stimulus packages are channeled towards environment related measures (Figure 6). Agriculture, energy, and industry have been a particular focus of stimulus (Figure 7a). Most of the support for the agriculture sector is targeted towards the development of agricultural infrastructure (USD 19.0 billion) and funding for afforestation and plantation (USD 780 million). The latter is expected to have a positive impact on the environment. Most of the support that is extended to the energy sector is expected to positively impact the environment. 5,000 compressed bio-gas plants adding up to USD 26.5 billion are to be rolled out by 2023-2024. Measures that are expected to have a negative impact include investments in coal transport infrastructure (USD 6.8 billion) and investment in coal heavy machinery (USD 796 million). Support for the industrial sector includes a production linked incentive scheme targeting 10 priority sectors (USD 19.8 billion) amongst other interventions. Additionally, it is worth highlighting that despite having no stimulus measures supporting the transport sector, there are several unquantified policy measures that have been announced in the transport sector (Figure 7b).

Underlying sector context (b_1): : Performance on key indicators is highly insufficient.

India's baseline environmental performance (-61) is 'highly insufficient', which suggests that strong additional action and commitment is required to achieve the targets of the Paris Agreement. India's annual GHG emissions and emissions per capita are still on an upward trajectory and need to peak soon to achieve the climate commitment of 33-35% reduction in emissions by 2030 (Carbon Brief, 2019; World Bank, 2020b). India's underlying environmental performance is calculated based on four publicly available environmental indexes. These consider performance against SDG 13 climate change, SDG 14 life below water, and SDG 15 life above land amongst other categories.

Specific environmental measures (b_2):

Agriculture – Support packages worth USD 20 billion were provided to the agricultural sector, which makes the sector the third largest beneficiary of environmentally relevant stimulus. Several stimulus packages that will have a positive environmental impact on the environment include funding for afforestation and plantation projects (USD 780 million) and the Sampada scheme to reduce agricultural waste (USD 780 million) (Nikkei Asia, 2020). A substantial sum has also been allocated to provide support to agricultural infrastructure development. However, the environmental impact cannot be classified at present.

Energy – The energy sector received the largest share of environment-related support packages from the government worth USD 11.5 billion. Most of this support is channeled towards 'green' activities that comprise 5,000 compressed bio-gas plants. However, there are several 'dirty' measures, including investments in coal transport infrastructure (USD 6.7 billion), investment in coal heavy machinery (USD 992 million), and investments in coal mining infrastructure (USD 600 million) (Government of India, 2020; Energy Policy Tracker, 2020 b). Several unquantified policy measures have also been announced, such as the Andhra Pradesh Renewable Energy Export Policy and waived transmission charges for solar and wind power (Energy Policy Tracker, 2020 b).

Industry – The amount of USD 24.9 billion support provided to the industrial sector is expected to have a negative impact on the environment. This includes USD 1.6 billion allocated to interest free loans for infrastructure, and D3.4 billion of capital expenditure for roads, defense, water supply, urban development, and domestically produced capital equipment (Press Information Bureau, 2020).

Transport – Only three policies were introduced by the Indian government to support the transport sector. All the policies are categorized as green policy measures. This includes the Delhi EV Policy, which includes a target to achieve 25% EVs for all new vehicle registrations in 2024, the Green Railway Initiative, and support for e-buses and charging stations. Based on this, it is expected that India's support to the transport sector will have a positive impact on the environment.

Waste – The government has introduced one measure to reduce post-harvest waste in India valued at USD 780 million (categorized as agricultural support). This support has been channeled to the Sampeda scheme, which is an ambitious government-launched national scheme involving large food parks, integrated cold chains, and food-processing clusters (Nikkei Asia, 2020). In addition to raising farming's income, this scheme is expected to positively impact the environment.

POLICY RECOMMENDATIONS:

Green policy measures represent c. 8.7% of India's total stimulus packages, representing the second highest share after South Korea. India's performance on the index, compared to the baseline score, was raised because of extensive support provided to bio-gas plants in the energy sector. However, there is still substantial room to expand the share of green stimulus. While several support measures for the agriculture sector are promising, the country needs to ensure that unclassified and future measures support nature-based solutions and sustainable agriculture practices. The agriculture sector is of particular importance in India, contributing

16.0% of GDP and employing 41.5% of the active population (Lloyds Bank, 2020 b). Further, to push for a stronger green recovery in the energy sector, India should curtail further investments in polluting extractive practices.

India has announced several green policy measures across sectors, but there is a lack of green R&D subsidies to spur innovation and bailouts with green strings attached. These can nudge polluting sectors towards sustainable recovery. Additionally, targeted green support should be provided to the industry and waste sectors. Green measures in industry offer opportunities for India to recover sustainably, particularly considering the contribution of the manufacturing and chemical industry to India's economy.

4.3 SINGAPORE

Singapore approved USD 85.7 billion in fiscal stimulus packages in response to COVID-19.

Composition of stimulus: Singapore's stimulus packages include healthcare support as well as a stabilization and support initiative to provide a cushion for local businesses and workers under the job support scheme. Welfare measures are provided in the form of a cash pay-out for households, wage support for workers, training support for the self-employed, cash grants for SME tenants, and financing support for start-ups. Specific sector-wise measures include a USD 396 million aviation support package, a USD 302 million tourism support package, and a USD 409 million package to support arts, culture, and businesses in digital transformation.

Singapore's index score (-73) is driven by a highly insufficient environmental baseline performance coupled with harmful stimulus measures. While Singapore has introduced no positive environmental policy measures in response to COVID-19, there are several issues that are expected to have a negative impact.

Table 6. Archetype policies announced by Singapore

Policy Measure	Agriculture	Energy	Industry	Transport	Waste
Bailouts with green strings attached					
Green infrastructure investments					
Green R&D subsidies					
Subsidies or tax reductions for green products					
Nature-based solutions					
Conservation and wildlife protection programs					
Subsidies for environmentally harmful activities					
Environmentally harmful infrastructure investments					
Deregulation of environmental standards					
Environment related bailout without green strings					
Subsidies or tax reductions for environmentally harmful products					

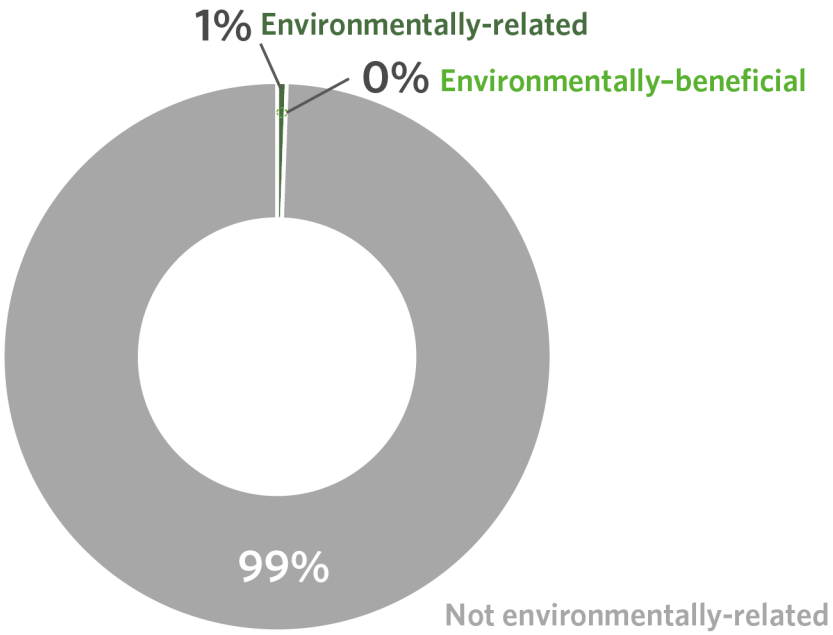
Source: Vivid Economics and CPI analysis

Legend: Positive Dirty Neutral

Singapore's current stimulus packages include several environmentally harmful measures across the agriculture, industry, and transportation sectors (Table 6). The most noteworthy of these are two aviation support packages amounting to USD 396 million, with no built-in conditionalities to decarbonize. Singapore's current stimulus packages focus on subsidies for environmentally harmful activities, bailouts with no green strings attached, and tax reductions for environmentally harmful products.

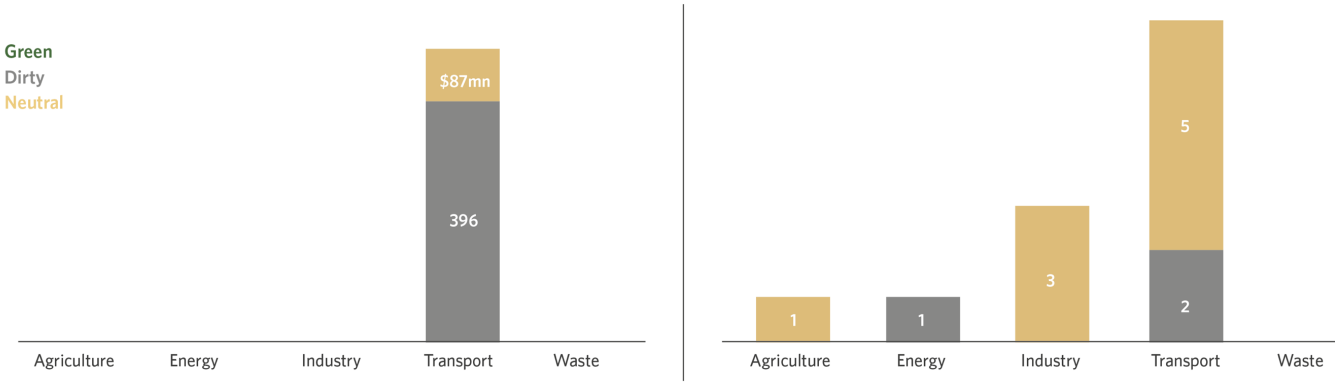
0% of Singapore's total stimulus packages support environmentally beneficial green products or activities. 99% of stimulus packages are categorized as not environmentally related and 1% are environmentally related (Figure 8). The former figure includes stimulus packages targeted at non-environmentally relevant activities and outcomes, such as healthcare and social support.

Figure 8. Share of Singapore's stimulus packages that are related to the environment



Source: Vivid Economics and CPI Analysis

Figure 9. Size and numbers of environmentally relevant stimulus packages in Singapore



Source: Vivid Economics and CPI Analysis

Most stimulus packages are not environment related and represent 99% of the total. These include a job support scheme (USD 11 billion), contingency funds to enable the government to respond quickly to developments arising from the pandemic (USD 10 billion), and a care and support package to support workers and families (USD 3 billion). While a significant share of stimulus packages is non-specific and cannot be tied to particular interventions, the government has also set aside funds for economic transformation and growth over the coming three years (USD 6 billion), as well as a goods and services tax (GST) hike offset (USD 4 billion).

Only c. 1% (USD 483 million) of Singapore's quantified stimulus packages is channeled towards environment related sectors. All this support is directed at the transport sector

(Figure 9a). This includes the aviation support package and enhanced aviation support package (USD 396 million), as well as fee waivers for taxi and private car hires and road tax rebates for private bus operations.

Underlying sector context (b_1): Performance on key indicators is highly insufficient.

Singapore's underlying environmental performance is -68, which shows that the country's performance against key indicators is highly insufficient to achieve climate change and nature-related targets. Singapore's current climate commitments are neither consistent with holding warming to below 2oC nor with the Paris Agreement's stronger 1.5oC goal. Singapore's underlying environmental performance is calculated based on four publicly available environmental indexes that consider performance against SDG 13 climate change, SDG 14 life below water, and SDG 15 life above land amongst other categories.

Specific environmental measures (b_2):

Agriculture – The government has introduced only one unquantified measure in the agricultural sector. This is a two-month rental waiver for non-residential tenants on premises managed by government bodies for agricultural purposes (KPMG, 2020).

Energy – The government has introduced only one unquantified measure in the energy sector. This is a two-month rental waiver for non-residential tenants on premises managed by government bodies for petrol station purposes (KPMG, 2020).

Industry – The government introduced several unquantified policy measures in the industrial sector. These include:

- A tax rebate of 15-30% to industries directly impacted, including manufacturing and wholesale trade.
- An extension of the foreign worker levy waiver under the fortitude budget and rebate for up to two months for all businesses including construction, marine and offshore, and process sectors (Singapore Government Agency, 2020 a).
- Redeployment programs under the adapt and grow initiative for affected sectors (i.e., tourism, aviation, retail, food services) to help employers retain and reskill their employees (Singapore Government Agency, 2020 b).

Transport – As part of the resilience budget announced in March 2020, the Singaporean government provided USD 258 million towards aviation support. This included measures such as rebates on landing and parking charges, as well as rental relief for airlines (Singapore Government Agency, 2020 c). Additionally, in August 2020, the government announced an allocation of USD 138 million to the enhanced aviation support package to extend support to the environmentally intensive aviation sector from November 2020 to March 2021 (Ministry of Transport, 2020).

The government also allocated USD 70 million of point-to-point (P2P) support packages, which allow taxi and private hired car drivers to receive special relief fund payments of USD 220 per vehicle per month until September (KPMG, 2020). To help private bus owners, the government allocated USD 17 million to provide a one-year road tax rebate and a six-month waiver of parking charges at government-managed parking facilities (Singapore Government Agency, 2020 c).

Waste - There are no specific environment related measures identified in the waste sector.

POLICY RECOMMENDATIONS:

Green policy measures represent 0% of Singapore's total stimulus packages and there is a definitive need to extend the share of green stimulus and support a green recovery. The substantial support provided to aviation enables a unique opportunity for the government to attach green conditionalities to measures and encourage decarbonization in the transport sector. Further examples of green support that could be provided to this sector include subsidies for electric vehicles and investment in charging infrastructure, particularly considering Singapore's target to phase out internal combustion engine vehicles by 2040 (CNA, 2020). While environmentally harmful policy measures should be avoided, Singapore can also implement tax reductions for green products and subsidies for R&D as part of its stimulus packages.

Along with the transport sector, Singapore can also provide green stimulus to the industry and energy sectors. Singapore's economy is highly industrialized, and the industrial sector represents 25.2% of GDP and employs 16.5% of the labor force (Lloyds Bank, 2020 c). Singapore can consider introducing green measures in the industrial sector, and in particular the manufacturing sector, which contributes 20.9% to GDP (Department of Statistics Singapore, 2020). Additionally, most of the energy in Singapore comes from extractive resources and providing additional support to renewables through subsidies or infrastructure investment will raise the index score of the country.

4.4 SOUTH KOREA

South Korea approved USD 333.7 billion in fiscal stimulus packages in response to COVID-19.

Composition of stimulus: South Korea's fiscal stimulus contains a variety of measures, including loans and guarantees for business operations, an employment retention support scheme and wage and rent support for small business operations. An additional 'key industries' fund was also introduced, extending USD 33 billion in loans to industries most affected by COVID-19 (Financial Services Commission, 2020). More recently, the Korean government announced substantial support for a 'new deal', which is based on two main policies, the digital new deal and green new deal. It also announced overarching policy support to strengthen employment and a social safety net.

Support for South Korea's new deal drives a comparatively strong index score (-12). The Korean new deal announced by the government allocates significant support to projects with positive environmental outcomes. This demonstrates the government's willingness to pursue a sustainable recovery in response to COVID-19. While carbon-intensive key industries receive support in the form of loans and investments across stimulus packages, a significantly higher contribution is assigned to the Korean new deal that includes green projects. This has substantially improved the index score from the country's underlying environmental performance.

Table 7. Archetype policies announced in South Korea

Policy Measure	Agriculture	Energy	Industry	Transport	Waste
Bailouts with green strings attached					
Green infrastructure investments					
Green R&D subsidies					
Subsidies or tax reductions for green products					
Nature-based solutions					
Conservation and wildlife protection programmes					
Subsidies for environmentally harmful activities					
Environmentally harmful infrastructure investments					
Deregulation of environmental standards					
Environment related bailout without green strings					
Subsidies or tax reductions for environmentally harmful products					

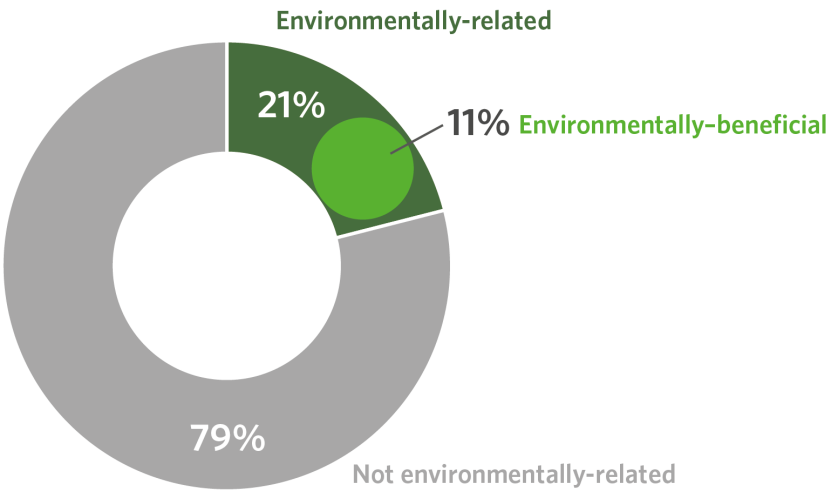
Source: Vivid Economics and CPI analysis

Legend: Positive Dirty Neutral

While 'dirty' policy measures are targeted mainly at the transportation sector (Table 7), South Korea has introduced green policy measures that affect multiple sectors. For instance, green infrastructure investments were tracked across the energy, industry, transport, and waste sectors. The government has also provided green R&D subsidies directed towards the energy sector and conservation and wildlife protection programs in the agricultural sector. Meanwhile, environmentally harmful measures in the form of subsidies, investments, and tax reductions were tracked in the transport sector.

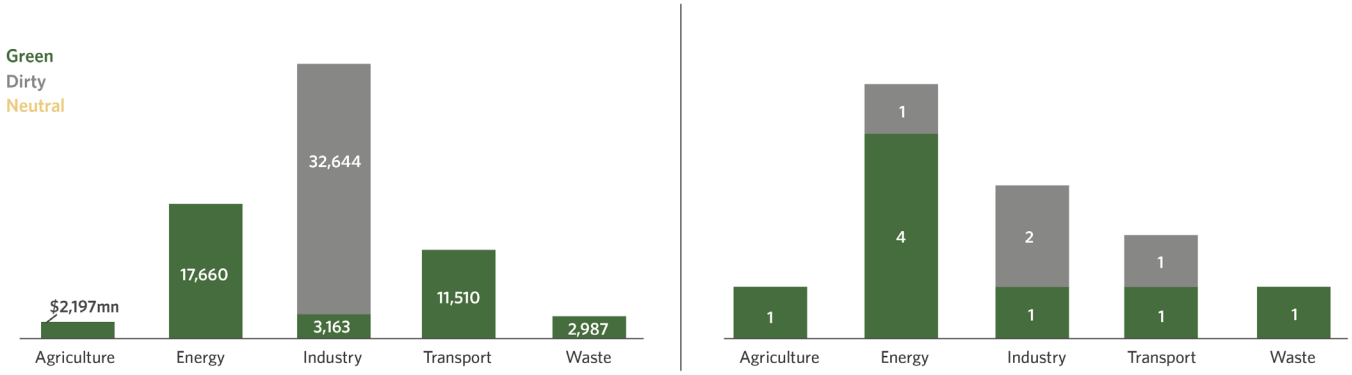
Of South Korea's total stimulus packages, 11% or USD37.5 billion, support environmentally beneficial products or activities. A large portion focuses on the energy (USD 18 billion) and transport sector (USD 12 billion). 79% of stimulus packages are categorized as not environmentally related, and 21% are environmentally related (Figure 10). The former figure includes stimulus packages targeted at non-environmentally relevant activities and outcomes, such as healthcare and social support.

Figure 10. Share of South Korea's stimulus packages that are related to the environment



Source: Vivid Economics and CPI Analysis

Figure 11. Size and number of environmentally relevant stimulus packages in South Korea



Source: Vivid Economics and CPI Analysis

21% or USD 70.1 billion of total stimulus packages from the South Korean government are environmentally relevant (Figure 10). A large portion of this support is channeled through the Korean green new deal, which provides support packages for green outcomes. This support spans multiple sectors with a major focus on the energy sector, including support for zero energy buildings, energy efficiency management, and promoting renewable energy use.

However, most stimulus packages, representing 79% of the total, are not directly related to the environment. This portion includes support for businesses, households, and healthcare. The Korean government introduced a substantial amount of support through the financial stabilization plan to provide economic relief to businesses (USD 102.1 billion) and cash transfers to households at the beginning of the pandemic (USD 8.9 billion). The government further focused on the healthcare sector, which received USD 2 billion to develop a COVID-19 response model and disaster management systems.

Underlying sector context (b_1): Performance on key indicators is insufficient.

South Korea's baseline performance (-42) is insufficient, and additional action and commitment are required to achieve the goals of the Paris Agreement, and even more so if the government aims to achieve its carbon neutrality target by 2050. South Korea's annual GHG emissions and emissions per capita are still on an upward trajectory (GCDL, 2017). South Korea's underlying environmental performance is calculated based on four publicly available environmental indexes. These consider performance against SDG 13 climate change, SDG 14 life below water, and SDG 15 life above land amongst other categories.

Specific environmental measures (b_2):

Agriculture – Agriculture has not been a major focus of South Korea's recovery package. Only one measure supports the sector. The measure was announced as part of the Korean green new deal, which aims to restore terrestrial, marine, and urban ecosystems. This includes the development of urban green spaces, forest sites, restoration of national parks, damaged urban spaces, and tidelands (MoEF, 2020). A positive environmental outcome may be expected as a result of this provision.

Energy – Substantial support has been directed towards the energy sector, amounting to USD 17.7 billion. The financial support to this sector was announced as part of the Korean green new deal. This includes building a smart grid for more efficient energy management.

Further, an eco-friendly generation system will be established in 42 island regions to reduce the emission from diesel-powered generators. The green new deal also includes an initiative to promote renewable energy use and support a fair transition. It aims to promote renewable energy through community benefit sharing schemes and the provision of loans to farming areas and industrial complexes (MoEF, 2020).

Support to the energy sector also involves laying down the foundation for green innovation through R&D and financial support. Financial support is offered to develop remanufacturing technologies to promote resource recycling. Support is also provided to turn public facilities into zero-energy buildings. Renewable energy equipment and high-performance insulation can be used to make public buildings green and energy efficient. Financial support towards the energy sector is expected to result in a net positive impact on the environment (MoEF, 2020).

Industry – Most environmentally relevant measures target the industrial sector. This includes support for seven key industries namely, airlines, shipping, shipbuilding, autos, general machinery, electric power, and communications (Financial Services Commission, 2020). This support is available in the form of loans, payment guarantees, and investments. There is, however, no specified allocation to each industry. It is expected that supporting these highly intensive industries will damage the environment.

There is, however, support for the industrial sector announced as part of the Korean green new deal, which includes promoting prospective businesses to lead in green industrial practices and establish low-carbon and green industrial complexes (MoEF, 2020). The support allocated to industry is expected to have a net negative impact on the environment.

Transport – Support for the transport sector accounts for 3% of South Korea's total stimulus packages. This includes the provision of 1.1 million EVs including passenger cars, buses, and freight vehicles, as well as the installation of 15,000 rapid chargers and 30,000 slow chargers. Additionally, the provision of 200,000 hydrogen vehicles will be supported along with the installation of 450 charging facilities. Fuel cell plants and other infrastructure for the distribution of hydrogen will also be introduced (MoEF, 2020).

Despite the 'green' measures listed above, there are several transport measures that are expected to have a negative impact on the environment. These include fees waived for airline carriers, a reduction in automobile consumption taxes and further support for airlines and shipping as part of the key industry stabilization fund.

Waste – A minor portion of South Korea's stimulus packages was allocated to the waste sector. This includes an investment of USD 3 billion to build a management system for clean and safe water (MoEF, 2020), which is expected to partly impact the waste sector. Further, smart components will be added to 15 sewage treatment plants by 2022, and a smart sewage management project controlling urban flooding and wastewater odor will be piloted at 10 locations until 2024. To improve water quality and prevent leakages, 12 water purification plants for interregional supply and old water supply pipes will be remodeled.

POLICY RECOMMENDATIONS

Green policy measures represent c. 11% of South Korea's total stimulus packages and account for the largest share of green stimulus covered across the five countries. Despite

substantial progress made as part of the green new deal, there is further opportunity for South Korea to green its stimulus, especially in the industrial sector. This sector is the second largest contributor to the economy at 33.0% of GDP and employs 25.0% of the workforce (Lloyds Bank, 2020 d). South Korea has become a high-tech industrialized economy leading activities across electronics, telecommunications, automobile production, chemicals, shipbuilding, and steel (Heritage Foundation, 2020). The support towards these industrial sub-sectors, for instance, through the key industry stabilization fund, is expected to have a negative impact on the environment. To further green its stimulus, South Korea should provide additional green investment to the industrial sector and attach green conditionalities to the financing it provides.

Besides attaching green conditionalities to financing, there is an opportunity for South Korea to support a sustainable recovery through green R&D and subsidies or tax reduction for green products in sectors beyond the energy sector. For example, as part of the support provided under the green new deal to buildings and industry, subsidies for energy efficient equipment can be provided. It is worth noting that the green new deal covers a period up to 2025, and will therefore last longer than stimulus measures implemented as a mere short-term response to the COVID-19 pandemic.

4.5 THE PHILIPPINES

The Philippines approved USD 17.0 billion in fiscal stimulus packages in response to COVID-19.

Composition of stimulus: A large portion of the Philippines' stimulus packages are geared towards supporting businesses, providing social support, and support to the healthcare sector. Support for businesses is extended in the form of credit guarantees for small businesses as well as a net operating loss carryover mechanism to help businesses cope with losses. A significant amount is also deployed via an emergency subsidy program to support households.

The Philippines performed poorly on the index score (-62) in large part due to environmentally harmful stimulus measures announced as part of its recovery packages. There are no quantified green measures announced as part of the fiscal stimulus packages. However, there are several quantified measures in the agriculture and industry sectors that are expected to lead to environmentally harmful outcomes.

Table 8. Archetype policies announced by the Philippines

Policy Measure	Agriculture	Energy	Industry	Transport	Waste
Bailouts with green strings attached					
Green infrastructure investments					
Green R&D subsidies					
Subsidies or tax reductions for green products					
Nature-based solutions					
Conservation and wildlife protection programs					
Subsidies for environmentally harmful activities					
Environmentally harmful infrastructure investments					

Deregulation of environmental standards					
Environment related bailout without green strings					
Subsidies or tax reductions for environmentally harmful products					

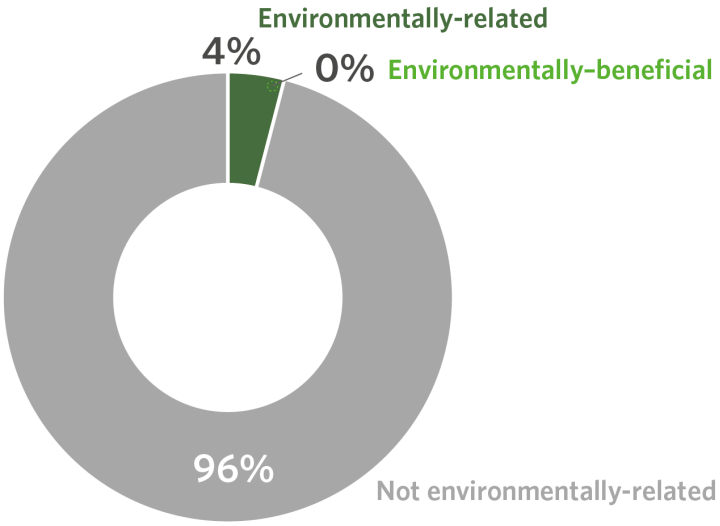
Source: Vivid Economics and CPI analysis

Legend: Positive Dirty Neutral

Most policies announced by the Philippines are 'dirty' measures that have a negative impact on the environment (Table 8). These measures are particularly targeted towards the industrial sector, including investments and subsidies for environmentally harmful activities. Such harmful policies have also been announced with respect to the transportation sector in the form of subsidies for environmentally harmful products, and in the agricultural sector in the form of unconditional bailouts without green strings attached. Meanwhile, policies that are expected to create positive impacts for the environment have been announced only in the energy sector.

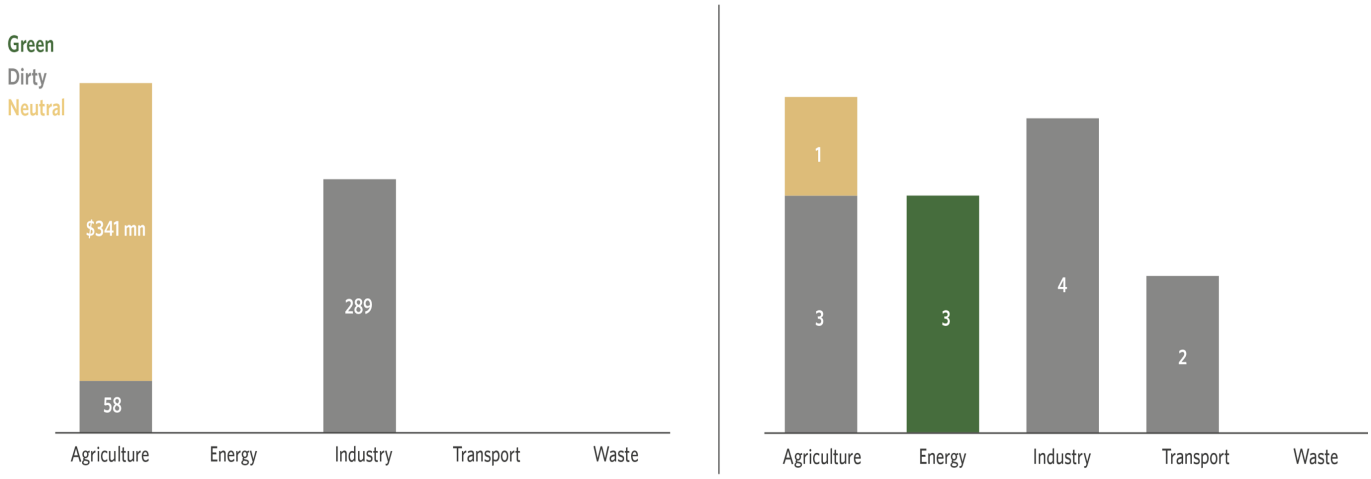
Of the Philippines' total stimulus packages, 0% of quantified measures support environmentally beneficial products or activities. 96% of stimulus packages are categorized as not environmentally related, and only 4% are environmentally related. The former figure includes stimulus packages targeted at non-environmentally relevant activities and outcomes, such as healthcare and social support.

Figure 12. Share of the Philippines' stimulus packages that are related to the environment



Source: Vivid Economics and CPI Analysis

Figure 13. Size and number of environmentally relevant stimulus packages in the Philippines



Source: Vivid Economics and CPI Analysis

Almost all the Philippines' stimulus packages are not environmentally related and represent 96% of total stimulus packages (Figure 12). Most of these non-environmental measures are focused on emergency subsidies for low-income households in the informal sector (USD 4 billion), credit guarantees for affected small businesses (USD 2 billion), and increasing health system capacity (USD 1 billion). The government has also introduced a training program to support employment, and measures to support businesses, including the deferral of payments and filing taxes.

The Philippines has announced three unquantified policy measures that are expected to have a positive impact on the environment (Figure 13b). These policy measures are targeted at the energy sector and include a levy on petroleum products, the reduction of electricity prices for renewables, and payment to renewable energy developers. Meanwhile, there are numbers of 'dirty' policy measures that primarily support the industrial, agricultural and transportation sectors. This includes support for the tourism industry (USD 289 million), credit support for smallholder farmers and fisherfolks (USD 58 million), and deferral charges for the aviation sector.

Underlying sector context (b_1): Performance on key indicators is critically insufficient.

The Philippines' baseline performance (-74) is critically insufficient, which means that the country's current trajectory is not consistent with the Paris Agreement's long-term temperature goal. Current policies are not yet on track to meet the Nationally Determined Contribution (NDC) target of 70% GHG emissions below business-as-usual by 2030. A key issue is the projected growth of coal. The Philippines' energy mix is heavily reliant on fossil-fuel products, where coal, oil and gas account for 69.6% of the country's electricity generation in 2019 (IEA, 2020). The underlying environmental performance in the Philippines is calculated based on four publicly available environmental indexes that consider performance against SDG 13 climate change, SDG 14 life below water, and SDG 15 life above land amongst other categories.

Specific environmental measures (b_2):

Agriculture – 2% of total stimulus packages announced support the agriculture sector. This includes a USD 341 million rice program from the Department of Agriculture (DA) and Department of Trade and Industry (DTI) to boost buffer stocks (ADB, 2020). This measure is classified as 'climate neutral', meaning there is no specific environmental outcome related to the measure. Additionally, support for the agricultural sector includes a USD 58 million survival and recovery aid program by the DA that provides loans for smallholder farmers and fisherfolks (ADB, 2020). This support program is expected to negatively impact the environment due to the absence of sustainable agricultural practices.

Energy – There are no quantified support packages focused on the energy sector as part of the fiscal stimulus. There are, however, three unquantified policy measures that have been introduced by the government to provide economic relief. This includes a 10% levy on imported crude and refined petroleum products (Philippines News Agency, 2020). Further, to provide economic relief for households during the pandemic, the Energy Regulatory Commission (ERC) suspended the pass-on of the feed-in-tariff allowance (FiT-All) charge in electricity bills for one month (ERC, 2020). This resulted in lower electricity bills for c. 19 million electricity consumers in Luzon. This will not affect the economic viability of renewable energy developers, as the FiT fund administrator, the National Transmission Corporation (TransCo) has been ordered to continue with the payment of FiT obligations to FiT-eligible renewable energy developers, and ensure the sustainability of their operations. All these measures are expected to deliver positive environmental outcomes.

Industry – The industrial sector makes up 2% of total stimulus packages, amounting to USD 289 million support for the Tourism Infrastructure and Enterprise Zone Authority (NTRC, 2020). This support is expected to have a negative impact on the environment. Additionally, several unquantified policy measures were announced. This includes the temporary elimination of tariffs and other taxes and fees on qualified manufacturers and suppliers of medicines, medical equipment and devices, or articles needed in the supply chain (ADB, 2020). Tax and duty exemptions were also introduced on imported relief goods, including food and medicine donated to the government and accredited private entities (ADB, 2020).

Finally, the government plans to increase government spending on infrastructure to stimulate the economy through job creation and enhanced connectivity (PhilStar, 2020). The government of the Philippines had already increased its infrastructure spending by 12% in the 2020 budget. This includes an initiative that seeks to modernize highways and urban rail projects as well as upgrade airports and seaports (Reuters, 2020).

Transport – Only two policies were introduced by the government to support the transport sector, and both primarily support the aviation sector. The Department of Transportation (DOTr) instructed the Manila International Airport Authority (MIAA) and the Civil Aviation Authority of the Philippines (CAAP) to extend the airport concessionaires rental holidays for one month. They also recommended deferring rental charges on the succeeding month to cover the enhanced community quarantine period. This provided a cushion for the economic impact of COVID-19 on the environmentally intensive aviation industry (DOTr Republic of Philippines, 2020). Both of these measures are categorized as 'dirty' measures, as they have direct and indirect negative impacts on the climate.

Waste - There are no specific environmentally related measures allocated towards the waste sector.

POLICY RECOMMENDATIONS

Green policy measures represent 0% of the Philippines' total stimulus packages and there is a definitive need to expand the share of green stimulus and support a green recovery. Large opportunities exist particularly in the agriculture and industry sector – two sectors that received the largest share of environmentally-relevant support. The agriculture sector employs a high share of the workforce (22.5% of total employment), while industry contributes 30.7% to GDP (Lloyds Bank, 2020 e). Given the support provided to these sectors, there is a unique opportunity for the government to attach green conditionalities to measures and encourage decarbonization.

While environmentally harmful policy measures ought to be avoided, The Philippines should implement other green policy measures across sectors, including green infrastructure investment and green R&D subsidies. Investing in measures across sectors will help support a green recovery in the Philippines. Further, given the substantial support provided to the agriculture sector, there is an opportunity to include support for nature-based solutions and conservation and wildlife protection programs.

5. SUMMARY OF POLICY RECOMMENDATIONS

To ensure a sustainable recovery across the five Asian countries, there is a definitive need for governments to integrate green considerations in the design of COVID-19 stimulus packages. Based on the announcements made by governments and stimulus packages tracked in the index, it is obvious that countries are not doing enough to focus on a long-term sustainable recovery. As such, the countries in the Asian region should consider the following recommendations to design further stimulus packages.

First, countries should increase the size of stimulus packages that support environmentally positive outcomes across sectors. One way to increase support is by introducing measures across sectors that focus on a long-term sustainable recovery and provide better economic returns and wider social benefits than policies that deplete natural resources (Hepburn et al., 2020). The existence of substantial opportunities in supporting sectors can play a major role in country economies. Providing green support to these sectors can help increase the effectiveness of governments' stimulus packages to achieve the twin goals of economic recovery and long-term sustainable growth.

Second, implementing green conditionalities should be encouraged when providing support and bailouts to environmentally damaging activities. The majority of the five Asian countries provided bailouts for the aviation sector, but none of them has introduced green conditionalities as part of the bailout. As one of the hard-hit sectors, a long-term and sustainable aviation recovery should be considered rather than focusing only on short-term measures. A good international example to build off is the Air France bailout, where climate conditions, such as emission reductions, improving fleet efficiency, and fuel mandates were included as part of the package (Transport & Envionment, 2020).

Third, countries should introduce a broader range of green policy measures. Tax reductions for green products and subsidies for R&D were underutilized in the five Asian countries covered in our assessment. Subsidies for green products can provide economic relief and support positive outcomes for the environment. International examples include Germany's support cutting the renewable energy levy on electricity bills and the United Kingdom's green R&D support in the aerospace sector. Meanwhile, conservation or wildlife programs are particularly important for countries such as Indonesia to preserve ecosystems, protect their natural capital and promote biodiversity.

While countries that pursue steps to implement these recommendations can pave the way for a sustainable recovery, the challenges they face in relation to the COVID-19 pandemic are unique. For example, those countries that are harder hit may need to expend greater effort to support the healthcare sector, potentially at the expense of other measures. Future iterations of this work could take into consideration such underlying conditions. They can also consider long-run multipliers, or the jobs generated per dollar of spending, to provide a more granular account of the impact of stimulus measures on the economy.

6. CONCLUSION

Governments around the world are transitioning from the rescue phase of the COVID-19 response to the recovery phase. They must lay the foundations for longer term sustainable growth as they do so. The typical response to economic crises, and COVID-19 in particular, tends to follow a three-phase approach. As the crisis took hold of international and national economies, restrictions on the movement of goods and people caused significant disruption to the usual patterns of production and consumption. This caused all countries to experience a major negative shock to their economies. In the early stages of the crisis, governments were rightly preoccupied with containing the economic fallout, offering emergency cash flow support to businesses and temporary protection to household income. Once the freefall of national economies had decelerated, and the severity of the crisis became apparent, governments began to shift their attention to the recovery phase, prioritizing policies which supported a rapid, jobs-led rebound. This recovery stage may last for years. However, it is vital that the recovery phase lays the foundations for sustainable, productivity-led growth once the economy returns to full employment.

Long term sustainable economic growth is driven by productive investment in broad-based measures of capital. Growth models which rely on the depletion of natural capital are not sustainable. Once economies return to full employment, productivity and achieving higher levels of economic production for a given set of inputs, must be the engine of growth. Productivity depends on investment in broad forms of economic capital. Economies which invest in physical, human, natural and social capital will see rising income per capita, whereas growth that depends on the depletion of natural resources will fade in the long run.

Green stimulus measures have been proven to provide both short term economic gains and build national wealth in the long term compared to business-as-usual stimulus measures. There is a wealth of evidence demonstrating that green recovery measures such as investment in renewable energy, low emission transport, energy efficiency and nature-based mitigation and adaptation solutions can provide higher employment intensity. They also enable better financial and economic returns and wider social benefits than policies which seek to prop up archaic, polluting means of production. Such measures offer governments a win-win solution, by maximizing the stimulus effects in the short term and mitigating environmental degradation in the long term.

COVID-19 represents a unique opportunity to rewrite the future. The need for Keynesian-style fiscal stimulus has near-universal acceptance. Channeling these stimulus measures to greener technologies can support a sharp bounce back whilst unlocking innovation and productivity gains in newer technologies that will support future sustainable growth. But mobilizing large amounts of public finance alone will not be sufficient. Public funds must crowd in, rather than out, private investment. Regulatory and structural reforms must accompany financial flows. These reforms include the removal of subsidies to fossil fuels, integration of renewable energy onto national grids and access to finance for energy efficiency investments and retrofits. It also includes investment in the human capital that

will research, finance and maintain future technologies, and a clear national framework for sustainable growth.

The results of the index indicate that the five Asian countries covered in the analysis are not currently doing enough to incorporate climate conditions into their fiscal stimulus responses.

While current performance across countries varies, South Korea is the best performer, driven by the government's significant support for green policy measures under its green new deal. However, all five countries need to do more to meet the goals of the Paris Agreement. Only by implementing support packages that maximize stimulus effects in the short term, and mitigate environmental degradation in the long term can countries lay the foundations for long-term sustainable growth.

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8. APPENDIX

METHODOLOGY

The assessment of green stimulus packages in this report is based on the Greenness of Stimulus Index (GSI) methodology developed by Vivid Economics (Vivid Economics, 2020). The index assesses the effectiveness of COVID-19 stimulus efforts in ensuring an economic recovery that takes advantage of sustainable growth opportunities and builds resilience through the protection of the climate and biodiversity. The GSI examines the environmental orientation of fiscal stimulus packages based on the total funds flowing into environmentally intensive sectors, the existing green orientation of those sectors (i.e. share of renewables in the energy sector), and the green orientation of new stimulus measures.

The index is constructed by combining the flow of stimulus into five key sectors with an indicator of each sector's environmental impact, the latter accounting for both historical trends and specific measures taken under the country's stimulus. The impact indicator assigns a greenness value (positive or negative) to each sector for every country. The overall GSI is an indicator of the total fiscal spending in response to COVID-19 categorised as having either a positive or negative impact on the environment. The final index for each country is an average of sectoral impact, normalised to a scale of -100 to 100. The five sectors are chosen for their historical impact on climate and environment: agriculture, energy, industry, waste, and transport.

Two components of the stimulus were analysed: the size of the fiscal flow (F value) to each environmentally intensive sector, and the overall impact of that stimulus on climate and environment (B value). Each environment-specific stimulus measure is categorised against positive and negative archetype interventions based on its sector (agriculture, energy, industry, transport, waste).

The B-value is a scaled indicator from -1 to 1 which rates sectors by the level of overall greenness from most pro-environmental at 1 to least environmental at -1. The B value differentiates between underlying sector context (b1) and specific environmental measures (b2). b1 refers to the baseline evaluation of each country using 'off the shelf' environmental indicators. This captures the country's underlying environmental performance. This includes an evaluation of its rating on multiple environmental performance indicators, and the overall country's climate target progression. b2 is a consideration of any COVID-19 response-specific data we have found that either supports or undermines the baseline value. It takes a negative value if stimulus support boosts harmful activities without regard to environmental targets or deregulates to roll back environmental conditions. It takes a positive value if stimulus support advances pro-environmental programmes or includes conditions on environmental performance. Both quantified stimulus measures (e.g. an amount of funding designated for a certain project) and unquantified stimulus measures (e.g. rollbacks of environmental regulations that would theoretically reduce compliance costs for firms) can contribute to b2 values.

Table 9 – Detailed summary of positive policy archetypes

Sector	Archetype	Description
Agriculture	Bailouts with green strings attached	Requiring limits to emissions or waste in return for direct funding.
	Nature-based solutions	Afforestation and reforestation programmes, restoration of wetlands, or forest management investments.
	Loans and grants for green investments	Direct loans or tax rebates and subsidies, eg for high-efficiency water irrigation systems.
	Conservation and wildlife protection programmes	Making the sale of endangered animals illegal.
Energy	Bailouts with green strings attached	Direct loans and guarantees for oil, gas and coal with commitments for improvement on emissions or energy efficiency.
	Loan and grants for green investments	Direct investment in the form of loans or grants towards renewable energy including solar, wind, biofuels and hydrogen.
	Green R&D subsidies	Grants for research institutes, academic institutes, and private firms to develop new renewable energy technologies and systems.
	Subsidies or tax reductions for green products	Extending tax rebates to households for rooftop solar, or making green energy products including utility tariffs with renewable targets available at a subsidised cost.
Industry	Bailouts with green strings attached	Conditions on firms relating to emissions, pollution, supply chain requirements, or compliance with voluntary agreements or reporting standards.
	Loan and grants for green investments	Low carbon or low emissions public infrastructure including CCS projects for industry, energy efficiency programs for existing buildings, investment in the hydrogen economy and electrification of industry.
	Green R&D subsidies	Direct grants or loans available to research institutions, academic institutions, and private firms to develop low-carbon industrial technologies such as CCS, hydrogen, and electrification.
	Subsidies or tax reductions for green products	Taxes for the use of primary materials in supply chain, subsidies offered to firms that ensure compliance in their supply chains.
Transport	Bailouts with green strings attached	Conditional bailouts to air carriers, car manufacturers, or shipping for emissions reduction pledges or commitment to use biofuel or renewable fuel standards in exchange for loans.
	Loan and grants for green investments	Building public infrastructure projects including cycleways, low-carbon rail or other mass transit, public walkways, and railroads with consideration towards climate mitigation and adaptation.
	Green R&D subsidies	Loans or research grants available to academic institutions, research centres, think tanks and private firms to develop electric vehicles, hydrogen vehicles, and low-carbon fuel alternatives for shipping, aviation and vehicle transport.
	Subsidies or tax reductions for green products	Tax rebates available to consumers for EVs, subsidies for low carbon transportation including light rail, developing HOV lanes or low-emission zones fees.

Waste	Bailouts with green strings attached	Tying bailouts to commitments to shift from waste incineration to more sustainable waste management strategies.
	Loan and grants for green investments	Direct investment in recycling, Municipal Solid Waste, waste-to-energy, or methane recapture on existing facilities or new waste management facilities.
	Green R&D subsidies	Loans or grants for academic institutions, research centres, think tanks, or private firms for the development of advanced waste management include waste-to-energy and methane recapture technologies.
	Subsidies or tax reductions for green products	Tax reductions or rebates for recycling, composting including buy-back programs or subsidisation of environmental producer responsibility (EPR) programs.

Note: Definition includes examples but may include additional and alternative programs.

Source: Vivid Economics

Table 10 – Detailed summary of negative policy archetypes

Sector	Archetype	Description
Agriculture	Subsidies or waived fees for environmentally harmful activities	Waiving, reducing, or directly subsidizing fees for point and non-point source pollution in agriculture, logging, and timber. Removal of conservation or preservation laws around forest management and access.
	Deregulation of environmental standards	Removing, repealing, increasing the quantity of pollutants allowed or extending the compliance period for pollution, emissions, or land use change in agriculture and forestry sectors.
	Environmentally related bailout without green strings	Loans, guarantees or grants provided to agricultural producers including farmers, fishers and cattle ranchers that do not require improvement in sustainable practices.
	Subsidies or tax reductions for environmentally harmful products	Introducing subsidies for high emissions agricultural products including cattle and sheep, reducing existing carbon taxes or environmental taxes on high-impact agriculture and harvested wood products.
Energy	Subsidies or waived fees for environmentally harmful activities	Subsidising utilities, producers, or developers of oil and gas or coal production plants, covering the cost of pollution taxes including carbon taxes, delaying the development or deployment of emissions taxes for energy producers.
	Environmentally harmful infrastructure investments	Direct investment in coal or oil and gas sector, or loans, grants and guarantees made available to private firms exclusively to build oil and gas or coal production plants.
	Deregulation of environmental standards	Removal or elimination of carbon trading schemes, increasing the cap on emissions or pollution trading schemes, decreasing the number of firms required to participate in emissions trading schemes, removing mandates for environmental reporting or disclosure, suspending enforcement of environmental regulation.
	Environmentally related bailout without green strings	Extending loans, grants, guarantees, or other financing to oil and gas or coal producers without conditions on emissions intensity, emissions output, or energy mix.
	Subsidies or tax reductions for environmentally harmful products	Subsidies for consumers or producers of oil and gas and coal including diesel, home electricity, and utilities and reducing existing fuel taxes or carbon taxes.

Industry	Subsidies or waived fees for environmentally harmful activities	Waiving permitting and environmentally-related fees for mining, construction or other heavy industrial sectors.
	Environmentally harmful infrastructure investments	Direct government investment in high emissions public infrastructure including factories, data centres, and non-energy efficient building stock or heating systems
	Deregulation of environmental standards	Removal of reporting or mandatory disclosure of environmental impacts by industrial firms, suspension of enforcement of environmental laws and regulations, removal of permit or use requirements for industry, fast-tracking of environmentally intensive industrial project development by removing environmental assessments.
	Environmentally related bailout without green strings	Direct unconditional support through grants, loans, guarantees, or other financial mechanisms to high-emissions industrial sectors without requirements for efficiency, energy use, or reporting improvements.
	Subsidies or tax reductions for environmentally harmful products	Reducing taxes on environmentally intensive products including manufactured goods and chemicals which have a high environmental impact.
Transport	Subsidies or waived fees for environmentally harmful activities	Direct subsidisation of combustion engines made available to consumers or producers, removal or reduction of the fees related to tailpipe emissions or fuel taxes.
	Environmentally harmful infrastructure investments	Direct government investment into infrastructure supporting polluting transport, such as airports or roads.
	Deregulation of environmental standards	Removal of regulations governing the transport sector, such as for ships and aviation and largely relating to emissions.
	Environmentally related bailout without green strings	Direct unconditional support through grants, loans, guarantees, or other financial mechanisms to high emissions transport providers, such as airlines.
	Subsidies or tax reductions for environmentally harmful products	Reducing taxes on the sale of high-polluting products such as automobiles, with no preferential treatment of 'green' alternatives such as electric vehicles.
Waste	Subsidies or waived fees for environmentally harmful activities	The removal of fees relating to the environmentally harmful disposal or treatment of waste.
	Environmentally harmful infrastructure investments	Investments into waste infrastructure that does not improve the environmental impact of waste disposal or treatment.
	Deregulation of environmental standards	Removal of regulations governing the disposal and/or treatment of waste.
	Environmentally related bailout without green strings	Extending bailouts to waste industries which openly incinerate or do not use methane recapture, or other advanced waste management systems without requirements for meeting environmental reporting standards.

Note: Definition includes examples but may include additional and alternative programs.

Source: Vivid Economics

The b_2 score is calculated based on the environmental impact of the policy archetype and a specific assessment of the stimulus measure, based on its severity and coverage:

- **Severity:** Each measure is rated on severity from 1 to 5, with one as the least severe and five as the most severe. The impacts on the environment may be severe in either positive or negative trajectories. Severity depends on three components: the irreversibility of environmental damage or gain, the concentration or diffusion of impact on environmental and natural systems, and the level of lock-in to either positive or negative development resulting from the policy.

  An example of a severe negative policy (5) is direct investment in new coal or oil/ gas technologies. These projects directly emit carbon into the atmosphere, causing irreversible damage. Pollution from these projects disperses into the air becoming a global externality. Coal and oil and gas assets lock in countries to environmentally harmful trajectories and risk becoming stranded assets.

  An example of a somewhat severe green policy (3) is a subsidy for electric vehicles. The avoided emissions by using EV reduces the amount of irreversible emissions in the atmosphere. Using electricity instead of oil avoids direct air pollution. EV uptake encourages increased adoption through positive externalities associated with a network of ownership, encouraging more uptake and subsequently a green lock in effect.

  An example of a less severe negative policy (1) is a temporary fee suspension for environmentally harmful activities, but subsequently resuming fee collection.

- **Coverage:** Each measure is rated on the level of coverage from 1 to 5, with one as the least amount of coverage and five as the highest coverage. Coverage of a policy is determined by level of directness, the number of subsectors or individual firms in a sector that will be impacted, and the temporal coverage (how far into the future will this positive or negative policy exist).

  An example of a high coverage negative policy (5) is the suspension of all environmental regulations on industry. Removing the monitoring, enforcement and compliance of environmental standards would extend coverage to all firms in the sector, having both direct effects and indirect effects.

  An example of a moderate coverage green policy (3) is a ban on wildlife trade. A ban on wildlife trade is a permanent change in policy and is likely to have positive impacts on the specific species no longer traded, and indirectly on other species that share that habitat. The wildlife ban will not affect parts of the agriculture and forestry sector.

  An example of a low coverage green policy (1) is a climate-related financial disclosure requirement for firms generating a certain quantity of revenue. Requiring firms that have revenue over D100 million or another equivalent excludes many small and medium-sized firms, resulting in a policy with incomplete sectoral coverage.

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