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**CLIMATE POLICY IN THE BROADER
SUSTAINABILITY CONTEXT:
JOINT IMPLEMENTATION OF AGENDA
2030 AND THE EUROPEAN GREEN
DEAL**

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CLIMATE POLICY IN THE BROADER SUSTAINABILITY CONTEXT: JOINT IMPLEMENTATION OF AGENDA 2030 AND THE EUROPEAN GREEN DEAL¹

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¹ This chapter is based on the report “Transformations for the Joint Implementation of Agenda 2030 for Sustainable Development and the European Green Deal: A green and digital, job-based and inclusive recovery from the COVID-19 pandemic” published by the UN sustainable Development Solutions Network. The full report is available [here](#).

ABSTRACT

The European Green Deal was approved in December 2019 by European Union Leaders, laying out a broad set of objectives for a climate-neutral, resource-efficient, technologically sophisticated, and socially equitable continent. The EU has also decided to integrate the Sustainable Development Goals (SDGs) of UN Agenda 2030 in the European Semester, the EU's main mechanism for coordinating national economic and employment strategies. Further, the EU responded to the enormous consequences of Covid-19 by enacting a robust "Next Generation EU" package of policies and resources to help Europe's economy recover while pursuing its green transformation. To link these four major policy initiatives – the SDGs, the European Green Deal, the European Semester, and the EU recovery plan we co-authored the report: *“Transformations for the Joint Implementation of Agenda 2030 for Sustainable Development and the European Green Deal: A Green and Digital, Job-Based and Inclusive Recovery from the COVID-19 Pandemic”*, which was released in February 2021 by the UN Sustainable Development Solutions Network Europe (SDSN Europe). In this article, we use part of the work performed in that report to present how the objectives of Agenda 2030 and the European Green Deal can be aligned and provide actionable recommendations to policymakers for this purpose.

Keywords: European Green Deal, SDGs, Sustainability, Co-integration, EU Economic Policy, Just Transition

JEL Classification: Q01, Q52, Q54, Q58.

1. INTRODUCTION

In September 2015 the UN “Agenda 2030” was launched ([United Nations,2015a](#)), including 17 Sustainable Development Goals (SDGs). In December 2015, the Parties to the UN Framework Convention on Climate Change (UNFCCC) in Paris, delivered a landmark agreement ([United Nations,2015b](#)) to combat climate change. Both frameworks call for deep transformations and require actions by governments, civil society, scientists, and businesses. While significant progress has been made on some goals, no country is currently on track towards achieving all SDGs.

To assist stakeholders in operationalising the implementation of the 17 SDGs, the UN Sustainable Development Solutions Network (SDSN) introduced in 2019 the concept of ‘Six Transformations to achieve the SDGs’ (6T) ([Sachs et al, 2019](#)). Each Transformation (Education-Gender-Inequality; Health-Wellbeing-Demography; Energy Decarbonisation-Sustainable Industry; Sustainable Food-Land-Water-Oceans; Sustainable Cities and Communities; and Digital Revolution for Sustainable Development) identified priority investments and regulatory challenges and called for actions by governments working with business and civil society. All Transformations and SDGs are closely interlinked; significant progress in any SDG cannot be achieved without the implementation of the objectives contributing to other SDGs as well.

The European Union introduced the European Green Deal ([European Commission, 2019](#)) (EGD) in December 2019 to reach the goal of climate neutrality by 2050. EGD guides the actions of governments, organisations, and businesses and offers a comprehensive framework for decarbonising the economy, reducing pollution and waste, and placing the SDGs at the centre of the European policy agenda. The EGD identifies nine areas of intervention – biodiversity, food systems (‘From Farm to Fork’), sustainable agriculture, clean energy, sustainable industry, building and renovating, sustainable mobility, eliminating pollution, and climate action. In line with the EGD, the EU adopted the European Climate Law in spring 2021, intending to set out the conditions for an effective and fair low-carbon transition and to provide

predictability for investors. EU leaders have also decided to integrate the SDGs in the European Semester, which is the major process for the coordination of national economic and employment policies in the EU. This makes SDSN's Six Transformations a useful integrated policy framework from which European countries and businesses can work together to help Europe become the first carbon-neutral continent in the world by 2050.

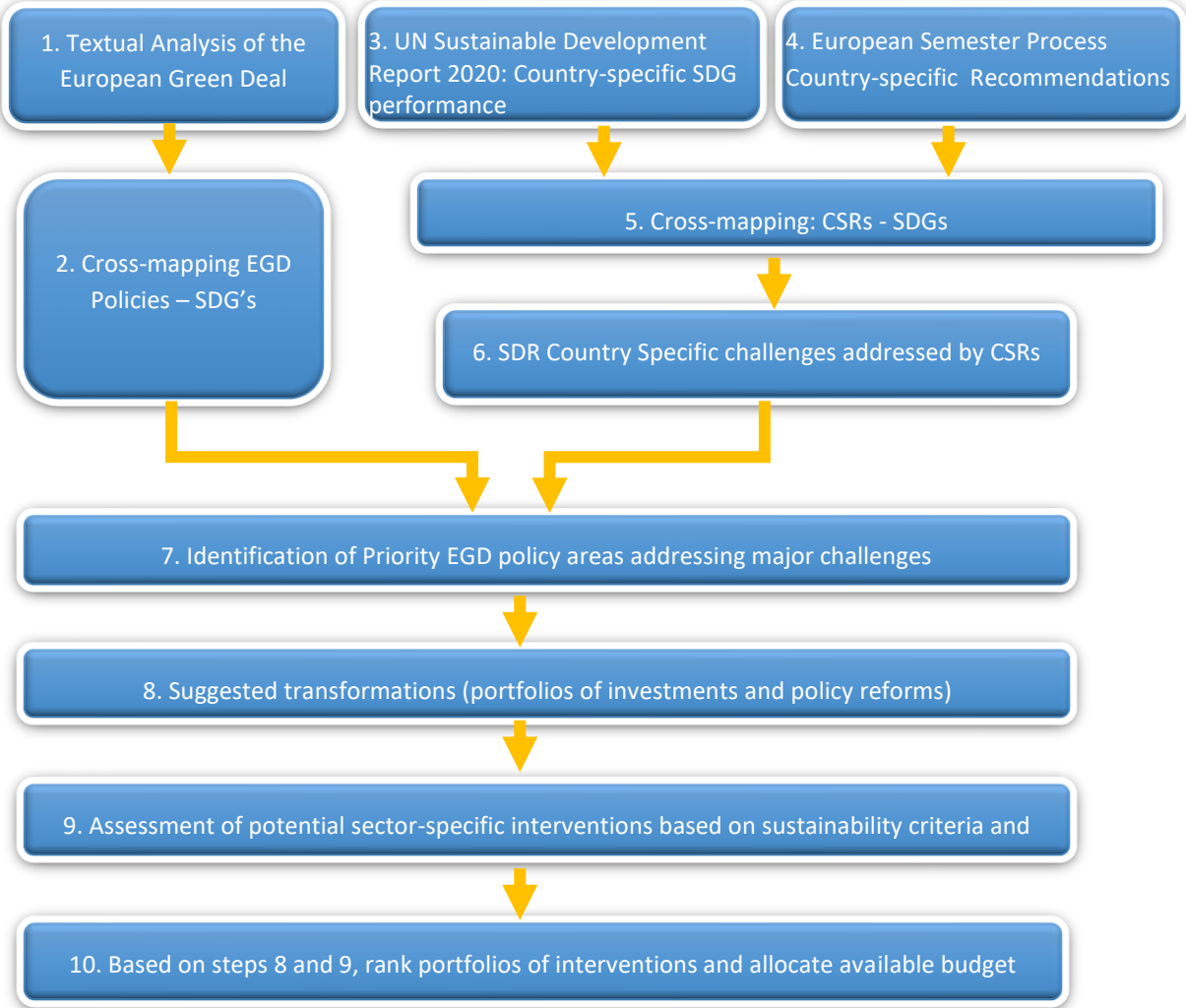
While these initiatives were in development, the COVID-19 pandemic hit in February 2020, causing tremendous health and socioeconomic challenges around the world. The measures for the health crisis steepened the macroeconomic recession curve and jeopardized supply chains. In response to this, EU leaders agreed in summer 2020 to spend €1.8 trillion, including the enhanced 2021-2027 EU budget and the 'Next Generation EU' recovery facility, to help Europe recover from the coronavirus pandemic.

This paper summarises the findings of a broader study that attempted to connect the dots between these four major policy initiatives – the SDGs, the European Green Deal, the European Semester, and the EU recovery plan –to support policymakers with actionable strategies that can guide EU-wide economic recovery in line with the continent's overarching sustainability agenda.

2. CONNECTING THE EUROPEAN GREEN DEAL AND EU ECONOMIC POLICY WITH SUSTAINABILITY

The numerous initiatives outlined above aim at the green transition. This section presents the findings of a '3D mapping' of the SDG framework both in the European Semester's Country-Specific Recommendations (CSRs) and in the policies of the EGD.

Figure 1 Flowchart of the 3-D Mapping methodology



Source: Sachs, J., Koundouri, P., et al., 2021

Figure 1 provides an overview of the methodology. The first step was a textual analysis of the main EGD policy document that described the EU’s vision for sustainability. Then, in step 2, a more detailed text mining exercise was conducted on the EGD document to match specific parts of it to SDGs that are explicitly relevant. This led to the identification of linkages between each SDG and specific EGD policies, as illustrated in Figure 2.

Figure 2 Mapping of the European Green Deal’s Policies to the 17 SDGs. Dark green cells denote a direct linkage between EGD Policies and SDGs, light green cells depict the implicitly derived association between EGD Policies and the SDGs, whereas white-coloured cells indicate a weak or no apparent connection.

The Global Goals for Sustainable Development - Agenda 2030	P1	P2	P3	P4	P5	P6	P7	P8	P9
	Biodiversity	From Farm to Fork	Sustainable agriculture	Clean energy	Sustainable industry	Building and renovating	Sustainable mobility	Eliminating pollution	Climate action
Goal 1 - No Poverty									
Goal 2 - Zero Hunger									
Goal 3 - Good Health & Well Being									
Goal 4 - Quality Education									
Goal 5 - Gender Equality									
Goal 6 - Clean Water & Sanitation									
Goal 7 - Affordable & Clean Energy									
Goal 8 - Decent Work & Economic Growth									
Goal 9 - Industry, Innovation & Infrastructure									
Goal 10 - Reduced Inequalities									
Goal 11 - Sustainable Cities & Communities									
Goal 12 - Responsible Consumption & Production									
Goal 13 - Climate Action									
Goal 14 - Life Below Water									
Goal 15 - Life On Land									
Goal 16 - Peace Justice & Strong Institutions									
Goal 17 - Partnerships for the Goals									

Source: Sachs, J., Koundouri, P., et al., 2021

Step 3 involved the collection of country-specific assessments of SDSN’s Sustainable Development Report (SDR) (SDSN and IEEP, 2020). In Step 4 the Country-Specific Recommendations (CSRs) of the European Commission were collected². Then, since each CSR can be directly or indirectly associated with some of the SDG indicators, Step 5 connected the relevance of the sustainability performance indicators mentioned in step 3 with the outcome of CSRs of Step 4.

Next, in Step 6, the analysis focused on the most problematic policy domains by country, i.e. those which the SDR has identified as presenting ‘Major’ or ‘Significant’ remaining challenges, and examined whether these are addressed by the CSRs. If at least one performance indicator is associated with a specific CSR, it was considered that CSRs urge for this issue. Results indicated that several of the 115 SDR performance indicators cannot be found in any CSR. Step 7 combined the mapping of SDGs to EGD Policies described in Step 2 with the mapping between CSRs and Major/Significant Challenges for each country that was performed in Step 6. Policies associated with Major-Challenge-SDGs were prioritised and followed by policies in domains associated with SDGs under the label of ‘Significant Challenges’.

Steps 8 to 10 follow the 3D mapping to move to country-specific interventions and identify synergies and trade-offs between sectors, evaluating the most promising interventions through a range of sustainability criteria. Policymakers can use this ranking to proceed with a list of priorities for policies, investments and reforms in each economic sector and allocate the available public budget to individual interventions.

The methodology outlined above leads to three useful policy conclusions with EU-wide significance. First, a careful country-specific assessment shows that according to the SDR, ‘Major Challenges’ for most of the EU-27 Member States (MS) can be found in the policy domains of SDGs 12, 13, and 14, whereas most of the ‘Significant Challenges’ are addressed

² As part of the European Semester Process, the European Commission annually assesses the performance of every Member State against four categories: Pandemic Recovery / Healthcare System effectiveness; Employment and Address the Social Impact of the Crisis; Energy/ Environment/ Digital Transition; and Further Improvement of Structural Characteristics.

by SDGs 2, 5, and 9. Sixteen out of the 27 EU countries have achieved SDG 1 of No Poverty. Second, it turns out that the EU macroeconomic policy coordination process is quite efficient in addressing the EU sustainability challenges, but there is room for further improvement (Table 1). Third, the analysis allows to prioritise the implementation of each one of the nine EGD policy areas (Table 2).

Table 1 Efficiency of the European Semester in identifying sustainability challenges of EU MS. Out of 459 cases (17 SDGs x 27 countries), 321 challenges have been successfully assessed by CSRs.

SDG's Assessment Category	Addressed by CSR	NOT addressed by CSR	Total
Achieved	21	24	45
Challenges Remain	120	46	166
Significant Challenges	115	44	159
Major Challenges	64	20	84
Grey (not available info)	1	4	5
Grand Total	321	138	459
Efficiency Ratio	70%	30%	

Source: Sachs, J., Koundouri, P., et al., 2021

Table 2 Prioritization of EGD Policies for the EU-27 Countries (A: High Priority, B: Next Priority, Blank: Neutral)

Prioritization of EGD Policies for each Country. A - High Priority B - Next Priority Blank - Not relevant	P1	P2	P3	P4	P5	P6	P7	P8	P9
	Biodiversity	From Farm to Fork	Sustainable agriculture	Clean energy	Sustainable industry	Building and renovating	Sustainable mobility	Eliminating pollution	Climate action
Austria	B	B	B	A	A	A		A	A
Belgium	A	A	B	B	A	B		A	A
Bulgaria	B	A	B	B	B	A	B		B
Croatia		A		B	B	A	B	B	B
Cyprus	B	B		A	A	A	B	A	A
Czech Republic	B	B	B	A	A	A		A	A
Denmark	A	A			A	B	B	A	A
Estonia		A	B	B	A	B		A	A
Finland	B	B		B	A	B		A	A
France	B	B		B	A	B		A	A
Germany		B			A			A	A
Greece	B	B	B	B	B	B	B	A	A
Hungary		A	B	A	A	B		A	A
Ireland	B	B		A	A	A		A	A
Italy	A	A	B	A	A	B	B	A	A
Latvia	A	A	B	A	A	A	B	A	A
Lithuania	B	A	B	A	A	A	B	A	A
Luxembourg	B		B	A	A	A	B	A	A
Malta	A	A	B	A	A	A		A	A
Netherlands	A	A	B	A	A	A		A	A
Poland	A	A		A	A	A		A	A
Portugal	A	A		B	B	B		A	A
Romania	A	A	B	B	B	A	B	B	A
Slovak Republic		A		A	A	B		A	A
Slovenia	A	A		B	A	B		A	A
Spain		A						B	B
Sweden		B			A			A	A
High Priority for # of Countries:	10	17	0	13	21	13	0	23	24
Next Prority for # of Countries:	10	9	14	10	5	11	10	3	3

Source: Sachs, J., Koundouri, P., et al., 2021

3. TECHNOLOGICAL AND INVESTMENT PATHWAYS

In June 2021, the European Parliament approved a law to reduce net EU emissions by 55% by 2030, from 1990 levels, and eliminate net emissions by 2050 (Abnett K., 2021). The next step to meet its new 2030 climate target, is to promote a deeper reflection on how to implement its climate neutrality trajectory not only up to 2030 but also between 2030 and 2050. This section draws on insights from recent research (SDSN, FEEM 2019), to provide EU policymakers with a set of technological and policy insights that they could consider while designing the EU’s long-term trajectory to climate neutrality by 2050.

The EGD should be conceived on a “systems approach” aiming to address multiple objectives simultaneously and promoting policy instruments and technological solutions that can be used across many sectors. The multiple objectives span decarbonization and environmental sustainability, economic prosperity (including poverty reduction), and social inclusion. Policy instruments include public investments, the phaseout of subsidies to fossil fuels, market mechanisms, regulatory frameworks on energy and land use, and targeted R&D. Technological solutions include a wide range of existing and emerging technologies, such as 5G-enabled and AI-empowered smart power grids to synthetic fuels produced with renewable energy. The systems approach identifies several key complementarities for managing the complexity of the energy system and identifies six main pillars for decarbonization:

- [1] Zero-Carbon Electricity
- [2] Smart Power Grids
- [3] Electrification of end Uses
- [4] Materials Efficiency
- [5] Green Synthetic Fuels
- [6] Sustainable Land-Use

To reach climate neutrality by 2050, the EU will have to transform its power, industry, transport, and buildings sectors given completely abating their greenhouse gas emissions. Tables 3 and 4 outline national actions required in the regulatory and financial domain, which are enabled by global development, can lead to the zero-carbon transition.

Table 3 National efforts and global enablers to reach zero net emissions by 2050

Six Pillars to Zero Net Emissions by 2050	National Actions	Global Enablers
Zero-Carbon Electricity	Zero-carbon electricity grid, mainly based on renewable energy	Reduced costs of renewable energy, mass scale-up of solar photovoltaics and wind turbines, improved energy storage technologies and expanded R&D of new energy sources
Smart Power Grid	Introduction of a digital power grid and the Internet of Things (IoT)	R&D of artificial intelligence (AI)-backed smart grid systems
Electrification	Infrastructure for battery electric vehicles, retrofitting of buildings for electric heating and cooking	Global phaseout of ICE vehicles, global mass production of battery electric vehicles (BEVs)
Materials Efficiency and Circular Economy	Introduction of the circular economy and national waste management systems	R&D of alternatives to cement, plastics, and other pollutants (persistent pesticides)
Synthetic Fuels	Infrastructure for trade and distribution of synthetic fuels and biorefining	Global R&D and scale-up of synthetic fuels for heavy-duty vehicles, ocean shipping, aviation, heavy industry

Sustainable Land-Use	Sustainable land-use regulations (reforestation, restoration of degraded lands), precision agriculture, reduced food wastage, a shift towards plant-based protein diets	Sustainable global supply chain management for major crops, global real-time monitoring systems for land management
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Source: Sachs, J., Koundouri, P., et al., 2021

Table 4 Major Fiscal and Financial Policies for Zero-Emission Policies

Action Area	Major Fiscal and Financial Policies
Zero-Carbon Electricity	Regulatory framework for power grid operators; public investments in renewable energy transmission and distribution; income support for fossil fuel-producing regions and sectors experiencing social costs of transition; redesign of electricity markets; financial market regulations to avoid stranded assets in the financial system; carbon pricing and taxation; green bonds
Smart Power Grid	Public investments in digital technologies for the power grid; regulations on AI and big data; design of IoT
Electrification	Public investments in infrastructure (e.g. charging facilities for BEVs); building codes for zero-emission buildings; regulations for phasing out ICE vehicles (coupled with incentive schemes to address equity issues); public procurement of BEVs; retrofitting and design of public buildings
Materials Efficiency and Circular Economy	National and local regulations on waste management and recycling; policies for waste valorization
Synthetic Fuels	R&D outlays for synthetic fuels; public infrastructure for synthetic fuels (e.g. adaptation and upgrading of existing pipelines for hydrogen, e-fuels, etc.), regulation to ensure ethical sourcing of biomass. These fuels should be generated by RES and may require 5 to 6 times more RES electricity units to generate one unit of synthetic fuel.
Sustainable Land-Use	Land-use regulations; public investments in national land-use monitoring systems and enforcement mechanisms; public payments for ecosystem services (e.g. payments for protected areas); green bonds
International Cooperation and Investment Allocation	Result based Investment for all public aid at a bilateral and multilateral level, national support to de-risk private investment for the energy transition.

Source: Sachs, J., Koundouri, P., et al., 2021

4. THE ROLE OF PATIENT FINANCE AND FISCAL POLICY IN THE COVID RECOVERY

The global economy has been significantly disrupted by COVID-19 and governments need to make significant and long-term investments to support rapid recovery from the coronavirus shock. Europe’s economy was fragile even before the COVID-19, not having recovered from the 2008 crisis. European countries continue to have different levels of competitiveness, often due to different levels of investment in key drivers of growth, such as education, R&D, and skills, so a new action plan that looks at both the rate of growth and its direction is needed (Mazzucato, M., McPherson, M., Dibb, G. 2020). Unless Europe kick-starts a new action plan that looks at both the rate of growth and its direction, there is a risk of a decade of stagnation for the continent. The Next Generation EU (NGEU) Recovery Package can contribute to this new direction as it supports the reorientation of activity towards innovation for resilience and requires MS to prioritise green, digital, and healthcare investment.

Finance is not neutral (Mazzucato, M. and Semieniuk, G. 2018). The private financial sector often tends towards short-termism and a risk-averse approach, but sustainable innovation requires patient, long-term, strategic finance. Only when there is a stable and consistent direction for investment will regulation and innovation converge along a green trajectory. Business does not invest unless it sees an opportunity for growth, so turning mitigation into opportunities for investment and innovation is key (Mazzucato, M., McPherson, M., 2019). Considering patient finance in the EU, seven years, as provided for in the EU's budget, maybe a significant time horizon compared to other short-term funding mechanisms, but not long-term by the standards of truly 'patient' finance, which is needed for transformative change. We, therefore, need to ensure that a portfolio, multi-pathway approach is taken to investment and that each route is supported across the innovation chain. This would allow for opportunities from basic research through to full deployment, and from general-purpose technologies through to highly-specialised design to flourish. This requires finance that is risk-welcoming and dependable, and that can absorb the possibility of failure.

An ecosystem of public finance and public policy is needed to direct the European economy towards a sustainable direction and to actively 'tilt the playing field' in favour of sustainable activity. For this purpose, an alignment is required between multiple financial institutions at the macro- (monetary and macroprudential policy), meso- (long-term finance from public financial institutions), and micro- (firm) economic policy level. At the macro level, central banks have had an interventionist role in our economies since the financial crisis. However, from a sustainability perspective, there has recently been a particular emphasis on how climate-related financial risks may impact central banks' established financial stability mandates (Kedward, K., Ryan-Collins, J. and Chenet, H. 2020). At the 'meso' level, national public investment organisations provide positive sources of long-term patient finance, which can support sustainable investing. In this context, the European Investment Bank and the European Investment Fund will play a vital role in post-pandemic recovery, particularly for companies that are increasingly indebted in the crisis. Financing the plans set by EU leaders will require a mixture of financial instruments to cater to various types of risk.

There is no shortage of money; the innovation gap is in direction-setting for the money that is being placed at the disposal of NGEU. The SDGs can and should be drawn on to provide a useful framework for creating conditions on the finances available. Condition-less bailouts in 2008 allowed policy-makers to flood the world with liquidity without directing it toward good investment opportunities. COVID-19 relief conditionalities can align with sustainable outcomes and there are differences between 'emergency' liquidity lending, the rapidity of which can make it difficult to attach conditions, and longer-term lending geared towards recovery (McDonald, D.A., Marois, T., and Barrowclough, D.V. (Eds.). 2020). Conditions can be attached to the latter, to make sure that bailouts are structured in ways that transform the sectors they're saving so that they become part of a new economy, one that is focused on lowering carbon emissions while also investing in workers and making sure they can adapt to new technologies. Corporate behaviour must align with long-term societal needs and conditionalities should not be seen as increasing barriers to doing business. Companies that switch direction soonest will be the most competitive, most innovative and most successful over time.

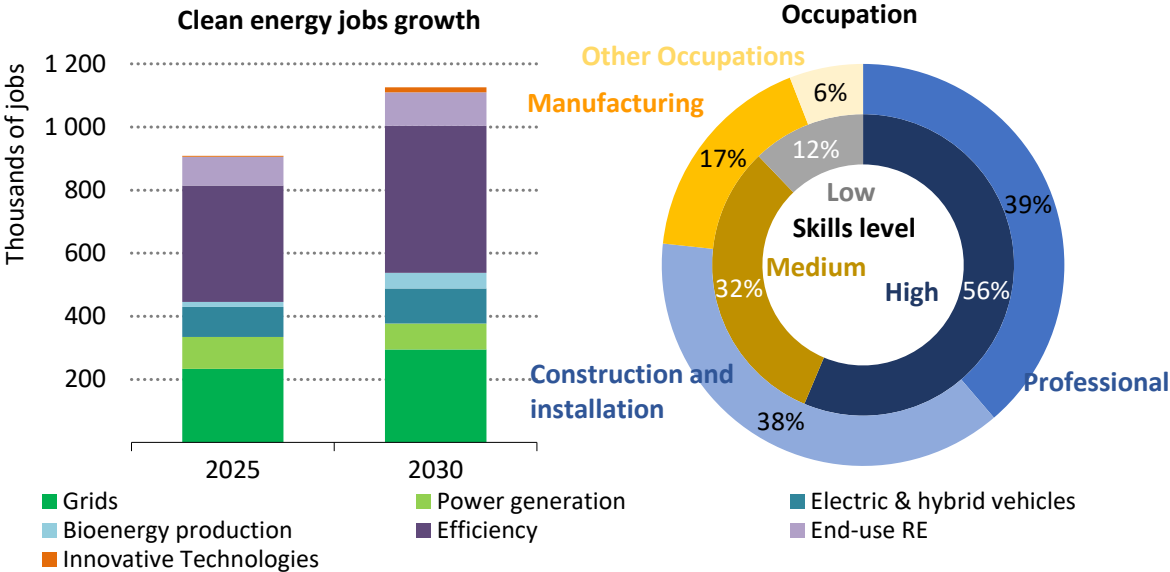
5. EFFECTS OF THE SUSTAINABILITY TRANSITION ON JOBS AND SKILLS

COVID-19 highlighted the need to focus on policies that restore employment while avoiding the exacerbation of global climate change and resource depletion. The right investments need

to be labour-intensive in the short run and have high multipliers and environmental co-benefits (Stern N., Bhattacharya A. and Rydge J.,2020).

Clean energy transitions will have a pronounced impact on energy employment, as seen in the International Energy Agency’s Sustainable Development Scenario, which describes the energy system changes and investments needed to meet Paris commitments and the energy-related Sustainable Development Goals (SDGs). Europe commits substantial funds for sustainable recovery as part of the European Green Deal Investment Plan (EGDIP). The scale of the investment outlined for the next 10 years creates a need for a rapid scaling up of clean energy employment in the region. Accordingly, the IEA has estimated the total job growth in Europe associated with the energy investments and spending in the Sustainable Development Scenario, as shown in Figure 3.

Figure 3 Number of additional European jobs needed to support an additional per one million USD of incremental investment annually



Source: IEA analysis, Adapted from a figure in EIB Investment Report 2020/21

This rapid scale-up of employment can necessitate a doubling of the current workforce in nascent industries like electric vehicle production. But even in established segments like electricity networks and power generation, a 30% increase in the workforce would be required in Europe, on top of massive shifts and retraining of the current workforce to work on new segments of a business. This poses challenges for companies expanding their workforce and for policymakers striving to maintain a stable labour market amidst a rapid shift toward a new energy economy.

In Europe, clean energy jobs are highly skilled, with over 50% of jobs requiring highly skilled individuals, while around 10% can be filled by untrained manual labour. This underscores the importance of workforce training and retraining, which must target universities, trade schooling, and vocational retraining programs, which can be a key focus for EGDIP's Just Transition Mechanism. Most roles created would require at least moderate retraining, which can focus on transitioning workers within the same industry from one segment to another or between industries but within the same occupation (e.g., a construction worker being retrained to conduct high quality building energy envelope investments).

This training could also target new entrants in the labour market, as well as addressing asymmetry in the participation of women and other underrepresented communities in the

energy industry. Globally, males hold around 93% of construction jobs and more than 60% of manufacturing jobs, which are the two labour segments that will transform the most within a clean energy transition. Unless gender occupational segregation is addressed, the jobs created by sustainable recovery plans are likely to be taken mainly by men. A multi-track approach is needed to close gender gaps and achieve equality in employment and remuneration (ILO, 2019).

Investment in clean energy measures in Europe would stimulate demand for imports of goods and services, especially in the short term. EGDIP's investments could help shift current production shares globally and could help seed new manufacturing in Europe. Accordingly, clean energy transition policies intersect with domestic and international industrial policy and energy security objectives. Directing investments into one clean energy sector versus another could be used to promote local industries and developing domestic supply chains, although this would need to be balanced against the need to ensure competitiveness. When making these decisions, Europe must consider the parallel decarbonising efforts in other regions, and how this impacts prices, availability of critical material inputs, and relative competitive advantages globally. International cooperation and trade agreements could help reduce potential areas of conflict and mutually reinforce and accelerate collective action and economic activity in this space.

Beyond the energy sector, there is sufficient quantitative evidence that green economic recovery programs are not only important for keeping Europe on track to the climate neutrality objective but can also positively affect employment prospects in the continent. Elements of the sustainability transition such as the circular economy, green agriculture and nature-based solutions like restoration of ecosystems and tree planting, which have been less well researched up to now, are also important ingredients of a green recovery plan, as they are expected to yield favourable employment impacts. At the same time, there are trade-offs between short-term and long-term impacts on employment. Programs with large short-term employment effects may have weaker effects for long-run growth, while those yielding a larger job impact may be more beneficial for lower-skilled workers, thus jeopardizing long-term economic growth prospects (Strand J. and Toman M., 2010). Therefore, immediate measures with attractive short-term impacts may have short-lived benefits and turn out to be inferior in both economic and environmental terms by 2030 (Barbier E.B., 2020). It has also been argued that green stimulus investments may be more effective for reshaping than for restarting an economy because they may not be sufficient for short-term growth and job creation (Popp, D., Vona, F., Marin, G., Chen, Z., 2020). Scaling up the financial support for immediate green interventions can help overcome such barriers.

Green recovery measures may be particularly effective in communities whose workers already have the appropriate green skills (Chen, Z., Marin, G., Popp, D. and Vona, F., 2020). European policymakers will hence need to adopt interventions that can match labour supply and demand by providing appropriate educational and vocational training to the workforce of vulnerable sectors and regions that have been affected by the pandemic or will be affected by the green transition. For this purpose, there is a need for unprecedented investment in reskilling and upskilling. The Fourth Industrial Revolution with the unprecedented pace of technological advancement, calls for governments to invest in life-long learning and focusing education systems on "deep learning", or learning how to learn.

6. EQUITY CONSIDERATIONS

The European Union is required to implement ambitious and stringent decarbonisation policies to achieve the goal of carbon neutrality by 2050. The costs associated with these policies will need to be minimised and distributed across different sectors to ensure that low-income

populations and vulnerable communities do not carry an inequitable share of the financial burden. Recent research (Enel Foundation, 2020) shows that appropriate countermeasures should be put in place to avoid the increase of inequality and to ensure broader support for the energy transition. This section summarises its main findings.

The study identified six decarbonisation policies³ that are needed to be implemented to achieve EU decarbonisation goals and made simulations based on them through a macroeconomic model, analysing the patterns of income inequality up to 2050 in Europe (EU27 and the UK) and its macro-regions. Some policies will result in lower-income households financially benefiting more than other income groups (progressive effect), while others will result in lower-income households being disproportionately burdened by costs (regressive effect). Nevertheless, if all key decarbonisation policies will be implemented without proper countermeasures the overall effect would be regressive.

As a second step, the study analysed several case studies and jurisdictions around the world that have successfully enacted measures to counter the regressive elements of key climate policies. A menu of policy options that can effectively reverse the regressive effects of the decarbonisation policies is then added into the modelling and the net distributive impact of a wider combined policy package is assessed. In particular:

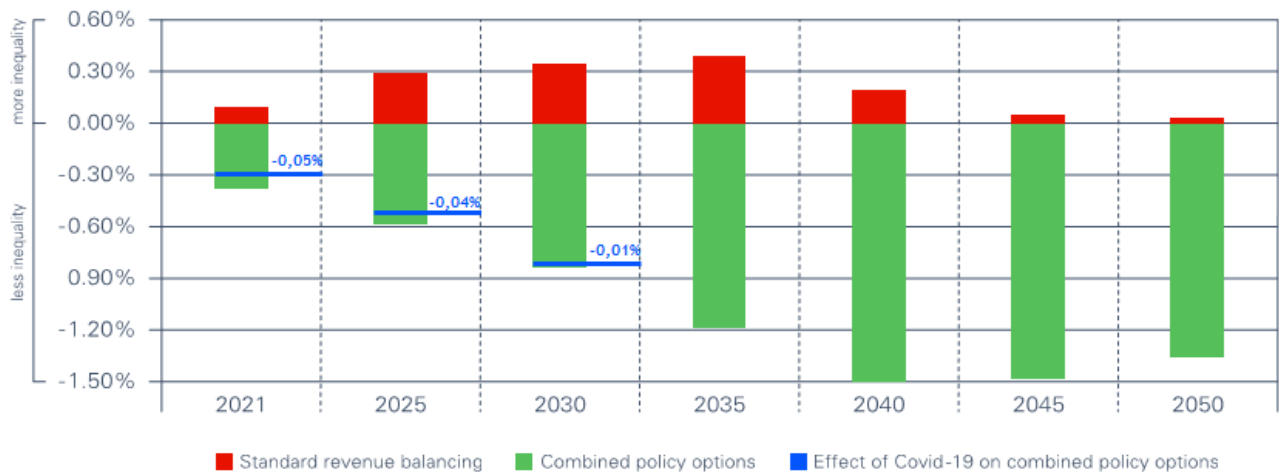
- The revenues raised from policies such as carbon pricing can be used to offset reductions in VAT or electricity taxes; in the alternative, the same revenues can be used for providing lump-sum direct rebates;
- Energy efficiency measures can be targeted to low-income groups to ensure future energy savings;
- Programs to reskill and upskill workers, such as the job retraining programs focused on industrial sectors most affected by decarbonisation can be important preventive policy options to implement;
- Low-carbon innovative technologies can benefit from subsidies funded via general taxation.

As can be seen in Figure 4, implementing the combined policy options – key decarbonisation policies plus the four mitigation measures mentioned above – can greatly improve equality. The positive effect will grow over time and the difference in the Gini coefficient⁴ compared to the standard revenue balancing case will be very substantial, especially in the period 2030-2050. Furthermore, sensitivity analysis shows that the measures that were taken to limit COVID-19 spread do not have a substantial impact on the distributional effects of climate policies and the effectiveness of the identified mitigation policies. There is a small reduction in the progressive impact throughout the 2020-2030 period as the scale of the change in real income under the COVID-19 shock is slightly reduced.

³ Carbon pricing, taxation of energy vectors, emission performance standards, subsidies for low-carbon technologies, phase out of the subsidies for fossil fuels and energy efficiency measures.

⁴ The Gini index, or Gini coefficient, is an indicator of inequality in terms of financial and social wealth. It measures the distribution of income within a nation or any other group of people and its value ranges between 0 and 1, interpreted as complete equality and perfect inequality, respectively. Thus, an increase in the Gini index expresses a rise in inequality and vice versa.

Figure 4 Gini Index variation for combined policy options in EU27 + UK



Source: Enel Foundation

The study also provided an estimate of the effect on GDP and employment and found that the combined policy package can increase both indicators. In particular, in the short term, GDP impact is mostly driven by investments in energy efficiency measures; in the longer term, the positive change in GDP increases as emissions performance standards come into effect, reducing consumer prices through energy savings in industry, and reducing fossil fuel imports as road transport will be progressively electrified over time. On the other hand, employment growth until 2035 is dominated by an increase in construction and manufacturing jobs to meet the energy efficiency investment. Over the longer term, the employment growth is concentrated in service sectors and the electricity generation and supply sector. The positive employment effect in the service sectors is driven by an increase in consumer demand due to higher real incomes, whereas in the electricity generation and supply sector the positive impact is driven by the need to meet the additional electricity demand due to electrification.

Finally, the modelling also suggests that all European macro-regions will benefit from the combined policy options. Southern Europe and Central and Eastern Europe are expected to experience the most benefits in terms of GDP growth and declining inequality, while Western Europe is expected to have a large share of the employment benefits in terms of increased jobs. On the contrary, Northern Europe shows the smallest economic impact from the various climate policies, largely because a higher level of decarbonisation has already been achieved. The general trend of positive distributional effects is broadly consistent across all EU macro-regions.

7. CONCLUSIONS

The COVID 19 recovery packages are financed by future generations' debt. For the present generation, this means investing in transforming the current economic, financial, social, and political system in order to meet the challenges of climate change, economic downturn, and health crises in a way that is resilient and socially inclusive. This issue necessitates transformational public investments that create a sustainable, equitable, and digital transition, while leveraging private sector investment. (1) Global climate neutrality by 2050 (including technological advances, circular economy, and nature-based solutions), (2) Sustainable Finance, and (3) Climate Adaptation and Resilience were highlighted by UN Secretary-General António Guterres in his special address on "The State of the Planet" (12 December 2020). The 2030 Agenda and the Paris Agreement give long-term visions and roadmaps for transformation.

The good news is that “Building Back Better” is not just a moral responsibility. Recent global simulations of the effect of green recovery plans confirm that a green economy creates jobs and a more inclusive society. Cleaning unsustainable supply networks and manufacturing processes can also help minimize the danger of future zoonotic illnesses and pandemics. Spending on climate resilience decreases harsh weather and poverty for hundreds of millions.

Global financial resources and pledges for a green recovery are still lacking. One exception is the European Union, where the European Green Deal offers the necessary amount of ambition and direction, and where efforts have been made to connect the investment framework with green and digital recovery. In this paper, we presented the transformations required in Europe to achieve the Sustainable Development Goals and the European Green Deal, and to enable a green and digital, job-based and equitable recovery from the COVID-19 Pandemic.

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