Key findings from the update of the OECD Green Recovery Database

30 September 2021

Since the last update in April 2021, recovery measures with positive impacts on the environment have increased, both in number and in budgetary terms. However spending on environmentally positive measures still represents only 21% of total COVID-19 recovery spending (up from 17%) in OECD, EU and Key Partner countries. Ongoing annual support to fossil fuels will likely surpass all the one-off green recovery spending in the next couple of years and undermine efforts to meet the Paris climate goals. Skills development and innovation are still insufficiently addressed in green recovery plans, even though they are essential for achieving a rapid and just transition to net-zero emissions.

Policy insights

The post-pandemic recovery provides an opportunity to set the global economy on a path toward transformation. Yet, latest OECD numbers suggest that only around one fifth (21%) of economic recovery spending in OECD, EU and Key Partner countries is currently allocated to environmentally positive measures. The aggregate data from the OECD Green Recovery Database provide important insights into the direction and magnitude of recovery measures, and their implications for the environment. Key findings include:

Green measures have increased in number and budgetary size, yet still account for a small share of total recovery spending. Since the last update in April 2021, the share of environmentally positive measures increased from 17% to 21% of total COVID-19 recovery spending, which now represents almost double the spending for measures with negative or mixed environmental impacts.

Ongoing annual support to fossil fuels will likely surpass all the one-off green recovery spending in just a few years, undermining efforts to meet the Paris climate goals. The USD 677 billion of green recovery budget will be spent by countries over a number of years, while subsidies to fossil fuel production and consumption amounted to USD 345 billion in 2020 alone in G20 and emerging economies (OECD/IEA, 2021[1]).

The scope of green recovery measures could be extended beyond climate change mitigation and air pollution. Most environmentally positive measures target climate mitigation and air pollution, while several other key environmental dimensions such as biodiversity and climate adaptation are largely neglected.

The energy and ground transport sectors are the largest beneficiary of recovery measures with a budget attached (e.g. tax reductions, other subsidies and grants/loans). Agriculture, which is a key sector to secure natural capital and biodiversity, receives one of the lowest share of funds.

Green recovery measures could have a stronger focus on skills for green jobs to ensure a 'just transition'. An adequate supply of the skills needed for green jobs is a prerequisite for a fair transition towards a greener economy, along with support for workers and communities in sectors that will lose out in the transition. Measures specifically targeting skills training represent only around 2% of the total.

Recovery measures could give more emphasis to innovation for green technologies, including investing in R&D. The cost of several key technologies needed to achieve net-zero by mid-century still need to drop further (e.g. low carbon cement and steel). Recovery packages are an opportunity to drive more supply-side "technology-push" support for green innovation. Investment in R&D subsidies represent 8% of recorded measures.

Monitoring and evaluation are needed to ensure that recovery funds are spent in an economically efficient, environmentally sustainable and publicly supported manner. Some measures with potential for a positive environmental impact, if not well implemented, could in fact have the opposite effect. It is essential that appropriate monitoring mechanisms are in place.

Developing countries face very different circumstances and the COVID-19 pandemic compounds pre-existing challenges. This Database focuses on OECD and Key Partner countries and therefore does not capture the challenges currently faced by other emerging and developing economies, which may have constrained access to COVID-19 vaccines and do not have the fiscal capacity to deploy rescue and recovery packages as large as high-income countries.

Tackling coronavirus (COVID-19) - Browse OECD contributions

Introduction

Since the start of the COVID-19 pandemic, the response of several governments has moved from a "rescue" phase, which mainly focuses on containing the virus and limiting the damages to the economy, to a "recovery" phase, which aims at restarting the economies by driving investments. In view of the extremely pressing global environmental challenges we face (e.g. climate change, biodiversity loss, air pollution, land degradation), it is essential that the large funds mobilised by recovery plans drive a transition towards more sustainable economies. Many governments have issued pledges to 'build back better' and more than 130 countries (UN, 2021[4]) have or are considering adopting a target of reducing emissions to net zero by mid-century. As significant amounts of public funds are being injected to the economy in this context, it is important to ensure that they are spent in an economically efficient and environmentally sustainable manner.

Against this background, the OECD has compiled the OECD Green Recovery Database to inform and support this international effort. The database identifies and tracks environmentally relevant recovery measures that have a clear positive, negative or mixed environmental impact across different environmental dimensions. The database comprises measures announced by OECD member countries as well as key partner countries and the EU.

An initial version of the database was compiled in the summer of 2020 and preliminary findings informed the OECD Ministerial Roundtable on Green Recovery on 14 September 2020. The database was updated, verified by governments, and publicly released in April 2021 with key findings summarised in a policy brief (OECD, 2021[5]). This second update aims at capturing the multiple recovery plans and measures that have been announced by mid-July 2021.

This brief provides an overview of the OECD Green Recovery Database, and presents the key findings from the updated data. The Annexes complement this paper with a discussion of methods and approaches for categorising the environmental impact of policy measures related to the COVID-19 economic recovery packages.

As the OECD Green Recovery Database focuses only on OECD and Key Partner countries, caution is needed to consider its global implications. Furthermore, countries differ in their progress on vaccinations, with some developing countries only in the early stages of vaccine roll-out. As the pandemic becomes under control in more countries, and more countries start "building back" their economies, the interpretations of the findings of this database may need to be updated. Also, the findings of this database do not allow to assess whether recovery plans are aligned with national and international long-term environmental objectives (e.g. net-zero emissions, biodiversity targets). A more detailed analysis would be necessary to draw conclusions in this regard.

Tackling coronavirus (COVID-19) - Browse OECD contributions

Key findings from the OECD Green Recovery Database: Summer 2021 update

Breakdown based on monetary value of measures

Since the previous update in April 2021, the total budget allocated to environmentally positive measures has increased from USD 336 billion to USD 677 billion (see section on Scope and Methodology). The funding allocated to measures with 'negative' (USD 156 billion) and 'mixed' (USD 163 billion) environmental impacts has remained stable (see Figure 1). Overall, the **share of green spending in total recovery spending increased from 17% to 21%** while **the share for negative and mixed measures together decreased from 17% to 10%** (see Figure 1)[1].

Figure 1. Total funding allocated by environmental impact categorisation
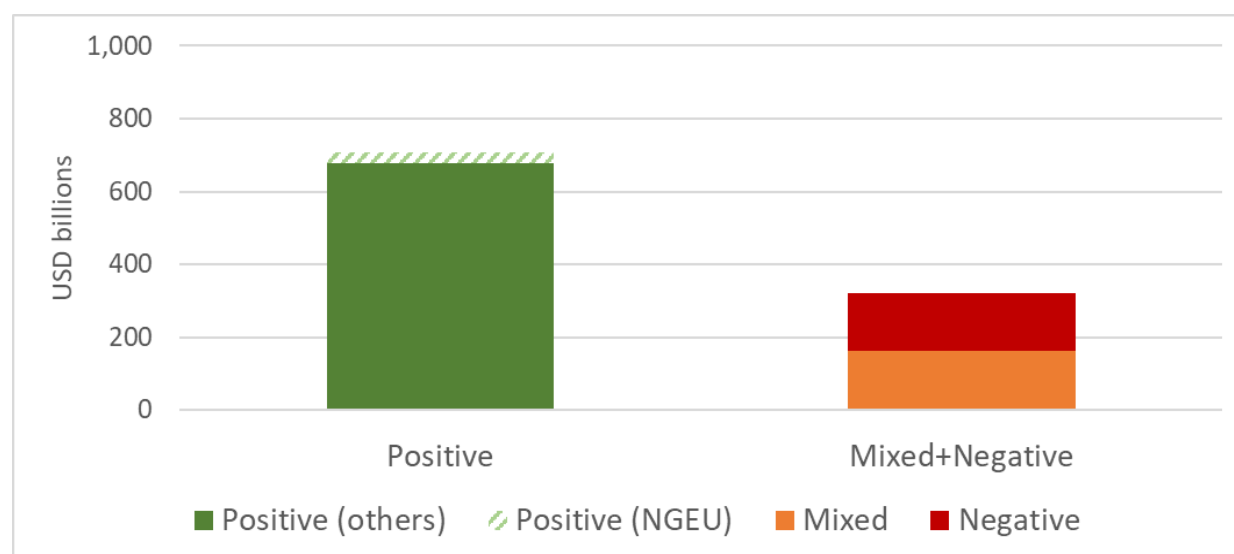
Note: NGEU = Next Generation EU, the European Commission's recovery fund. The funding indicated here in green stripes represents the share of NGEU allocation earmarked for climate-related investments but not yet allocated as per EU Member States' Country Recovery and Resilience Plans approved by the Commission by mid-July 2021. Note that the NGEU funding is available to all EU27 countries, some of which are neither OECD members nor accession/key partners, and so are not covered in the database.
Source: OECD Green Recovery Database.

The increase in green recovery spending is primarily due to three factors. First, we include in our estimates the budget of the EU Recovery and Resilience Facility allocated to EU Member States whose Recovery and Resilience Plans (or RRPs), which are required to include at least 37% of funding towards climate action, have already been approved by the EU Commission. Since the April 2021 update, a number of RRPs representing significant amounts of funding has been approved, and this drove a large increase in the green spending captured by this database update. This emerges clearly in the chart above (Figure 1) where the hatched bar, which represents the portion of NextGenerationEU earmarked for climate-related investments not yet allocated to countries, is sensibly smaller compared to the April update. Second, generally government responses have increasingly focused on medium-term 'recovery' measures aiming at stimulating economic growth through public spending, incentives and investments and these measures are more likely to have environmental impact. Thirdly, the growing policy attention to 'green recovery' appears to have translated into the increased budget allocated to 'green' measures while keeping a check on recovery measures with negative environmental implications.

---

[1] Total recovery spending is an OECD estimate based on data from (O'callaghan and Murdock, 2021[10]) (data accessed July 2021).

Tackling coronavirus (COVID-19) - Browse OECD contributions

However, this one-off increase in public spending on green recovery measures is dwarfed by the continuing government support to fossil fuel producers and consumers each year (see Figure 2). On the one hand, the USD 677 billion of identified green recovery budget will be spent over a variable number of years. On the other hand, government support measures for fossil fuels amounted to USD 345 billion just for the year 2020 in G20 and emerging economies according to OECD-IEA estimates (OECD/IEA, 2021[1]). Though this represents a decrease compared to 2019 levels (i.e. subsides amounted to USD 494 billion in 2019), the continued government support provided to fossil fuels undermine the efforts to ensure a green recovery. Similarly, governments spend roughly USD 500 billion annually on subsidies harming biodiversity (OECD, 2019[2]).

Figure 2. Government support measures for fossil fuel subsidies vs. green recovery spending
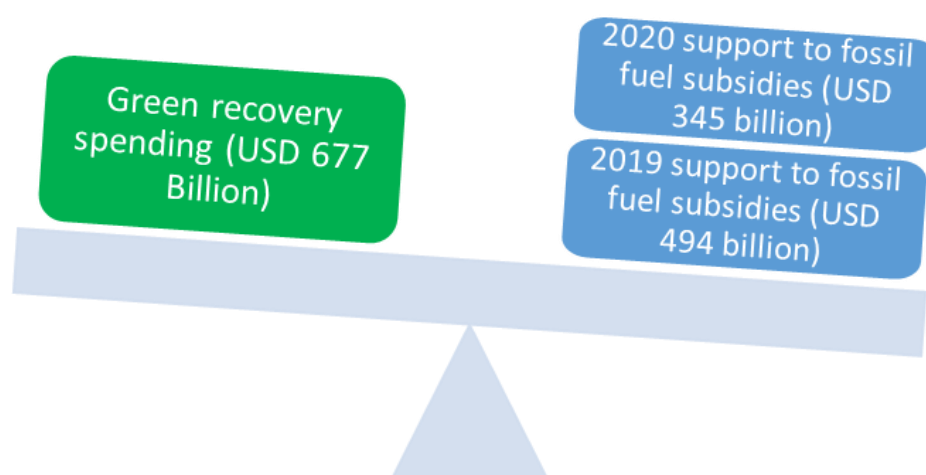
Source: (OECD/IEA, 2021[1]).

Furthermore, more than two thirds of recovery measures do not have clearly identifiable environmental impacts from the present high-level assessment. While not all recovery measures have environmental implications, the wide-ranging economic transformation required to achieve the goal of net-zero carbon emissions suggests that there is an urgent need to better align recovery spending with long-term environmental objectives.

Other recovery trackers find similar results. The various recovery trackers (see Box 3 below) differ along a number of dimensions, including the countries considered; methodological approaches in the assessment of environmental impacts; the scope of estimated effects, and whether they compute the share of green spending over the sum of both "rescue" and "recovery" measures or only "recovery" measures (See Figure 3)[2]. Both this analysis of the OECD Green Recovery Database and the Oxford Global Recovery Observatory use the total spending for "recovery" measures in estimating the share of green spending: the latest estimates amount to, respectively, 21% and 15%. In contrast, the Greenness of Stimulus Index and the IEA Sustainable Recovery Tracker focus on the ratio between green investments and the sum of "rescue" and "recovery" measures. As a result of the larger denominator used by the latter approach – because "rescue" spending is much larger than "recovery" – the share of green spending is

---

[2] The differentiation between 'rescue' and 'recovery' measures is essential to assess the short- and long-term implications of COVID-19 related support measures. Rescue measures are by nature immediate and temporary, aiming at mitigating the greatest damage to society and economy in the short-term. Those include e.g. livelihood measures, liquidity support and payment relief measures. Recovery measures, by contrast, are focused on rebuilding the economy in the long-term, also by creating forward-looking incentives and investments.

lower and amounts to 10.6% and 2% respectively. If a similar approach is applied to the OECD Green Recovery Database and the IMF data on total government spending is used (i.e. the sum of "rescue" and "recovery" measures), the share of green recovery measures over total spending decreases to 4%.

Figure 3. Different calculations of the share of green spending, depending on denominator

Share of green spending =

$$\frac{\text{Green recovery spending}}{\text{Total "rescue" + "recovery" spending}} \quad \textbf{vs.} \quad \frac{\text{Green recovery spending}}{\text{Total "recovery" spending}}$$

Source: Own Illustration.

Breakdown of measures by type

Grants/loans (including interest-free loans) **is the most frequent type of measure introduced by countries,** accounting for around 39% of the 1 375 measures in the Green Recovery Database with clear environmental implications. *Tax reductions/other subsidies* and *regulatory changes*, which are respectively the second and third most represented measures, account for 19% and 14% of these measures. In contrast, little action is taken to foster research development and hardly any measures target workers' skills upgrade: investment in *R&D subsidies* and *skills training* represent, respectively, only 8% and 2% of the measures recorded.

Around 18% of the assessed measures are implemented on a city-level and 20% carried out economy-wide, while most (62%) target specific industries. **Across all types of green recovery measures, the sectoral focus lies on energy and surface transport** (26% and 20% respectively), while a quarter of measures falls into other or multiple sectors (including economy-wide). Table 1 provides an overview of how different types of measures are spread across sectors.

The limited focus of green recovery measures on workers' skills is a missed opportunity, given the policy priority attached by many governments to ensure a "just transition". The transition to a more sustainable green economy will lead to a process of job destruction in some sectors and job creation in others. Upskilling and re-training programmes are essential to smooth the worker transition towards new green employment opportunities. However, the budget allocated for green skills development only amounts to 1.4% of the total (or USD 13.6 billion).

Table 1. Number of positive, negative and mixed measures across different sectors and policy types

Sectoral measures with clear **POSITIVE**, **NEGATIVE** and **MIXED** environmental implications

POSITIVE	Energy	Aviation	Ground transport	Maritime transport	Industry	Buildings	Agriculture	Forestry	Waste management	Other or Multiple	TOTAL
Tax reduction / other subsidy	51	1	62	0	4	28	5	9	5	30	195
Grant/Loan (including interest-free loans)	102	1	98	5	20	69	20	12	12	89	428
R&D subsidies	26	4	14	1	5	7	1	1	2	36	97
Regulatory change	44	0	21	1	5	7	14	2	8	39	141
Skills training	1	0	0	0	2	0	0	1	0	23	27
Other or not specified	34	1	36	2	3	6	22	7	5	65	181
TOTAL	258	7	231	9	39	117	62	32	32	283	1070
NEGATIVE	Energy	Aviation	Ground transport	Maritime transport	Industry	Buildings	Agriculture	Forestry	Waste management	Other or Multiple	
Tax reduction / other subsidy	25	5	8	0	0	0	2	0	1	4	45
Grant/Loan (including interest-free loans)	8	32	5	1	1	0	0	0	0	4	51
R&D subsidies	1	0	0	0	0	0	0	0	0	0	1
Regulatory change	10	0	3	0	9	0	1	0	0	14	37
Skills training	0	0	0	0	0	0	0	0	0	0	0
Other or not specified	17	8	11	0	0	0	0	0	0	4	40
TOTAL	61	45	27	1	10	0	3	0	1	26	174
MIXED	Energy	Aviation	Ground transport	Maritime transport	Industry	Buildings	Agriculture	Forestry	Waste management	Other or Multiple	
Tax reduction / other subsidy	13	0	4	0	0	3	1	1	0	4	26
Grant/Loan (including interest-free loans)	11	3	13	0	0	9	5	0	0	16	57
R&D subsidies	5	0	0	1	0	0	0	0	0	1	7
Regulatory change	4	1	0	0	0	0	0	0	0	4	9
Skills training	1	0	0	0	0	0	0	0	0	0	1
Other or not specified	7	4	6	1	0	1	3	0	0	9	31
TOTAL	41	8	23	2	0	13	9	1	0	34	131

Note: Darker shades indicate higher numbers of measures. The distribution of different types of measures does not provide information about their weight/importance.
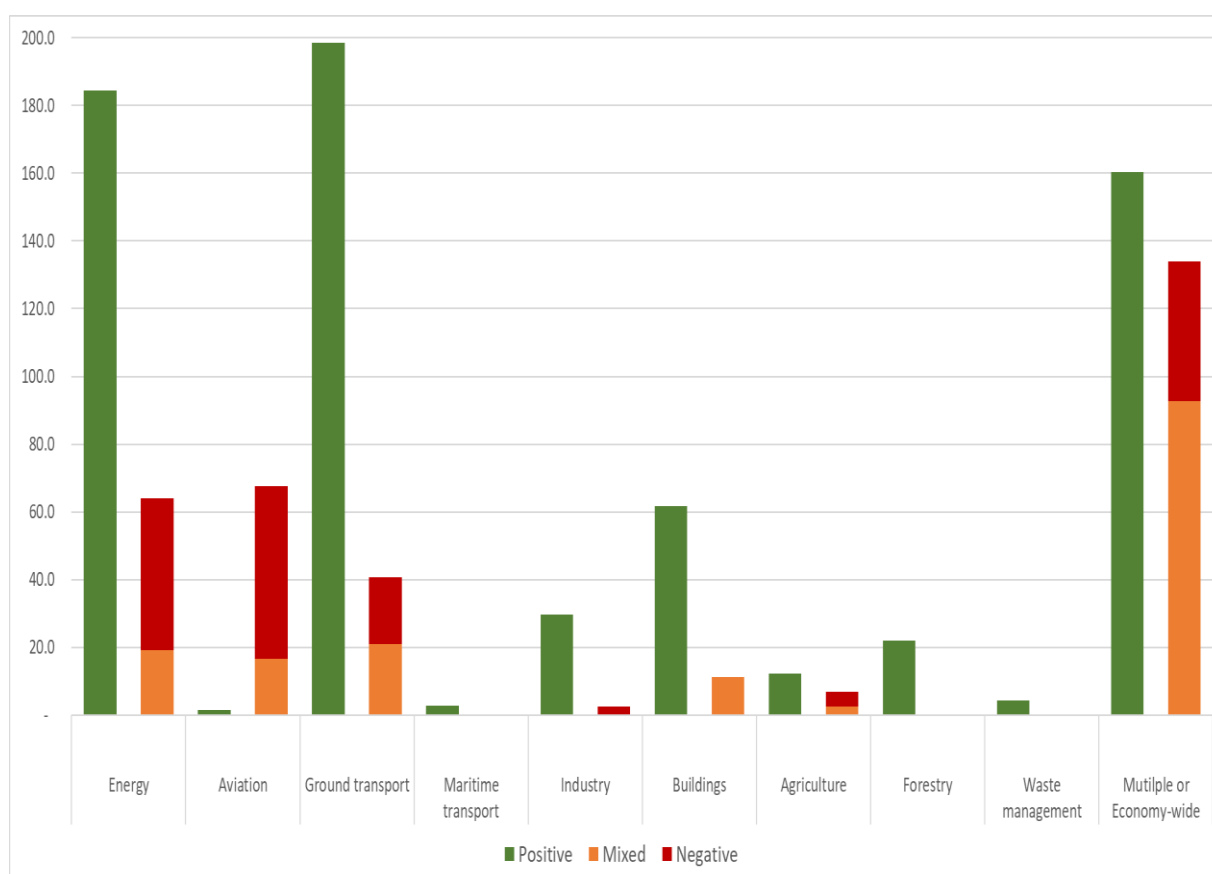Source: OECD Green Recovery Database.

Financial breakdown of measures by sector

The energy and ground transport sectors are the largest beneficiary of green recovery measures with a budget attached (e.g. tax reductions, other subsidies and grants/loans). At the same time, a significant share of such measures are *economy-wide* policies (see Figure 3). Since the previous update of the Database, green investments in energy, ground transport and buildings have more than doubled from a total of USD 199 billion to USD 445 billion. This is mainly driven by increased spending on renewable energies, electric mobility and buildings energy efficiency. Further underlining the long-term nature of recently introduced measures, budget reserved for hydrogen infrastructure and R&D has also increased by more than threefold from USD 18 billion to USD 55 billion. Agriculture, which is key sector to secure natural capital and biodiversity, receives one of the lowest share of funds (see Figure 4).

Environmentally positive investments outweigh those with a negative/mixed impact in most industries. Only aviation sector has negative and mixed measures outstripping positive measures. It is particularly interesting to note the increased use of green recovery measures for the industry, which has reversed the situation observed in the previous update of the database where budget allocation for negative/mixed measures was higher than for green investment.

Figure 4. Funding totals by sector and environmental impact

Note: "Multiple or other" category includes economy-wide or non-specific measures.
Source: OECD Green Recovery Database.

Assessment by environmental dimensions

When considering the individual environmental dimensions affected by recovery measures, the vast majority of them addresses climate change mitigation (90%) and air pollution (64%) (See Figure 5). This strong focus is visible across all environmental impact categories (i.e. positive, mixed and negative). For instance, 64% and 44% of positive measures concern climate mitigation and air pollution. Similarly, most measures with adverse environmental effects affect these dimensions: 26% for climate change and 19% for air pollution.

Figure 5. Share of total funding across environmental dimensions
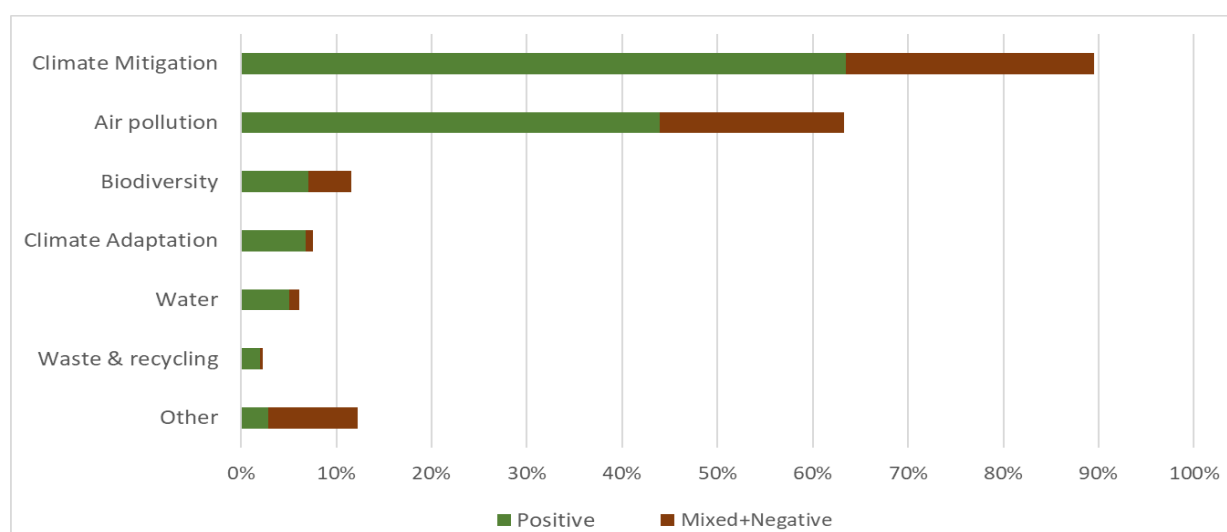
Source: OECD Green Recovery Database.

The remaining environmental dimensions are less targeted by recovery measures, including climate change adaptation. For example, less than 11% of funding for positive measures benefits biodiversity, which is particularly concerning given the alarming findings of Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019[6]).
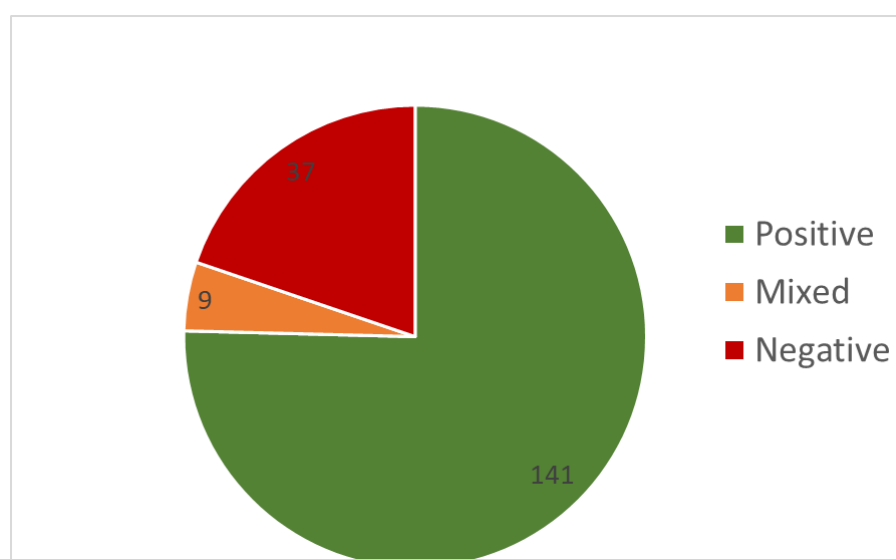
Regulatory changes

Regulatory changes deserve an additional separate discussion in the context of the OECD Green Recovery Database. Although these measures are rarely allocated a budget, they can have significant implications for economic trajectories (e.g. consider the extreme case of a total ban on the use of a certain technology or fuel).

In total, the dataset comprises 187 measures that are categorised as regulatory changes introduced as part of government response to the COVID-19 pandemic. Of those, 141 have a beneficial impact on the environment (e.g. alternate number plate driving) and 46 have mixed/negative effects (e.g. rolling back environmental regulations) (see Figure 7). Most negative regulatory changes apply economy-wide, followed by energy and industry.

Figure 6. Number of regulatory measures by environmental impact

Source: OECD Green Recovery Database.

Once more, like for budgetary measures, positive regulatory changes outweigh negative and mixed ones in most sectors (see Figure 7). The only exception is the industry sector, where negative/mixed regulatory changes represent the majority. The increase of more than threefold in the number of energy and transport regulations recorded in the OECD Green Recovery Database (from 19 to 66) is particularly evident, mainly driven by new regulation promoting renewable energy generation and electric mobility.

Figure 7. Number of regulatory measures by sector and environmental impact

Source: OECD Green Recovery Database.

Tackling coronavirus (COVID-19) - Browse OECD contributions
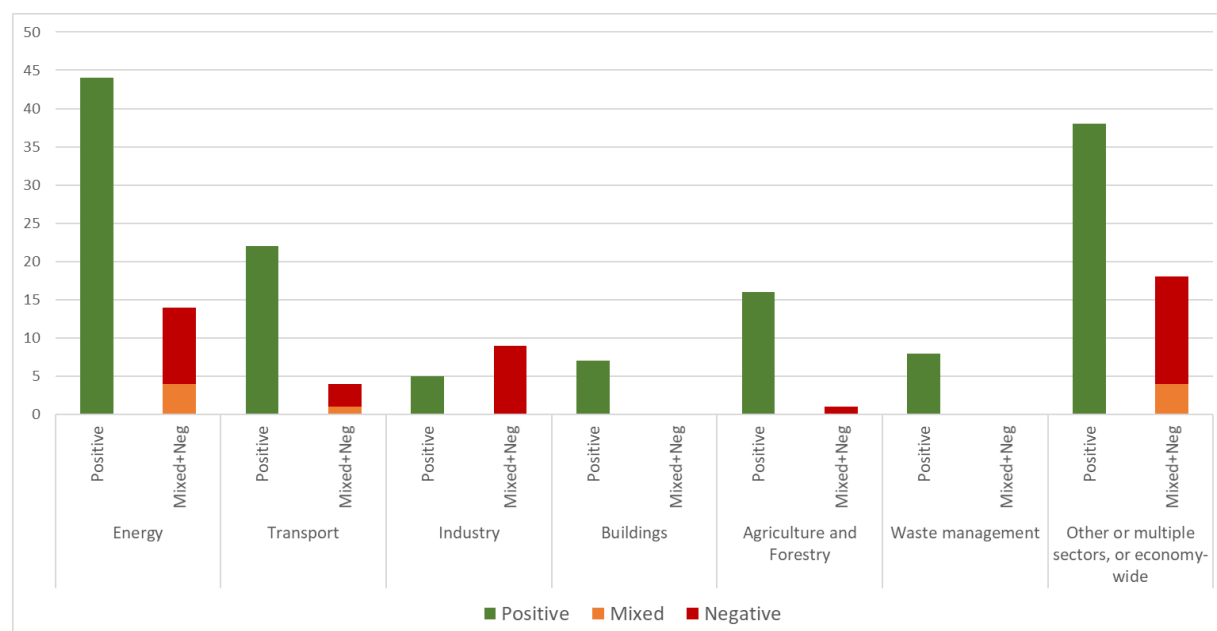
Scope and Methodology

The database focuses on measures introduced to support economic recovery from the COVID-19 pandemic that are likely to have a clear environmental impact. Importantly, existing policy measures that have been expanded or accelerated as part of recovery efforts are also included.

Policy measures are described according to several different characteristics, including their type (e.g. grant, regulatory change, sectors targeted) and scope (see Box 1). For each measure, its environmental impact on a number of environmental dimensions is evaluated. A measure is tagged as "positive" (or "negative") if it has a positive (or negative) impact across all environmental dimensions that it affects. A measure is tagged as "mixed" if it has a positive impact on one specific environmental dimension and negative on another (e.g. investment in climate adaptation that has a negative impact on biodiversity). Broad measures that may have both positive and negative impacts on the same environmental dimension (e.g. a broad infrastructure plan) are also tagged as mixed.

Evaluating the overall environmental impact of recovery measures is challenging for several reasons. First, measures beneficial to one environmental dimension might have adverse effects on others. Second, the available information might not be sufficient to fully assess their environmental implications. Third, a counterfactual would be required to estimate what would occur in the absence of the measure and thus determine the definite environmental impact. Annex 1.A and Box 2 provide a more detailed discussion of the challenges, caveats and the approach taken to address them.

Box 1. Categories to describe recovery measures

In the database, the following variables are used to describe the measures:

1. **Country**, including all OECD members, Key Partner countries, Russia and the EU (44 countries in total plus the EU)

2. **Type of measure**, covering five broad categories: Grant/loan (including interest-free loans), R&D subsidies, Regulatory changes, Skills training and other Tax reduction/other subsidies. The "other" category captures all measures not falling in any of the above mentioned categories.

3. **Scope,** differentiating between economy-wide, sector-specific or city/regional levels of implementation.

4. **Sector targeted by the measure** includes the categories: Agriculture, Air transport, Buildings, Energy, Forestry, Industry, Maritime transport, Surface transport, Waste management and an additional option for those measures applying to the multiple sectors or to none of the above mentioned categories.

5. **Monetary value of the measure**, indicating the total funding foreseen to the measure. For some, no funding was announced, for others no information on the specific time-frame for the disbursement was provided while other measures, such as regulatory changes, by nature have no funding allocated.

6. **Environmental dimensions** that are likely to be affected by the measure (up to three per measure). Those include: climate change mitigation and adaptation, air pollution, water pollution, biodiversity, waste management (including plastics), and other. Measures without an environmental impact are not included in the database.

7. **Environmental impacts** the measure is likely to have are classified as positive, negative or mixed (see Annex 1.A for a further discussion). Positive measures have

---

clear positive environmental impacts on at least one environmental dimension while not harming another dimension. Mixed measures are those for which both clear negative and positive impacts are identifiable. This includes measures that are clearly beneficial for one dimension and adversely affect another one, or very broad measures with both environmentally positive and negative implications. Measures with have clear negative impacts on one or more environmental dimensions are tagged as negative.

Compared to the previous update (April 2021), the number of recorded measures with environmental implications has increased by 700 to 1 375 measures[3], from 44 countries and the EU. The mean number of environmentally relevant measures captured per country is 31, but there is a high level of heterogeneity in the number of entries per country, which ranges from six to nearly 160 (with a median of 20).

The OECD Green Recovery Database complements several other initiatives that aim at tracking recovery measures since mid-2020 (see further discussion in Annex 1.B), though differing in scope and methodology.

Box 2. Caveats for interpreting the results of the OECD Green Recovery Database

There are a number of reasons why the results of this analysis should be interpreted with caution, including:

Information on funding amounts allocated for measures with budgetary implications (e.g. tax reductions, other subsidies and grants/loans) is available only for 88% of these measures, and these are not directly comparable (e.g. due to different disbursement periods, different public finance impact of loan guarantees versus grants, etc.).

Measures differ in their form and status. Some consist of detailed proposals, while others are broader and announced at early stage and subject to potential revisions or adaptations during their implementation.

There may be a bias towards capturing environmentally positive measures compared to negative measures. First, this may manifest in the total number of measures captured since "green" measures are often more identifiable. Second, information on funding amount is more available for measures with positive impacts (i.e. 91% of green budgetary measures have information on funding in our database) than for negative measures (i.e. information on funding is available for 72% of environmentally negative budgetary measures in the database).

The determination of the measures' likely environmental impact is often challenging and requires a certain level of expert knowledge (see Annex 1.A).

Recovery measures still under discussion are not included in the database but their implementation might change the results profoundly (e.g. the United States infrastructure bill with an estimate budget of USD 1 trillion; further loan requests to the EU Recovery and Resilience Facility).

The extent to which the policy measures are covered in the database differs among countries; OECD member countries are generally better covered than key partner countries. Also, the

---

[3] While the updated OECD Green Recovery Database currently records some 1 700 measure, those considered to have "indeterminate" impacts on the environment are not included in this total. The measures included in the database for South Africa have been independently compiled by the OECD Secretariat and have not been endorsed by the Government of South Africa.

coverage of policies announced at sub-national level differs across countries and is not intended to be comprehensive in this database.

A further distinction between the following types of measures is a useful task and deserves consideration in future updates: 1) grants and subsidies which are provided by government but do not have to be paid back; 2) loans provided by the government with an expected repayment; 3) loans granted by a private bank but guaranteed by the government for which the latter only pays in case of default. Given that the impacts of those measures on the public budget are different, their breakdown would provide further insights on the effect of such recovery measures.

Box 3. Other initiatives tracking Green Recovery

The findings of the OECD Green Recovery database are broadly consistent with those of other tracking exercises and supplementary to their works. Other important tracking initiatives are:

- The **Greenness of Stimulus Index** by Vivid Economics (2021[7]) assesses the impacts on climate and nature of governmental rescue and recovery packages in G20 and ten other emerging economies. The index is determined by identifying the economic sector targeted by the recovery measure. Each of those has an environmental impact indicator that allocates a positive or negative greenness value for each sector per country.

- The **Energy Policy Tracker** (2021[8]) gathers publicly available information on approved policies concerning energy production and consumption for 31 major economies and eight Multilateral Development Banks. Policies are classified according to different criteria, including targeted energy technologies and whether it has environmental conditionality attached.

- The **Green Recovery Tracker,** led by E3G and Wuppertal Institute (2021[9]), focuses on EU member states' national recovery plans and evaluates their contribution to the green transition, specifically climate change mitigation. The evaluation relies on qualitative and quantitative analysis performed together with local experts.

- The **Global Recovery Observatory**, established by the Oxford University (O'callaghan and Murdock, 2021[10]), evaluates all announced COVID-19 related fiscal spending in 50 leading countries and additional 39 emerging and developing economies. National policies are assessed by their environmental impacts, but also potential social and economic impacts are taken into account

- The **Sustainable Recovery Tracker,** developed by the IEA (2021[11]), assesses the impact of pandemic-related government spending to support the adoption of clean energies with a detailed coverage of the specific sectors concerned. The tracker accounts for more than thousand policies since mid-2020 across more than 50 countries worldwide.

Annex 1.B discusses the complementarity of the OECD Green Recovery Database and other tracking initiatives.

References

Agrawala, S., Dussaux Damien and N. Monti (2020), "What policies for greening the crisis response and economic recovery? Lessons learned from past green stimulus measures and implications for the COVID-19 crisis", OECD Environment Working Papers No. 164, Paris, https://www.oecd-ilibrary.org/docserver/c50f186f-en.pdf?expires=1631617443&id=id&accname=ocid84004878&checksum=DA1061A01DD0F2F0BEB70B78314AC77B (accessed on 14 September 2021).

[13]

E3G and Wuppertal Institute (2021), *Green Recovery Tracker*, https://experience.arcgis.com/experience/f2700c9b597a4aababa4c80e732c6c5c/page/page_13/?views=view_16 (accessed on 19 January 2021).

[17]

Energy Policy Tracker (2021), *Energy Policy Tracker - Track funds for energy in recovery packages*, https://www.energypolicytracker.org/ (accessed on 14 September 2021).

[8]

Energy Policy Tracker (2020), *Energy Policy Tracker - Track funds for energy in recovery packages*, https://www.energypolicytracker.org/ (accessed on 19 January 2021).

[16]

Green Recovery tracker (2021), *Green Recovery Tracker Home Page*, https://www.greenrecoverytracker.org/ (accessed on 14 September 2021).

[9]

IEA (2021), *Sustainable Recovery Tracker*, https://www.iea.org/reports/sustainable-recovery-tracker (accessed on 14 September 2021).

[11]

IPBES (2019), *Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.*, IPBES secretariat, Bonn, Germany. 56 pages., http://www.ipbes.net (accessed on 14 January 2020).

[6]

O'callaghan, B. and E. Murdock (2021), *Are we building back better? Evidence from 2020 and Pathways for Inclusive Green Recovery Spending*, https://wedocs.unep.org/bitstream/handle/20.500.11822/35281/AWBBB.pdf (accessed on 14 September 2021).

[10]

OECD (2021), *OECD Skills Outlook 2021: Learning for Life*, OECD Publishing, Paris, https://dx.doi.org/10.1787/0ae365b4-en.

[3]

OECD (2021), *The OECD Green Recovery Database: Examining the environmental implications of COVID-19 recovery policies*, OECD Publishing, Paris, https://www.oecd.org/coronavirus/policy-responses/the-oecd-green-recovery-database-47ae0f0d/ (accessed on 10 September 2021).

[5]

OECD (2020), *Developing Sustainable Finance Definitions and Taxonomies*, OECD publishing, Paris, http://dx.doi.org/10.1787/24090344.

[14]

OECD (2020), *Green infrastructure in the decade for delivery : assessing institutional investment*, OECD Publishing, Paris, https://www.oecd-ilibrary.org/environment/green-infrastructure-in-the-decade-for-delivery_f51f9256-en (accessed on 14 September 2021).

[12]

OECD (2019), *Biodiversity: Finance and the Economic and Business Case for Action Prepared by the OECD for the French G7 Presidency and the G7 Environment Ministers' Meeting*.

[2]

Tackling coronavirus (COVID-19) - Browse OECD contributions

OECD (2018), *Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264308817-en. [19]

OECD (2014), "The crisis and its aftermath: A stress test for societies and for social policies", in *Society at a Glance 2014: OECD Social Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/soc_glance-2014-5-en. [20]

OECD (2010), *OECD Employment Outlook 2010: Moving beyond the Jobs Crisis*, OECD Publishing, Paris, https://dx.doi.org/10.1787/empl_outlook-2010-en. [18]

OECD/IEA (2021), *Update on recent progress in reform of inefficient fossil-fuel subsidies that encourage wasteful consumption 2021*, https://www.oecd.org/g20/topics/climate-sustainability-and-energy/OECD-IEA-G20-Fossil-Fuel-Subsidies-Reform-Update-2021.pdf (accessed on 14 September 2021). [1]

OECD/IEA (2019), *"Update on recent progress in reform of inefficient fossil-fuel subsidies that encourage wasteful consumption*, https://www.oecd.org/fossil-fuels/publication/OECD-IEA-G20-Fossil-Fuel-Subsidies-Reform-Update-2019.pdf. [21]

UN (2021), *Net Zero Coalition | United Nations - accessed on July 2021*, https://www.un.org/en/climatechange/net-zero-coalition (accessed on 10 September 2021). [4]

Vivid Economics (2021), *Greenness of Stimulus Index*, https://www.vivideconomics.com/wp-content/uploads/2021/07/Green-Stimulus-Index-6th-Edition_final-report.pdf (accessed on 14 September 2021). [7]

Vivid Economics (2020), *Greenness of Stimulus Index.*. [15]

Annex 1.A. Tagging environmental impacts of recovery measures: Methodological note

Assessing the environmental implications of recovery-related policies and measures is challenging and necessarily imprecise, especially at the level of aggregation used in the OECD Green Recovery Database. Several factors complicate the exercise of categorising likely environmental implications:

- Measures that are beneficial for one environmental dimension may be harmful for other dimensions, either immediately or over time. This can become increasingly complex as more environmental dimensions are considered (e.g. beyond climate and air pollution issues to consider also water, biodiversity etc.).

- Initial information available on measures (such as title and descriptions) may be insufficient to gauge either the full sectoral scope of the measure (which sectors or infrastructure types will be affected) or the environmental implications across different dimensions (positive or negative or mixed).

- Even where a measure has clearly defined sectoral scope, such as subsidies or grants for a particular energy generation technology, different interpretations can exist as to how environmentally favourable a particular technology is across different environmental dimensions.

- There is necessarily an element of counterfactual required when assessing the environmental impacts of a particular measure: estimating what would occur in the absence of the measure to find out whether the measure is more or less impactful on the environmental dimensions considered. Carrying out such analysis for every relevant measure would be prohibitively time-consuming.

For this exercise, each measure has been assessed at a high level and tagged as having positive, mixed, negative or indeterminate environmental implications. These categories are summarised in Table 2.

Table 2. Environmental Impacts Categories in the Green Recovery Database

	Description	Examples
Positive	*The measure has clearly discernible positive environmental impact for one or more environmental dimensions, without any clearly discernible significant negative impacts on other environmental dimensions.*	*Investment commitments for renewable energy; support for innovation targeted to clean technologies; measures for improved forest management, regulatory changes that strengthen investment case for cleaner technologies*
Negative	*The measure has clearly discernible negative impacts on one or more environmental dimensions, without any clear positive environmental impacts.*	*.* *Unconditional bailouts to environmentally harmful activities; rollbacks of environmental regulations; investment commitments for emissions intensive fossil-fuel projects*
Mixed	*Both positive and negative environmental impacts are clearly discernible. This can happen either i) where the measure has clear positive environmental benefit on one dimension, but has clearly significantly negative impacts on at least one other dimension; or ii) where the measure is very broad and contains some elements that*	*Examples of (i) include biofuel investments without safeguards, which may have impacts on biodiversity and lead to indirect GHG emissions from land-use change; an example of (ii) is a broad infrastructure investment plan that includes both*

	will have strong positive implications but other elements that are likely to have clear negative implications (whether for the same environmental dimension or another)	*renewable energy and carbon-intensive infrastructure*
Indeterminate	*The measure does not have clearly identifiable environmental implications at the level of assessment carried out for this exercise. This does not mean that the measure is environmentally benign, just that the impacts are difficult to determine. A large proportion of countries' stimulus measures could be considered indeterminate; these are by no means all captured in the database (full tracking of all stimulus measures was not the purpose of this database nor within the mandate of the OECD Environment Directorate). Measures tagged indeterminate have been excluded from the analysis, in order to avoid introducing unnecessary bias*	*Support for small businesses with no particular green focus; increased welfare support for vulnerable families; highly time-limited emergency rescue measures*

The classification of each measure has been carried out on a bottom-up line-by-line basis. The approach has been informed by existing detailed environmental classification methods, such as those described in the next section, and draws on the analysis of such methods carried out under previous work (e.g. (OECD, 2020[12])). However, in many case recovery-related measures are broad and not sufficiently specific, for example, to use the precise activity-level technology-based classification used in sustainable finance taxonomies such as that in the EU. Nonetheless, principles from those taxonomy approaches have been used, such as for example the cross-examination of different environmental dimensions introduced by the "do no significant harm" principle of the EU sustainable finance taxonomy. In this database, if another environmentally positive measure appears likely to negatively impact another environmental dimension, it is categorised as "Mixed". The same category is used for broad measures that may have a wide-range of environmental impacts, such as a broad infrastructure programme, as described in Table 2.

Importantly, this analysis does not weight measures by the coefficients used by the European Commission to assess the extent to which each country's measures contribute towards the target of 37% recovery budget spent for climate change. Those have been excluded since this database assesses not only measures relevant for climate change but across all environmental dimensions.

Other environmental tagging or classification exercises relevant to this database

While COVID-19 response measures have some notable characteristics, the general challenge of categorising the environmental impacts of policies, projects and investments is not new. Several existing exercises have informed the tagging carried out in this database, and some of these are briefly summarised here. Nevertheless, there is no globally agreed definition of "what is environmentally sustainable", as the question can be asked at various levels; for example, recent development of sustainable finance taxonomies is at the activity level; green bonds are specific financial products, and green budgeting relates to public budgets.

A key area of development in recent years has been taxonomies aiming to influence sustainable finance decisions, by providing clear guidance over which projects or existing activities can be labelled as "sustainable". The OECD has carried out detailed analysis of progress and prospects for different taxonomy approaches around the world (OECD, 2020[14]). A prominent example is the EU taxonomy of sustainable economic activities, currently under development, which aims at providing clear positive lists and criteria for what can be considered a sustainable economic activity in the EU. Once fully developed, the taxonomy will cover six environmental objectives (climate change mitigation and adaptation, water and

marine resources, circular economy, pollution prevention and ecosystem protection). Recognising that no individual economic activity is independent of the wider system in which it operates, activities need to demonstrate that, as well as making a substantial contribution towards one of the objectives, they also need to demonstrate no significant harm to any of the other five objectives.

A major growth area in green finance in recent years has been through specialised debt instruments such as green bonds. To improve standardisation, several market initiatives have developed standards and guidelines for determining what projects and use-of-proceeds can qualify for a bond to be considered green. For example, the Climate Bonds Standard and Certification Scheme has been developed by the Climate Bonds Initiative and used internationally.

Different approaches to taxonomies and green bond standards are being explored around the world. For example, at the national level, the People's Bank of China issued the first iteration of its Green Bond Endorsed Project Catalogue in 2015. In Japan, the Ministry of the Environment launched the nation's green bond guidelines in 2017. A comparison of these parallel approaches to providing clear definitions for sustainability was recently carried out as the basis for OECD empirical analysis on institutional investment (OECD, 2020[12]).

Annex 1.B. Other recovery tracking initiatives

Several non-government organisations and academic institutions have developed various tools to track and evaluate stimulus measures. Each has its own focus and approach, bringing unique insights, and none duplicates the particular added value of the OECD Green Recovery Database.

The "Greenness of Stimulus Index" developed by Vivid Economics, supported by the Finance for Biodiversity Initiative, has developed a methodology to provide a single index score per country, rating the "greenness" of the overall stimulus package (Vivid Economics, 2020[15]). The calculation considers both the volume of stimulus funding flowing into environmentally relevant sectors, combined with a factor assessing whether the measures themselves are more or less impactful on the environment relative to a set of generic archetype stimulus policy measures. The version of the index released in July 2021 finds that only USD 4.8 trillion out of the USD 17.2 trillion public stimulus money spent has a positive environmental effect (mainly targeting the sectors energy, transport, industry, agriculture, waste). However, in most of the considered countries the index shows a net negative impact on the environment.

Another important tracking initiative is the Energy Policy Tracker, launched by a consortium of NGOs and universities (Energy Policy Tracker, 2020[16]). The tracker aims to provide a comprehensive view of energy policy developments in covered countries (including, and in some cases beyond, COVID-19 recovery measures), and classifies the measures as to whether they relate to clean or fossil energy, and whether they are conditional or not on environmental considerations. While the classification into clean and fossil energy avoids a discussion about what qualifies as environmentally positive or sustainable, it nevertheless requires a clear definition of "clean". In some cases, the analysis introduces an "other" category for cases where categorisation is not clear. The August 2021 version of the tracker reports that 4% of energy stimulus funding is targeted towards fossil fuels (for 31 major economies) totalling USD 336 billion.

In March 2021, the Global Recovery Observatory was launched. This is a collaboration led by Oxford University and with the support of the Green Fiscal Policy Network, including UNEP and the IMF. The Observatory seeks to comprehensively track all COVID-19-related spending, not just those with environmental implications, across around 50 leading countries and an additional 39 emerging and developing economies. Measures are assessed not only for environmental impact (covering greenhouse gas emissions, air pollution, natural capital) but also social impact (wealth inequality, quality of life, rural livelihood) and economic impact (multiplier, speed of implementation). To do this, measures are first mapped to 40 exhaustive and mutually exclusive archetypes, as well as 158 sub-archetypes (O'callaghan and Murdock, 2021[10]).

Also in March 2021, the Green Recovery Tracker was launched by the NGO E3G, together with the Wuppertal Institute. This tracker focuses specifically on assessing recovery plans in certain EU Countries (E3G and Wuppertal Institute, 2021[17]). The tracker mainly assesses implications for greenhouse gas emissions, with a categorisation of measures from "very positive" to "very negative".

Finally, the IEA Sustainable Recovery Tracker monitors the impact of total COVID-19 related government spending on clean energy measures across more than 50 countries globally. The tracker relies on more than thousand IEA-assessed policies, which are categorised by the type of policy mechanism employed and the targeted technologies. Additionally, the tracker aims at evaluating the resulting impact on the global emission scheme. The last assessment, released in July 2021, revealed that around USD 380 billion of total pandemic related fiscal spending have been assigned to clean energy measures, 2% of the total.

Contact: Enrico Botta (✉ mailto:Enrico.Botta@oecd.org)

KEY FINDINGS FROM THE UPDATE OF THE OECD GREEN RECOVERY DATABASE © OECD 2021

Tackling coronavirus (COVID-19) - Browse OECD contributions