

Green Recovery: Catalyst for an Enhanced Role of the EU in Climate and Energy Policy?

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1. Introduction

Economic crises offer a window of opportunity for transformational change. They may destabilise incumbent industries and initiate or accelerate their decline, thus opening new economic development pathways (Benner, 2013). Crises may also provide opportunities for counter-cyclical government intervention. This may provide strategic support to emerging green industries and sectors, thereby favouring their development vis-à-vis other sectors during a period of economic hardship (Barbier, 2010; Frankel et al., 2013).

Periods of crisis may act also as catalysts for institutional changes. They may function as external shocks that weaken path dependencies and facilitate reforms (Stark, 2017). For instance, financial crises frequently precipitate efforts to tighten the regulatory grip over the financial economy, as was seen with the passing of the Dodd-Frank Wall Street Reform and Consumer Act in the US in 2010 or the assumption of new supervisory duties by the European Central Bank in the EU's newly created Banking Union (Jančić, 2017). The actual or perceived need for state intervention during times of crisis may provide government and regulatory bodies with new and enhanced powers to intervene and shape economic development pathways.

In the wake of both the global financial crisis and the economic crisis induced by the Covid-19 pandemic, it has been widely suggested that governments should seize on these opportunities to pave the way for a green economic recovery (Hepburn et al., 2020). In this chapter, we review how the European Union has fared in terms of enabling such a green recovery. In doing so, we focus on the European Commission and its evolving role in promoting the

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decarbonisation of the economies of its Member States. We pay particular attention to its increasing role in the financing of investments in low-carbon assets.

Analytically, we distinguish between two broad dimensions. Firstly, we consider the direct effects of green stimulus policies on decarbonisation in the EU and the structural changes required for this. We discuss the extent to which measures deployed in response to these two crises targeted climate-friendly investments and, to the extent possible, how they performed in enabling decarbonisation processes. This includes their direct effects on the creation of new infrastructure, in particular investments in long-lived assets, such as power generation or transport infrastructure. Due to their long-life spans, these assets play an important role in either perpetuating or overcoming carbon lock-ins (Unruh, 2000). Equally important are policy measures aimed at supporting climate-friendly innovation and technological change. Temporary policies can have a long-lasting impact if they help induce or reinforce innovation processes that support emerging, climate-friendly technologies to compete with incumbent industries (as described by Skjaereth and Eikeland, this volume).

Secondly, we consider how the measures taken in response to these crises have shaped the capacities of the Commission as an actor in the field of climate and energy policy. We start from the premise that the Commission is traditionally constrained as a policy actor. Its ability to promote ambitious climate action within the European Union is limited by its competencies, which traditionally focus on facilitating the development and enforcement of common regulations and directives (see Burgin, this volume). Reflecting this, scholars have referred to the EU as a “regulatory state” with limited ability to directly support climate-friendly investments (Majone, 1996). Equally important, its ability to take ambitious climate action is constrained by the political will of the Member States which need to approve significant measures taken at the EU level (see Wurzel et al., this volume). At the same time, scholars have pointed out how the European Commission has acted as a policy entrepreneur, seizing on windows of opportunity to expand and strengthen its competencies (Maltby, 2013).

Focusing on these two dimensions, the chapter explores how the EC was able to utilise the windows of opportunity to launch a green recovery in the European Union following first the financial crisis in 2008/2009 and more recently the crisis induced by the pandemic. It argues that the Commission was still strongly constrained in its ability to launch an ambitious green

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recovery in the decade following the financial crisis. However, the Commission utilised the crisis and its aftermath to enhance its institutional capacities and develop new modes of intervention. Parallel to this, political developments, including the signing of the Paris Climate Agreement, and increased political mobilisation in support of climate action, have favoured a more ambitious European climate and energy policy. This took shape in 2019 in the form of the European Green Deal, which included an ambitious European agenda for investments in climate-friendly technology and infrastructure. In the wake of the Covid-19 crisis, this could be converted into a far-reaching green recovery effort.

2. Green Recovery in the Aftermath of the Global Financial Crisis

A green stimulus is usually defined as “the application of policies and measures to stimulate short-term economic activity while at the same time preserving, protecting, and enhancing environmental and natural resource quality both near-term and long-term” (Strand and Toman, 2010). In general, a green stimulus differs from green policies in that it can be implemented more quickly, and its aim is to specifically respond to economic shocks, while also contributing environmental benefits. Green stimulus measures may include investments in climate-friendly technologies and infrastructure as well as investments with other types of environmental benefits. We focus only on the climate-related measures in our analysis.

2.1 (Green) Stimulus Spending: The Global Picture

In response to the global financial crisis, so-called green stimulus programmes were implemented by governments in a number of countries, including China, Japan, Korea, the United States as well as the European Union. Globally, US\$520 billion was announced for green stimulus measures in 2008–09, 16 percent of the total global fiscal stimulus. Announcements of climate-friendly investments totalled \$177 billion. Putting this in perspective, the world spent 15 times more on fossil fuel subsidies from 2009 to 2013 than it did on the clean energy stimulus that was disbursed in that period (Jaeger et al., 2020).

The responses were very different across countries, both regarding the investment volumes and the sectors targeted by the measures. China focused the bulk of its US\$220 billion package on

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infrastructure modernisation and expansion, mainly for railway networks and electricity grids. Japan and Germany focused on building efficiency programmes, and the US spread its recovery funds across a range of different sectors (Agrawala et al., 2020).

The 2009 American Recovery and Reinvestment Act (ARRA) was the largest green stimulus package in US history. The ARRA allocated about \$94 billion (or \$118 depending on the source) to green measures, about 12 percent of the total package. It was around four times the size of the EU-level green recovery package. ARRA allocations to all sectors were spent over an extended timeframe, peaking in 2010 but continuing for an entire decade. Close to ninety percent of the allocated funds were eventually spent (Jaeger et al., 2020). The ARRA support to renewable energy generation, which totalled 30 billion, was successful in creating employment and spurred expansion of renewable power capacity, particularly in solar power. The US also made energy efficiency retrofits a priority during its recovery. Ex-post evaluations have found that these programmes supported jobs and reduced emissions. (Jaeger et al., 2020) In contrast, the US Car Allowance Rebate System (a scrappage scheme) was found to have little effect, both economically and environmentally (Agrawala et al., 2020).

In the European Union, stimulus plans at the EU and national levels amounted to US\$325 billion or approximately 2 percent of EU GDP. The plan contained a mix of measures to boost immediate demand along with “smart investments”. Most of the funds – equivalent to US\$287 billion or approximately 1.9 percent of the EU’s GDP in 2008 – would be spent by the 28 Member States. The balance of US\$38.8 billion would come from the EU’s own budget and the European Investment Bank (EIB). The total stimulus in the European Union and its members states was significantly smaller than the packages launched in the USA (US\$972 billion, 6.5 percent of GDP), China (US\$586 billion, 11.6 percent of GDP), or Japan (US\$486 billion, 8.4 percent of GDP) (Robins et al., 2009).¹

2.2 EU-level Green Stimulus

In 2009, the EU launched the European Energy Programme for Recovery (EEPR) to support key investments in the context of the economic crisis, while promoting the transition to clean

¹ Estimates of GDP shares are based on the level of GDP in constant 2010 US\$ reported by the World Bank for the year 2008.

energy (European Parliament & Council of the European Union, 2009). This coincided with recurring gas disputes between the Russian Federation and Ukraine. Reflecting this, energy security featured prominently in this programme, which allocated support to interconnections in gas and electricity supply systems and innovation in low-carbon energy infrastructure (i.e. offshore wind and CCS, see table 1) (IEA, 2008).

Table 1: European Energy Programme for Recovery (EEPR)

Measure	
Electricity infrastructure	€ 910 million
Gas infrastructure	€ 1.40 billion
Offshore wind projects	€ 565 million
Carbon capture, utilisation, and storage	€ 1.05 billion
European Energy Efficiency Fund	€ 146 million

Source: IEA (2020).

The overall EU green stimulus was an order of magnitude bigger than the European Energy Programme for Recovery, as several elements of the EU financial framework² were mobilised for crisis management, most of which had a green component. This included structural and cohesion funds for energy efficiency and renewable energy, EU innovation funding for clean energy R&D, and infrastructure funding from the Connecting Europe Facility. The EIB also scaled up its support for renewables and energy efficiency and launched innovative financial instruments, including the Risk Sharing Finance Facility to support R&D and the Loan Guarantee Instrument for Trans-European Networks to stimulate greater participation by the private sector (for more on the EIB, see Mertens and Thiemann, this volume).

In sum, the EU took several initiatives, and the green share of the recovery package was high (approximately 59%) in comparison to China (38%) or the USA (12%), with only South Korea

² The EU Multiannual Financial Framework is a seven-year framework regulating the EU budget (see Rietig and Dupont, this volume).

committing a greater share of its stimulus (81%). Nevertheless, the total amount of green stimulus spending by the European Union was just US\$23 billion, compared to an estimated US\$31 billion in South Korea, US\$112 billion in the USA, and US\$221 billion in China (Robins et al., 2009).

This relatively constrained approach reflected the limited budgetary and financial capacity of the EU as well as the initial focus on austerity in the immediate aftermath of the Eurozone crisis. Although more ambitious proposals to mobilise financing, including the issuance of so-called Eurobonds, were floated, these were ultimately rejected by Germany and several Northern European Member States. Instead, the European Union focused on the creation of short-term mechanisms to provide liquidity to struggling Member State governments with the aim of restoring financial stability in the Eurozone (Plehwe, 2018).

2.3 Green Stimulus Measures by European Member States

The total amount of green stimulus spending approved by Member States was slightly higher than the EU-level one, but only amounted to around 10% of total stimulus spending (Robins et al., 2009). Besides, countries like Germany, Italy and France labelled car-scrappage schemes as green spending, whose classification as "green" is questionable. France, Germany, and the United Kingdom allocated the most to green spending, totalling US\$25.7 billion collectively. Table 2 provides an overview of the scale of stimulus spending and the share of green spending in selected Member States (based on available data).

In Germany, green investments accounted for roughly 13 percent of the total US\$105 billion stimuli. The building refurbishment initiative received EUR3.3 billion and was one of the largest programmes. Germany also implemented a car-scrappage scheme, which successfully stimulated the automobile industry but had no positive effects on emissions. Although the scheme helped to make Germany's car fleet more fuel-efficient, it also resulted in an increase in vehicle size (Jaeger et al., 2020). In 2009, Germany also raised its renewable energy targets, aiming to reach 30 percent of total electricity consumption by 2020. Since renewable energy is financed through a surcharge on consumer electricity bills rather than budgetary expenditures, however, they are not counted as part of government stimulus spending.

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In France, the share of stimulus spending dedicated to green measures is estimated at anywhere from 8 to 20 percent of the €26 billion French Economic Revival Plan. This package included green investments in solar photovoltaics, building efficiency, and railways, but also spending on fossil fuel plant upgrades and road infrastructure (Pollitt, 2011). Also in 2009, France passed the first law of the *Grenelle de l'Environnement*, a framework defining the conditions for sustainable development and enhanced environmental measures in thirteen sectors (Jaeger et al., 2020).

A modest 5 to 7 percent of the United Kingdom's £25 billion (US\$41 billion) stimulus was allocated to green measures, such as energy efficiency and rail transport. The £150 million spent on the Warm Front Programme in 2009–10 supported insulation and heating improvements in almost 38,000 homes (Pollitt, 2011). An additional £60 million were spent on energy efficiency measures through an extension of the Decent Homes Programme, one of the very few European stimulus investments to go directly to vulnerable groups (Jaeger et al., 2020).

In Italy, less than 6 percent of the stimulus plan was earmarked for green investments. The main programmes targeted building refurbishment and public transport, especially railway infrastructure. In addition, the government implemented a EUR527 million car-scrappage programme. Like Germany, Italy also increased its support for renewables through its feed-in tariff scheme and other interventions targeting the electricity sector (not included in the recovery plan). These measures, however, were reduced or halted in 2012 after the appointment of the Monti government at the apex of the Italian economic crisis (Jaeger et al., 2020).

Table 2: “Green” Recovery Measures of Selected Member States After the Global Financial Crisis

Country / Policy	Stimulus as share of GDP	Green share of stimulus	Green stimulus per capita (in Euro)
Belgium	0.5%	10%	16
Czech Republic	1.9%	33%	86
Estonia	6-10%	20%	185

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Country / Policy	Stimulus as share of GDP	Green share of stimulus	Green stimulus per capita (in Euro)
France	1.3%	8-20%	55
Germany	3.2%	13.3%	129
Italy	4%	5,8%	60
Slovakia	2.3%	6-12%	31
Sweden	2.9%	5%	60
United Kingdom*	1.5%	5.1%	27

Source: Pollitt (2011). *Converted from British Pounds Sterling, based on average exchange rate reported by the UK's Office of National Statistics for 2009.

2.4 Impacts of Green Recovery Packages on Decarbonisation.

Surprisingly, evaluations of the macroeconomic, employment and environmental effects of green stimulus packages remain very limited. Available evaluations tend to be ex-ante, frequently relying on strong and at times opaque assumptions. Moreover, some programmes (technology development programmes, for example) may appear cost-ineffective in the short run but may generate significant long-term gains through learning-by-doing and economies-of-scale (Agrawala et al., 2020).

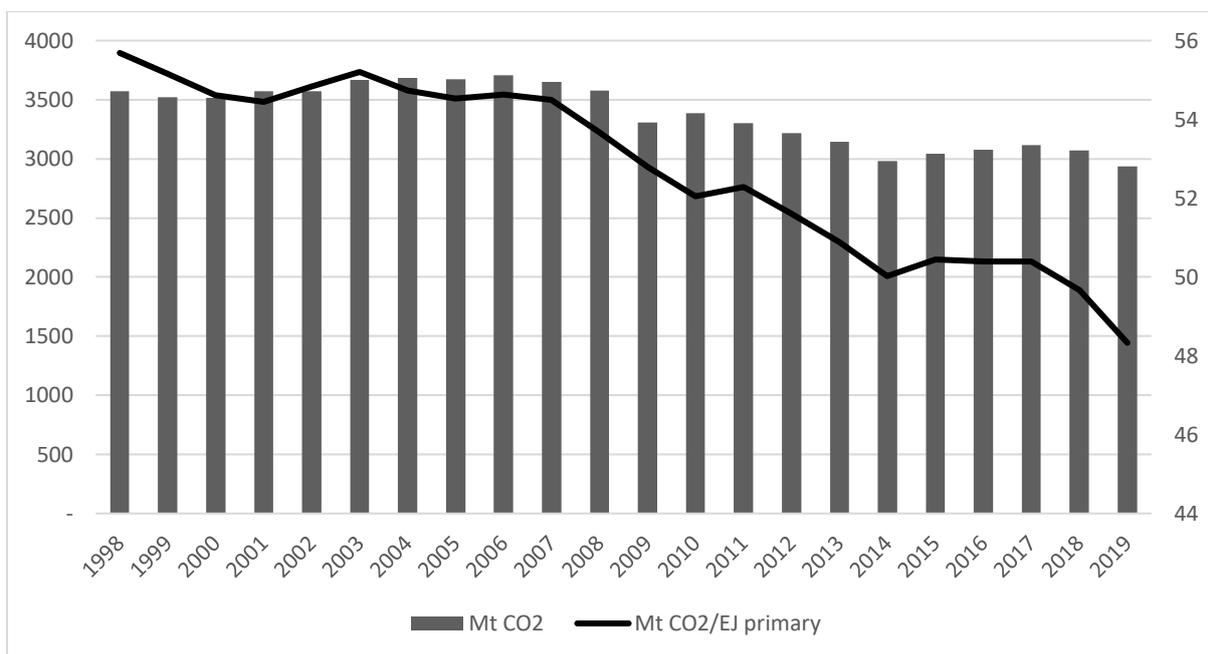
The very few ex-post evaluations available have found that the green elements of the recovery packages made a positive but small short-term contribution to economic recovery. The scale of the impacts was limited by the low share (around 10%) of green measures in the recovery plans. Pollitt (2011) estimates that the short-term multiplier effects (the ratio of the boost to GDP to volume of spending) from green investment were 0.6 to 1.1 at the national level and up to 1.5 at the European level. Countries that specialise in the production of climate-friendly capital goods, such as manufacturing of renewable energy technologies (like Germany or Denmark), tended to benefit most from the stimulus measures.

The environmental impact of the green stimulus measures was small, but likely net positive in the long run (Pollitt, 2011). Investments in renewable energy and energy efficiency had the longest-lasting environmental effects, while the environmental impacts of new rail transport

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infrastructure are harder to measure (Jaeger et al., 2020). In some cases, evaluations reveal a trade-off between economic and environmental objectives and between short-term and long-term effects (Agrawala et al., 2020). As mentioned above, car-scrappage payments in several countries removed inefficient vehicles from the road but in some cases encouraged the purchase of bigger vehicles. They also delivered limited economic benefits, as they frequently only brought forward purchases that would have occurred anyway. In effect, Europe missed an opportunity to promote a shift to electric vehicles and other forms of mobility that could have facilitated decarbonisation in the transport sector in the decades to come. In contrast, the effects of renewable energy and energy efficiency (in building) programmes were modest but positive. Consequently, both carbon emissions and the carbon intensity of energy consumption continued to decline during the post-2010 recovery, and despite an increase from 2015 to 2017, has not recovered to pre-crisis levels (see figure 1).

Figure 1: Total CO₂ emissions and carbon intensity of primary energy consumption in the EU-28 (1998 – 2019)



Source: BP (2021) Statistical Review of World Energy.

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As the few ex-post evaluations available focus exclusively on green stimuli, the effect of the "non-green" parts of recovery packages is unclear. According to Pollitt (2011), the stimulus packages contain very few directly environmentally harmful measures, with the largest volume of funding coming in the form of direct and temporary support for families and companies affected by the crisis. These focused on short-term relief rather than long-term structural changes. The most harmful measures included additional spending aimed at road building, in particular in France and the UK.

Finally, as mentioned in the previous section, several EU countries increased the ambition of market support for solar and wind power in the wake of the financial crisis. However, in many cases, due to funding modalities these measures were not technically part of the green stimulus. Nevertheless, they resulted in funding for renewable energy projects that could be considered comparable to the green stimulus spending by central budgets. Indeed, the average annual investment in wind and solar power in Europe increased from US\$54 to 92 billion in the three years before and after 2009, respectively. In the US investment increased from US\$23 to 32 billion in the same period (IEA, 2020).

3. Green Recovery and the Evolving Role of the EU in Climate and Energy Policy

As discussed in the previous section, the European economic stimulus had mixed results as a driver of decarbonisation. However, it marked an important turning point in the role of the Commission as an actor in climate and energy policy as well as economic governance broadly. The launch of the European Economic Recovery Plan (EERP) signalled a shift from its role as a "regulatory state" (Majone, 1996) to a more interventionist stance aimed at catalysing innovation and investment, with a growing emphasis on climate-friendly infrastructure and industry (Prontera & Quitzow, 2021). This shift was driven by the recognition that the crisis required new types of intervention at the European level. As Commission President Barroso put it: "Exceptional times call for exceptional measures" (EC, 2010). Among other things, these included the growing involvement of the EIB and the European Bank for Reconstruction and Development (EBRD) in infrastructure projects in Member States, new types of partnerships

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between the public and private sectors, and an increased focus of EU funding schemes on climate and energy projects (Prontera & Quitzow, 2021).

These developments could build on previous efforts to expand EU-level interventions in support of infrastructure development, which had failed in the face of resistance from Member States. The guidelines for the so-called Trans-European-Energy Networks (TEN-E) were introduced as early as 1996. However, the EU's financial contributions to these projects remained marginal until the financial crisis. Before 2009, the EU's financial involvement was limited to feasibility studies and generally accounted for no more than 0.01–1% of the total costs. This changed with the European Energy Programme for Recovery, which could support not only feasibility studies but also investment costs, with contributions of up to 50 per cent of the total. The financial crisis had opened a window of opportunity for the adoption of the investment-oriented agenda promoted by the Commission. In contrast to the mid-1990s, this agenda was supported by most Member States, which were keen to utilise investments to drive the recovery (Prontera & Quitzow, 2021).

This trend continued in 2013-14 with the launch of the new TEN-E scheme (Regulation 347/2013) and the Connecting Europe Facility for Energy (CEF-E) (Innovation and Networks Executive Agency, 2016). CEF-E was designed to leverage EU resources by supporting projects through new types of financial instruments, such as guarantees and project bonds. This was followed by the so-called Juncker Plan, which consisted of the Investment Plan for Europe and the European Fund for Strategic Investments (EFSI). The Juncker Plan further expanded the deployment of non-traditional instruments aimed at catalysing private investment (see also Mertens and Thiemann, this volume). Similarly, the Common Provisions Regulation, which sets the rules for the disbursement of resources from the structural funds, was amended to allow an increased use of blended finance with private-public partnership arrangements (EPEC, 2016).

This increasingly active role in facilitating infrastructure investment has been accompanied by a move towards ensuring that EU funding is compatible with the Union's climate targets. Climate change-related actions represented about 25 percent of European structural and investment funding between 2014 and 2020; this is almost double the amount allocated in the previous period and slightly more than the 20 percent committed by the Commission

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(Directorate-General for Internal Policies, 2021). In this vein, the EFSI was intended to support investment projects to help achieve the 2030 EU climate objectives. Its revision in 2017 (EFSI 2.0) stated that at least 40 percent of EFSI financing under the infrastructure and innovation window (provided by debt and equity instruments) should target climate projects in line with the COP21 commitments. In 2019, the EU established the Innovation Fund, based on the NER300 programme, to finance low-carbon demonstration projects (see also Skjaereth and Eikeland, this volume). Like NER300, it is financed with funds raised from the sale of emission allowances in the European Emissions Trading Scheme (ETS) and can contribute to investments under EFSI and CEF-E. The Innovation Fund aims to help the EU achieve its commitments under the Paris Agreement and its target to achieve climate neutrality by 2050.

In addition to these new forms of financial support, the Commission has increasingly assumed the role of a convener to catalyse cooperation among stakeholders and facilitate the development of new collaborations. For this purpose, it deploys a range of instruments aimed at information sharing and networking. Within the 2013 TEN-E scheme, for example, it launched a new planning system created for the so-called Projects of Common Interest (PCIs) (Regulation (EU) No 347/2013). This system is organised around regional High-Level Groups, which bring together Member States and the private sector and have the purpose of facilitating the realisation of priority investment projects in the energy sector. The EFSI also provided for the establishment of so-called ‘investment platforms’: public-private co-investment arrangements structured with a view to catalysing investments in a portfolio of projects combining EFSI with European structural and investment funds as well as other public and private funding (EC, 2014).

Finally, the Commission established a series of public-private partnerships for low-carbon innovation. Most prominently, so-called Joint Undertakings (JUs) involving the Commission and the private sector, were launched to finance innovation in five low-carbon technology fields. More recently, these have served as the basis for the development of industrial alliances with the aim of promoting “strategic value chains” and catalysing large-scale investments by private sector actors. These include the European Battery Alliance and the Clean Hydrogen Alliance. Linked to the European Technology and Innovation Platform and the SET-Plan, these alliances combine a platform approach – gathering the Commission, interested Member States, the EIB and companies – with advisory and informational services (i.e. the Business Investment

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Platform) and targeted financial assistance (e.g. the Battery for eVehicles Prize under the Enhanced European Innovation Council pilot) (EC, 2019a).

4. Policy Responses in the Wake of the Covid-19 Crisis: a New Paradigm?

Building on the trends outlined in the previous section, the role of EU-level instruments has increased significantly, both in terms of their share of total spending and their influence on recovery programmes in the wake of the Covid-19 crisis. Related to this, *green* stimulus measures have also taken on a more prominent role. This section provides an overview of these developments. As in section 2, it covers both EU-level activities as well as measures taken by key Member States.

4.1 From Green Deal to Green Recovery at the EU level

In 2019 the European Green Deal emerged as the first comprehensive policy strategy to transform Europe into a climate-neutral continent by 2050. The policy package is expected to mobilise at least EUR1 trillion over the following decade. It also includes a revision of all climate-related policy instruments and the introduction of new policies for building, biodiversity, energy, transport, and food. The Green Deal is guided by the objective of carbon neutrality by 2050 and a further tightening of the 2030 target, which aims for a reduction of carbon emission of 50-55% compared with 1990 levels (EC, 2019b).

With the Covid-19 pandemic spreading rapidly within the European Union during the first half of 2020, many feared that the Green Deal might be abandoned. Indeed, leaders from Poland and the Czech Republic floated the idea of postponing the deal and even exempting countries from the existing financial burdens of the ETS (Abnett & Baczynska, 2020; Euractiv, 2020). However, this met strong resistance from scholars and think tanks as well as other EU governments. Representatives from seventeen governments signed a letter pushing for the deal to continue as a “response to the economic crisis, while transforming Europe into a sustainable and climate-neutral economy” (Doyle, 2020). In a survey of central bankers, finance ministry officials and economic experts, a team of prominent economists found that stimulus policies

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with positive climate impacts were strongly preferred over policies without such benefits (Hepburn et al., 2020).

Since the European Green Deal had only been decided as an overarching plan, it was possible to rapidly transform it into a green recovery programme. Indeed, it became a substantial part of the New Generation Europe (NGEU) recovery package. The NGEU is a EUR807 billion temporary recovery instrument of the EU to help repair the socio-economic damage of the Covid-19 pandemic. To finance the NGEU, the Commission decided to directly borrow approximately EUR800 billion from financial markets and distribute these funds among Member States through the Recovery and Resilience Facility. This will provide EUR338 billion in grants and EUR385 billion in long-term loans (see also Table 3) (EC, 2021c).

This is a major change from the restrictive approach taken in the wake of the financial crisis. The EU stopped short of issuing the Eurobonds that a number of Member States had called for in a letter to the President of the European Council (Michalopoulos, 2020). However, the scale of direct borrowing by the Commission signalled a potential paradigm shift, giving rise to an EU-level fiscal policy. For now, EU borrowing to fund the Covid-19 recovery has been declared temporary. However, to repay part of the debt, the Commission also proposed the introduction of new revenue-raising instruments, including a Carbon Border Adjustment Mechanism (see Wettestad, this volume), a digital levy and a financial transaction tax (EC, 2021a). These new ventures towards increasing the Commission's fiscal autonomy were not welcomed by all Member States. However, the nature of the economic crisis, caused by an external shock rather than imbalances within the financial system, increased willingness among key Member States to pursue a more interventionist agenda. The coalition of Member States opposing stronger EU-level engagement had been diminished to the so-called frugal four – Austria, Sweden, the Netherlands and Denmark – and, later, Finland (Dennison & Zerka, 2020). Crucially, it no longer included Germany, making way for the ambitious recovery effort.

Table 3: Next Generation Europe breakdown (in EUR billion)

Recovery and Resilience Facility	723.8
<i>of which, loans</i>	385.8
<i>of which, grants</i>	338.0
Recovery Assistance for Cohesion and the Territories of Europe	50.6
Horizon Europe	5.4
InvestEU	6.1
Rural Development	8.1
Just Transition Funds (JTF)	10.9
RescEU	2
TOTAL	806.9

Source: European Commission (2021c).

The recovery scheme also stipulated that at least 37 percent of the expenditure from the facility must be allocated for climate-friendly investments and reforms, noticeably higher than the equivalent figure for the total 2021-2027 EU long-term budget, which is 30 percent. It means that EUR242 billion should go for climate-related measures, which is more than ten times the EU's green packages after the global financial crisis. The remaining funds must respect the principle of "do no significant harm", as set out in the EU taxonomy for sustainable investment (see Eckert, this volume). Member States need to submit plans to the EC, which it will assess against these benchmarks. These rules on sustainable investment are reinforced by the Climate Bank Roadmap and the revised energy lending policy of the EIB, which plays an important role in implementing elements of the EU recovery programme (see Mertens and Thiemanns, this volume). The EIB has committed to ending financial support for fossil fuel energy projects, including gas, from the end of 2021. At the same time, the EIB declared its intention to unlock EUR 1 trillion of climate-friendly and environmentally sustainable investment in the decade to 2030.

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Moreover, a further, vital element of the European Green Deal and recovery plan is the creation of a Just Transition Mechanism (JTM) to support the most carbon-intensive regions of the EU in their efforts to transition towards climate neutrality. It is the first major EU policy explicitly aiming to reconcile the phase-out of carbon-intensive industries with social justice. It recognises that not all territories and citizens start the energy transition from the same point of departure, and, therefore, provides additional support to those being asked to shoulder more substantial burdens. The JTM was proposed as part of the Green Deal and scaled up in 2020 in the context of the Covid-19 recovery, to the point where the intention became to mobilise at least €65-75 billion during the EU's multi-annual budget period from 2021 to 2027. It comprises a Just Transition Fund with €17.5 billion in funding from NGEU and the EU multi-annual budget (EC, 2021b). The InvestEU Just Transition scheme provides budgetary guarantees, while a new Public Sector Loan Facility offers EIB loans coupled with grant support to reduce the financial burden for beneficiaries and increase the attractiveness of investments. These mechanisms seek to finance the professional retraining of workers directly affected by the foreseeable disappearance of carbon-emitting activities and support the economic diversification and rehabilitation of land in affected territories, especially in Central and Eastern Europe. Though a significant step forward in addressing the socio-economic impacts of phasing-out fossil fuels, the Just Transition Fund in particular has been criticized for its lack of financial ambition and overly centralized governance structure (for more details see the box 1 below).

Finally, in addition to the JTM, the Fit for 55 package, a set of policy initiatives aimed at delivering the EU's revised CO₂ reduction target for 2030, included a proposed Social Climate Fund with a funding volume of EUR72.2 billion from 2025 to 2032. According to the proposal, the fund should mitigate adverse social impacts from the proposed extension of the EU ETS to road transport and buildings, another key measure of the package. The fund is intended to finance temporary income to support vulnerable households as well as investments aimed at reducing emissions in the affected sectors, which simultaneously support affected households, small businesses or transport users. The aim is to channel a share of the revenues from the extended ETS into the fund, which would distribute allocations to Member States based on so-called Social Climate Plans (EC, 2021b).

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Box 1: The Just Transition Fund and its Critics

The Just Transition Fund (JTF) has been perceived as a milestone for workers and unions in their fight for social measures accompanying the transition and has been welcomed by environmental NGOs (IndustriAll, 2021; WWF, 2021). The Member States must ensure social dialogue in developing the so-called Territorial Just Transition Plans, with concrete projects for the most affected regions as a condition to accessing the funding. Member States may also contribute to these Transition Plans with national funding or transfer resources from other funds (the European Regional Development Fund and the European Social Fund Plus). In this way, the EC envisions mobilising nearly EUR 30 billion. Critics, however, argue that the total envelope of fresh funding is relatively limited, especially after the JTF was downscaled by the Council from the initially proposed EUR40 billion to EUR17.5 billion and does not correspond to the scale of the challenge. Critics also maintain that the funds would be dispersed across too many different types of investments, leading to fragmentation. In addition, concerns have been raised regarding the pre-allocation of funds to selected regions and an overly centralised governance of the funding mechanism (Marty, 2020). Despite these deficits, the initiative appears to have helped in overcoming the resistance of Member States, such as Poland, who have sought to weaken the climate ambition of the EU's post-Covid recovery (Quitow et al., 2021).

4.2 National Policy Responses to the Covid-19 Crisis

By the end of 2021, Member States had presented their national plans to access the EU Recovery and Resilience Facility. Most national recovery plans were limited to EU resources, while others (Germany, Italy, France) included significant domestic funding. A number of think tanks have been monitoring and assessing these national programmes, using distinct methodologies.³ Overall, the degree of “greenness” varied considerably depending on the sector. In the energy sector, where alternative carbon-neutral technologies exist, many national packages are likely to make a positive or very positive contribution to supporting a transition towards climate neutrality, including investments in renewable energy, energy efficiency, storage, or green hydrogen. Similarly, the mobility sector should benefit from green investments, in areas like public transport infrastructure, e-mobility or research in climate-

³ See for instance the Green Recovery Tracker: <https://www.greenrecoverytracker.org>

friendly transport. In the industrial sector, however, only a few green measures were announced.

According to the Commission's assessment, most National Recovery and Resilience Plans presented in order to access NGEU funding respected the 37 percent minimum EU climate spending target. However, this percentage was substantially lower in some countries when considering the overall stimulus plans (including additional domestic funding). In addition, the Commission applies less strict criteria to evaluate green stimulus components compared to benchmarks applied by tools like the Green Recovery Tracker. In particular, the Green Recovery Tracker does not classify measures as climate-friendly if their climate impact depends significantly on how they are implemented in practice. In addition, it does not account for climate adaptation measures. This has led to significant discrepancies to assessments performed by the EU (Green Recovery Tracker, 2021a).

In Italy, the largest beneficiary of the NGEU, the share of green spending in the EU-funded component, approximately 80 percent of the total package, stood at 37 percent according to the EC's assessment. An assessment by the Green Recovery Tracker found a green spending share of only 16 percent for the EU-funded component and 13 percent for the full package. Among other things, this discrepancy relates to the fact that the Green Recovery Tracker has not counted planned energy efficiency investments, amounting to over €20 billion. It cites relatively low thresholds for accessing the programme coupled with a very high level of co-financing by government (amounting to 110 percent of investment cost) as reasons for excluding it from its calculations (Green Recovery Tracker, 2021b).

Similar discrepancies were present in the assessment of stimulus plans in Germany and France. The green share of European funding according to the EC evaluations was 42 and 46 percent, respectively, compared to 38 and 29 percent according to the Green Recovery Tracker. For the full stimulus package, the shares were even lower, with 21 percent of EUR140.3 billion in Germany (Green Recovery Tracker, 2021b), and 19 percent of EUR101 billion in France (Green Recovery Tracker, 2021c/d), indicating that governments may have deliberately shifted green spending to EU programmes in order to meet the EC's criteria. Spain's recovery plan, which included European funding only, had one of the highest green shares, representing 40 percent according to the EC and 31 percent according to the Green Recovery Tracker (2021d).

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The programme emphasised the link between stimulus aid and regional development, aiming to create new jobs and new economic activities in less developed regions (Green Recovery Tracker, 2021e).

These examples suggest that larger shares of EU-funding are accompanied by higher overall shares of green spending, indicating both the increased role of the EU in promoting a green recovery among Member States, on the one hand, and its limits, on the other. Moreover, as the assessments conducted by the Green Recovery Tracker suggest, the ultimate climate impact will in many cases strongly depend on the actual implementation by the Member States who remain responsible for this. In other words, it will be crucial to assess *ex post* to what extent stimulus programmes have truly lived up to the EU's ambitions.

5. Discussion and Outlook

As outlined in the chapter, there has been a tangible shift in the EU response to the Covid-19 crisis compared to the stimulus measures adopted after the 2008 financial crisis. Many elements remain under development at the time of writing, and only time will tell how they will fare during implementation at the national level. Nevertheless, current developments indicate that EU-level measures are playing a more substantial role than in the direct aftermath of the financial crisis, and they are also more strongly aimed at enabling a green recovery. This reflects changes in the institutional, political, and economic landscapes – some of which were induced by the economic crisis of 2007/2008 – that have facilitated greater engagement by the EU.

Firstly, the political environment had changed significantly since the onset of the global financial crisis in 2007. While the year 2009 was overshadowed by the failure of the Copenhagen Climate Change Conference, the Paris Agreement and its ambition mechanism provided a significantly more favourable political backdrop when the Covid-19 crisis struck. This was further enhanced by the increasing political mobilisation for more ambitious climate action, spearheaded by the Friday's for Future movement (see della Porta et al, this volume). Moreover, Frans Timmermans, Executive Vice President of the Commission for the Green Deal, had emerged from the European elections of 2019 with a strong political mandate for this

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task. As the *Spitzenkandidat* of the Party of European Socialists, he led the second largest political grouping in the European Parliament, trailing the conservatives by only two percentage points. Moreover, the Socialists' party platform had included central tenets of the European Green Deal, such as the Just Transition Mechanism.

Secondly, the economic conditions for the deployment of climate-friendly technologies had developed favourably. Most significantly, the costs of renewable energy technologies decreased rapidly in the period from 2009 (IRENA, 2019), significantly boosting their overall attractiveness. Simultaneously, the financing environment for incumbent, high-carbon assets, such as coal-based electricity production, had deteriorated, bolstered by coal phase-out policies and increasing concerns regarding the risk of stranded assets (Caldecott, 2017). Within the EU, the EIB, which has emerged as a critical player in EU climate and energy investment, had taken significant steps towards restricting its investment in high-carbon assets and had formulated the vision of becoming a climate bank (see Mertens and Thiemann, this volume).

Finally, these trends coincided with the process of institutional development outlined in Section 3. The enhanced capacities of the EC to support investment in climate-friendly infrastructure and technologies, provided the basis for the European Green Deal. Prepared by the Commission directly following its appointment, it offered a package of policies that could be quickly mobilised and indeed further enhanced in support of a green recovery. Most notably, the Recovery and Resilience Facility will be financed through large-scale EU-level borrowing to be financed with its "Own Resources." As discussed above, the scale of borrowing goes far beyond previous activities and increases pressure on Member States to agree to the introduction of additional revenue-raising activities in the future. One avenue for this – the introduction of a Carbon Border Adjustment Mechanism - has been proposed within the context of the European Green Deal (see Wettestad, this volume). Broader discussions on the harmonisation of the European tax system to prevent tax avoidance by large digital companies and other corporations and an agenda to green the European taxation system are also underway (Ecorys & WIFO, 2020). Parallel to this, the Commission and Member States have signalled a willingness to pursue a more activist foreign and trade policy, which combines a stronger focus on climate and sustainability concerns with an approach aimed at strengthening the position of the EU vis-à-vis the US and China (Goldthau, 2021).

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While it remains uncertain how these and other areas of policy development will evolve, the post-Covid-19 recovery most certainly has opened new avenues for further developing and expanding the role of the EC as an actor in climate and energy policy. Rather than signalling a departure from previous developments, these new developments represent a continuation and enhancement of trends that were triggered in the wake of the financial crisis. These have enabled the EC's strong response to the economic crisis induced by the pandemic, leading to further institutional changes that favour the further expansion of its role.

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