

# 4 Bridging the gap – implications of current COVID-19 fiscal rescue and recovery measures

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## 4.1 Introduction

The COVID-19 pandemic has brought unprecedented health and socioeconomic challenges – several of which will continue to have a profound effect on global society for many years to come. These new challenges compound many existing social and economic challenges, including widespread social inequality, rural/urban disparities and climate change. This confluence of challenges requires a considered response.

At the same time, COVID-19 rescue and recovery measures present an opening to stimulate the economy, while simultaneously accelerating a transition towards a low-carbon economy consistent with the temperature goals of the Paris Agreement. Unless this opening is pursued, the Paris Agreement goals are likely to slip further out of reach (chapter 3).

Against this background, this chapter assesses two main questions:

- ▶ What can we say about the size and extent to which COVID-19 rescue and recovery measures to date support low-carbon or high-carbon development? (sections 4.2 and 4.3)
- ▶ What are the emerging lessons for governments in the pursuit of a low-carbon economic recovery? (section 4.4)

Global fiscal actions to address the impact of the COVID-19 pandemic are of an unprecedented scale. As section 4.2 shows, in September 2020, fiscal actions amounted to around US\$12 trillion, or 12 per cent of global gross domestic product (GDP). Particularly for countries with capacity to cheaply borrow funds (high ‘fiscal space’), governments have been willing to spend large sums of money, often drastically increasing public debt. For nations

without this fiscal space (often developing countries), public spending has been significantly lower to date.

To date, most governments have rightly focused on funding economic rescue measures to protect lives and businesses in their immediate economic response to COVID-19. As competing objectives and varied COVID-19 impact and response timelines have emerged around the world, some governments have also started sharpening their fiscal focus to funding recovery measures to reinvigorate their economies.

This chapter shows that so far, the opening to use rescue and recovery measures to support a low-carbon transition has largely been missed. Although there are examples of measures that support a transition towards a decarbonized world, most countries are currently adopting measures that support a high-carbon status quo of their economies – or even foster new high-carbon investments. This is particularly the case for rescue measures.

The jury is still out on whether COVID-19 rescue and recovery measures will lead to lower or higher global greenhouse gas (GHG) emissions in the longer run (see also chapter 3). However, this chapter illustrates that certain rescue and recovery measures can simultaneously support a rapid, employment-intensive and economically cost-effective economic recovery and a low-carbon transition. Such measures include i) support to low-carbon and renewable energy, low-carbon transport, zero-energy buildings and low-carbon industry; ii) support to research and development of zero-emissions technologies; iii) fiscal reforms of fossil fuel subsidies; and iv) nature-based solutions, including large-scale landscape restoration and reforestation.

A detailed evaluation of the appropriateness of given measures in various country contexts is required to assess the scope for rolling them out across countries, as impacts vary across different political, environmental,

economic, business, legal, regulatory and social contexts. Well-designed spending can also tackle other pressing problems such as air pollution, natural capital deficit, wealth and income inequality, inadequate quality of life and rural/urban disparities.

The future can still be shaped in a way that helps bridge the emissions gap, through the decisions yet to be made on the composition and implementation of the announced recovery packages and on future recovery actions.

## 4.2 Unprecedented global fiscal spending on economic rescue and recovery measures

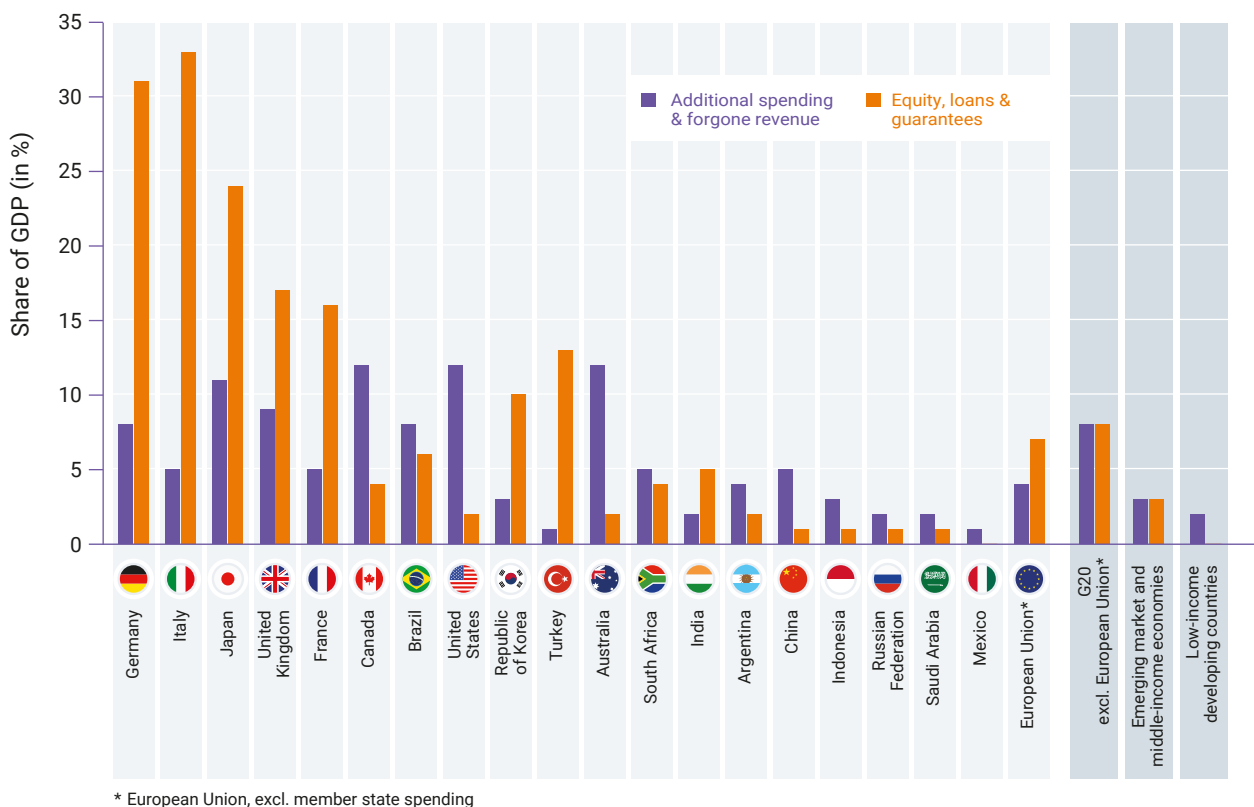
Fiscal actions to address the impact of the COVID-19 pandemic are unprecedented in scale (see figure 4.1): around US\$12 trillion, or 12 per cent of global GDP, had been spent by September 2020 (International Monetary Fund [IMF] 2020a, 2020b). For some G20 members, fiscal spending has been as high as 40 per cent of GDP. However,

spending profiles have not been homogeneous around the world. While the average G20 spend currently hovers at approximately 15 per cent of GDP, the average for the middle- and low-income country categories used by the International Monetary Fund (IMF) is less than 6 per cent (IMF 2020a).

Fiscal responses to the COVID-19 crisis have included both new spending measures and changes to pre-existing revenue streams. Spending measures have included direct liquidity support for businesses and not-for-profits; direct provision of cash, resources and health services for citizens; new incentive measures (for instance to restart tourism); infrastructure investment and; investment in research and development (R&D). Revenue measures have included tax deferrals, tax cuts, and reductions in payments and rent for public services and resources.

While the recorded size of fiscal action varies slightly by institution and tracker, overall spending trends are relatively consistent. The main difference is in the scope and timing of tracking fiscal measures, monetary measures,

**Figure 4.1.** Discretionary fiscal response announced by G20 countries in response to the COVID-19 pandemic as at 11 September 2020, expressed as a percentage of GDP



*Note:* Discretionary fiscal response by the European Union includes all (announced) fiscal actions at the European Union institutional level, excluding fiscal spending at the member state level. The average across all G20 members excluding the European Union represents the weighted average by country-specific GDP values. The classification according to emerging market and middle-income economies and low-income developing countries comes from the IMF's Fiscal Monitor: Policies for the Recovery of October 2020 (IMF 2020b).

*Sources:* IMF (2020a); IMF (2020b)

and deregulation initiatives.<sup>1</sup> For instance, the Overseas Development Institute (ODI) estimates the total fiscal stimulus of G20 countries, excluding fiscal actions at the European Union institutional level, at US\$10.8 trillion as at August 2020 (Overseas Development Institute [ODI] 2020), compared with the US\$10.3 trillion estimated by the IMF as at September 2020 (IMF 2020a) and the US\$12.4 trillion estimated by the Oxford University Economic Recovery Project and the Green Fiscal Policy Network as at November 2020 (O’Callaghan *et al.* 2020).

If monetary liquidity stimulus provided by countries’ central banks is considered in addition to fiscal spending, the share of GDP spent on COVID-19 measures increases sharply: up to 70 per cent for some G20 members (ODI 2020). The range of fiscal and monetary interventions reflects the full policy space available to each country to respond to the COVID-19 pandemic.

Since many developing countries entered the pandemic with pre-existing vulnerabilities and limited fiscal space, and given the immediate threat to lives due to the health and income impacts of COVID-19, spending in these nations has primarily targeted short-term rescue measures. Key vulnerabilities include high levels of public indebtedness, slowing economic growth rates due to subdued global demand, and trade tensions. To date, this has left little room to fund recovery strategies with a longer-term perspective. In view of this, regional development banks and the international donor community have increased their commitment of support.

At the regional level, for example, the African Development Bank initially responded by raising US\$3 billion for a ‘Fight COVID-19’ social bond in March 2020, the largest US-dollar-denominated social bond transaction in the capital markets to date (African Development Bank [AfDB] 2020a). This was followed by its creation of a US\$10 billion response facility to assist governments and the private sector, its approval of loans and grants to individual member countries, and its support for regional efforts to combat the pandemic (AfDB 2020b; AfDB 2020c). Meanwhile for most European and Central Asian countries, the European Bank for Reconstruction and Development (EBRD) plans to devote more than half of its total COVID-19 recovery investments to the green economy (Bennett 2020).

The IMF doubled its COVID-19-related funding capacity from US\$50 billion to US\$100 billion in April 2020, had reached

US\$280 billion lending commitment by October 2020, and stands ready to deploy US\$1 trillion in lending capacity to help its member countries to weather the impact of the pandemic (IMF 2020c; IMF 2020d; IMF 2020e). Meanwhile, the World Bank Group also significantly increased its commitment for COVID-19 projects from US\$14 billion in March 2020 to US\$160 billion in April 2020 (World Bank 2020a; World Bank 2020b). The World Bank had allocated US\$43 billion of this pool as at September 2020 (World Bank 2020c). Reflecting global spending patterns, in the early stages of the COVID-19 outbreak, most World Bank projects supported emergency funding to address health priorities. More recently, the scope of funding has widened to include financial sector reform, education, governance, and market support.<sup>2</sup> The international donor community is likely to play an important role in supporting and steering funding towards measures that support an inclusive, resilient and low-carbon economic recovery (UN Regional Commissions 2020), especially in the least developed countries.

### 4.3 Fiscal COVID-19 spending has so far primarily supported the global status quo of high-carbon economic production

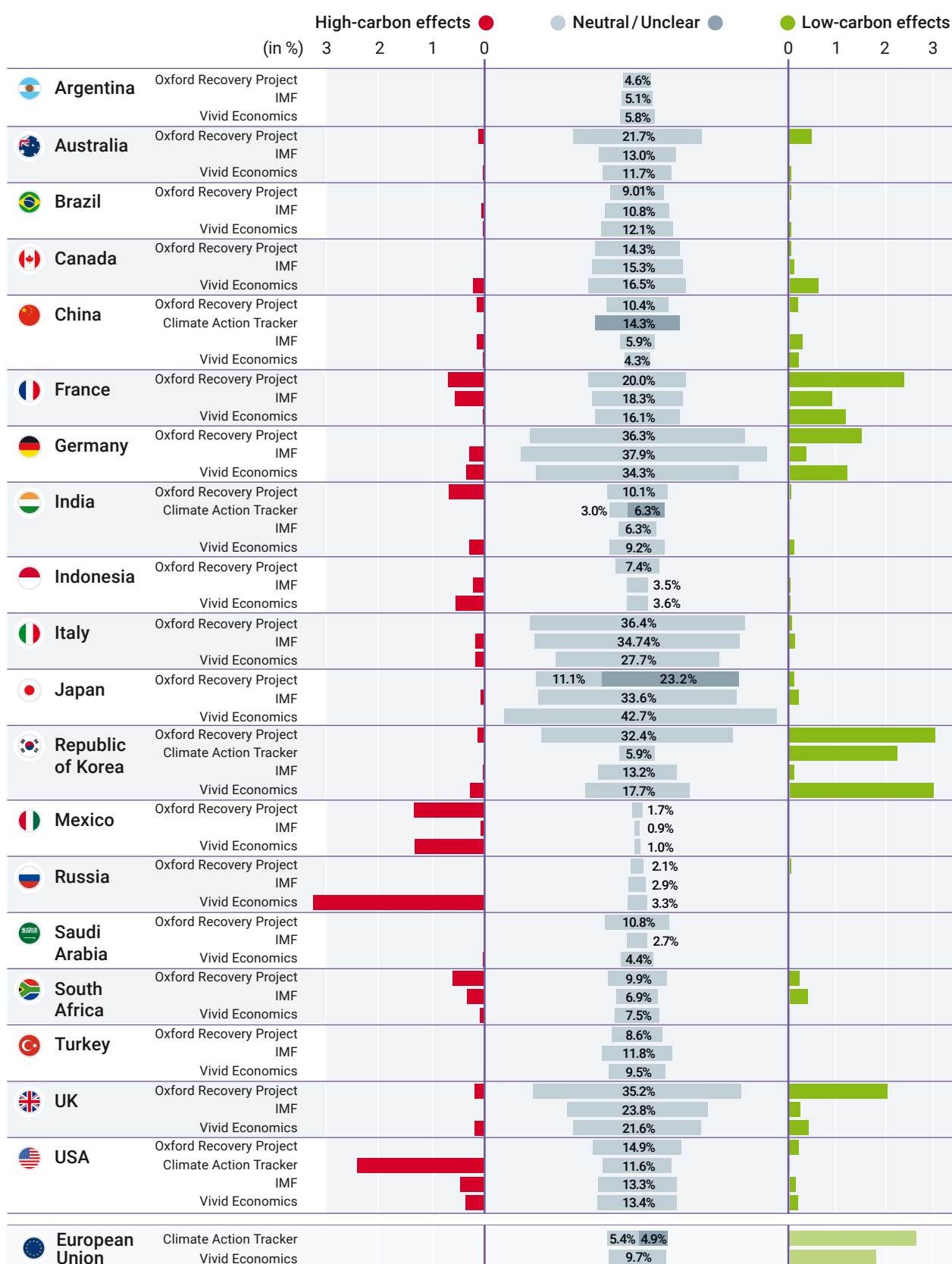
This section provides a preliminary assessment of the extent to which COVID-19 fiscal rescue and recovery measures to date support low- or high-carbon development, and whether they have a positive net effect on GHG emissions. As at October 2020, COVID-19 fiscal spending had primarily supported the global status quo of high-carbon economic production. While it is understandable that immediate rescue measures were directed to incumbent industry, later rescue and recovery measures could have supported low-carbon development, without forsaking opportunities for economic gain (Hepburn *et al.* 2020).

Only a few countries have transformed green rhetoric into low-carbon recovery measures (that is, measures that lead to a reduction in GHG emissions). For most, recovery spending has mostly been high-carbon (that is, implying negative net effects GHG emissions) or neutral (that is, having no discernible effects on GHG emissions). Furthermore, in a number of cases, the effect on GHG emissions is still unclear. Focusing on G20 members, figure 4.2 provides an overview of climate negative, neutral and positive fiscal rescue and recovery measures

1 For example, the IMF (2020a) includes both additional spending and forgone revenue as ‘above the line measures’ and equity injections, loans, asset purchase, debt assumptions and contingent liabilities as ‘liquidity support’. The ODI (2020) includes both ‘fiscal stimulus’ including aid, grants and guarantees and ‘monetary (liquidity) stimulus’ including central banks’ explicit monetary liquidity injection and expected impact from lowering policy interest rates. Vivid Economics includes deregulation measures in its Green Stimulus Index (Vivid Economics 2020a). The highest granularity pure-form fiscal spending tracker, from the Oxford University Economic Recovery Project, combines inputs from these sources with its own tracking to report and classify policies covering all fiscal stimulus measures announced by the largest 50 economies since March 2020 (O’Callaghan *et al.* 2020).

2 See the World Bank Group’s *Operational Response to COVID-19 (coronavirus) – Projects List* (accessed on 11 September 2020) for a list of beneficiary countries: <https://www.worldbank.org/en/about/what-we-do/brief/world-bank-group-operational-response-covid-19-coronavirus-projects-list>.

**Figure 4.2.** Non-exhaustive overview of total fiscal rescue and recovery measures of G20 members with high-carbon, neutral and low-carbon effects as a share of 2019 GDP



*Note:* Oxford Recovery Project refers to the Oxford University Recovery Project (OUPER).

All announcements by the European Council on the NextGenerationEU recovery fund and additional green climate change-related spending in the 2021–2027 Multiannual Financial Framework remain preliminary as at October 2020.

*Sources:* Climate Action Tracker (2020); IMF (2020a); IMF (2020b); O’Callaghan *et al.* (2020); Vivid Economics (2020a). Climate Action Tracker data from August 2020, Vivid Economics from August 2020, IMF from September 2020 and Oxford from November 2020.

to date, based on four main trackers of COVID-19 fiscal investments. [Annex II](#) provides an overview of the methodologies underlying these four COVID-19 trackers.

For G20 members, several preliminary findings are emerging regarding the extent to which fiscal rescue and recovery measures to date have been low-carbon, neutral or high-carbon (Carnell *et al.* 2020; Climate Action Tracker 2020; Energy Policy Tracker 2020; IMF 2020a; Larsen *et al.* 2020; O'Callaghan *et al.* 2020; Tiftik *et al.* 2020; Vivid Economics 2020a):

- ▶ All G20 members have implemented several immediate rescue measures in response to the COVID-19 pandemic (Climate Action Tracker 2020; Energy Policy Tracker 2020; O'Callaghan *et al.* 2020; Vivid Economics 2020a). These are mostly considered neutral in terms of GHG emissions impact (for example, health-care-related spending) or supporting high-carbon industries without conditions for a low-carbon transition attached.
- ▶ Around a quarter of G20 members have dedicated shares of their packages (accounting for up to 3 per cent of GDP) explicitly to low-carbon measures as at October/November 2020 (Climate Action Tracker 2020; Energy Policy Tracker 2020; O'Callaghan *et al.* 2020; Vivid Economics 2020a). Several countries are spreading the announced sums across the years up to 2025.
- ▶ Most G20 members have brought forward measures and packages supporting a high-carbon status quo of their economies or are even fostering new high-carbon investments (O'Callaghan *et al.* 2020; Vivid Economics 2020a). For some G20 members, no explicit low-carbon measures could be identified (O'Callaghan *et al.* 2020; Tiftik *et al.* 2020; Vivid Economics 2020a).
- ▶ Assessments of the effects on GHG emissions are preliminary (see chapter 3), but will become more robust as the composition and implementation details of rescue and recovery packages become clearer.

Methodologies for identifying and quantifying the climate impacts of rescue and recovery measures and times of analysis vary slightly across institutions, bringing corresponding variance in results (figure 4.2, [Annex II](#)). However, for all trackers and across geographies, low-carbon measures are significantly outweighed by neutral and high-carbon measures.

Preliminary analysis<sup>3</sup> indicates that low-carbon policies have been slightly more prevalent in recovery measures than in rescue measures (O'Callaghan *et al.* 2020). This

is noteworthy, as the next stages of COVID-19 fiscal interventions are likely to shift a greater proportion of capital towards recovery measures, indicating prospects for increasing low-carbon measures in upcoming new recovery plans or in revisions to announced recovery plans.

### 4.4 Emerging lessons and examples for governments in the pursuit of low-carbon economic recovery

The previous sections show that the economic rescue and recovery measures announced by governments worldwide are unprecedented in scale. Although section 4.3 clearly shows that measures supporting a low-carbon transition have been limited to date, there is scope to adjust announced recovery measures to become more low-carbon and to design future packages in a manner that supports an inclusive, resilient and low-carbon economic recovery (UN Regional Commissions 2020).

As chapter 3 illustrates, global GHG emissions are projected to be significantly reduced by 2030 only if COVID-19 economic recovery is used as an opening to pursue decarbonization. Therefore, bridging the 2030 emissions gap critically depends on the extent to which this opening is used and integrated into substantially more ambitious new or updated nationally determined contributions (NDCs). Previous editions of the Emissions Gap Report have highlighted the major long-term sectoral transformations that are needed to bridge the gap and reach net-zero GHG emissions globally and these are also relevant to consider in the context of recovery measures (box 4.1).

Governments evaluate fiscal rescue and recovery spending, taxation and regulatory options against a variety of criteria. In most instances, the ability to stabilize or stimulate the economy through a specific measure is likely the first criteria considered by policymakers. However, measures that have similar short-term economic characteristics may differ considerably in terms of their social, environmental and long-term economic impacts. Considering medium- to long-term economic, environmental and social indicators can therefore help governments maximize the long-term prosperity benefits of their recovery measures. Various studies discuss, in a global context, the benefits of aligning policy with different indicators. These are summarized in table 4.1 (Flyvbjerg 2020; Hepburn *et al.* 2020; International Energy Agency [IEA] 2020; Jotzo *et al.* 2020; O'Callaghan *et al.* 2020; Vivid Economics 2020b; World Bank 2020d).

For country-specific cases, detailed evaluation is required to assess the appropriateness of each measure, as impacts vary across different political, environmental, economic, business, legal, regulatory and social domains. To design

3 As at October 2020.

**Box 4.1. Major long-term sectoral transformations needed to reach net-zero GHG emissions globally**

- ▶ Full decarbonization of the energy sector, based on renewable energy and electrification across sectors, including phasing out coal-fired power plants
- ▶ Decarbonization of the transport sector in parallel with modal shifts to public transportation, cycling and walking
- ▶ Shifts in industry processes towards electricity, (near-)zero carbon, substitution of carbon-intensive products, circularity and material efficiency
- ▶ Decarbonization of the building sector, including electrification and greater efficiency
- ▶ Enhanced agricultural management as well as demand-side measures such as dietary shifts to more sustainable, plant-based diets and measures to reduce food waste
- ▶ Zero net deforestation and the adoption of policies to conserve and restore land carbon stocks and protect natural ecosystems, aiming for significant net CO<sub>2</sub> uptake in this sector

Source: UNEP Emissions Gap Report 2019 – chapter 4 (Höhne *et al.* 2019)

optimal policy, it is important that results for each dimension are assessed and weighed against each other.

Some fiscal rescue and recovery measures are likely to perpetuate high-carbon and environmentally damaging development (see table 4.2 to table 4.7 for detailed COVID-19 examples). These include:

- ▶ fossil fuel-based infrastructure investments or fiscal incentives for high-carbon technologies and projects
- ▶ waivers or rollbacks of environmental regulations
- ▶ bailouts of fossil fuel-intensive companies without conditions for low-carbon transition or environmental sustainability: relevant industries include airlines, internal combustion automotive companies, industrial industries and fossil energy companies.

Conversely, many fiscal rescue and recovery measures can simultaneously support rapid, employment-intensive and cost-effective economic recovery and a low-carbon transition (see table 4.2 to table 4.7 for detailed examples). Broad categories include:

- ▶ support for zero-emissions technologies and infrastructure, for example, low-carbon and renewable energy, low-carbon transport, zero-energy buildings and low-carbon industry

- ▶ support to research and development of zero-emissions technologies

- ▶ fossil fuel subsidies through fiscal reform

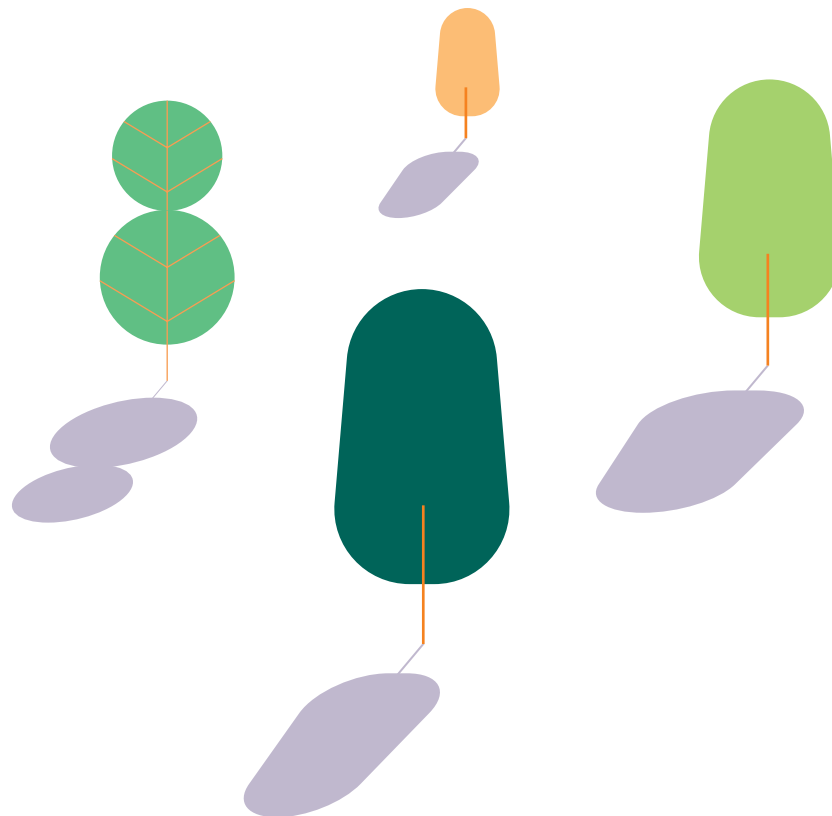
- ▶ nature-based solutions, including large-scale landscape restoration and reforestation.

Experience from early COVID-19 rescue and recovery measures can provide valuable insights for policymakers designing economic rescue and recovery measures for the immediate future. Based on an assessment of recently published literature and information from available rescue and recovery trackers, table 4.2 to table 4.7 provide case examples of low-carbon and high-carbon recovery measures organized by main sectors. All tables have been constructed based on information available in October 2020. Each table includes a set of examples that reduce GHG emissions and a set of examples that tend to increase GHG emissions or foster lock-in of high carbon emissions.









The case examples presented have all been cited by multiple sources and many incorporate relevant additional socioeconomic considerations, such as employment or social benefits (CarbonBrief 2020; Energy Policy Tracker 2020; O'Callaghan *et al.* 2020; Vivid Economics 2020a). Further research is required to assess the replicability of specific recovery examples in different country contexts given their different environmental, social and economic dimensions.





**Table 4.1.** Non-exhaustive, simplified overview of recently published literature that proposes indicators to assess and design low-carbon, sustainable and socially inclusive economic recovery measures






Indicators	IEA (2020)	World Bank (2020d)	Hepburn <i>et al.</i> (2020)	Jotzo <i>et al.</i> (2020)	O'Callaghan <i>et al.</i> (2020)	Vivid Economics (2020b)
<b>Timeliness</b> (including speed of implementation and timing of effects)	✓	✓	✓	✓	✓	✓
<b>Employment</b> (including scale, quality, location and their distribution over time)	✓	✓		✓		✓
<b>Economic activity</b> (including short- and long-term impact and multiplier effects)		✓	✓	✓	✓	✓
<b>Government budget capacity</b> (including the impact on fiscal space, e.g. producing future fiscal revenues or savings to the government)				✓		✓
<b>GHG emissions</b> (including short- and long-term and potential lock-in)	✓	✓	✓	✓	✓	✓
<b>Other environmental benefits</b> (including air quality and water)		✓		✓	✓	
<b>Social benefits</b> (including access to public resources, health, gender equity, cost-of-living reductions for low-income earners or improved public health)	✓	✓		✓	✓	



**Table 4.2.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the energy and electricity supply sector, and selected case examples as at October 2020








Country	Case study	Studies
<b>ENERGY AND ELECTRICITY SUPPLY: low-carbon and high-carbon interventions</b>		
<b>Total of 45 low-carbon spending measures identified in 17 out of 50 countries and 32 high-carbon spending measures in 14 out of 50 countries as at October 2020 (O'Callaghan et al. 2020)</b>		
<b>Direct support for zero-emissions energy technologies and infrastructure</b>		
 Republic of Korea	Increased support for solar and wind capacity deployment in 2020-2025, with a particular focus on large-scale offshore wind parks (Republic of Korea, Ministry of Economy and Finance 2020)	1 3 4 5
 Chile	Green Credit programme to make renewable energy investments of up to US\$39 million in 2020 by refinancing long-term credits granted by financial intermediaries (Government of Chile 2020; Mackenna et al. 2020)	4
 China	Increase in solar and wind energy targets to 240 GW each for 2020, implying additions of 30 GW of wind and 36 GW of solar in 2020 (Hove 2020)	3 5
 Malaysia	Tender of 1 GW solar announced as part of economic recovery efforts, with the potential to create 12,000 employment opportunities in Malaysia (Government of Malaysia 2020)	7
 Nigeria	Installation of Solar Home Systems (SHS) in 5 million households currently not connected to the national grid, including a local content production requirement triggering domestic employment opportunities (Akrofi and Antwi 2020; Government of Nigeria 2020)	2
 Japan	Up to US\$50 million for the development of on-site renewables to support corporate power purchase agreements (PPAs) under companies' commitments to the RE100 initiative (Japan, Cabinet Office 2020; Japan, Ministry of the Environment 2020)	1 4 6
<b>Support for research and development (R&amp;D) in zero-emission energy technologies and infrastructure, and liquidity support to energy companies with conditions for zero-emission transition</b>		
 Germany & France	Funding for national hydrogen strategies to support R&D in green hydrogen technologies: around US\$8.3 billion in Germany (Germany, Federal Ministry of Finance 2020) and around US\$2.4 billion in France as part of the recovery plan (France, Ministry for the Economy and Finance 2020a)	2 3 4
 Canada	Energy companies and other corporates receiving support from the Large Employer Emergency Financing Facility (LEEFF) must commit to disclosing annual climate-related reports, including an assessment of the impact of their future operations on sustainability and climate goals (Canada, Office of the Prime Minister of Canada 2020)	1 6

 Positive     
  1 Vivid Economics (2020a)     
  2 Carbon Brief (2020)     
  3 Energy Policy Tracker (2020)     
  4 O'Callaghan et al. (2020)

 Negative     
  5 Climate Action Tracker (2020)     
  6 Moisiso et al. (2020)     
  7 Martin (2020)     
  8 Sarkar (2020)



**Table 4.2.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the energy and electricity supply sector, and selected case examples as at October 2020 (continued)

ENERGY AND ELECTRICITY SUPPLY: low-carbon and high-carbon interventions		
Total of 45 low-carbon spending measures identified in 17 out of 50 countries and 32 high-carbon spending measures in 14 out of 50 countries as at October 2020 (O’Callaghan <i>et al.</i> 2020)		
Country	Case study	Studies
<b>High-carbon technology and infrastructure investments, for example reviving ‘shovel-ready’ fossil fuel infrastructure projects</b>		
 China	Regulatory change as part of the risk and early warning assessment released in February 2020 that allows all but five provinces to approve new thermal coal power plants (China Energy Portal 2020; Gao 2020; Global Energy Monitor 2020; National Energy Administration 2020)	1 3 5 6
 India	Accelerated commercial coal mining by removing the coal end-use restriction on private parties, with a first auction announced for 41 new coal mines in 2020 to reduce India’s dependence on coal imports and spur private sector investments as key drivers in the context of new (ultra) supercritical power plants being built in India and the earmarked closure of up to 5.1 GW in coal capacity by the Central Electricity Authority (CEA) due to non-compliance with pollution standards (India, Prime Minister’s Office 2020; Ranjan 2020)	1 3 4 5 8
<b>Waivers or rollback on environmental regulations for the energy industry</b>		
 USA	Waiver of reporting requirements for fossil fuel electricity generators under the Cross-State Air Pollution Rule, Acid Rain Program and NOx State Implementation Plan (Environmental Protection Agency [EPA] 2020), and executive order waiving environmental reviews of infrastructure projects	1 3 5
 Australia (states and territories)	Queensland has frozen fees and charges for coal and gas explorers until July 2021 (State Government of Queensland 2020), and South Australia has implemented a partial suspension of permitting and licensing fees in the oil, gas and mining sectors (State Government of South Australia 2020)	1 4
 Brazil	Reduction of royalties for small or medium-sized companies exploring, developing and producing oil and natural gas to initiate further private sector investment (Brazil, National Energy Policy Council 2020)	3 4
<b>Bailout of fossil fuel companies without conditions for zero-emission transition</b>		
 Canada	Short-term unconditional liquidity support and higher-risk financing for Canadian oil and gas companies to support operational requirements over a 12-month period of up to around US\$46 million (CAD 60 million) per company announced in April 2020 (Business Development Bank of Canada [BDC] 2020). While this specific programme does not include requirements for zero-emission transition, the Government of Canada has also announced other recovery investments in the oil and gas sectors designed at reducing emissions while stimulating the economy and creating jobs.	1 3 4
 USA	Paycheck Protection Program (PPP) established by the Coronavirus Aid, Relief, and Economic Security (CARES) Act and a tax loophole in the CARES Act provide financial support to oil and gas companies, without any conditions for zero-emission transition (Juhasz 2020)	1 3 6

- Positive
- Negative
- 1 Vivid Economics (2020a)
- 2 Carbon Brief (2020)
- 3 Energy Policy Tracker (2020)
- 4 O’Callaghan *et al.* (2020)
- 5 Climate Action Tracker (2020)
- 6 Moisiso *et al.* (2020)
- 7 Martin (2020)
- 8 Sarkar (2020)

One aspect not directly considered in this chapter is the extent to which the implications of COVID-19 and associated rescue and recovery measures may influence underlying drivers of high-carbon production and consumption. Box 4.2

provides an example of how COVID-19 could compound economic and environmental incentives for a transition out of coal, using India as an illustrative example.

#### **Box 4.2. A potential opening for accelerated retirement of coal plants in India**

Coal-based power is an important part of India's immediate energy future to enable reliable and modern electricity access in a historically energy-poor nation. However, beneficial economics of an accelerated phase-out of old coal-fired power plants, and expressions of political support for doing so, offer the possibility of post-COVID recovery and both climate and air pollution gains.

India has one of the largest and youngest coal power fleets in the world, with an installed capacity of 205 GW and average plant age of around 12 years (Malik *et al.* 2020). India's fleet continues to grow, with 6.7 GW added in FY2019-20 and another 59.8 GW in the pipeline, of which 23.7 GW are on hold for various reasons (Central Electrical Authority [CEA] 2020a). In contrast, 10 GW have been retired since April 2014 (India, Ministry of Power 2020a).












However, rapid capacity addition in recent years (nearly 60 per cent of India's coal capacity was commissioned between 2010 and 2020), lower-than-forecasted growth in demand, and competition from renewable energy have created a power surplus. The entire coal fleet is facing low utilization rates (55–60 per cent) and competition for limited coal supply. Forty GW of coal-fired projects were financially stressed in 2018 (India, Ministry of Power 2018). In addition, new pollution control norms will add costs to coal-based electricity production. Reflecting these developments, in her budget speech for 2020, the Finance Minister suggested that old thermal plants with high carbon emissions should be closed, and the Power Minister later announced that 5.1 GW had been earmarked for shutdown due to non-compliance with pollution standards. Two major states, Gujarat and Chhattisgarh, have announced that they will no longer construct new coal plants (Carbon Copy Editorial Team 2019).



In the medium term, COVID-19 is expected to cause a sustained decline in electricity demand compared with pre-COVID-19 trends (Spencer 2020). This could reinforce a move away from coal. Analysts have identified accelerated retirements of coal plants as a catalyst for reviving the power sector, while reducing air pollution and GHG emissions. Studies estimate that there is a strong economic and environmental case for decommissioning 27–36 GW of old, expensive or polluting plants in the short term (Fernandes and Sharma 2020; Srikanth and Krishnan 2020). This would release debt-ridden utilities from contractual fixed cost obligations and improve the utilization of younger, more efficient and cleaner plants, while also releasing low-cost coal linkages.

At the same time, it would result in considerable savings in terms of system-level costs and GHG emissions (Dang, Nuwal and Acharya 2020; Ghosh and Ruha 2020). It would also generate upstream benefits on the balance sheets of public sector banks at a critical moment. Increasing the usage of cleaner plants would avoid the cost of retrofitting old, dirty plants with air pollution control equipment. Furthermore, utilities would be free to lower their power purchase costs by replacing the lost generation with cheaper renewable energy or power exchange.







Implementing an accelerated retirement programme for old coal plants will face technical and political constraints, particularly if the promoter has not fully recovered their equity. Proposals to overcome such challenges have recently emerged, such as bundling the decommissioning costs into renewable energy auctions (Dang, Nuwal and Acharya 2020) or raising government bonds funded by ratepayer surcharges to buy out brownfield assets (known as 'securitization') (Shrimali 2020).

**Table 4.3.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the land-based transport sector, and selected case examples as at October 2020

LAND-BASED TRANSPORT SECTOR: low-carbon and high-carbon interventions		
Total of 35 low-carbon spending measures identified in 18 out of 50 countries and 41 high-carbon spending measures in 21 out of 50 countries as at October 2020 (O'Callaghan <i>et al.</i> 2020)		
Country	Case study	Studies
 <b>Financial incentives for zero-emission vehicles and other low-carbon transportation</b>		
 Italy	Government incentives for purchase and registration of low-carbon cars has increased by US\$600 million, including budget to support installation of charging infrastructure for electric vehicles	1 3 4
 India (cities)	The city government of Delhi aims to increase electric vehicles to 25 per cent of all new vehicle registrations by 2024 as part of its green stimulus package	1 3
 Canada	Funding of US\$1.1 billion to purchase zero-emission buses and charging infrastructure provided by the Canada Infrastructure Bank	2 3
 <b>Investments in low-carbon infrastructure such as electric vehicle charging infrastructure, cycleways, and low-carbon rail or other mass transit systems</b>		
 China	Expansion of electric vehicle charging network with an additional 200,000 charging stations to be installed in 2020, an increase of about 16.5 per cent over the year 2019 (Shen 2020)	1 3 4
 Mexico (cities)	Investment in active transport infrastructure in response to COVID-19 by investing in the expansion of Mexico City cycling network, with 54 km of new routes to support healthy, safe and sustainable urban mobility (City Government of Mexico City 2020; Webber 2020)	1 3 4
 United Kingdom	Funding of US\$2.6 billion (GBP 2 billion) for bike lanes, wider pavements and safer junctions (Government of the United Kingdom 2020a)	3 4
 Spain	Investments to support green transport networks, and funding for R&D in sustainable transport such as hydrogen-fuelled public transport (Government of Spain 2020)	1 4
<b>Fiscal reform on fossil fuel subsidies</b>		
 India	Temporary tax increase by INR 2 per litre for petrol and INR 4 per litre for diesel in the context of low international oil prices to create, inter alia, additional fiscal revenue streams for urgent rescue measures such as health-care provision in response to the COVID-19 pandemic (Kishore 2020; Parashar 2020)	2 3
 Nigeria	Removal of gasoline subsidies to save a total of US\$2 billion annually will increase end-consumer prices to around US\$0.32 per litre for gasoline (Bala-Gbogbo 2020)	2 4

-  Positive   
  Negative   
 1 Vivid Economics (2020a)   
 2 Carbon Brief (2020)   
 3 Energy Policy Tracker (2020)   
 4 O'Callaghan *et al.* (2020)   
 5 Climate Action Tracker (2020)   
 6 Moisio *et al.* (2020)   
 7 Martin (2020)   
 8 Sarkar (2020)

**Table 4.3.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the land-based transport sector, and selected case examples as at October 2020 (continued)







LAND-BASED TRANSPORT SECTOR: low-carbon and high-carbon interventions		
Total of 35 low-carbon spending measures identified in 18 out of 50 countries and 41 high-carbon spending measures in 21 out of 50 countries as at October 2020 (O'Callaghan et al. 2020)		
Country	Case study	Studies
 <b>Bailout of transport and automobile companies with environmental conditions</b>		
 <b>United Kingdom</b>	US\$2 billion bailout to Transport for London (TfL) to cover the public transportation company's losses, accompanied by the congestion charge in the Ultra-Low Emission Zone (ULEZ) in London increasing to GBP 15 per day (Government of the United Kingdom 2020b)	1 3
 <b>France</b>	Government-backed loan of US\$5.4 billion for car manufacturer <i>Renault</i> linked to environmental conditions, although limited information on the specific conditions has been publicly communicated (Government of France 2020)	1 3
 <b>Financial incentives for high-carbon products (e.g. combustion engine vehicles), deregulation of vehicle emission standards, or automobile company bailouts without conditions for zero-emission transition</b>		
 <b>Russia</b>	Unconditional support to the Russian automotive industry of around US\$360 million (RUB 25 billion) through state procurement and interest rate subsidies, without any conditions for zero-emission transition (Government of the Russian Federation 2020)	1 3 4 6
 <b>Republic of Korea</b>	Reduction of car sales tax for new cars from 5 per cent to 1.5 per cent between March and June 2020 and to 3 per cent from July to December 2020, without preferential measures for electric or hydrogen vehicles (Ho-Jeong 2020), despite an additional temporary tax cut on purchases of all-electric and hydrogen fuel-cell electric cars having been extended to 2022 (Kim 2020)	1 4 5

- Positive   
 1 Vivid Economics (2020a)   
 2 Carbon Brief (2020)   
 3 Energy Policy Tracker (2020)   
 4 O'Callaghan et al. (2020)
- Negative   
 5 Climate Action (Tracker 2020)   
 6 Moisiso et al. (2020)   
 7 Martin (2020)   
 8 Sarkar (2020)

**Table 4.4.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the aviation sector, and selected case examples as at October 2020

**AVIATION: low-carbon and high-carbon interventions**

Total of three low-carbon spending measures identified in 2 out of 50 countries and 48 high-carbon spending measures in 23 out of 50 countries as at October 2020 (O’Callaghan *et al.* 2020)

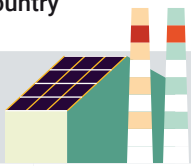





Country	Case study	Studies
 <b>Bailout of airlines or airports with conditions for zero-emission transition, and support of R&amp;D in zero-emission aviation technologies and infrastructure</b>		
 Austria	Bailout of Austrian Airlines linked to several climate conditions such as reduction in domestic flight emissions by 2030, end of flights where a train connection under three hours exists, and minimum price for tickets via fees and taxes (Bannon 2020a)	4 5
 France	Bailout of Air France linked to several non-legally binding climate conditions such as fleet efficiency improvements, reduction in domestic flight emissions by 2024 and a fuel mandate by 2025 (Bannon 2020b), supplemented by US\$1.8 billion (EUR 1.5 billion) in public support directed towards developing low-carbon planes	1 2 3 4 5
<b>Bailout of airlines or airports without conditions for zero-emission transition, and deregulation of environmental standards or rollback of fees and taxes</b>		
 EU27+UK	<b>Twenty-four out of 26 airline bailouts in EU27+UK</b> , totalling around US\$32 billion (EUR 26 billion), did not have any conditions for zero-emission transition as at October 2020 (Transport & Environment 2020)	1 9 for Germany, Italy and Spain
 Republic of Korea	Bailouts of around US\$2.5 billion provided to Korean Air and Asiana Airlines, without any conditions attached for zero-emission transition (Yim 2020)	1 3 4
 USA	Financial support to airlines of around US\$60 billion, without any conditions attached for zero-emission transition, through the CARES Act (Aratani 2020)	1 3 4

- Positive
- Negative
- 1 Vivid Economics (2020a)
- 2 Carbon Brief (2020)
- 3 Energy Policy Tracker (2020)
- 4 O’Callaghan *et al.* (2020)
- 5 Climate Action Tracker (2020)
- 6 Moisiso *et al.* (2020)
- 7 Martin (2020)
- 8 Sarkar (2020)
- 9 Greenpeace (2020)

**Table 4.5.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the industrial sector, and selected case examples as at October 2020






## INDUSTRY: low-carbon and high-carbon interventions

Total of 25 low-carbon R&D spending measures identified in 13 out of 50 countries and 47 'neutral' R&D spending measures in 17 out of 50 countries as at October 2020 (O'Callaghan *et al.* 2020)

Country	Case study	Studies
 <b>Financial incentives for investments in low-carbon technology, R&amp;D and pilot projects for difficult-to-abate sectors such as the steel and cement sector, and bailouts of industrial corporations with conditions for zero-emission transition</b>		
 Denmark	Grants of US\$140 million proposed to fund electrification and energy efficiency in industry between 2020 and 2024 to promote a "green transition" (Government of Denmark 2020)	2 5
 Sweden	Introduction of state credit guarantee programme for large-scale industrial investments that contribute to achieving the environmental and climate goals and reduce emissions (Sweden, Ministry of Finance 2020)	2 4
 United Kingdom	Around US\$450 million in funding has been provided to reduce emissions in heavy industry, for example funding to support the transition from natural gas to clean hydrogen power and the scaling-up of carbon capture and storage technology (Government of the United Kingdom 2020c)	1 2 4 5
 <b>Deregulation of environmental standards, rollback of climate measures, and bailouts of industrial corporations without conditions for zero-emission transition</b>		
 USA	Relaxation of several environmental regulations for industry and energy companies (Columbia Law School 2020), for example the Environmental Protection Agency has suspended payment of penalties for violation of environmental regulations (Friedman 2020)	1 3 5 6
G20	<b>Thirteen G20 Member States</b> have bailed out industrial corporations without conditions for zero-emission transition, or have implemented other environmentally harmful rescue and recovery measures in the industrial sector (Vivid Economics 2020a)	1

- Positive   
 1 Vivid Economics (2020a)   
 2 Carbon Brief (2020)   
 3 Energy Policy Tracker (2020)   
 4 O'Callaghan *et al.* (2020)
- Negative   
 5 Climate Action Tracker (2020)   
 6 Moisiu *et al.* (2020)   
 7 Martin (2020)   
 8 Sarkar (2020)

**Table 4.6.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the buildings and construction sector, and selected case examples as at October 2020







BUILDINGS AND CONSTRUCTION SECTOR: low-carbon and high-carbon interventions		
Total of 14 low-carbon retrofit spending measures identified in 9 out of 50 countries and nine high-carbon infrastructure spending measures (excluding transport and high-carbon energy) in 5 out of 50 countries as at October 2020 (O’Callaghan et al. 2020)		
Country	Case study	Studies
		
<b>Financial and regulatory support for energy-efficient retrofits of existing buildings, and accelerated construction of low and zero-energy buildings</b>		
 Germany	Additional funding of around US\$2.5 billion in 2020 and 2021 for a building renovation programme targeting energy efficiency improvements (Germany, Federal Ministry of Finance 2020)	1 2 3 4 5 as part of ‘Package for the Future’
 Republic of Korea	Retrofitting of old public facilities such as day-care centres and public housing with a total investment of around US\$5.2 billion between 2020 and 2025 (Republic of Korea, Ministry of Economy and Finance 2020) and creating more than 243,000 employment opportunities	1 2 3 4 5 as part of Green New Deal
 Italy	‘Ecobonus’ scheme providing 110 per cent tax deductions for the private installation of energy-efficient retrofits such as heat pumps (Government of Italy 2020a)	1 2 3 4
<b>Stimulus programmes for retrofitting existing buildings or supporting new buildings without any energy efficiency criteria</b>		
 Italy	Tax credits for the refurbishment and upgrade of buildings in the tourism sector (around US\$180 million per year in 2020 and 2021), without distinct conditions on energy efficiency criteria (Government of Italy 2020b)	3 4

- Positive
- Negative
- 1 Vivid Economics (2020a)
- 2 Carbon Brief (2020)
- 3 Energy Policy Tracker (2020)
- 4 O’Callaghan et al. (2020)
- 5 Climate Action Tracker (2020)
- 6 Moisiso et al. (2020)
- 7 Martin (2020)
- 8 Sarkar (2020)

**Table 4.7.** Non-exhaustive overview of low-carbon and high-carbon rescue and recovery measures for the land-use and environmental protection sector, and selected case examples as at October 2020

### LAND USE AND ENVIRONMENTAL PROTECTION: low-carbon and high-carbon interventions

Total of 25 low-carbon spending measures identified as green spaces and natural infrastructure investment identified in 11 out of 50 countries as at October 2020 (O'Callaghan *et al.* 2020)

Country	Case study	Studies
<b>Large-scale landscape restoration and reforestation efforts ('nature-based solutions')</b>		
 India	Additional funding (approx. US\$780) through the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) to support plantation work, forest management and wildlife conservation (Government of India 2020)	1 2 4 5
 Republic of Korea	Funding component of around US\$2.1 billion as part of the Green New Deal for 2020-2025 to restore the terrestrial, marine and urban ecosystems, involving the creation of more than 100,000 employment opportunities (Republic of Korea, Ministry of Economy and Finance 2020)	1 4 5 as part of Green New Deal
 Ethiopia	Ethiopia and the United Nations Economic Commission for Africa signed a Memorandum of Understanding on a four-year US\$3.6 million project on nature-based solutions for water resources infrastructure and community resilience to support Ethiopia's green recovery (United Nations Economic Commission for Africa 2020)	6
 Pakistan	Three-phased approach to natural ecosystems restoration focusing on local employment creation, for example aiming to provide around 65,000 employment opportunities as part of the first stage of the 10 Billion Trees Tsunami project (Khan 2020)	4
<b>Deregulation of environmental standards and rollback of environmental regulations, and dismantling enforcement of state protection for natural habitats</b>		
 Brazil	Changes in rules and procedures on land use regulation and law enforcement in the Amazon, Cerrado, and Mata Atlântica areas to stimulate economic activity without safeguards for environmental protection (De Freitas Paes 2020; Gonzales 2020; Observatório de Clima 2020)	1 10
 Australia (states and territories)	Suspension of conservation laws in the logging industry for the next decade by the State of Victoria, as part of the Regional Forestry Agreement which exempts loggers from having to comply with certain federal conservation laws (Morton 2020)	1

- Positive   
 1 Vivid Economics (2020a)   
 2 Carbon Brief (2020)   
 3 Energy Policy Tracker (2020)   
 4 O'Callaghan *et al.* (2020)
- Negative   
 5 Climate Action Tracker (2020)   
 6 Moisiso *et al.* (2020)   
 7 Martin (2020)   
 10 De Freitas Paes (2020)

Overall, this chapter has shown that while the opening for using COVID-19 economic recovery measures to pursue decarbonization has so far largely been missed, there are

many opportunities to reverse this trend. This will be critical to bridging the emissions gap by 2030.