

Green Stimulus Index

An assessment of the orientation of COVID-19 stimulus in relation to climate change, biodiversity and other environmental impacts

The Green Stimulus Index (GSI) assesses the effectiveness of the COVID-19 stimulus efforts in ensuring an economic recovery that takes advantage of sustainable growth opportunities, and is resilient to climate and biodiversity. It provides a method to gauge the current impact of the COVID-19 responses, to track countries' progress over time, and to identify and recommend measures for improving the effectiveness of those responses. This assessment is updated regularly – please use the latest version.

This note is part of a series looking at *economic responses to COVID-19*. Other notes relate to corporate bailouts, international assistance flows into developing countries and job-creating fiscal stimulus. This work was undertaken by the Finance for Biodiversity Initiative (F4B) and funded by the MAVA Foundation.

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Executive summary

Across 17 major economies, announced economic stimulus packages will pump approximately USD 3.5 trillion directly into sectors that have a large and lasting impact on nature. These flows present an opportunity to support these sectors through the current COVID-19 crisis, while increasing their sustainability and resilience in the face of the parallel climate and biodiversity crises. **So far, government responses have largely failed to harness this opportunity, disregarding the broader sustainability and resilience impacts of their actions.**

In 13 of the 17 countries considered, potentially damaging flows outweigh those supporting nature. Of the more developed countries, the United States stands out as the largest scale risk, with \$479 billion USD providing unrestricted support to sectors proven to be environmentally harmful in the past amidst several rollbacks on environmental regulation. Australia, South Korea, Japan, Germany and Spain join them on the negative side, owing largely to the existing negative impacts of their environmentally-intensive sectors, and their lack of decisive action to ensure stimulus supports a more sustainable transition.

Emerging economies dependent on environmentally-intensive sectors and without strong regulatory systems have perhaps the hardest task ahead. China, India and Mexico have announced measures that will have negative environmental impacts, while South Africa and Russia's stimulus is largely reinforcing their existing 'brown' trajectories in environmentally-intensive sectors. Indonesia and Brazil are pushing response efforts likely to reinforce brown trajectories dominated by high carbon industry and energy sectors and unsustainable agriculture practices. To manage through the crisis, while protecting and rebuilding nature, international support must be combined with environmental provisions hardwired into their stimulus measures.

Packages in parts of Western Europe and Canada offer more promise with at least a portion of spending likely to be nature-friendly. France and the UK benefit from less environmentally-intensive economies and their decisions to retain more stringent regulations and policies. However, while the UK's stimulus package is small, environmentally relevant spending in France is much higher. Canada follows suit with several inherently green measures but is mired by an equally large set of destructive measures.

The 'Next Generation EU' recovery package is set to be the most green stimulus package to date. Initial proposals suggest substantial and sustained positive impacts for the climate and nature with a host of specifically targeted measures including policies to reduce dependence on fossil fuels, enhance energy

efficiency, invest in preserving and restoring natural capital, among others. However, as the package is yet to be approved by the European Parliament, the Commission's index score remains provisional.

Green Stimulus Index



Source: Vivid Economics using a variety of sources, consult Annex II for the entire list of sources

Note: The European Commission score is calculated assuming that the proposed 'Next Generation EU' recovery package and related environmental measures are implemented in full. Its score is provisional. Updated on June 3, 2020.

Regardless of economic structure or past environmental performance, each country has the opportunity to steer their stimulus package to support nature and the climate. Looking across announcements to date, a clear set of tools are emerging that provide lasting and immediate economic benefits while also accelerating the transition to a more sustainable future. These fall into the following broad categories:

- Corporate bailouts with green strings attached
- Investment in nature-based solutions and sustainable agriculture
- Loan and grants for green investments
- Subsidies or tax reductions for green products, and the removal of brown subsidies.
- Green R&D subsidies
- Reinforcing environmental regulation, and avoiding deregulation

Our social and economic fate is inextricably linked to that of nature. Governments have the opportunity and responsibility to ensure short-term emergency measures lead to a better more resilient future. Nature has suffered a pandemic-like crisis for over a century. Human activity has accelerated the rate at which plant and animal species are becoming extinct by a factor of over 100, and paved the way for a growing climate crisis. To date, the global economic response to the COVID-19 crisis is set to reinforce this trend. However, **there is an opportunity to act decisively now to prevent irreversible damage to nature and dramatically lower future costs of protecting the planet.** In solving one crisis, we cannot ignore another.

New to this release

This update of the index incorporates new information that has become available since the previous release. The latest announcements on stimulus flows, deregulation and environmental policies have been incorporated into the analysis, with the following highlights:

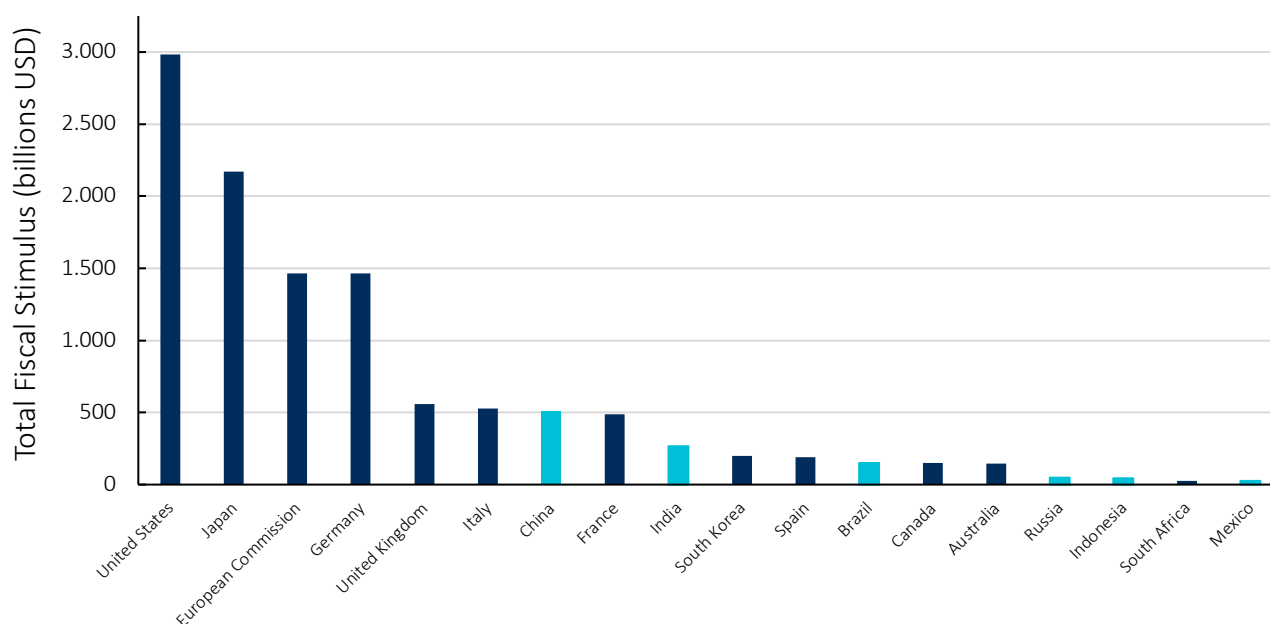
- South Africa and the European Commission have been added to the index.
- Many countries increased the size of their total stimulus through the introduction of new packages and expansion of existing measures. Most notably, these include Japan (\$1.08 trillion to \$2.17 trillion), China (\$366 billion to \$507 billion) and Germany¹ (\$1.36 trillion to \$1.46 trillion).
- The quantity of stimulus that we identify as environmentally relevant increased from \$2.2 trillion to \$3.5 trillion. This is partly due to better information availability and new announcements of support for businesses but also the inclusion of the European Commission's proposed environmentally-heavy stimulus package.
- Among others, new environment specific announcements include the removal of energy efficiency and emissions intensity targets in China, decreased protection against deforestation in Brazil, and new airline bailouts in Germany, Italy, Spain and Australia. The 'Next Generation EU' recovery package is expected to include a host of 'green' policy measures. Please refer to the Country notes in Annex II for more information.

¹ This number does not include Chancellor Merkel's announcement made on a late night press conference on June 3rd. She announced that the German government has agreed on a 130 billion euro recovery package for 2020/21 to help the economy grapple with the economic downturn caused by the COVID-19 crisis.

Announced Stimulus Packages

Over the past months the world has witnessed unprecedented government financial interventions in response to COVID-19. Economic stimulus packages announced to date include a range of fiscal mechanisms including bailouts and loans. For the countries that we have analysed, current stimulus packages vary from \$26 billion to \$2.98 trillion, with Mexico as the smallest and the United States as the largest.

Figure 1 Announced COVID response fiscal stimulus package by country



Source: Vivid Economics using IMF COVID response tracker and Oxford Coronavirus Government response tracker.

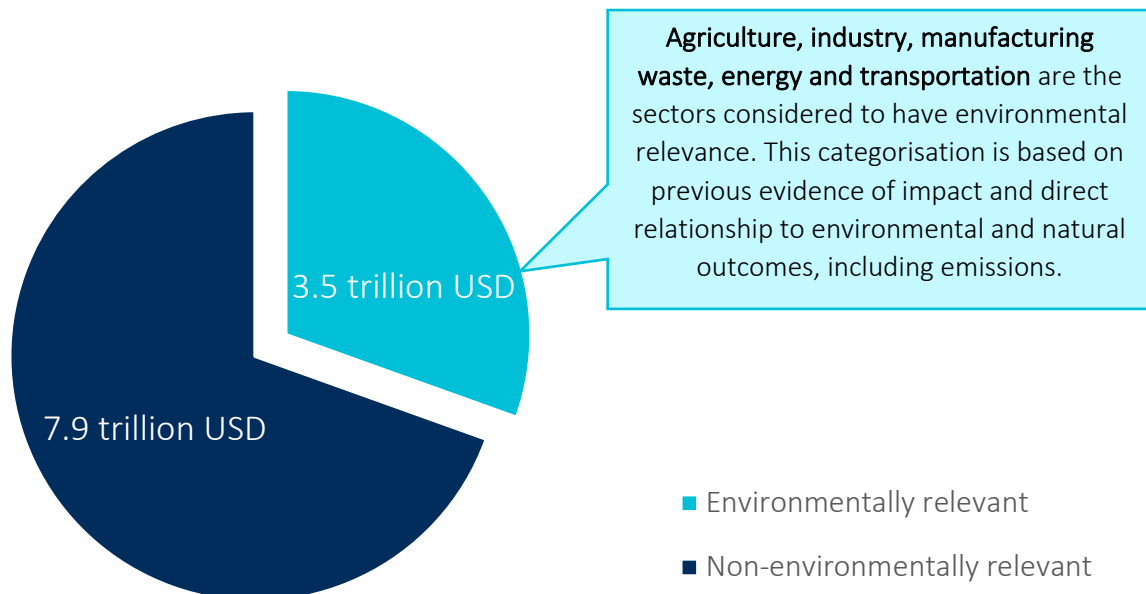
Note: Dark blue represents developed and light blue represents developing countries. Assumes the proposed 'Next Generation EU' recovery package is implemented in full. Does not include Germany's latest 130 billion announcement. Updated on June 3, 2020.

Governments have rightly put people first and focused on the immediate implications of the crisis – with money channelled directly to households and those on the frontline. Governments have focused on securing employment, providing unemployment and cash benefits to workers and households, and providing liquidity to businesses across the economy.

At the same time, roughly \$3.5 USD trillion in announced stimulus, 30% of the total, will flow into sectors with a high environmental impact – whether on climate change, biodiversity or local pollution.² This proportion will likely increase as stimulus efforts deepen for long-term recovery. This critical funding should allow countries to respond to the COVID crisis without risking public health, job security, fiscal stability and environmental sustainability. Economic stimulus provided to sectors with an environmental impact may be directed towards clean energy and low carbon development. It is worth noting that transport and industry are two sectors that have been hit hard by the crisis and are receiving substantial support from governments, and also have a large environmental impact.

² In defining the amount of stimulus flowing through to sectors with a high environmental impact, the index has removed any measures which are purely devised to provide income support to workers (e.g. furlough or paycheck protection programmes). In some cases, insufficient information was available.

Figure 2 Sum of global fiscal stimulus policies of countries considered in our analysis



Source: Vivid Economics using a variety of sources

Note: Updated on June 3, 2020

The Green Stimulus Index

The Green Stimulus Index examines 17 economies³ and the European Commission to assess the green or brown orientation of their stimulus funding based on:

- the scale of funds flowing into environmentally intensive sectors
- the existing green orientation of those sectors, and
- the efforts which steer stimulus toward (or away from) pro-environmental recovery.

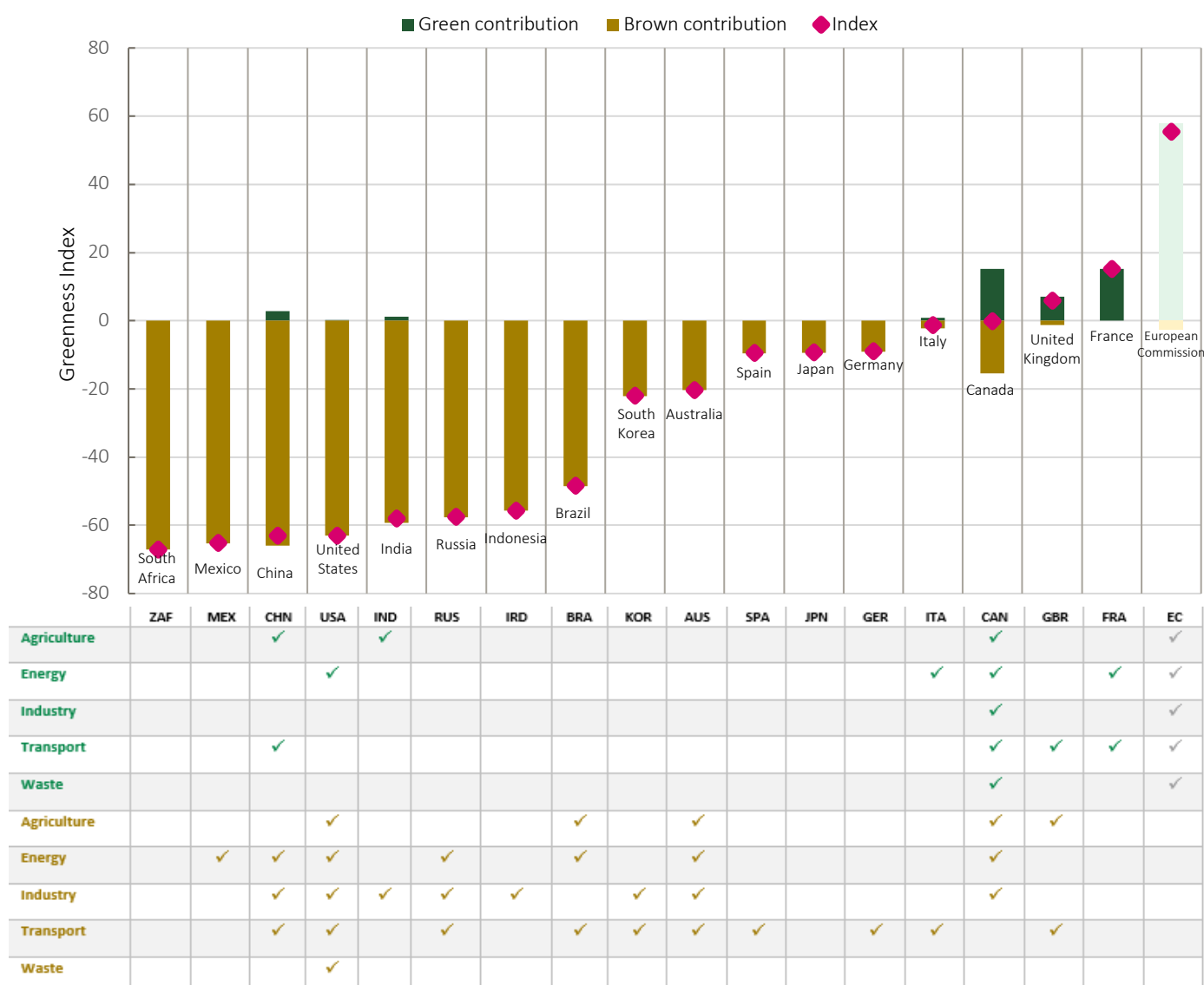
To date, much of this stimulus funding is set to flow into existing sectors with no attempt to look forward and support the medium and long-term sustainability and resilience of these sectors. There remains significant scope for governments to more pro-actively ensure this funding strengthens sustainability and resilience.

In countries with inadequate existing climate and biodiversity policies, these flows are likely to reinforce unsustainable trajectories of high emissions and loss of nature. All countries have entered this crisis with large sectors of their economies still contributing significantly to greenhouse gas emissions, air and water pollution, and loss of biodiversity. Many countries also lack concrete policies to facilitate a transition in those sectors to a more low carbon and resilient trajectory. As a result, current stimulus into those sectors risks reinforcing a status quo that is significantly tilted toward brown, amplifying risks to citizens' welfare and the natural world in the near and long term.

Where targeted efforts have occurred to specifically steer funding, they have more often removed incentives toward sustainability, although a few have added green incentives. The most significant examples of COVID response measures that steer environmentally intensive sectors include significant deregulation, subsidies or tax cuts to activities likely to worsen environmental outcomes, including large bailouts to the aviation sector. Only a few efforts have been made to support some improvements in the environmental sustainability of the industry, energy, agriculture and transport sectors.

³ Our analysis includes ten developed countries and seven developing countries, plus the European Commission.

Figure 3 Green Stimulus Index, scaled (-100, 100)



Source: Vivid Economics using a variety of sources, consult Annex II for the entire list of sources

Note: The European Commission score is calculated assuming that the proposed 'Next Generation EU' recovery package and related environmental measures are implemented in full. Its score is provisional. Updated on June 3, 2020.

The negative score in the US is particularly worrying, as it is also the country directing by far the most stimulus money (in absolute terms) towards environmentally-related sectors. The results in the US are driven by a combination of poor underlying (pre-COVID) policies as well as specific measures which further undermine a shift to sustainability. The US has a current policy mix that means stimulus funds will be generally more tilted toward reinforcing a brown trajectory, and this has been made much worse by specific stimulus measures including environmental deregulation in energy, industry, manufacturing, transportation and agriculture, and the bailout of the aviation industry without green conditionality.

China too is particularly worrying, given the size of its economy and the negative signal it might send across developing Asia and the wider Belt and Road countries. China has a relatively brown sector base and poor underlying policy environment, which means its stimulus efforts will largely reinforce a brown trajectory

unless concerted effort is made to avoid this. As a response to COVID, the government relaxed environmental reporting in key industries like transportation and industry, streamlined permits for coal mining and extended subsidies for fossil fuel vehicles. It is worth mentioning that the government is also expanding an EV subsidy scheme, which the index scores positively even though power mostly comes from coal. The government decided to ban wildlife trading for specific animal species, which gives it a significant positive boost to the index score.

Indonesia and Brazil have demonstrated historically less aggressive environmental policies and large land use and forest eco-system impacts. These countries are heavy agriculture producers, and without strict environmental policies and enforcement, these sectors remain on a trajectory of high emissions intensity and large biodiversity destruction. Brazil has often encountered major issues in enforcing forest and land use policies. This situation has aggravated during the COVID response through a Presidential decree relaxing land use permits and enforcement. Indonesia had loosened permitting restrictions on timber producers to stimulate economic activity, but this has since been reversed, resulting in an improved index score. Indonesia has, however, passed a law that deregulated the mining industry. Such policies risk undermining previous commitments to reduce greenhouse gas emissions, preserve nature and strengthen natural capital, while providing very limited (if any) benefits in terms of immediate emergency economic stimulus.

Russia, Mexico and South Africa are heavy fossil fuel energy producers, and their response to COVID has reinforced their brown orientation. Russia relies heavily on the oil and gas sector for exports and overall economic output, and its response to COVID has supported that sector further. Since the economic slowdown, the government has propped up oil prices domestically and continued to subsidise the energy and industrial sector without green conditionality or targeted investments in low carbon developments or programs. Because Russia's economic activity is dominated by historically 'brown' sectors and it has not made an attempt to tighten fiscal flows to these sectors, the country's performance is low in our index. Mexico has announced considerable funding for its energy sector, with unconditional support directed towards the refining industry. While South Africa has announced little of specific environmental significance, its support is likely to reinforce 'brown' outcomes in the country's emissions-intensive sectors.

India's \$266 billion USD appears most likely to support the current brown trajectory of its manufacturing and energy industries. Despite the announcement of funding for afforestation, a large proportion of India's stimulus is directed at supporting environmentally-intensive industries. A reduction in the stringency of monitoring and approval of environmentally harmful projects risks raising the impact of India's 'brown' industries.

With a more pro-climate baseline across sectors, Japan, Australia, Canada, and South Korea also lean brown but to a lesser magnitude than developing countries with less institutional commitment. They benefit from having somewhat better underlying (pre-COVID) policies and environmental performance, but are channelling funds into a mix of sectors, with significant risks of reinforcing existing brown trajectories. They have also not put in place decisive measures to assure a greener orientation. Japan and Australia have yet to take measures that ensure stimulus will not undermine the sustainability and resilience of their economies, with Australia also waiving fees in for some environmentally harmful sectors. Strong green commitments by South Korea's newly re-elected government hold some promise for greater policy action over the coming weeks but are not part of the index yet. Canada on the other hand has deployed a mix of targeted policies, both positive and negative, resulting in a small negative score.

The EU countries analysed – Italy, Spain, France, Germany and the UK are more neutral in their overall orientation, but show specific nuances worth noting.

- Spain is the most negative of the EU countries examined given many environmentally-intensive sectors receiving stimulus risk reinforcing brown behaviour. Despite reported announcements of ambitious green plans, there is no evidence of environmental conditionality having been implemented to stimulus packages to date, and the government has funded a \$1.1 billion USD airline bailout.
- Germany – despite announcements that it wants to ensure a green recovery – has a negative index score owing to the environmental intensiveness of its economy, good (but not exceptional) underlying policies, and lack of a clear action to date ensuring its stimulus supports an accelerated trajectory toward greater sustainability and resilience.
- Italy is broadly neutral. It has relatively good underlying policies (similar to other EU countries), but also some environmentally intensive sectors that risk being reinforced. Italy's bailout of airline Alitalia drives its index score below zero.
- France and the UK generally benefit from less environmentally intensive sectors and above average policy measures. The UK has a mix of specific 'green' and 'brown' measures, with France more 'green' across the board; the UK's bailout of the aviation sector without green conditionality contrasts to France, who was successful in implementing green conditionality in the bailout of Air France-KLM. Even with the highest score of the 17 countries, France still is only slightly above neutral, and improved performance on sustainability and resilience is still possible.

The European Commission's own stimulus package is the most promising prospective environmental impact. The proposed \$837 billion USD (€750 billion) 'Next Generation EU' recovery package is expected to include a range of 'green' measures aimed at supporting the 'European Green Deal'. Specific measures include those to improve the sustainability of agriculture, funding for renewable energy and support for electric vehicle sales and infrastructure. Financial support to member states is also expected to be accompanied by 'do no harm' environmental conditions. If implemented in full, these environmental initiatives will have a substantial positive environmental impact, as indicated by the EU's index score.

Archetype green measures

Hundreds of policies have been announced worldwide, but only some deliver environmental and economic benefits. Below is a set of examples of such measures that have been implemented in different sectors worldwide (more details in Annex 1):

- **Corporate bailouts with green strings attached:** some governments view bailouts as public investments that deliver public benefits. While these bailouts must clearly deliver immediate benefits in terms of stability of public services, employment and supply chains, they can also secure a transition to sustainable and resilient growth. Bailouts can achieve this by conditioning public support on implementing specific environmental improvements to operations and procurement, and by committing to high-integrity environmental offsets, enhanced nature-related financial disclosures, and increased supply chain transparency. The recent agreements with Austrian Airlines and Air France demonstrate how governments and corporations can meet on common ground.
- **Investment in nature based solutions and sustainable agriculture:** Land use investments – such as afforestation on degraded land, sustainable agricultural practices, wildfire prevention infrastructure, efficient water irrigation systems – are ideally suited to tackle the ongoing crisis because they can be deployed on a timely fashion, are temporary, provide stimulus to particularly vulnerable populations and are resilient to future lockdowns.

- **Loan and grants for green investments:** Direct investment in the form of loans or grants towards renewable energy including solar, wind, biofuels and hydrogen in the energy sector; energy efficient retrofits in the construction sector; active transport infrastructure or electric vehicle infrastructure in the transport sector.
- **Subsidies or tax reductions for green products:** Tax reductions or rebates are available most broadly across countries in the transport sector targeted at electric vehicle adoption, offering consumers refunds or subsidising the cost of adoption upfront by expanding cash-for-clunker programs and ratcheting up or extending the period of fund available for rebates on EVs. Additional subsidies available in the transport sector include electric bicycles, regular bicycles, and public transit passes. In the energy sector, rebates or subsidies are made available to households who install solar panels or choose to purchase electricity from a renewable energy provider, including tariff adjustments, coverage of capital cost, or income-qualifying eligibility for residential solar. For industry, products which meet voluntary performance standards are eligible for tax rebate including home appliances and lighting.
- **Green R&D subsidies:** Government spending across sectors focuses heavily on R&D subsidies for the transportation and energy sectors where government funds have been created for the purpose of innovation in electric vehicle development and deployment, electric batteries, hydrogen vehicles, and low-carbon fuel alternatives. Governments grants to research institutions or private R&D firms for energy include investments in solar, wind, storage, and hydrogen energy technologies. R&D subsidies to industry and agriculture include grant funding for the development of low-water use and drought resistance crops, as well as carbon capture and storage (CCS) and energy efficiency technologies in chemicals, cement, and steel.
- **Reinforcing environmental regulation and avoiding deregulation:** Although not a traditional stimulus measure, regulation and deregulation have been a focus area for the COVID response. Environmental deregulation has been used a stimulus measure in some countries, arguing they relief regulatory burdens to businesses. However, other countries have reinforced environmental regulation by introducing wildlife trading bans proposing to expand the coverage of their Emissions Trading Schemes to other sectors.

Annex I - Methodology

Methodology

The index is constructed by combining the flow of stimulus into key sectors with an indicator of each sector's environmental impact. The impact indicator assigns a greenness value (positive or negative) to each sector for every country based on methodology discussed below. The overall Greenness Index is an indicator of the total fiscal spending in response to COVID categorised as either a positive (green) or negative (brown) impact on the environment. The final index for each country is an average of sectoral impact, normalised to a scale of -1 to 1. The sectors included as relevant due to their historical impact on climate and environment include agriculture, energy, industry, waste and transport. Within industry we include manufacturing, while energy includes utilities and mining. Aviation is included within transport.

An estimated 30% of overall global stimulus funding will have a relevant impact on the environment.⁴

Despite some targeted stimulus measures to support environmental improvements, overall flows into the sectors of interest remain brown given historic performance of these sectors. To date, a relatively small magnitude of stimulus measures contain clear pro-environmental conditions. A majority of fiscal stimulus measures currently passed and likely to flow to environmentally intensive sectors do not have an explicit focus on climate change and environmental goals.

Two components of the stimulus were analysed including 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).

B is a scaled indicator from -1 to 1 which rates countries by level of overall greenness from most pro-environmental at 1 to least environmental at -1. The B value differentiates between underlying sector context (b_1) and measure-specific conditionality (b_2). b_1 refers to our baseline evaluation of each country and sector pair we have analysed. This captures the baseline for each sector's environmental performance in the country. This includes an evaluation of current and historical emissions and emissions intensity for the sector within the specific country, its rating on multiple environmental performance indicators, and the overall country's climate target progression. b_2 is a consideration of any COVID response-specific data we have found that either supports or undermines the baseline value. It takes a negative value if stimulus support boosts brown 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.

Each environment-specific policy is categorised against 'green' and 'brown' archetype interventions. Table 1 and Table 2 describe the 'green' and 'brown' policy archetypes respectively.

⁴ This figure comes from totalling all fiscal spending by countries in our analysis and categorising the flows by sector. This value is the percentage of estimated and actual flows going into the above environmentally-relevant sectors across all countries in our analysis. Our estimate is above recently published work, including Hepburn et. Al's estimate of 8% of total funding having an either 'green' or 'brown' impact. [Hepburn, C. O'Callaghan, B., Stern, N., Stiglitz, J., Zenghelis, D. (2020). Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change? *Oxford Smith School of Enterprise and the Environment*, Working Paper No. 20-02 ISSN 2732-4214]. We believe our figure is larger given our analysis is only of recovery stimulus and not long term fiscal measures that may be introduced in the medium and long term. We categorise all stimulus into agriculture, energy, industry, transport and waste.

Table 1 Summary of 'green' policy archetypes

Sector	Archetype	Description
Agriculture	Bailouts with green strings attached	Requiring limits to emissions and waste in return for direct funding.
	Nature based solutions	Afforestation programmes, restoration of wetlands, or forest management investments.
	Loan and grants for green investments	Direct loans or tax rebates and subsidies for low- water irrigation systems.
	Wildlife Trade Ban	Making the sale of endangered animals illegal.
Energy	Bailouts with green strings attached	Direct loans and guarantees towards energy providers (renewables, nuclear) or oil and 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 solar, making green energy products including utilities with renewable targets available at a subsidised cost.
Industry	Bailouts with green strings attached	Conditions on firms on emissions, pollutions, supply chain requirements, or compliance to voluntary agreements or reporting standards.
	Loan and grants for green investments	Low carbon or low emissions public infrastructure for industry including CCS projects for industry, energy efficiency programs for existing buildings, investment in 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 infrastructure including natural based solutions, hydrogen, and electrification technologies.
	Subsidies or tax reductions for green products	Taxes for the use of primary materials in supply chain, subsidies offered to firms who undertake compliance in supply chain.
Transport	Bailouts with green strings attached	Conditional bailouts to air carriers, car manufacturers, or navigation for emissions reduction pledges or commitment to 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 transit, public walkways, and railroads with considerate to 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, subsidisation of low carbon transportation including light rail, developing HOV lanes or low-emission zones fees.
Waste	Bailouts with green strings attached	Directing grants or loans to firms who open incinerate waste without provisions for more sustainable waste management strategies.
	Loan and grants for green investments	Direct investment in recycling, MSW, 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 advancement 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 2 Summary of 'brown' policy archetypes

Sector	Archetype	Description
Agriculture	Subsidies or waived fees for environmentally harmful activities	Waiving, reducing, or directly subsidizing fees associated with 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 in agriculture and forestry sectors.
	Environmentally related bailout without green strings	Loans, guarantees or grants provided to agriculture producers including farmers, fishers and cattle ranchers that do not require improvement in sustainable practices.
	Subsidies or tax reductions for brown products	Introducing subsidies on high emissions agriculture 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	Subsidising utilities, producers, or developers of oil and gas or coal production plants, covering the cost of pollution taxes including carbon

	environmentally harmful activities	taxes, delaying the development or deployment of emissions taxes for energy producers.
	Brown 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 capacity to oil and gas or coal producers without conditions on emissions intensity, emissions output, or energy mix.
	Subsidies or tax reductions for brown products	Subsidisation 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.
	Brown infrastructure investments	Direct government investment or procurement of 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 impact by industrial firms, suspension of enforcement of environmental laws and regulations, removal of permit or use requirements for industry, fast-tracking of 'brown' 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 brown products	Reducing taxes on brown 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.
	Brown infrastructure investments	Direct government investment into infrastructure supporting brown transport, such as airports or car transport infrastructure.

	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 brown products	Reducing taxes on the sale of brown 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.
	Brown 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 industry who openly incinerate or do not use methane recapture, MRV systems, 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 policy, based on its severity and coverage:

- Severity:** Each measure is rated on severity from 1 to 3, with one as the least severe and three as the most severe. The impacts on the environment may be severe in either 'green' or 'brown' 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 brown or green development resulting from the policy.
 - An example of a severe brown policy (3) 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 brown trajectories and risk becoming stranded assets.
 - An example of a somewhat severe green policy (2) 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 and gas avoids direct air pollution and land use

for oil and gas or coal. 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 brown policy (1) is a temporary fee suspension for environmentally harmful activities and recouping those fees afterwards.**
- **Coverage:** Each measure is rated on the level of coverage from 1 to 3, with one as the least amount of coverage and three 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 green or brown policy exist).
 - **An example of a high coverage brown policy (3) 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 (2) is a ban on wildlife trade.** A ban on the wildlife trade is a permanent change in policy and is likely to have positive impacts on the species directly traded and indirectly on other species who live in or the share the habitat. The wildlife ban will likely not affect all 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 \$100 million or another equivalent excludes many small and medium-sized firms, resulting in a policy with incomplete sectoral coverage.

Annex II - Country notes

These notes describe the underlying numbers that are driving the index score for each country. The notes and the index will be updated as more information on the recovery packages becomes available:

1.1 United States

The US has passed a \$2.98 trillion USD spending package.

Composition of stimulus: The US stimulus package includes substantial healthcare and welfare measures, payroll protection and direct support for businesses. Specific funding for environmentally relevant sectors includes \$60 billion directly to airlines and cargo carriers in the aviation sector. Another \$25 billion has been allocated to the transportation sector, including transportation infrastructure, shipping, and trucking, and \$23.5 billion has been allocated to support the agriculture sector. Alongside the announced direct measures, sectoral breakdown of stimulus is possible using the data on the businesses that are receiving loans, of which a substantial proportion have been allocated to industrial producers.⁵

Sectors evaluated in the US prove to be overwhelmingly brown due to underlying conditions and specific 'brown' policies.

- **Underlying sector context (b_1).** In the US, the baseline trajectory on policy drives many sectors into deep 'brown' spending. Performance on key indicators:
 - ◇ Climate Action tracker score⁶: Critically insufficient.
 - ◇ Yale's EPI⁷: Medium.
 - ◇ OECD Environmental Stringency⁸: Low-Medium.
 - ◇ Sectoral emissions intensity (GHG/\$)⁹: Medium.
 - ◇ EIU Agriculture Sustainability Index¹⁰: Low.
- **Measure-specific conditionality (b_2):** In the United States, deregulation across all sectors coupled with a lack of environmental conditions on transportation funding have added negative weights to our baseline. Key policies include:
 - ◇ A total of \$60 billion USD in bailout funding has been made available to ten aircraft carriers in the US. The stimulus was provided without any green conditions, although conditions on employee retention and equity stakes have been introduced for some carriers depending on firm financials.¹¹ The US government has warrants on up to 1.9% of shares for any airline receiving grants or loans.¹² But given the current US administration, we do not anticipate these equity stakes, if taken, to be

⁵ AP News (2020) <https://apnews.com/53954f808f0652463d58728ad64cd5b3>

⁶ Climate Action Tracker (2019). <https://climateactiontracker.org/countries/>

⁷ Yale Environmental Performance Index (2018). <https://epi.envirocenter.yale.edu/epi-country-report/>

⁸ OECD (2018). <https://www.oecd-ilibrary.org/docserver/5jxrjnc45gvg-en.pdf?expires=1588087930&id=id&accname=guest&checksum=B0695EB229FB22622C1C81C61B9B5B85>

⁹ European Environment Agency (2018). <https://edgar.jrc.ec.europa.eu/>

¹⁰ EIU: <https://foodsustainability.eiu.com>

¹¹ US Treasury (2020). <https://home.treasury.gov/system/files/136/Payroll-Support-Procedures-Form-FINAL.pdf>

¹² Financial Times (2020) <https://www.ft.com/content/fb8ef5a9-2e42-4b6a-acd0-078a1faa0d01>

used to drive voluntary compliance to any environmental standards that would be set by the federal government. This is a direct ‘brown’ measure for the transport sector.

- ◇ In the US, announcements of environmental rules have been rolled back indefinitely. The EPA will be exercising “enforcement discretion” indefinitely through the pandemic. All firms which have pollutant or emissions discharge are not required to monitor or report to the Environmental Protection Agency (EPA) at this time.¹³ On May 15th, President Trump as passed an Executive Order instructing agencies to prioritise the economic recovery of the US by waiving or exempting polluters from any regulations or requirements “which may inhibit economic recovery.”¹⁴ This deregulatory regime is across all sectors of our analysis and is a direct ‘brown’ measure impacting all environmentally-relevant funding in the US.
- ◇ Despite the plethora of ‘brown’ measures in the US, the Department of Agriculture has introduced a recovery measure providing grants to agricultural producers who undertake the production of renewable or bio-fuels.¹⁵ This funding amounts to \$100 million USD and is a ‘green’ measure as it encourages generating supply for biofuel production.

¹³ The Hill (2020) <https://thehill.com/policy/energy-environment/489753-epa-suspends-enforcement-of-environmental-laws-amid-coronavirus>
 NY Times (2020). <https://www.nytimes.com/interactive/2020/climate/trump-environment-rollbacks.html?mtrref=www.google.com&assetType=REGIWALL>

¹⁴ Columbia Climate Law (2020). <https://climate.law.columbia.edu/climate-deregulation-tracker>

¹⁵ TMF Group (2020). <https://www.tmf-group.com/en/news-insights/coronavirus/government-support-schemes/#B>

1.2 Japan

Japan has passed a total of \$2.17 trillion USD in fiscal measures as a response to COVID.¹⁶

Composition of stimulus: Japan has announced two stimulus packages, each of ¥117.1 trillion (\$1.08 trillion), with measures including funding for health, welfare and employment protection. Support for businesses totals around \$1.3 trillion, of which a large share is directed at Japan's industrial and transport sectors.

Japan's stimulus is slightly brown-skewed.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◊ Climate Action tracker rating: Insufficient.
 - ◊ Yale's EPI: Medium-High.
 - ◊ OECD Environmental Stringency: Medium.
 - ◊ Sectoral emissions intensity (GHG/\$): Low-Medium.
 - ◊ EIU Agriculture Sustainability Index: Medium-high.
- **Measure-specific conditionality (b_2):** To date, Japan has not announced any specific 'brown' or 'green' policies. Japan's Minister of Environment has announced an online event to discuss shifting the future economic recovery towards green stimulus, the "June Momentum".¹⁷ This event does not have planned policy outcomes but is a discussion for future recovery measures. With this lack of specific deregulation, conditions, or other environmentally related policies, Japan's index score is based on its sectoral baseline performance.

¹⁶ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

¹⁷ Climate Change News (2020). <https://www.climatechangenews.com/2020/06/01/japan-launch-green-recovery-platform-ministerial-meeting/>

1.3 Germany

Germany has passed a total of \$1.46 trillion USD in fiscal stimulus.¹⁸ This figures excludes the 130 billion euro recovery package announced on the night of June 3rd.

Composition of stimulus: Germany has announced a number of measures to support businesses, including \$835 billion USD in loan guarantees from the Economic Stabilisation Fund (WSF) and the public sector development bank KfW. Other measures, including healthcare equipment, hospital capacity and vaccine R&D spending, as well as welfare measures, have been excluded from the sectoral stimulus. Substantial support for businesses has also been granted by state governments.

Germany has a slight negative score, with its current stimulus package lacking explicit 'green' measures.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker rating: Highly insufficient.
 - ◇ Yale's EPI: High.
 - ◇ OECD Environmental Stringency: Medium.
 - ◇ Sectoral emissions intensity (GHG/\$): Low.
 - ◇ EIU Agriculture Index: High.
- **Measure-specific conditionality (b_2):** As a part of the economic stimulus passed in Germany, only the transport sector has received targeted funding. Additional environmental measures have not been introduced.
 - ◇ On May 27th among calls by EU leaders to pass a green recovery, Germany's Green parliamentary group has proposed a future 'green' stimulus program of \$559 billion.¹⁹ The group is introducing a bill that invests in economic recovery measures that are in line with international and national climate targets, and have also introduced a reformation of the Renewable Energy Act. This bill has not been included in our analysis of the score of Germany, but if passed, it would greatly improve the 'greenness' of the stimulus for Germany across all sectors, specifically energy. Support has been building for these initiatives, with industry groups and the German government advocating for a sustainable recovery, but no specific measures have been passed.²⁰
 - ◇ The German government has bailout out three airlines, TUI Fly (\$1.98 billion USD), Lufthansa (\$9.9 billion USD) and Condor (\$600 million USD) without environmental conditions.²¹ The Lufthansa bailout includes ceding a 20% equity stake to the German government.²² While the equity stake could yield 'green' outcomes in the future through their membership on the board of the firm, at this time there are no explicit commitments to climate or environment goals. For the Greenness Index, Germany is still providing a bailout without any 'green' strings attached.

¹⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

¹⁹ Clean Energy Wire (2020). <https://www.cleanenergywire.org/news/climate-friendly-post-coronavirus-stimulus-tracking-debate>

²⁰ Reuters (2020). <https://uk.reuters.com/article/uk-health-coronavirus-germany-climatecha/german-companies-call-for-covid-19-aid-to-be-tied-to-climate-action-idUKKCN2290LW>

²¹ Transport & Environment (2020). https://www.transportenvironment.org/sites/te/files/Airline-bailout-tracker_8_May_2020.pdf

²² DW (2020). <https://www.dw.com/en/lufthansa-accepts-terms-of-eu-germany-rescue-deal/a-53650294>

Euractiv (2020) <https://www.euractiv.com/section/aviation/news/lufthansa-board-gives-green-light-to-e9bn-bailout/>

1.4 United Kingdom

The United Kingdom has passed \$557 billion USD in fiscal measures in response to COVID-19.²³

Composition of stimulus: The UK's stimulus package includes a range of measures to fund healthcare, support workers and provide specific support for businesses. There has been substantial support for the transport sector, including the soft loan of \$740 million USD extended to EasyJet²⁴, \$2billion USD TFL bailout²⁵ and \$6.1 billion USD investment in bus and cycling lanes.²⁶

The UK scores relatively well on the baseline indicators and has a mix of environmentally specific stimulus measures.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Insufficient.
 - ◇ Yale's EPI: High.
 - ◇ OECD Environmental Stringency: High.
 - ◇ Sectoral emissions intensity (GHG/\$): Low-medium
 - ◇ EIU Agriculture Sustainability Index: High.
- **Measure-specific conditionality (b_2):** In the United Kingdom, deregulation has not been widespread, as is in other developed countries like the United States. The UK has extended bailouts to the transport sector, both 'green' and 'brown':
 - ◇ A soft loan of \$740 million USD (£600 million GBP) has been to EasyJet by the UK government without environmental conditions.²⁷ The unconditional transport bailout is categorised as a 'brown' measure. Shareholders received dividends in mid-March while the airline was negotiating with the government for crisis funding. Although it is a loan, the government has granted the airline lenient terms on the money and not required any changes to environmental performance or emissions as a result of the payment.
 - ◇ A slight easing of permitting requirements in the agriculture, energy and waste sectors in the UK has taken place.²⁸ In agriculture, slurry from dairy farming may be used without a limit despite concerns of run off pollution. Energy firms are allowed to breach emissions limitations from combustion sources in the case of a blackout. Additionally, medical waste is allowed to be incinerated at registered municipal solid waste processing plants. This deregulation is minor but 'brown'.
 - ◇ The agriculture sector has received a \$49 million USD grant program targeted towards cattle farmers in Scotland.²⁹ While minor, this policy extends direct fiscal aid to high emission agricultural

²³ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>, OBR (2020). <https://obr.uk/coronavirus-analysis/>

²⁴ The Guardian (2020). <https://www.theguardian.com/business/2020/apr/06/easyjet-secures-600m-coronavirus-loan-from-uk-treasury-and-bank>

²⁵ BBC (2020). <https://www.bbc.co.uk/news/uk-england-london-52670539>

²⁶ Forbes (2020). <https://www.forbes.com/sites/carltonreid/2020/05/09/uk-government-boosts-bicycling-and-walking-with-ambitious-2-billion-post-pandemic-plan/#3a5ce00a3d7c>

²⁷ Transport & Environment, Carbon Market Watch & Greenpeace (2020). <https://www.transportenvironment.org/sites/te/files/Airline-bailout-tracker-30-April.pdf>

²⁸ UK Government (2020). <https://www.gov.uk/government/collections/covid-19-regulatory-position-statements#water-industry>

²⁹ TMF Group (2020). <https://www.tmf-group.com/en/news-insights/coronavirus/government-support-schemes/#B>

producers without environmental conditions. While not large relative to the size of the overall UK stimulus, there were no additional 'green' targets or goals imposed on Scotland's cattle industry attached to the funding.

- ◇ The UK has recently decided to delay the ban on certain single use plastics in response to COVID-19 until October 2020.³⁰ As a suspension of a future environmental law, the delay is a form of deregulation in the industrial sector, as it would have inhibited the manufacturing and the selling of these goods. The delay of the ban imposes a 'brown' weight in the UK given the impact of plastic pollution on natural systems and the environment.³¹
- ◇ The UK government has extended a bailout to Transport for London (TFL) amount to \$1.97 billion USD to cover the public transportation company's losses from decreased ridership.³² The loan is considered a 'green' bailout given it preserves public. Additionally, the loan to TFL will also be accompanied by an increased congestion charge in the ultra-low emissions zone (ULEZ) in London to £15 per day.
- ◇ Additional funding of \$2.48 billion USD has been earmarked in the government's investment in public infrastructure for cycling and pedestrian infrastructure in the UK.³³ This investment in green infrastructure is designed for local authorities to rapidly undertake cycling and walking infrastructure projects during lockdown. With this funding comes additional removals of government requirements for public approval of projects. This is a fast tracking of active transport projects can be developed and implemented rapidly across the UK.

³⁰ Business Green (2020). <https://www.businessgreen.com/news/4014021/disappointing-government-delays-ban-plastic-straws-stirrers-cotton-buds>

³¹ The Guardian (2020). <https://www.theguardian.com/environment/2020/apr/17/polluter-bailouts-and-lobbying-during-covid-19-pandemic>

³² BBC (2020) <https://www.bbc.co.uk/news/uk-england-london-52670539>

³³ Forbes (2020). <https://www.forbes.com/sites/carltonreid/2020/05/09/uk-government-boosts-bicycling-and-walking-with-ambitious-2-billion-post-pandemic-plan/#3a5ce00a3d7c>

1.5 Italy

Italy has passed \$530 billion USD in fiscal stimulus measures.³⁴

Composition of stimulus³⁵: Italy's initial 'Cura Italia' package was largely directed at healthcare, welfare and emergency support for businesses. The 'Liquidity Decree' is providing €400 billion (\$441 billion USD) in state loan guarantees to businesses, and the 'Relaunch' package includes additional measures both for families and for businesses. These measures include the €3 billion (\$3.3 billion USD) bailout of Alitalia³⁶, with Italy's industrial sector also receiving a substantial share of stimulus.

Italy has a neutral index score due to relatively good underlying environmental performance and a mix of specific policies.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker rating: Medium.
 - ◇ Yale's EPI: Medium-High.
 - ◇ OECD Environmental Stringency: High.
 - ◇ Sectoral emissions intensity (GHG/\$): Low.
 - ◇ EIU Agriculture Index: High.
- **Measure-specific conditionality (b_2):**
 - ◇ Italy has extended a \$3.2 billion bailout to Alitalia, provided they do not lay off employees. The Italian government has also planned to take full ownership over the airline since the bailout and is considering further injecting spending into the firm over the coming months. The airline has had no 'green' conditionality imposed upon its operations. Given the Italian government is looking for a buyer of the airline, there is little belief that the nationalisation of the airline will bring it under stricter climate or environmental targets imposed by the Italian government.
 - ◇ Italy has recently increased the subsidy for residential consumers who install solar PV from 50% to 110%.³⁷ This green subsidy for households is a tax-deductible benefit available for households who install solar and storage systems in their home. As a part of the COVID-19 economic recovery, this is a 'green' subsidy and encourages low carbon development in the energy sector.

³⁴ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

³⁵ IMF Policy Tracker (2020), Forbes (2020) <https://www.forbes.com/sites/irenedominioni/2020/04/07/italy-unveils-unprecedented-435-billion-plan-to-support-coronavirus-hit-economy/#6d0c387f7214>

³⁶ https://www.transportenvironment.org/sites/te/files/Airline-bailout-tracker_8_May_2020.pdf

³⁷ PV Magazine (2020). <https://www.pv-magazine.com/2020/05/27/covid-19-weekly-round-up-residential-systems-in-italy-will-get-a-110-tax-rebate-and-uk-consumers-are-being-paid-to-turn-appliances-on-as-coronavirus-turns-the-energy-world-upside-down/>

1.6 France

France has passed a total of \$485 billion USD in fiscal measures.³⁸

Composition of stimulus: The French stimulus package includes €315 billion (\$347 billion USD) in loan guarantees and credit reinsurance schemes for businesses, which will extend substantial support for environmentally relevant sectors. France has also announced specific measures to support the transport sector, including a €7 billion (\$7.7 billion USD) conditional bailout of airline AirFrance³⁹ and €8 billion (\$8.8 billion USD) in support for the auto industry.⁴⁰

France's baseline score and conditional measures indicate that their stimulus is having a positive environmental impact.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker rating: Insufficient.
 - ◇ Yale's EPI: High.
 - ◇ OECD Environmental Stringency: High.
 - ◇ Sectoral emissions intensity (GHG/\$): Low.
 - ◇ EIU Agriculture Index: High.
- **Measure-specific conditionality (b_2):** France has introduced some of the most explicit green conditions on the transport and energy sector across all countries who have introduced economic recovery packages. At this time, the measure specifications we have considered are below:
 - ◇ France has extended a \$7.7 billion USD deal to Air France, as part of an EU approved deal between the Netherlands and France to bailout the airline.⁴¹ The extension of the funding includes \$4 billion USD in a loan and the remaining amount available in guarantees. While the French government did not take an equity stake in exchange for funding, they have introduced two environmental conditions: the reduction of emissions by 50% by 2030 and a minimum standard of 2% renewable fuel by the same time period.⁴² While the specifics of how this will be affirmed or enforced are still not released, this is a prime example of transport funding being made conditional on the future environmental imprint of the firm, and therefore is seen as a 'green' response measure. Air France has also announced to slash 40% of its domestic flights as requested by the government to reduce flight routes where train routes exist.⁴³
 - ◇ The French government has supported the development of electric vehicles and EV infrastructure in line with their target for banning the sale of petrol and combustion engine vehicles by 2040.⁴⁴ Major points of the \$8.9 billion stimulus to the transportation sector include increasing the subsidies for electric vehicles until December, accelerating the deployment of electric charging

³⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

³⁹ New York Times (2020). <https://www.nytimes.com/2020/04/25/business/air-france-klm-bailout.html>

⁴⁰ Government of France (2020). <https://www.economie.gouv.fr/covid19-soutien-entreprises/mesures-plan-soutien-automobile>

⁴¹ New York Times (2020). <https://www.nytimes.com/2020/04/25/business/air-france-klm-bailout.html>

⁴² Routes Online (2020). <https://www.routesonline.com/news/29/breaking-news/291047/air-france-told-by-government-to-drastically-cut-domestic-flying/>

⁴³ RFI (2020) <http://www.rfi.fr/en/wires/20200527-air-france-cut-40-domestic-flights-after-bailout>

⁴⁴ Europe Auto News (2020). <https://europe.autonews.com/automakers/france-help-auto-sector-measures-worth-88b>

stations and investing over \$390 million in green research and development across the supply chain of vehicle manufacturers.⁴⁵

- ◇ France has extended their rooftop solar PV subsidy to households originally slated to be phased out this spring.⁴⁶ This extension, coupled with a fast-tracking of requirements for wind and solar projects in France is providing a 'green' regulatory environment for energy projects during the crisis. This policy delivers a 'green' boost the energy sector in our analysis.

⁴⁵ French Economic Ministry (2020). <https://www.economie.gouv.fr/covid19-soutien-entreprises/mesures-plan-soutien-automobile>

⁴⁶ The Guardian (2020). <https://www.theguardian.com/environment/2020/apr/17/polluter-bailouts-and-lobbying-during-covid-19-pandemic>

1.7 China

China has passed a total of \$507 USD billion in fiscal stimulus.⁴⁷

Composition of stimulus: Alongside healthcare and welfare measures, the stimulus package includes substantial support for China's large and environmentally intensive industrial sector. Stimulus has been channelled through special purpose bonds for localities, special treasury bonds, and an increase in the budget deficit. Lines of credit have been extended to state owned enterprises⁴⁸ and therefore are not publicly disclosed. The headline figure is based on estimates by the IMF, which should be treated as conservative. Infrastructure projects will receive a large proportion of the new stimulus.

China scores poorly on the key indicators and has introduced a mix of 'brown' and 'green' policies, resulting in a negative overall index score.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◊ Climate Action tracker score⁴⁹: Highly insufficient.
 - ◊ Yale's EPI: Low.
 - ◊ OECD Environmental Stringency: Low.
 - ◊ Sectoral emissions intensity (GHG/\$)⁵⁰: High.
 - ◊ EIU Agriculture Sustainability Index⁵¹: Very low.
- **Measure-specific conditionality (b_2):** China has not explicitly committed to a GDP target in 2020, a large departure from previous years as they intend to focus on employment and poverty alleviation.⁵² This information, while not explicitly included in the index, is a departure from China's business-as-usual strategy which encourages traditional infrastructure investment in coal, steel, and cement projects. This shift in government policy indicates an opportunity for more 'green' investment. While this announcement has not been factored into our analysis of China's greenness stimulus index, we have considered the following policies in our analysis:
 - ◊ Part of the fiscal stimulus plan includes an increased speed of coal permit approvals, in contrast to the government's commitment to restrict coal to 58% of the national energy consumption by 2020.⁵³ In February and March, China had loosened the labelling on the provinces which were previously considered over-capacity for coal power generation to available for sites, and had more permit approvals than in the same period in 2019.⁵⁴ During the post-2008 crisis China funded much of the coal capacity they have today, and a similar investment now could lock-in the country to high emissions infrastructure.⁵⁵
 - ◊ Although investing in coal, the Chinese government renewable energy projects also appear on the list of prioritized projects. New infrastructure by the Chinese government will be digital,

⁴⁷ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

⁴⁸ The Economist (2020). <https://www.economist.com/finance-and-economics/2020/04/16/why-has-chinas-stimulus-been-so-stingy>

⁴⁹ Climate Action Tracker (2019). <https://climateactiontracker.org/countries/china/>

⁵⁰ European Environment Agency (2018). <https://edgar.jrc.ec.europa.eu/>

⁵¹ EIU: <https://foodsustainability.eiu.com>

⁵² Climate Change News (2020). <https://www.climatechangenews.com/2020/05/22/china-prioritises-employment-gdp-growth-coronavirus-recovery/>

⁵³ Climate Action Tracker (2019); <https://climateactiontracker.org/countries/>

⁵⁴ Global Energy Monitor (2020). https://endcoal.org/wp-content/uploads/2020/03/BoomAndBust_2020_English.pdf

⁵⁵ Wong, Christine (2011), "The Fiscal Stimulus Programme and Public Governance Issues in China", OECD Journal on Budgeting, Vol. 11/3. <http://dx.doi.org/10.1787/budget-11-5kg3nhljqrjl>

focusing on technology innovation and information networks.⁵⁶ The announcement to have more innovative and future-secure investments includes prioritising solar and wind in Chinese locality project lists. We currently lack the information of the extent of prioritization over traditional energy projects and therefore will include this information in the next release of the Greennees Index.

- ◇ The Chinese government has dropped its commitment to key emissions intensity and energy targets for post-2020 in response to COVID-19.⁵⁷ While China had already not achieved its targets for energy efficiency in 2019, the lack of target set for 2020 demonstrates a delay in the country's trajectory towards its climate change commitments. The suspension of developing an emissions target is deregulation in the industrial sector.
- ◇ Chinese provinces have rolled out car subsidies to save the general industry, encouraging uptake in traditional combustion engines in the transport sector.⁵⁸ Only the province of Guangzhou has made explicit support available for EVs, but it is comparable to the subsidies offered for petrol vehicles. These subsidies are mostly in the form of cash transfers to buyers of vehicles, and certain regions are promoting higher subsidies for car manufacturers located in the province. Without specific stipulations on EVs, this imposes a 'brown' weight on the transport sector.
- ◇ Contrarily, while local governments are extended subsidies for any vehicles, the Chinese government has extended its national EV subsidy program through to 2022.⁵⁹ This extension of an existing subsidy coupled with the government's recent announcement to reduce the permitting requirements on new electric vehicles provide a 'green' boost to the transport sector in China.⁶⁰ This extension will occur through 2022⁶¹ but will decrease by 10% in December and excludes vehicles over \$42,357 USD.⁶²
- ◇ A specific measure that supports 'green' infrastructure investment includes the \$379 million payout for EV charging infrastructure across China.⁶³ In tandem with the extension of the EV subsidy in March, these projects aid in the uptake of EVs across the country. This type of explicit 'green' infrastructure drives the transport sector's index score positively.

⁵⁶ WRI Blog (2020). <https://www.wri.org/blog/2020/04/coronavirus-china-economic-recovery>

⁵⁷ Bloomberg (2020). https://www.bloomberg.com/news/articles/2020-05-22/china-drops-key-environmental-target-as-coronavirus-hits-growth?cmpid=BBD052220_GREENDAILY&utm_medium=email&utm_source=url_link&utm_term=200522&utm_campaign=greendaily

⁵⁸ Financial Times (2020). <https://www.ft.com/content/12cc8c6a-5f7a-11ea-b0ab-339c2307bcd4>

⁵⁹ PR Newswire (2020). <https://www.prnewswire.com/news-releases/china-extends-new-energy-vehicle-purchase-subsidies-and-purchase-tax-exemption-policy-for-two-years-301032549.html>

⁶⁰ IHS Market (2020). <https://ihsmarkit.com/research-analysis/china-steps-up-efforts-to-boost-auto-industry.html>

⁶¹ Bloomberg (2020). <https://www.bloomberg.com/news/articles/2020-04-01/china-mulling-cutting-electric-car-subsidies-it-just-extended>

⁶² The Driven (2020). <https://thedriven.io/2020/04/02/tesla-confusion-as-china-extends-electric-vehicle-subsidies-to-meet-covid-19-challenge/>
Reuters (2020). <https://uk.reuters.com/article/uk-china-autos-electric-subsidies/china-to-cut-new-energy-vehicle-subsidies-by-10-this-year-idUKKCN2251DT>

⁶³ China post-COVID Recovery Factsheet (2020).

1.8 India

India has passed a \$266 billion USD fiscal stimulus package in response to COVID.⁶⁴

Composition of stimulus: India's initial package that focused on support for healthcare and welfare, but further measures have included substantial support for businesses and targeted support for the agriculture sector.

India's 'brown' index score is driven by poor environmental performance across the key sectors, particularly in industry.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◊ Climate Action tracker rating: Good.
 - ◊ Yale's EPI: Very low.
 - ◊ OECD Environmental Stringency: Very Low.
 - ◊ Sectoral emissions intensity (GHG/\$): High.
 - ◊ EIU Agriculture Sustainability Index: Low.
- **Measure-specific conditionality (b_2):** Information on India's explicit 'brown' and 'green' fiscal stimulus policies are outlined below. At this time, the measure specifications considered for India include:
 - ◊ India has committed to securing a strategic amount of oil reserves from its trading partners. While this is not an explicit 'brown' policy, this is a lock-in for the energy and residential sector as it ensures that it has enough oil when the future US embargo on Iran is enacted.⁶⁵ While this is not an explicit provision in the COVID stimulus recovery package, the securing of oil for consumption in India is an example of a reinforced 'brown' inertia for the country.
 - ◊ India's \$6.6 million USD funding for coal infrastructure to help bring coal from India's state run mines to market.⁶⁶ This direct investment into infrastructure for a 'brown' energy source is in direct opposition to environmental and natural commitments, as mining has a large and irreversible impact on the environment.
 - ◊ The coal plan in India is coupled with a revenue share arrangement by the government and private companies to promote the mining and gasification of coal. This reform and rebate in revenue share is a tax incentive for brown energy production. India's fiscal stimulus is directly driving lock-in of a 'brown' energy source for the country.
 - ◊ India has also fast-tracked the environmental assessment of site clean-ups on project in order to increase the speed of project development.⁶⁷ This increase in the speed of assessments for environmental performance spans across different industrial firms, and is a main driver of the 'brown' score for industry.

⁶⁴ <https://www.ft.com/content/5734f333-e4d7-4ebf-9de2-220e537da3f0>

⁶⁵ Livemint (2020). <https://www.livemint.com/news/india/india-has-secured-additional-oil-supplies-to-tide-over-iran-sanctions-1556806947754.html>
Recovering Better (2020) The Case for a Sustainable and Resilient Recovery in India

⁶⁶ LiveMint (2020). <https://www.livemint.com/news/india/fm-sitharaman-fast-tracks-industrial-reforms-to-aid-growth-recovery-11589639649764.html>

⁶⁷ QZ (2020) <https://qz.com/india/1851634/india-fast-tracks-green-clearance-to-spur-coronavirus-hit-economy/>

- ◇ Opposite the above discussed ‘brown’ policies, India has also channeled \$792 million USD towards an afforestation program designed to stimulate the rural and semi-urban economy while providing essential ecosystem benefits.⁶⁸ This funding is channeled through the Compensatory Afforestation Management and Planning Authority (CAMPA) fund.⁶⁹ The specific jobs created through this fund include plantation work, forest management, wildlife protection and afforestation. These jobs will be available for tribal communities.⁷⁰ This program both provides income to vulnerable members of society through a nature-based solution and contributes to the already small green aspect of India’s stimulus.

⁶⁸ India TV (2020). <https://www.indiatvnews.com/business/news-nirmala-sitharaman-final-phase-of-announcement-economic-stimulus-package-11-am-live-updates-617884>

⁶⁹ Jagran (2020). <https://english.jagran.com/business/economic-package-tranche-2-mnrega-support-free-foodgrains-for-migrants-rs-30000-crore-additional-credit-support-for-farmers-10011841>

⁷⁰ Economic Times (2020). <https://bfsi.economictimes.indiatimes.com/news/policy/key-highlights-of-the-finance-ministers-whole-economic-package/75797903>

1.9 South Korea

South Korea has passed fiscal stimulus equal to \$201 billion USD.

Composition of stimulus⁷¹: South Korea's fiscal stimulus includes 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 KRW 40 trillion (\$33 billion USD) in loans to industries most affected by COVID-19.⁷²

South Korea's negative index score is driven by relatively poor historical environmental performance and the introduction specific 'brown' policies. This score could be overturned by the successful implementation of the Green New Deal that has been proposed.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Highly insufficient.
 - ◇ Yale's EPI: Low-Medium.
 - ◇ OECD Environmental Stringency: Medium.
 - ◇ Sectoral emissions intensity (GHG/\$): Medium-High.
 - ◇ EIU Agriculture Sustainability Index: High.
- **Measure-specific conditionality (b_2):** Information regarding deregulation, the delaying or deferral of climate policies, or specific green conditions were included as measure specific conditions. At this time, the measure specifications considered for South Korea include:
 - ◇ South Korea is expected to announce a Green New Deal, which would be a significant step forward in committing further investment and policy measures to be in line with environmental and climate goals.⁷³ This includes phasing out coal power and going net zero in energy production by 2050. While this is an ambitious target and the Green New Deal, as part of the coalition government's New Deal package in response to COVID-19, the details are still being determined as the bill has not been formally enacted, and so has not yet been included in the index.
 - ◇ In opposition to the government's long term 'green' goals, South Korea is increasing tax relief for the car manufacturing industries for an additional three months and providing additional aid to the industry.⁷⁴ The tax deduction for car makers of 30%, which was supposed to end in 2020, has been extended in an effort to boost export sales.⁷⁵ This tax deduction does not offer any conditions or additional incentives for electric or hydrogen vehicles. Additionally, the car sales tax of 5% on new vehicles has been lowered to 1.5%, for consumers, to stimulate consumer demand and similarly is without a green conditional component. This lowering of cost for car manufacturers and reduced tax for consumers contributes to the 'brownness' of South Korea's transport related stimulus.

⁷¹ IMF Policy tracker (2020) <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>, Pulse News (2020)

⁷² Financial Service Commissions (2020).

https://www.fsc.go.kr/eng/new_press/releases.jsp?menu=01&bbsid=BBS0048&selYear=&sch1=&sword=&nxPage=1

⁷³ Korea Times (2020). https://www.koreatimes.co.kr/www/nation/2020/05/113_289851.html

Channel News Asia (2020). <https://www.channelnewsasia.com/news/asia/climate-change-south-korea-new-green-deal-ambitious-12691892>

The Diplomat (2020) <https://thediplomat.com/2020/05/south-koreas-green-new-deal/>

⁷⁴ Pulse News Korea (2020) <https://pulsenews.co.kr/view.php?year=2020&no=217288>

⁷⁵ KPMG Insights (2020). <https://home.kpmg/xx/en/home/insights/2020/04/south-korea-tax-developments-in-response-to-covid-19.html>

- ◇ Additional 'brown' measures includes the bailout in early April extended to Doosan Heavy Industry, the country's largest producer of coal plants, by the Korean Development Bank and the Import-Export Bank of Korea. The company has received a total of \$2 billion USD.⁷⁶ The funding was dispersed in stages, with the first loan coming from South Korea's first COVID stimulus, while the second portion of funding was granted during the second wave of funding, announced on April 28th. Doosan Heavy Industry received two rounds of funding despite the country's credit rating dropped steadily before the crisis.⁷⁷ This loan comes with no environmental conditions and is an example of South Korea's direct injection of cash towards a heavy producer in the 'brown' industry, as their production focuses on coal stations, gas turbines, nuclear equipment and desalination equipment. While it is not a direct coal bailout by the government, the loan's approval process is opaque and may likely fund coal development in direct contradiction to the Green New Deal.

⁷⁶ Climate Change News (2020). <https://www.climatechangenews.com/2020/05/06/south-korean-government-backs-2-billion-bailout-coal-company-despite-green-finance-pledge/>

Pulse News Korea (2020) <https://pulsenews.co.kr/view.php?year=2020&no=439931>

Reuters (2020) <https://www.reuters.com/article/us-column-russell-renewables-coal/column-do-renewables-hold-the-upper-hand-against-coal-in-post-coronavirus-world-russell-idUSKBN22Q0W1>

⁷⁷ KoreaBiz (2020) <http://koreabizwire.com/policy-lenders-mulling-providing-800-bln-won-to-doosan-heavy/158650>, Eco-Business (2020) <https://www.eco-business.com/news/green-groups-decry-south-koreas-bailout-of-coal-power-plant-builder/>

1.10 Spain

Spain has passed a total of \$188 billion USD in fiscal measures as a response to COVID.⁷⁸

Composition of stimulus: Spain's fiscal stimulus includes a variety of measures to support households and businesses. Alongside announced health and welfare measures, Spain's package includes loan guarantees of €100 billion (\$110 billion USD) and other smaller measures to support businesses. There is substantial support for environmentally related sectors, including the €1 billion (\$1.1 billion USD) bailout of Iberia and Vueling airlines.⁷⁹

All sectors in Spain have a slight negative score, with the transport sector the most 'brown'.

- Underlying sector context (***b*₁**): Performance on key indicators:
 - ◊ Climate Action tracker rating: Insufficient.
 - ◊ Yale's EPI: Medium-High.
 - ◊ OECD Environmental Stringency: Low.
 - ◊ Sectoral emissions intensity (GHG/\$): Low-medium.
 - ◊ EIU Agriculture Sustainability Index: Medium-high.
- **Measure-specific conditionality (***b*₂**):** Information regarding deregulation, the delaying or deferral of climate policies, or specific green conditions were included as measure specific conditions. At this time, the measure specifications considered for Spain include:
 - ◊ The Spanish government in January announced the 2030 climate and energy targets would require an additional \$260 million USD for emissions reductions in the energy sector⁸⁰. While not an explicit measure outlined in the COVID stimulus package, the government has adopted an agreement to slowly close an energy park that is mostly coal and other fossil fuel-based. This planned closure does not feed into our analysis to date, but gives an indication that the energy sector in Spain will be more 'green' given the government's existing commitment to defunding and closing this major electricity park that is fossil fuel based and redirecting funding towards renewable energy.

⁷⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

⁷⁹ Reuters (2020). <https://www.reuters.com/article/us-health-coronavirus-iaq-debt/iaqs-spanish-airlines-secure-1-1-billion-of-state-backed-loans-idUSKBN22D56D>

⁸⁰ El Economista (2020). <https://www.eleconomista.es/empresas-finanzas/noticias/10313736/01/20/El-Gobierno-sube-la-inversion-en-clima-y-energia-hasta-los-241000-millones-durante-la-decada.html>

1.11 Australia

Australia to date has passed \$145 billion USD in total fiscal support.⁸¹

Composition of stimulus: Australia's fiscal package includes specific health spending, support for households and workers, and specific support for businesses. The Australian government has announced specific support of \$437 billion USD for Australian airlines and airports. Other measures to protect businesses will provide financial support to industry, transport, energy and agriculture.

'Brown' measures in key sectors drives Australia's negative index score.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Insufficient.
 - ◇ Yale's EPI: Medium-High.
 - ◇ OECD Environmental Stringency: Medium.
 - ◇ Sectoral emissions intensity (GHG/\$): Medium
 - ◇ EIU Agriculture Sustainability Index: Medium.
- **Measure-specific conditionality (b_2):** Information regarding deregulation, the delaying or deferral of climate policies, or specific green conditions were included for multiple sectors in Australia's COVID-19 relief. The following policies included are below:
 - ◇ A partial suspension of permitting and licensing fees was instated in the oil, gas and mining sectors in South Australia.⁸² The government announced in April that licensing fees and annual petroleum fees will not be due until December 2020.⁸³ This explicit tax and fee deferral made for the oil, gas, and mining industries in South Australia is a 'brown' policy given it explicitly extends relief to fossil fuel firms without conditions for environmental performance. Given that this is only regional, the policy rollback does not impose as high of a brown weight as a federal rollback would. The subnational endorsement of these sectors without 'green' conditions is in contradiction with Australia's pledge to emissions reductions.
 - ◇ The Australian government is supporting the airline industry by extended \$437 million USD in loans and tax deferrals without 'green' conditions.⁸⁴ Because airlines are a high emissions subsector in transportation, this policy imposes a 'brown' weight on the transport sector in the country.
 - ◇ The suspension of conservation laws in the logging industry for the next decade undertaken by the State of Victoria in Australia is a direct deregulatory measure in the agricultural and forestry sector.⁸⁵ While it is not a law imposed across the entire country, the repeal of this legislation puts natural growth forests at risk of logging.⁸⁶ This suspension of the conservation is a part of the Regional Forestry Agreement that was reaffirmed during the COVID-19 crisis which exempts

⁸¹ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>, Australian Treasury (2020). <https://treasury.gov.au/sites/default/files/2020-05/Overview-Economic-Response-to-the-Coronavirus-3.pdf>

⁸² Climate Change News (2020). <https://www.climatechangenews.com/2020/04/20/coronavirus-governments-bail-airlines-oil-gas/>

⁸³ APPEA (2020). https://www.appea.com.au/media_release/sa-supports-exploration-amid-covid-19-challenges/

⁸⁴ Australian Treasury (2020). <https://treasury.gov.au/sites/default/files/2020-05/Overview-Economic-Response-to-the-Coronavirus-3.pdf>

⁸⁵ Drilled News (2020). <https://www.drillednews.com/post/the-climate-covid-19-policy-tracker>

⁸⁶ Monga Bay (2020). <https://news.mongabay.com/2020/05/australias-logging-madness-fuels-more-fires-hastens-ecosystem-collapse/>

loggers from compliance to certain federal conservation laws, including the Environmental Protection Biodiversity Conservation Act.⁸⁷

⁸⁷ The Guardian (2020). <https://www.theguardian.com/environment/2020/apr/17/polluter-bailouts-and-lobbying-during-covid-19-pandemic>

1.12 Brazil

Brazil has passed a total of \$150 billion USD in fiscal stimulus spending.⁸⁸

Composition of stimulus: The Brazilian government has introduced a number of measures to support businesses, including an additional extension of working capital to SMEs (\$14.9 billion USD) and a relief plan of at least \$8 billion to large companies affected by the crisis. A large proportion of stimulus is directed at industry and transport sectors, while some specific support has also been announced for agriculture producers. Other stimulus measures include health and medical equipment spending, income and employment support.

Brazil's negative score is driven by a combination of poor underlying performance and specific 'brown' policies.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Insufficient
 - ◇ Yale's EPI: Low-Medium.
 - ◇ OECD Environmental Stringency: Very Low.
 - ◇ Sectoral emissions intensity (GHG/\$): High.
 - ◇ EIU Agriculture Sustainability Index: Low.
- **Measure-specific conditionality (b_2):** Information regarding deregulation, the delaying or deferral of climate policies, or specific green conditions were included as measure specific conditions. At this time, the measure specifications considered for Brazil include:
 - ◇ Brazil has announced a delay in their electricity auctions which were anticipated to be rolled out in the spring of 2020.⁸⁹ Because of this delay, it is likely gas producers have more time to improve their relative market share and attract additional private investment, harming the renewable sector. The postponement of energy auctions may impose additional barriers to the development of renewable energy in the country. By supporting natural gas' ability to have a competitive edge in the market, the country is delaying the development of 'green' energy projects.
 - ◇ Brazil has followed suite with many other European and North American countries and extended unconditional financial support to the airline industry.⁹⁰ The government is extending the deadline for repayment on airport concession contracts until December of 2020. This deferral of payments without condition is a 'brown' policy for the transportation sector.
 - ◇ Since Brazil has introduced economic recovery measures, the country has taken significant steps to deregulate land use in the Amazon to stimulate economic activity in the region. This deregulation includes the relaxation of restrictions on logging, mining and other development permits to boost growth in the agriculture and forestry and industrial sectors.⁹¹

⁸⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

⁸⁹ BN Americas (2020). <https://www.bnamericas.com/en/analysis/spotlight-the-impacts-of-brazils-decision-to-postpone-all-electricity-auctions>

PV Magazine (2020). <https://www.pv-magazine.com/2020/04/01/brazil-postpones-energy-auctions/>

⁹⁰ KPMG Insights (2020). <https://home.kpmg/xx/en/home/insights/2020/04/brazil-government-and-institution-measures-in-response-to-covid.html>

Business Wire (2020). <https://www.businesswire.com/news/home/20200521005773/en/Corporaci%C3%B3n-Am%C3%A9rica-Airports-Announces-1Q20-Results>

⁹¹ Brazil government (2020). http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/Mpv/mpv910.htm

- One example is a recent bill introduced by Bolsonaro allowing illegal occupants of land who have made it agriculturally productive to make a claim for legal title to the land.⁹² Relaxing the enforcement of property rights for land use in the Amazon and creating a process for poachers to qualify for land deeds is predicted to cause an uptick in this illegal land poaching, directly harming indigenous communities increasing deforestation which has negative environmental consequences.⁹³ The bill explicitly is designed to allow for over 9.8 million hectares of land that is currently under unrecognized indigenous use to be opened up for economic activity, effectively serving as a deregulatory measure for the mining and timber industries.⁹⁴ Because of this deregulation, increased economic activity will largely be gained in the industrial sector. For our analysis, this measure is considered as an environmental rollback for the industry sector in our analysis.
- An additional measure leading to the increased ‘brownness’ of the agriculture sector is the decreased oversight for environmental monitoring in the Amazon. Because of the COVID-19 crisis, one third of enforcement agents were asked to stay home and isolate, lessening the availability of work force to combat illegal deforestation and land poaching.⁹⁵ While this is not an explicit stimulus measure, this recommendation, coupled with the firing of two supervisors for the government in deforestation and a decrease in funding for equipment and labour for agents has strained the department’s ability to protect land.⁹⁶ Given the lack of monitoring and enforcement that is exacerbated by the COVID-19 crisis, we consider this a deregulatory impact, resulting in a more ‘brown’ score for agriculture in Brazil as decreased monitoring can lead to activities which cause damage to ecosystems and natural health through deforestation.

⁹² The Guardian (2020). <https://www.theguardian.com/environment/2020/may/28/studies-add-to-alarm-over-deforestation-in-brazil-under-bolsonaro-covid-19>

⁹³ Financial Times (2020). <https://www.ft.com/content/ca84017c-94c5-48ca-80c6-2ac31ea20cd9>

⁹⁴ Monga Bay (2020). <https://news.mongabay.com/2020/05/brazil-opens-38000-square-miles-of-indigenous-lands-to-outsiders/>

⁹⁵ Politico EU (2020). <https://www.politico.eu/article/climate-battle-shifts-to-once-in-a-generation-national-budgets/>

⁹⁶ The Rising (2020). <https://therising.co/2020/05/21/amazon-fires-may-be-worse-2020/>

1.13 Canada

Canada has passed a \$149 USD billion stimulus package.⁹⁷

Composition of stimulus⁹⁸: Alongside measures to fund the healthcare system and to support households, Canada is providing substantial support for businesses, including specific environment related measures. For the energy sector, \$1.72 billion CAD (\$1.23 billion USD) has been split between the main oil producing provinces of British Columbia, Alberta, and Saskatchewan. An additional \$750 million CAD (\$537 million USD) has been set aside for oil and gas to comply with the 2019 methane regulation. CA\$5 billion (US\$3.6 billion) has been secured for Farm Credit Canada to extend more loans to agricultural and food producers.

‘Green’ policies in Canada’s energy sector balance with some ‘brown’ policies and underlying performance on some baseline indicators, resulting in a neutral index score.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Insufficient.
 - ◇ Yale’s EPI: Medium-High.
 - ◇ OECD Environmental Stringency: Medium-High.
 - ◇ Sectoral emissions intensity (GHG/\$): Medium-High
 - ◇ EIU Agriculture Sustainability Index: Medium.
- **Measure-specific conditionality (b_2):** In Canada, deregulation of the energy sector has had a stronger negative impact than the positive expenditure invested in oil and gas clean up. Specific measures include:
 - ◇ Canada has committed \$1.22 billion USD to cleaning up abandoned and unused well sites as a part of the stimulus funding appropriated to the provinces of British Columbia, Alberta, and Saskatchewan.⁹⁹ This funding is categorised as green infrastructure investment because it works to reduce the environmental impact of the oil and gas sector on the natural environment. While concerns over the responsibility of who should fund this project raise concerns of whether this is truly a green investment or a brown subsidy, we consider this fund to contribute to the reduction of environmental impact in the energy sector.
 - ◇ Additional funding to the energy sector amounting to \$530 million USD was made available through the Emissions Reductions Fund to cover the cost of labour necessary to install upgraded methane monitoring and reduction technologies in line with recently updated methane emissions standards.¹⁰⁰ This funding is a green infrastructure investment made to ensure the long term emissions reductions of the oil and gas sector in Canada.
 - ◇ Despite ‘green’ measures passed in Canada’s economic stimulus package, the extension of tax relief to the oil and gas sector provided to the Province of Alberta is a direct subsidization of ‘brown’ energy infrastructure.¹⁰¹ In addition to the tax relief, the expanded export credit capacity in

⁹⁷ Conversion from the Canadian dollar to US dollar are taken using the weekly average exchange using Morning Star

⁹⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

⁹⁹ Canadian Government (2020). <https://pm.gc.ca/en/news/news-releases/2020/04/17/prime-minister-announces-new-support-protect-canadian-jobs>

¹⁰⁰ Canadian Broadcast Corporation (2020). <https://www.cbc.ca/news/politics/financial-aid-covid19-trudeau-1.5535629>

¹⁰¹ Climate Change News (2020). <https://www.climatechangenews.com/2020/04/20/coronavirus-governments-bail-airlines-oil-gas/>

the Export Development Canada and Business Development Bank will benefit the oil and gas sector, without conditions for environmental performance.¹⁰²

- ◇ In the transport sector, Canada has suspended airline docking fees temporarily, waiving the taxation for a high-emissions industry.¹⁰³ Suspension of ground lease rents through the end of the year are being expanded to large port cities across Canada. Providing economic relief to aviation and subsequently navigation without any conditions falls into a 'brown' category as they do not require additional 'green' improvements in exchange for tax relief.
- ◇ Loans provided to the fishing and agricultural industry in Canada have been enacted without conditions for improvement in environmental performance.¹⁰⁴ Given cattle are a high emissions agricultural product and fisheries require sustainable management practices to ensure avoid ecosystem collapse or other resulting environmental damages, providing unconditionally are categorised as 'brown' policies in our analysis.
- ◇ The Canadian government announced that recipients of support from the Large Employer Emergency Financing Facility (LEEFF) must commit to disclosing yearly climate-related reports, including an assessment of the impact of their future operations on sustainability and climate goals.¹⁰⁵ This 'green' strings attached bailout covers the energy, industry, agriculture, transport and waste sectors in Canada. Given the requirement to disclose climate related risks, firms who are eligible for the funding will have to make permanent adjustments to the financial reporting procedures.

¹⁰² EDC (2020) <https://www.edc.ca/en/about-us/newsroom/covid-19-oil-gas-support.html>

¹⁰³ Government of Canada (2020). <https://www.canada.ca/en/department-finance/economic-response-plan.html>

¹⁰⁴ Government of Canada (2020). <https://www.canada.ca/en/department-finance/economic-response-plan.html>

¹⁰⁵ Prime Minister of Canada (2020). <https://pm.gc.ca/en/news/news-releases/2020/05/11/prime-minister-announces-additional-support-businesses-help-save>

1.14 Russia

Russia has passed a total of \$48 billion USD in fiscal stimulus measures.¹⁰⁶

Composition of stimulus: Alongside healthcare and welfare measures, Russia has included support for businesses in its stimulus package. These include loan guarantees, interest rate subsidies, tax deferrals and delays in social contributions for SMEs in affected industries. However, very little data is available on the breakdown of these stimulus flows between sectors.

Russia has large negative scores in industry and transport, which are expected to receive substantial support.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Critically Insufficient.
 - ◇ Yale's EPI: Low.
 - ◇ OECD Environmental Stringency: Very Low.
 - ◇ Sectoral emissions intensity (GHG/\$): Very High.
 - ◇ EIU Agriculture Sustainability Index: Low-Medium.
- **Measure-specific conditionality (b_2):** Information regarding deregulation, the delaying or deferral of climate policies, or specific green conditions were included as measure specific conditions. The measures introduced at this time include:
 - ◇ Russia has also introduced a deferral of loan payments for 'hard hit' sectors who are classified as small and medium enterprises (SMEs).¹⁰⁷ This loan deferral for SMEs will include any extended cash received by these businesses. The 'hard hit' sectors include leisure, service, transportation, travel and aviation. By offering loan deferral for these firms is a continuation of business-as-usual investment in 'brown' sectors. No conditions or additional funding has been available to 'green' sectors.

¹⁰⁶ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

¹⁰⁷ KPMG Insights (2020). <https://home.kpmg/xx/en/home/insights/2020/04/russia-government-and-institution-measures-in-response-to-covid.html>

1.15 Indonesia

Indonesia has passed \$44 billion USD in fiscal stimulus measures.¹⁰⁸

Composition of stimulus: Indonesia's initial stimulus package focused largely on support for healthcare and welfare. More recent measures involve substantial support for businesses including tax incentives, loans and guarantees – with a large proportion expected to be directed towards industry and agriculture.

Indonesia's negative index score is driven by poor performance across the environmentally related sectors.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◇ Climate Action tracker score: Highly insufficient
 - ◇ Yale's EPI: Low.
 - ◇ OECD Environmental Stringency: Very Low.
 - ◇ Sectoral emissions intensity (GHG/\$): High.
 - ◇ EIU Agriculture Sustainability Index: Low.
- **Measure-specific conditionality (b_2):** Indonesia has introduced specific measures in environmentally relevant sectors. Those included are below:
 - ◇ A mining law announced in early May has expanded the land area available to miners, designed to stimulate more value-added production of mined coal and minerals.¹⁰⁹ This law has required mining companies to allocate exploration funds and to increase exploration each year.¹¹⁰ The law additionally extends royalty rates for large miners. Additionally, the new law has very few provisions for environmental impact except the requirement to complete land restoration projects. The specifications of what qualifies is unclear. The purpose of the bill is developing downstream mining industries and centralising the permitting process, but this requires sustaining investment to a 'brown' industry and encouraging its expansion in the country.
 - ◇ The rolling back of permitting for forest and land use passed in February drove estimates of 'brown' performance in the agriculture sector for Indonesia in our first and second version of the index. The relaxing of permit regulations for land use and forest use is a major concern in Indonesia given the rapid deforestation by illegal or overlogging the country has experienced when policies limiting the number of people.¹¹¹ The relaxation of measures risks damaging remaining forest in the short run in exchange for a short run economic boost in the timber sector. However, this relaxation has since been repealed. Most recent developments by the Indonesian government have backtracked on their relaxation of the legality license for wood exports.¹¹² Because the government has revoked this decision due to pressure from export markets and activists, this specific conditionality has now been removed from our analysis, which has caused Indonesia's index score to improve.

¹⁰⁸ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>

¹⁰⁹ Reuters (2020). <https://www.reuters.com/article/indonesia-mining/indonesia-passes-new-mining-law-revisions-met-with-praise-and-protest-idUSL4N2CU2Q4>

Detik Finance (2020). <https://finance.detik.com/energi/d-5011570/pasal-pasal-mencurigakan-dalam-ruu-minerba>

¹¹⁰ Jakarta Post (2020). <https://www.thejakartapost.com/news/2020/05/14/explainer-new-rules-in-revised-mining-law.html>

¹¹¹ Mighty Earth COVID report (2020). <https://stories.mightyearth.org/the-coronavirus-climate-profiteers/index.html>

Monga Bay (2020). <https://news.mongabay.com/2020/03/indonesia-timber-illegal-logging-legality-license-svlk/>

¹¹² Monga Bay (2020). <https://news.mongabay.com/2020/05/indonesia-svlk-legal-timber-license-eu-vlegal-export/>

1.16 South Africa

South Africa has passed \$27 billion USD in fiscal stimulus measures.¹¹³

Composition of stimulus: South Africa's stimulus package includes support for the immediate response to the crisis in healthcare and welfare measures alongside specific support for businesses. The government has extended loan guarantees (\$10.6 billion USD) and tax measures (\$3.7 billion USD) to businesses. Specific support has been granted for the agriculture sector, which includes direct payments to small farmers.

South Africa scores poorly on the key indicators, with industry the main contributor to its 'brown' index score.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◊ Climate Action tracker score: Highly Insufficient.
 - ◊ Yale's EPI: Very Low.
 - ◊ OECD Environmental Stringency: Very Low.
 - ◊ Sectoral emissions intensity (GHG/\$): Very High.
 - ◊ EIU Agriculture Sustainability Index: Medium.
- **Measure-specific conditionality (b_2):** South Africa currently has not announced any specific 'green' or 'brown' spending measures. The only measure of interest in South Africa is the country's \$20.5 billion commitment to public works projects, announced on May 27th.¹¹⁴ The specific projects are infrastructure projects that require presidential approval, and may include railways, ports and energy projects although the level of 'greenness' is currently undisclosed. Whether these projects go towards low carbon, renewable and electric infrastructure will determine the overall greenness and we will likely have more information in the coming weeks to evaluate the environmental performance of this spending. In this version of our release, we have used the baseline of South Africa's sectors to estimate the greenness index.

¹¹³ <https://mg.co.za/article/2020-04-21-ramaphosa-announces-r500-billion-covid-19-package-for-south-africa/>

¹¹⁴ Reuters (2020). <https://www.businesswire.com/news/home/20200521005773/en/Corporaci%C3%B3n-Am%C3%A9rica-Airports-Announces-1Q20-Results>

1.17 Mexico

Mexico has passed a total of \$26 billion USD in fiscal stimulus measures.¹¹⁵

Composition of stimulus: Alongside health and social programmes, Mexico's stimulus package includes support for businesses - the government has announced \$1 billion USD in loans. However, a large proportion of the stimulus package is directed towards the energy sector.

Mexico's support for its 'brown' energy sector is driving its negative index score.

- **Underlying sector context (b_1):** Performance on key indicators:
 - ◊ Climate Action tracker score: Critically Insufficient.
 - ◊ Yale's EPI: Low.
 - ◊ OECD Environmental Stringency: Very Low.
 - ◊ Sectoral emissions intensity (GHG/\$): Very High.
 - ◊ EIU Agriculture Sustainability Index: Low-Medium.
- **Measure-specific conditionality (b_2):** Mexico has introduced specific measures in environmentally relevant sectors. Those included are below:
 - ◊ The Mexican government has committed part of its \$26 billion USD spending package to the flagship oil refinery and the new airport development that has begun under the Mexican President.¹¹⁶ With particular budgeting for the new airport, the government is investing in 'brown' infrastructure development. Both major projects will receive funding under the COVID stimulus package and are a further investment in 'brown' infrastructure.

¹¹⁵ Reuters (2020). <https://www.reuters.com/article/us-health-coronavirus-mexico-budget/too-little-too-late-mexico-unveils-26-billion-coronavirus-spending-shift-idUSKCN22423Q>

¹¹⁶ Mexican Government (2020). <https://lopezobrador.org.mx/2020/04/05/presidente-anuncia-acciones-para-la-reactivacion-economica-ante-covid-19-en-primer-informe-del-ano-al-pueblo-de-mexico-2/>

1.18 European Commission (planned)

Alongside the stimulus packages of its members, the European Union has announced its own stimulus packages. Including the proposed 'Next Generation EU' recovery plan, the European Commission's stimulus package totals €1.33 trillion (\$1.46 trillion USD).¹¹⁷

Composition of stimulus: On top of an initial package of rescue measures, the European Commission has proposed a large 'Next Generation EU' recovery stimulus package. While this is yet to be approved, our analysis tracks the greenness of the proposed measures to provide a provisional index score for the European Commission. The European Commission shows up faint in the index chart to signify that the score is not yet confirmed. The €750 billion recovery plan is composed of €500 billion in grants and €250 billion in loans for member states. The proposed package is expected to reinforce the European Green Deal, and so is expected to have a substantial positive environmental impact. The biodiversity and farm to fork strategies appear to be particularly relevant in terms of land use policies that enhance nature's conservation efforts. The European Commission has also indicated that it will reinforce the long-term EU budget from 2021-2027 by €1.1 trillion.¹¹⁸

The European Commission has positive scores across the board based on the expected 'green' impact of the 'Next Generation EU' recovery plan.

- **Underlying sector context (b_1):** Performance on key indicators:¹¹⁹
 - ◇ Climate Action tracker score: Insufficient.
 - ◇ Yale's EPI: Medium-High.
 - ◇ Sectoral emissions intensity (GHG/\$): Low.
 - ◇ EIU Agriculture Sustainability Index: High.
- **Measure-specific conditionality (b_2):** Proposed measures included in the 'Next Generation EU' recovery package include:
 - ◇ An addition of €40 billion to the Just Transition Fund to reduce the reliance on fossil fuels.¹²⁰ The Just Transition fund, following the principles of the EU taxonomy on sustainable finance would target regions which heavily rely on fossil fuel, mining, and other high emissions sectors to support the labour transition and economic impacts of the low-carbon transition.
 - ◇ Support for home energy efficiency and green heating equal to €90 billion.¹²¹
 - ◇ €25 billion in funding for natural capital and circular economy, alongside support for rural development fund to decarbonize agriculture.¹²² This funding would be mobilised across the next decade to establish nature-based solutions and low carbon infrastructure in waste and agriculture.

¹¹⁷ IMF Policy Tracker (2020). <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#G>, European Commission (2020). https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/recovery-plan-europe_en

¹¹⁸ European Commission (2020). https://ec.europa.eu/info/sites/info/files/factsheet_1_en.pdf

¹¹⁹ The Climate Action Tracker provides a score for the EU. For other indicators, scores are calculated by taking an average of scores of member countries.

¹²⁰ EURACTIV (2020). <https://www.euractiv.com/section/energy/news/eu-boosts-just-transition-fund-pledging-e40-billion-to-exit-fossil-fuels/>

¹²¹ Guardian (2020). https://www.theguardian.com/environment/2020/may/28/eu-green-recovery-package-sets-a-marker-for-the-world?CMP=share_btn_tw

¹²² S&P Global (2020). <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/all-the-green-elements-of-the-eu-s-8364-750b-recovery-proposal-58822603>

- ◇ Funding for sustainable infrastructure through InvestEU amounting €20 billion.¹²³ The fund will include money for renewable energy and storage, clean hydrogen, batteries and carbon capture technologies.
- ◇ Support for electric vehicle sales and charging infrastructure amounting to €60-80 billion.¹²⁴ This is a 'green' provision in the transport sector across Europe given the network effects of building electric stations across the country to stimulate adoption of EVs.
- ◇ Loans and grants to member states are also expected to be tied to 'do no harm' environmental conditions. These loans are conditional on pledges which will align with EU goals for sustainable investment and climate risk.¹²⁵

¹²³ S&P Global (2020). <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/all-the-green-elements-of-the-eu-s-8364-750b-recovery-proposal-58822603>

¹²⁴ Bloomberg (2020). https://www.bloomberg.com/news/articles/2020-05-20/eu-to-unveil-world-s-greenest-virus-recovery-package?cmpid=BB052120_GREENDAILY&utm_medium=email&utm_source=newsletter&utm_term=200521&utm_campaign=greendaily

¹²⁵ KPMG Insights (2020). <https://home.kpmg/xx/en/home/insights/2020/04/russia-government-and-institution-measures-in-response-to-covid.html>