
The driving forces behind the green transition in Europe and South Korea

A comparison between the European Green Deal
and the Korean Green New Deal

STUDY

Agora
Energiewende



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PUBLICATION DETAILS

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The driving forces behind the green transition in Europe and South Korea – A comparison between the European Green Deal and the Korean Green New Deal

PUBLISHED BY

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Title picture: TOPOS Landscape
Architects | Unsplash

280/07-S-2022/EN

Version: 1.0, December 2022



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ACKNOWLEDGEMENTS

This study would not have been possible without the commitment of numerous external experts and colleagues. We would like to thank the following people in particular: Marco Siddi at Finnish Institute of International Affairs, Yujjin Lee at Institute for Green Transformation in Korea, Markus Steigenberger, Nikola Bock, Anja Werner, Kinita Shenoy, Nayeon Kang, Oleksandra Kovalenko at Agora Energiewende.

This study has been funded by the Korea Foundation.

KOREA **KF**
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Please cite as:

Agora Energiewende (2022): The driving forces behind the green transition in Europe and South Korea – A comparison between the European Green Deal and the Korean Green New Deal.

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Preface

Dear reader,

The climate and energy crises have dominated global headlines in 2022. As confirmed by world leaders at COP27 in Sharm El-Sheikh, transitioning our economies away from fossil fuels and mobilising green investments is key to both alleviating the climate crisis and helping economies regain their energy sovereignty.

To this end, many countries worldwide have committed to becoming carbon neutral by the middle of the century or shortly thereafter. Furthermore, many countries have seen the emergence of Green New Deal narratives that seek to reconcile environmental and climate policies with economic growth in the aftermath of the economic crises triggered by the COVID-19 pandemic. The European Union presented its Green Deal in December 2019, followed by South Korea's Green New Deal in July 2020. The U.S. is also planning massive public expenditure via a 10-year

green transition investment program through the Inflation Reduction Law enacted in August 2022.

This report, supported by the Korea Foundation, provides an in-depth description, comparative assessment, and qualitative evaluation of the EU Green Deal and the Korean Green New Deal. It also provides policy proposals for reinvigorating the Korean Green New Deal based on lessons learnt from Europe.

We hope that this report will be useful not only for South Korea, which committed to reaching net-zero emissions by 2050, but also for policymakers in other countries that are contemplating green strategies.

Markus Steigenberger
Managing Director, Agora Energiewende

Key findings at a glance:

1

Effective Green Deal policies are based on strong policy leadership, adequate financial endowment, and concrete legal competencies. To reconcile climate policies with economic growth, the strategies must be established as a top priority among other policies. Large-scale governmental funding must be mobilised with adequate financial instruments to shift investments towards a green transition. Planning, implementation and evaluation of the strategy must be enshrined in law.

2

The European Green Deal (EGD) and the Korean Green New Deal (KGND) establish green policies at the core of a new growth strategy, while differing in detailed policies and long-term roadmaps. The EGD is a clear long-term green transition framework strengthening the mid-and long-term climate ambitions and including a just transition mechanism. The KGND is a more short-term strategy only up to 2025 based mostly on already existing measures without concrete sectoral roadmaps.

3

To support the implementation of its net-zero commitment by 2050, Korea should reinvigorate its Green New Deal framework. The KGND has been an important framework for streamlining and strengthening Korea's climate ambitions. The KGND has also encouraged the mobilisation of public finance into the green transition. However, the framework is yet to be sufficiently reinvigorated by the government that took office in May 2022.

4

The Korean Green New Deal requires a broader institutional and organizational foundation. The KGND must be anchored under the direct responsibility of the President of Korea. Inspired by the EGD, the KGND needs a set of adequate policy measures, such as cross-sectoral roadmaps and regulatory instruments including an assessment mechanism of the level of required investments.

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Explanatory notes and Abbreviations

Explanatory notes

Carbon neutrality: The definition of carbon neutral in Korea is equivalent to climate neutral, as it includes all greenhouse gas emissions as estimated in metric tons of carbon dioxide equivalent (CO₂eq). This covers emissions from carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrochlorofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) in all sectors of the economy, more precisely power, industry, buildings, transport, agriculture, as well as carbon sinks. In Korea, the term carbon neutrality rather than climate neutrality is generally used, especially in related laws and official names. So, in this report carbon neutrality is used in the Korean context.

Korea in this report refers only to the Republic of Korea (South Korea) unless otherwise specified.

Monetary unit: 1 Euro (€) is about 1 350 Korean Won (₩). €1 billion is about ₩1.35 trillion.

AI	artificial intelligence	PCI	Projects of Common Interest
AMI	advanced metering infrastructure	PPA	Power Purchase Agreement
CBAM	Carbon Border Adjustment Mechanism	RED	Renewable Energy Directive
CCfD	Carbon Contracts for Difference	RRF	Recovery and Resilience Facility
CCUS	carbon capture, utilisation and storage	SDGs	Sustainable Development Goals
CEAP	Circular Economy Action Plan	SMEs	small and medium-sized enterprises
CEF	Connecting Europe Facility	TEN-E	Trans-European Networks for Energy
EFSF	European Financial Stability Facility	TEN-T	Trans-European Transport Network
EGD	European Green Deal		
EPBD	Energy Performance of Buildings Directive		
ESM	European Stability Mechanism		
ETS	Emissions Trading System		
EV	electric vehicles		
GDP	gross domestic product		
GHGs	greenhouse gases		
ICT	information and communication technology		
IPCC	Intergovernmental Panel on Climate Change		
KGND	Korean Green New Deal		
kgoe	kilogram(s) of oil equivalent		
LPG	liquefied petroleum gas		
MFF	Multiannual Financial Framework		
MtCO₂eq	million tonnes of carbon dioxide equivalent		
NDC	Nationally Determined Contribution		
NECPs	National Energy and Climate Plans		
NGEU	Next Generation EU		

Summary

In 2019 and 2020, Green Deal policy narratives emerged in several countries around the world, particularly in the EU, Korea and the U.S. Those strategies sought to reconcile environmental and climate policies with economic growth recovery opportunities. The European Union adopted the European Green Deal (EGD) in December 2019, followed by detailed strategies and plans such as the enactment of the European Climate Law, the Just Transition Mechanism, and the Fit for 55 package, aiming at accelerating the green transition in Europe to reach carbon neutrality by 2050. Korea also introduced a Korean Green New Deal (KGND) in July 2020 as an economic relief measure against the COVID-19 pandemic, launching a green transition toward carbon neutrality.

This report analyses both the Korean and European Green Deal strategies, highlighting their differences and similarities, and drawing lessons that can be learnt from their adoptions and subsequent integrations into policy proposals. It traces the emergence and subsequent development processes of those two green strategies based on an analytical framework consisting of policy priorities, financial endowment, and legal competence.

In Europe, the implementation of the EGD has progressed well since its adoption, despite other challenging policy developments (COVID-19, Russian war of invasion in Ukraine). The economic downturn caused by the COVID-19 pandemic has obviously shifted policy priorities in the short term, but has also helped to establish a green recovery policy narrative for Europe in the mid- to long term. In addition, the global energy crisis, accelerated by the Russian war of invasion in Ukraine, has further strengthened the case for decarbonisation policies to minimise reliance on fossil fuels imports, even though some short-term measures have primarily focused on securing sufficient fossil fuel capacities (gas and coal) to meet

energy demand, especially during the upcoming winters.

In Korea, the KGND was introduced as a national sustainable development strategy in response to the climate, environmental, and economic crises. It encompasses a complex set of overlapping policy goals and is much more short-term than the EU strategy, with a time horizon spanning only up to 2025. In terms of institutional development, the KGND has been an important framework for streamlining and strengthening Korea's climate ambitions. The KGND 1.0, launched in 2020, was complemented by the KGND 2.0 announced in 2021. This laid the foundation for the adoption of the Carbon Neutrality Act in September 2021 and the strengthening of the NDC 2030 GHG emission reduction targets in October 2021. This gradual development has encouraged the mobilisation of public finance into the energy transition and served as a major policy framework to establish green transformation as a major policy priority. However, the KGND framework is yet to be sufficiently reinvigorated by the new Korean government that took office in May 2022. Currently, it does not appear to be on the Korean political agenda, which is regrettable as the country requires a cost-efficient and effective green transition strategy for transforming the economy and society.

This study provides a comparative assessment of the EGD and KGND strategies. Drawing lessons from European experiences, it also proposes specific policy improvements to the Green New Deal policy concept in Korea, aiming to turn the current Korean economic and institutional structures towards a sustainable green economy aligned with the 2050 carbon neutrality objectives adopted in 2020. A successful design and implementation of the Green New Deal will require a broader institutional and organizational foundation. Above all, the implementation of the

KGND must be anchored under the direct responsibility of the President of Korea.

In order to turn the KGND strategy from being a short-term stimulus package into becoming a long-term framework for a sustainable green transition, an overall cross-sectoral roadmap with concrete policy and regulatory instruments needs to be adopted for achieving carbon neutrality in each sub-sector. The transformation of the energy sector must be given top priority, given its weight in total

greenhouse gas emissions. The goals of the KGND include not only carbon neutrality but also economic growth and social equality. Therefore, a just transition mechanism must be prepared and implemented promptly to provide support for the affected areas and workers during the green transition.

Green New Deals are, by nature, a form of Keynesian stimulus. Ambitious budgetary measures for an effective green transition are required and must be adopted during each budgeting period. For instance,

Comparative assessment of the EGD and KND					Table 1
	Announcement	Development			
		Legislative process	Update	Response to latest policy changes	
European Green Deal					
Policy priority	Excellent	Excellent	Excellent	Good	
Financial endowment	Fair	Fair	Good	Good	
Legal competence	Fair	Good	Excellent	Good	
Korean Green New Deal					
Policy priority	Good	Excellent	Excellent	Poor	
Financial endowment	Fair	Fair	Good	Fair	
Legal competence	Fair	Good	Good	Fair	

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to reach Korea's 2030 NDC targets in the building sector, at least ₩580 billion (€430 million) must be invested annually for green retrofitting and renewable heating. This is 2.4 times more than the government budget in 2021. Given the transformative nature of the transition, and in order to minimise conflicts between stakeholders, the Green New Deal strategy should be co-developed through wide stakeholder consultation, including local governments and citizen representatives. The KGND framework could also be aligned with foreign affairs policy priorities while promoting Korea's political and economic leadership in the region when it comes to the fight against climate change.

1 Context

1.1 Background

The urgency of the climate crisis

The climate crisis has dominated the worldwide headlines in 2022: heat waves in the western part of the United States and Canada, large-scale wildfires in North America, Australia and Africa, heavy floods in Europe and Southeast Asia, torrential rains on the Korean peninsula, and Europe's worst drought in 500 years. As a result, many economic activities have been negatively affected and it is becoming clear that the climate crisis is one of the biggest threats to human wellbeing and the health of the planet (IPCC, 2022).

In the latest Intergovernmental Panel on Climate Change (IPCC) report, released in April 2022, it is reported that the global temperature has already risen by 1.1 degrees Celsius compared to pre-industrial levels, and that a far more serious catastrophe is looming than that which we face today if greenhouse gases (GHGs) are not reduced by half within the next 10 years (IPCC, 2022). Curbing GHG emissions as fast as possible and adapting our economies and societies to the impact of climate change are both urgently needed if we want to pass on a sustainable planet to future generations.

The emergence of the Green New Deal narrative

As the climate crisis has become more tangible, many countries worldwide, including Korea, have committed to become carbon neutral by the middle of the century or shortly thereafter¹. Reaching those goals requires a radical transformation of their societies

and economic sectors, in particular the energy and industry systems.

This context of rising climate ambitions has seen the emergence of Green New Deal narratives that seek to reconcile environmental and climate policies with economic growth recovery opportunities (Rifkin, 2019). A Green New Deal can be defined as a policy framework accelerating the transition towards decarbonised socio-economic systems through publicly driven economic stimuli programmes that foster job creation and investment in green technologies (Shin, 2020).

The Green New Deal narrative builds on the New Deal policies enacted by the US in the 1930s to overcome the Great Depression. As such, it also acts as a short-term stimulus programme for economic recovery, emergency stabilisation, job security, and expansion of the social security safety net based on active state intervention.

The concept of the Green New Deal was first mentioned by Michael O'Neill in 1997 in a policy proposal focusing on promoting green technology and job creation from an environmental policy angle (O'Neill, 1997). It aims to overcome the economic downturn and at the same time to fight against climate change, in the context of the repeated global economic crises since the 1990s and the strengthening of the global climate agenda. It emerged as a fully-fledged agenda when U.S. Democratic Senator Edward Markey and Congresswoman Alexandria Ocasio-Cortez submitted the *Green New Deal Resolution*² to the U.S. Congress in February 2019. The initial proposal originated in

1 China, Japan and Korea announced their carbon neutrality pledges on 23 September, 26 October and 28 October 2020 respectively, highlighting the race for leadership in terms of climate ambition in the region.

2 Recognizing the duty of the Federal Government to create a Green New Deal, H. Res.109, 116th Congress (2019–2020), 2019

the United States³, but it was first embodied in Europe: in the wake of the European Parliament election in 2019, a pan-European policy campaign called Green New Deal for Europe was launched (Yoon, 2020), and in December 2019 European Commission (hereinafter Commission) President Ursula von der Leyen presented a policy package under the name The European Green Deal (EGD) on her inauguration.

The promise of the Korean Green New Deal

On the other side of the globe, Korea also swiftly embraced the Green Deal political trend, announcing a Korean New Deal on July 2020 as a measure to revitalise its economy following the COVID-19 pandemic. This policy package included the Korean Green New Deal (KGND) as one of its most significant pillars. In addition, in October 2020 the Korean government adopted the goal of achieving climate neutrality (net zero) by 2050. The almost simultaneous adoptions of the Green New Deal strategy and the net zero commit-

ment were very timely, and were acknowledged as an exemplary case by the international community (UN, 2020).

Despite the promise of the KGND, its limitations and inconsistencies have been pointed out by several national and international stakeholders. The main criticisms were the insufficiently long-term nature of the policy vision (with a time range only to 2025) and the lack of detailed climate measures (most of them amounted to repackaging of already existing ones).

1.2 Research goals, methodology and outline

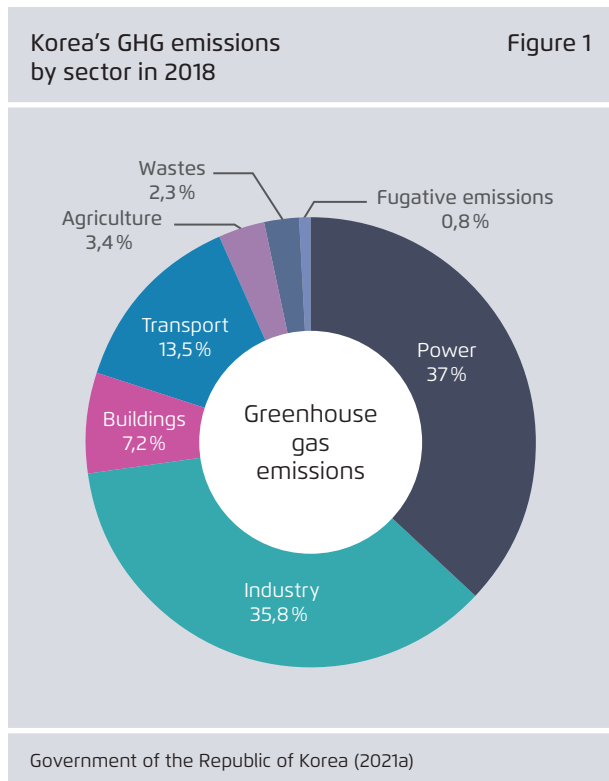
Purpose of this study

The purpose of this research is to make policy proposals for refining the KGND so that it can fulfill its role as a steppingstone for the achievement of the climate neutrality objectives adopted by the Korean government. In order to put in perspective of the institutional set-up and level of ambition of the KGND, an in-depth analysis of the KGND and EGD and subsequent comparative analysis are conducted. While these two initiatives are anchored in a similar

3 Although the policy package named Green New Deal was not accepted at the Congress and governmental level in the United States, in August 2022 the U.S. Senate approved an investment of \$497 trillion in climate response under the name of the *Inflation Reduction Act*.

Korea: a major economic power and a major greenhouse gas emitter

Korea, the world's poorest country immediately after the Korean War in 1953, achieved very rapid economic growth over the last few decades. In 2021, Korea was the 10th largest economy in the world, with a GDP of \$198 billion (about ₩226 trillion). This remarkable economic development has however rapidly pushed up GHG emissions, making the country the world's 11th largest GHG emitter today (728 MtCO₂eq in 2018). Furthermore, in contrast to other major developed economies, Korea's emissions remain on a rising trend, as the country has not managed to decouple economic growth from GHG emissions. Its emission intensity (0.134 kgoe per \$ GDP in 2021) is almost twice as high as other major economies (0.07 kgoe per \$ in Germany or 0.077 kgoe per \$ in Japan). In addition, Korea relies heavily on fossil fuel imports, which cover more than 80% of its primary energy consumption. Given the rate of its economic development, the onus on Korea to curb GHG emissions has grown considerably. Nevertheless, climate protection efforts are below international standards. According to the Energy Transition Index released by the World Economic Forum, Korea ranks 31st out of 32 advanced countries surveyed: energy consumption continues to increase; coal-fired power generation accounts for about 40% of the total power mix; and the share of renewable energy is the lowest among all OECD member countries (6% of total electricity consumption).



political narrative, they differ significantly when it comes to their institutional, budgetary and legal implementation. Finally, based on this descriptive and comparative analysis, policy proposals are made for refining the KGND framework so that it can effectively deliver both the climate protection and economic recovery objectives set by the Korean government.

Analytical and methodological framework

Policies or institutions are either locked-in through positive feedback and self-reinforcing (Pierson, 2000), or they are changed due to new social, economic, political, or demographic developments or the emergence of new actors (Thelen, 2004). In other words, institutions are in a process of continuous change (even if there are no major changes on the surface, internal institutional evolution is taking place).

This study recognises that governmental political, financial and legal strategies for carbon neutrality are

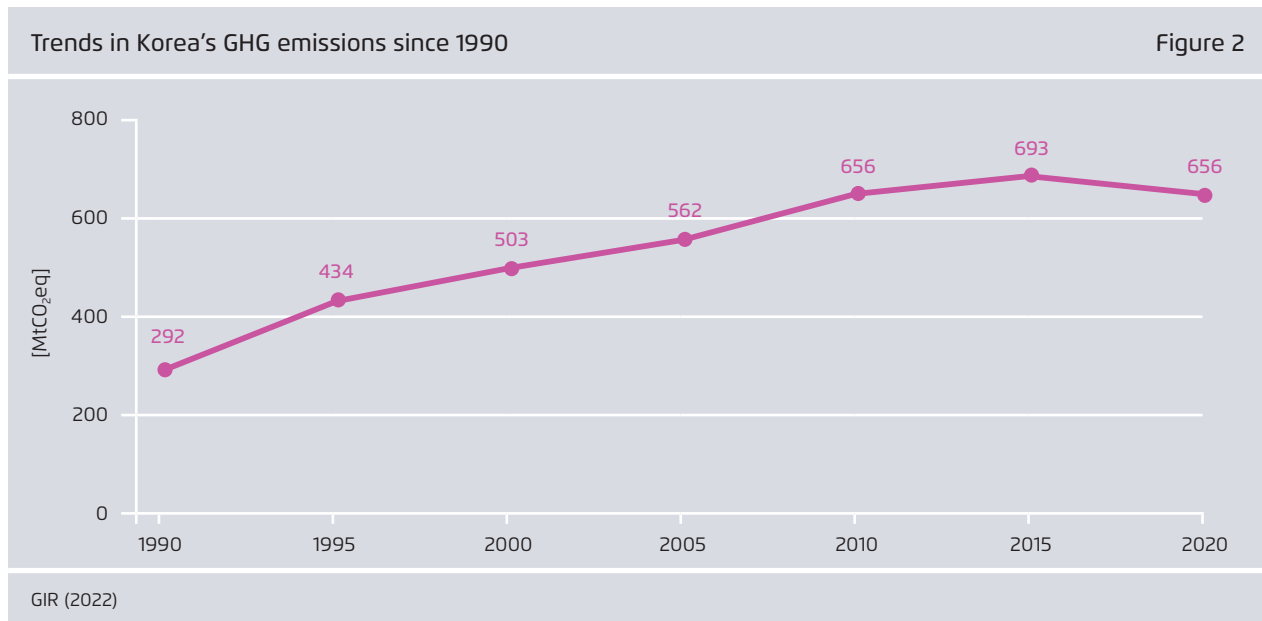
subject to a process of internal evolution. This report seeks to trace how these policy frameworks change by examining the emergence and subsequent development of the EGD and KGND.

In order to compare both frameworks, this study uses an analytical framework proposed by Siddi (2020)⁴, consisting of three dimensions:

- **policy priority:** a successful implementation of the Green New Deal requires it to be placed at a top priority level by the government among the various competing economic and social policies.
- **financial endowment:** the success of the Green New Deal will be guaranteed only if large-scale governmental funding and financial instruments are put in place.
- **legal competence:** planning, implementation, and evaluation of the strategy must be clearly enshrined in law. Furthermore, the institutional foundations for safely carrying out the plan must be established in advance.

After their political adoption, the Green Deal strategies in Korea and the EU went through a development process that followed a similar pattern: legislative enactment; supplementing/updating of detailed content; and reassessment following changes in the external policy environment (i.e. the COVID-19 pandemic and the energy crisis driven by Russia's invasion of Ukraine in Europe; a change of political leadership for the government in Korea). Further analysis of how external political and economic factors influence the development of the two Green Deal strategies would be an interesting subject for further research.

⁴ The Korean Green New Deal focuses primarily on domestic policy, with only limited measures to enhance international cooperation. So, the international cooperation is excluded from the analysis of this study.



This evidence-based analysis uses official documents issued by the Commission and the Korean government as well as existing research papers evaluating and analysing Green New Deals, policy discussions in Europe and Korea and press reports. In addition, the critical evaluation of the policies so far has been refined through qualitative interviews with experts and researchers both in the EU and Korea.

Outline of the report

Chapter 2 provides an in-depth description of the EU Green Deal. It starts with a general overview and is followed by a detailed description of various components (targets, sectoral policies, climate

mainstreaming and green taxonomy, budget, governance, monitoring and impact assessments). A discussion of recent policy developments, in particular the impact of the energy crisis on the green deal framework, completes this chapter. Chapter 3 analyses the Korean Green New Deal, following a similar structure to Chapter 2. The final section of the chapter analyses the impact on the development process of the presidential election held in March 2022. Chapter 4 provides a qualitative assessment of both green deals in term of their policy priority status, financial endowment and legal implementation. Finally, Chapter 5 provides policy proposals for reinvigorating and refining the Korean Green New Deal based on lessons learnt from Europe.

2 EU Green Deal

2.1 The EU Green Deal in a nutshell

The EGD is a green growth strategy – published in December 2019 by the Commission⁵ – which is aimed at stimulating and transforming the European economy through the promotion of environmental sustainability in all policy areas, thereby creating jobs⁶ and welfare in Europe. The EGD brought a sense of urgency⁷, placing climate ambitions at the top of the policy agenda, and represented a cut-off point compared to past ambition levels. The transition towards climate neutrality⁸, as along with other environmental objectives, does indeed require a complete rethinking of the economy and society, and the first step – as proposed by the Commission – is to align legislation and policymaking in other sectors with these environmental goals. This includes fiscal, economic and financial policy.

The EGD also aims to strengthen the EU's position in key markets and technologies at the core of the green revolution. It is a long-term and holistic strategy (Bongardt and Torres, 2021) that formalises the EU's ambition to lead the world in climate protection (Eckert, 2021). A recurrent focus is on the removal of barriers, mostly at member state level, that constrain green investment. Reforms cover not only the energy system but also agriculture, resource management and biodiversity.

While the EGD emphasises the collateral benefits of achieving climate neutrality, it also highlights the need to carefully balance economic, environmental, and social objectives, noting that no one should be "left behind". The reference to increasing ambition in "a responsible way" acknowledges that the proposal, while technically feasible, must tackle economic and social implications. *The Just Transition* concept became one important pillar of the policy framework, and the plan includes additional funding for the support of those regions that are the most economically dependent on fossil fuels.

Moreover, the nexus between climate policies, trade and industrial competitiveness is addressed through the proposal to introduce a Carbon Border Adjustment Mechanism (CBAM). The Commission sees trade policy as a "platform to engage with trading partners on climate and environmental action", a policy area where it has significant power and authority. The CBAM is a notable result of this multilateral policy approach, while more broadly the Commission seeks to establish and enforce sustainability principles in trade agreements.

- 5 The communication entitled *The European Green Deal* was published a few days after the von der Leyen cabinet took office. The document describes the strategy of the new Commission on climate action and environmental policy and sets out a roadmap for its implementation.
- 6 For example, the so-called *Renovation Wave* (the Commission's plan for the renovation of 35 million buildings by 2030) could create 160 000 new local jobs in the construction sector across Europe, plus many more along the supply chains.
- 7 IPCC had published three alarming reports over the preceding couple of years: the *Global Warming of 1.5°C* report, *Special Report on Climate Change and Land*, and the *Special Report on the Ocean and Cryosphere in a Changing Climate*.
- 8 The EGD also strengthens adaptation measures to climate change, although this area remains marginal compared to mitigation in terms of number of policy initiatives and funding. Particular importance is given to data access, and to the integration of physical climate risks into risk management practices. Adaptation has become one of the missions in Horizon Europe, the EU programme financing research and innovation activities.

2.2 Main components of the EU Green Deal

Long-term targets

Setting clear interim and long-term targets – both overall and sectoral (e.g. renewables targets, CO₂ emissions standards for vehicles) – is an essential component of the EGD strategy, as making goals more explicit facilitates the fine-tuning of regulatory parameters. In this respect, the EGD proposed two major improvements to the EU's climate legislative framework. The first was to make the 2050 climate neutrality objective legally binding in a European Climate Law. The mid-century objective was thereby added to the decade-by-decade targets (i.e. 2020, 2030) guiding EU climate action. The second proposal was to increase the EU's greenhouse gas emissions reduction target for 2030 from 40% to at least 50% and towards 55% compared with 1990 levels "in a responsible way". The higher target was necessary to bring the EU's emissions trajectory in line with that in the Paris agreement. Several sectoral targets were also adopted (see below).

The increased ambition for 2030 implies a comprehensive update of all relevant EU regulation to ensure the target will be achieved. It was therefore of primary importance for the Commission to set a timeline for the reform process, and it proposed to publish by June 2021 a package of amendments to all relevant climate-related policy instruments. In addition to tightening existing regulations, the Commission proposed new measures to expand the sectoral coverage, e.g. an Emissions Trading System (ETS) for road transport and buildings, and new policies, e.g. a CBAM. The policy package was given the name *Fit for 55* and it was eventually published in July 2021.

Sectoral policy framework of the EGD

The following sections discuss briefly some key sectoral components of the EGD.

→ Energy supply

The decarbonisation of the EU energy system is at the core of the EGD strategy. While every Member State has the right to freely determine its energy mix, the EU sets several binding targets, in particular with regard to renewable energy development. The EGD raised ambitions for renewables⁹ by setting a new target of a 40% share by 2030.¹⁰ The RepowerEU Plan, adopted in response to the energy crisis of 2022 (see section below), raises this target even further to a share of 45% in 2030. This basically means doubling the share of renewables in 10 years (see Figure 3).¹¹

The adoption of new targets required the revision of the Renewable Energy Directive (RED), the main piece of EU legislation framing the common ambitions and rules regarding renewable energy.

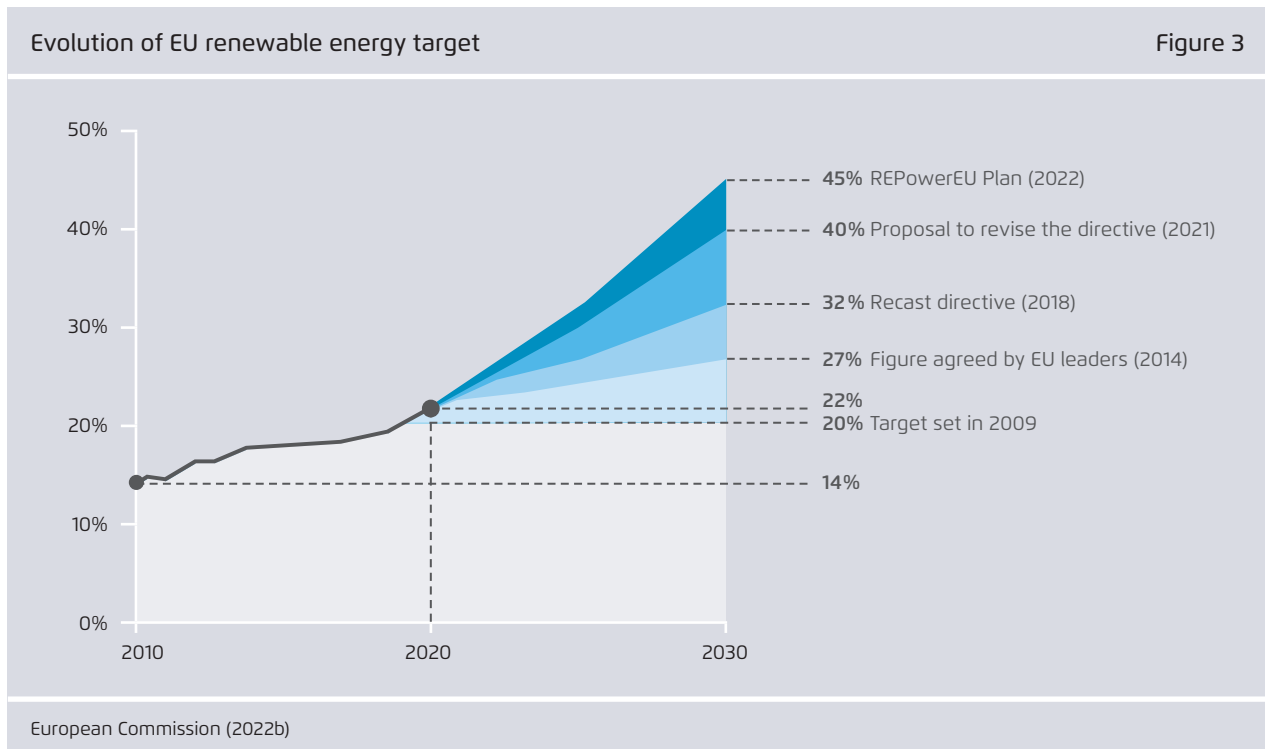
The RED revision strengthens and expands the regulation of renewable energy and requires Member States to further reduce administrative barriers to the acceleration of renewable power deployment.¹²

9 The EU had set in 2018 a binding target of reaching a 32% share of renewables in the overall energy mix by 2030. That was compatible with a 40% reduction target for greenhouse gas emissions. As the EGD upgraded the emissions target to a greenhouse gas reduction of at least 55% by 2030 compared to 1990 levels, the renewable energy target was also revised upwards to a 40% penetration by 2030.

10 EU renewable energy targets are defined in terms of share of renewable energy in gross final energy consumption.

11 In 2020, renewables accounted for 22.1% of total energy consumption.

12 The length of the approval process is one of the main factors holding up investment in renewable power, and the proposed interventions aim to cut construction times and attract capital to the sector. The Commission committed to providing Member States with recommendations on best practices on approval and market integration of renewables (with a review clause in 2024 to monitor progresses).



The revision also aims to facilitate the integration of renewable power plants into the grid.¹³

Other measures include changes to regulations applying to Power Purchase Agreements (PPAs)¹⁴ and bioenergy. Regarding bioenergy, the Commission proposed to tighten regulations on forest biomass and

expand the use of sustainability criteria.¹⁵ Moreover, a *cascading principle* was introduced to prioritise the use of biomass for energy use in the support schemes of Member States.

The Commission has also addressed how natural gas supply and use should be further regulated in line with the more ambitious climate targets. Until the war in Ukraine broke out in February 2022, fossil gas was often seen as a reliable *transition fuel*, an intermediate step in the process of switching from coal and oil to renewables. This perception has shifted since the war started, because the economic calculus has radically changed, and the availability of non-Russian gas is limited and expensive (see section below).

13 Measures include a requirement for transmission system operators (TSO) and distribution network operators (DSO) to publish data on the share of renewables and the GHG content of their electricity supply, as well as an obligation for Member States to ensure non-discriminatory balancing regulation for renewable power plants and small storage systems.

14 PPAs are contracts between generators of renewable power and consumers, who commit to purchase specific amounts of electricity for a fixed period (several years). Recommended reforms include the use of public credit guarantees to back these contracts, the development of special support for small and medium-sized enterprises (SMEs) to enter into PPAs and the removal of administrative barriers to their adoption.

15 The proposal prohibits the production of biomass from primary and highly biodiverse forests, and from stumps and roots. The application of existing sustainability requirements (e.g. emissions savings) is extended to more types of producers.

The EGD also proposes to modernise the cross-border grid infrastructure and align it with the climate neutrality objective. For instance, natural gas and oil projects are excluded from future projects of common interest (PCI) lists and from access to the Connecting Europe Facility (CEF), one of the EU funding sources for cross-border infrastructure investment.¹⁶ The priority was shifted towards new green projects like offshore wind, hydrogen and CO₂ infrastructures and smart grids.

→ **Industry**

The EGD aims to accelerate industrial decarbonisation¹⁷ through a series of policy initiatives, like the EU Industrial Strategy and the new Circular Economy Action Plan. Reforming the regulatory framework is crucial in order to influence investment decisions in the near future, so as to prevent the lock-in of billions of euros into carbon-intensive technologies. The EU Industrial Strategy, published in 2020, addresses the resilience of the EU single market more broadly as well as both the green and digital transformations. On the climate side, the strategy sets as a top priority the modernisation and decarbonisation of the most energy-intensive industries, like steel, cement and chemicals, and the integration of sectors through electrification and Power-to-X. EU funding will play an important role in upscaling green industrial technologies currently in early stages of development. Grants, loans and guarantees, offered by different entities, including the EU Budget and the Innovation Fund, provide financial support to promising indus-

trial projects across Europe and often complement national funding.

Transforming industrial structure is also key to reducing the consumption of natural resources. The Circular Economy Action Plan is aimed at increasing the resource efficiency of the economy by acting on different points of the value chains right up to waste management.

One of the innovations in the EDG is the proposal of a Carbon Border Adjustment Mechanism (CBAM). The CBAM is a measure that extends domestic carbon pricing mechanisms to goods imported into the EU and produced in countries where a similar regulation is not in place. However, it only covers a few sectors: cement, aluminium, fertilisers, electricity production, iron and steel. This proposal reconciles the raised decarbonisation ambitions with concerns that a tighter climate policy will have negative effects on industry competitiveness and jobs (i.e. carbon leakage). It also represents a break with the past. The EU ETS has traditionally dealt with the risk of carbon leakage by providing free allowances to energy-intensive and trade-exposed industries. That is, a subsidy to domestic producers was preferred to making foreign producers pay for emissions generated abroad. As the emissions allowance price soared in 2018 and 2019, the implicit costs of this policy became more and more apparent. Shifting to a CBAM provides billions of euros of additional auctioning revenues which can be used to support green investments.

→ **Buildings and energy efficiency**

Decarbonising the building sector is one of the key priorities of the EGD¹⁸, despite being a challenging

16 Investment in the repurposing of natural gas infrastructures may be accepted if the main objective is to enable their use for the transport of renewable gases or hydrogen.

17 Industry in Europe – one of the world’s major industrial hubs – directly accounted for 20% of EU greenhouse gas emissions in 2018. The transition to a climate-neutral industry is not only a climate imperative but also an economic opportunity (leading green technologies markets and creating new jobs). Furthermore, indirect emissions from the consumption of electricity must also be taken into account.

18 Residential, commercial and public buildings produce around 40% of total EU greenhouse gas emissions, if both direct and indirect contributions (i.e. electricity use) are included.

one.¹⁹ Achieving the 2030 climate targets requires the energy renovation rates to at least double by 2030. Buildings are not covered by the existing EU ETS, and carbon pricing initiatives for buildings have been introduced in only a few countries (such as France and more recently Germany). The EGD is aimed at strengthening the relevant EU regulations on energy efficiency standards and eliminating fossil fuel-based heating. The cornerstone of this policy is the Renovation Wave strategy, a policy package that aims to renovate 35 million homes by 2030 and to address energy poverty across the continent. It identifies three focus areas: energy poverty; public buildings and social infrastructure; and decarbonising heating and cooling. The Commission will develop by 2023 a roadmap up to 2050 for reducing life-cycle carbon emissions from buildings.

Minimum energy efficiency requirements and improved energy performance labels will speed up the renovation of the most energy-intensive buildings, leading to a significant reduction of carbon emissions and energy poverty. In the context of the revision of the Energy Performance of Buildings Directive (EPBD), the Commission has proposed mandatory minimum energy performance standards that will require the least energy efficient buildings to be renovated by a specific date.²⁰ The minimum energy performance requirements are accompanied by other obligations for the renovation of buildings. In the reform of the Energy Efficiency Directive, the public

sector is called upon to speed up the renovation of public buildings.²¹ In addition, the EBPD revision requires that in all new buildings, where technically feasible, 100% of on-site energy consumption is covered by renewable energy as of 2030 (2027 for public buildings).

→ Transport

The EGD includes significant measures to curb transport sector emissions,²² boosting a shift towards sustainable mobility (electric vehicles and alternative fuels) that will have clear environmental, health and societal benefits. The incentives to switch to zero-carbon vehicles and reduce the usage of private transport are distorted by national fuel taxation frameworks that are not aligned with decarbonisation objectives. The Commission has proposed to review and adjust the minimum fuel taxation levels and to remove fossil fuel exemptions, not only for transport fuels.

Tighter CO₂ emissions standards for cars and vans are also proposed to accelerate the shift towards zero and low-carbon emission vehicles in road transport. Those standards have been instrumental for the expansion of electric cars in the EU market over the last few years, as it is easier for manufacturers to comply with the limit by selling zero-emission vehicles. Missing the target results in penalties, proportional to the excess emissions. The EGD brings the 2030–2034 targets down to 43 g CO₂/km for cars and 74 g CO₂/km for vans,²³ while also setting the limit

19 The annual rate of energy renovations has been low in the past, close to 1% in the EU, with much lower rates (0.2% per year) if renovations are restricted to those that deliver energy efficiency improvements above 60%. (See Hermelink et al, 2019)

20 In each country, residential buildings among the 15% classed as worst-performing will have to be renovated by 2030. For non-residential and public buildings, the deadline is 2027. This regulation requires a uniform measurement of energy performance across Member States, and the Commission has proposed a reform to improve consistency between existing national energy performance certificates.

21 At least 3% of the floor area of public buildings must be renovated annually by 2030 and the sector must also reduce energy consumption by 1.7% every year. Moreover, Member States must introduce energy efficiency requirements into public procurement procedures.

22 The transport sector produces a quarter of EU greenhouse gas emissions, and the trend has been upward over the last decade.

23 The EU applies to manufacturers a regulation that limits the average CO₂ emission levels of the vehicles sold on the market. The current target for the period 2020–2024 is 95 g CO₂/km for cars and 147 g CO₂/km for vans.

at zero for both vehicle types starting from 2035. This decision effectively sets a date for the end of internal combustion vehicles sales in the whole EU.

The EGD contains new legislation and a strategy to develop alternative transport fuels infrastructures and production. The Commission anticipates that 1 million public recharging and refuelling stations will be needed by 2025 across the EU. For instance, recharging stations for cars will need to be installed for every 60 kilometres at least of main roads by 2025.

The decarbonisation of private transport must be accompanied by an increasing use of public transport and of alternatives to road transport for freight, like rail and inland waterways. A series of legislative proposals are made in this direction. Funding for long-distance rail infrastructures, smart systems for traffic management and Mobility as a Service solutions is provided by the Connecting Europe Facility in the EU budget.

The maritime and aviation sectors are also being asked to make their contribution to the green transition. Aviation is currently part of the EU ETS, but is granted free allowances, and maritime transport is not covered by the system. The ReFuelEU aviation and FuelEU maritime proposals aim to boost the use of sustainable fuels in those sectors.²⁴

→ **Agriculture, ecosystems and biodiversity**

The Farm to Fork proposal, launched in 2020, is the cornerstone of the Commission's strategy to trans-

form the agriculture sector²⁵ with the objective of mitigating its climate impact, providing healthier food to EU citizens, improving food security and reducing food waste and biodiversity loss along the food value chain. It tackles sustainability issues along all links of the value chain: food production, processing and distribution, consumption and waste management. For instance, on the upstream phase the strategy promotes new business models like carbon sequestration by farmers and foresters by opening EU funding to reward these activities and better regulating carbon accounting and the certification of carbon removal, a prerequisite for the development of private markets for removal. New regulation is also proposed with respect to organic farming, the use of chemical pesticides and nutrients, the circular production of bio-fertilisers and bioenergy, the reduction of methane emissions from livestock, and sustainable fishing and seafood production. Regulatory interventions in the downstream phase deal with, among other things, food packaging and nutrition labelling.

Climate mainstreaming and green taxonomy

→ **Climate mainstreaming**

The EGD promotes the integration of climate and environmental considerations into all EU policy activities. This process, referred to as mainstreaming in the EU legislation, applies to various areas of policymaking, from the EU Budget to international cooperation. The EGD extends it further, for instance to macroeconomic and fiscal policy coordination.

The EGD proposes to integrate the UN's Sustainable Development Goals (SDGs) relating to environmental sustainability and fairness into the European Semester process, in particular in the development of the Country Specific Recommendations which the Commission prepares every year to steer national policy agendas. The revision of the Energy Taxation

24 Aircraft fuel suppliers will have to follow a roadmap that sets rising targets for the use of renewable fuels, starting from a minimum share of 2% in 2025 to a 63% share in 2050. Maritime vessels larger than 5 000 gross tonnes that stop at EU ports will have to reduce the carbon intensity of their energy use according to a specific timeline, and must utilise power from onshore supply starting from 2030.

25 The agriculture sector accounted for 12% of greenhouse gas emissions in the EU in 2019.

Directive to remove environmentally harmful subsidies and tax exemptions, mentioned above, is one example.²⁶

The further integration of environmental sustainability into European and national budgeting is also being pursued. The EU tracks the proportion of EU budget spending that contributes to climate change objectives (climate mainstreaming) and sets a specific objective in each budget period. In the 2021–2027 cycle, the target is set at 30% of the entire spending (around €1.8 trillion) from the EU budget to be spent on climate mitigation or adaptation measures.²⁷

While its implementation has been inconsistent in the past (European Court of Auditors, 2022), climate mainstreaming has redirected a significant proportion of financial resources from the EU budget into climate action. Finally, the EGD also promotes collaboration between the Commission and Member States to develop and benchmark green budgeting practices at national level. This step is important for improving the measurement of both harmful subsidies and green spending, enabling a more effective integration of climate into the European Semester.

→ Green Taxonomy

In addition, the EGD takes forward the work on a sustainable finance regulation package that was started during the previous Commission. The new legislation includes a proposal for an EU taxonomy of sustainable activities; regulations on environmental disclosure for non-financial corporations and asset managers; criteria for the definition of EU low-car-

bon benchmarks; and green bonds. The main objective is to fix a chronic and growing lack of transparency and reliability in sustainable finance by preventing so-called greenwashing, so that the fast-growing interest in green finance products can translate into a commensurate increase in private capital channelled into green investments.

The EU green taxonomy has been widely discussed worldwide as the first attempt to create an official classification of the economic activities that underlie financial products and balance sheet items. While the classification is a complex system supported by a detailed set of technical screening criteria, the basic principle is that the activity must not cause harm to any of the following objectives: climate change mitigation and adaptation, the sustainable use of water and marine resources, the transition to a circular economy, pollution prevention and control, biodiversity and ecosystem protection. The principle of Do No Significant Harm has also been adopted beyond the sustainable finance regulation, for example in the allocation of the EU budget and in Recovery and Resilience Facility (RRF) funding.

Funding

The Commission estimated that the private and public sector together should increase their climate investment by €356 billion per year over the 2020s compared to the average spent over the previous decade (European Commission, 2020a). The public sector plays a crucial role in scaling up green investment, not only with respect to the decarbonisation of public assets and the roll out of infrastructures, but also in support for private investment through grants and subsidies. EU resources are needed alongside national funding to fill the investment gap quickly.

To support this investment programme, the Commission targets the mobilization of at least €1 trillion (about ₩1350 trillion) in public and private funding up to 2030 to achieve the EGD's policy goals. In order to facilitate investment, the EGD has repurposed and expanded existing EU funding instruments to finance

26 Since the 2020 European Semester cycle, from Autumn 2019 to Summer 2020, the flagship report *Annual Growth Survey* has become the *Annual Sustainable Growth Strategy*, and consideration of the SDGs was added to the yearly country reports (Hollewijn, and Roldán, 2020).

27 The tracking employs the so-called Rio Markers, which attribute to each individual spending item a coefficient of 100%, 40% or 0%, depending on whether climate change mitigation and adaptation is a principal objective, a significant objective or is not related (Agora Energiewende, 2021).

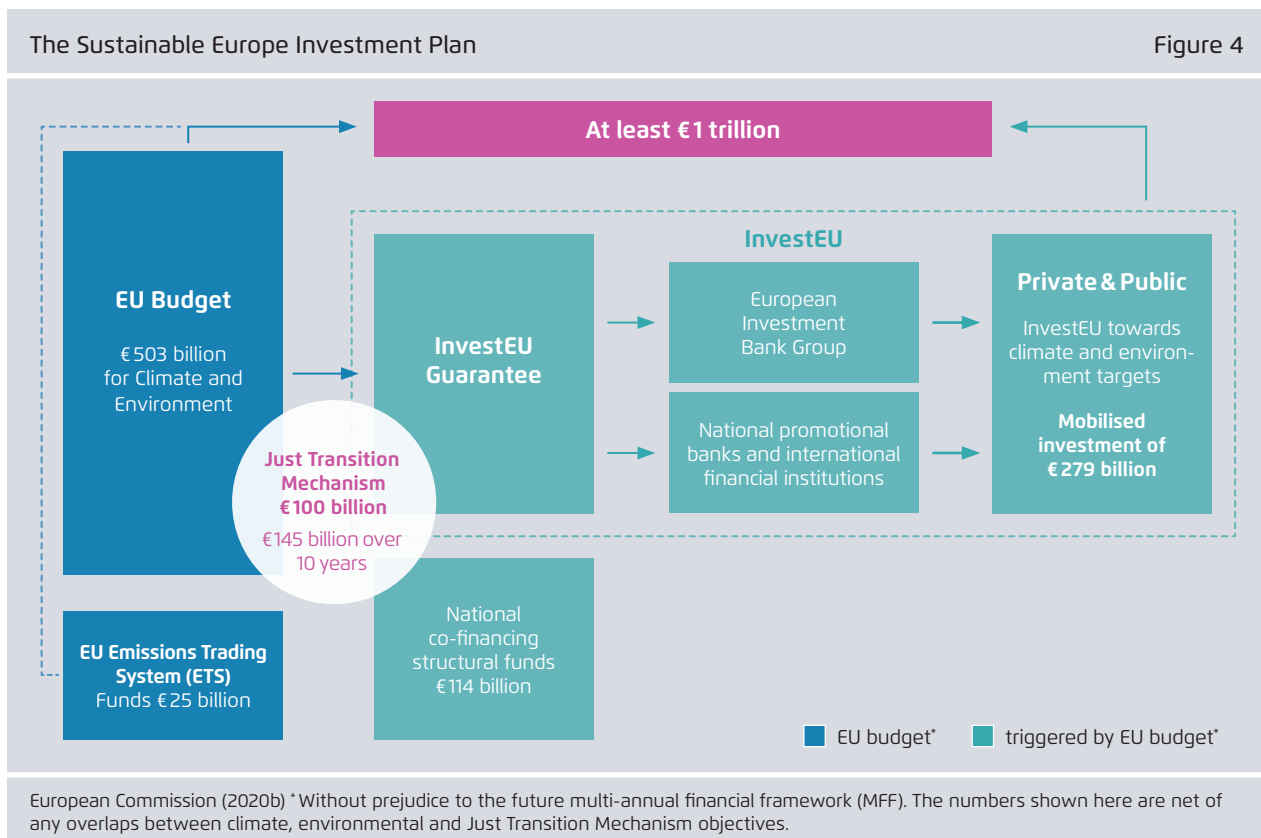
climate action within the framework of the Sustainable Europe Investment Plan (Figure 4) which was launched together with the EGD. The support comes in a mix of grants, loans and guarantees, from both EU and national public funds. InvestEU will be the largest provider of loans and guarantees for green investment through the European Investment Bank and national promotional banks. By targeting projects hitherto hindered by market failures, InvestEU is expected to leverage a significant amount of private capital into key sectors. The Commission estimates of the investment mobilised are however clouded by uncertainty. The Next Generation EU initiative, which came later in 2020 and is worth around €800 billion, will instead provide fresh funding to cover part of the additional investment needs of the EGD.

In addition, the Just Transition Mechanism is a new instrument that channels financial resources towards

those regions, industries and workers in the EU that are the most vulnerable to the social and economic effects of the transition. It consists of a Just Transition Fund, an InvestEU Just Transition scheme and a new Public Sector Loan Facility. The funding will be distributed on the basis of national Territorial Just Transition Plans. These plans are for investment in economic diversification through public infrastructure, support to small and medium enterprises and research and innovation. They must be aligned with each country's national energy and climate plans and contribute to the achievement of their climate targets.

Governance, monitoring and impact assessments

The implementation of the EGD fits into a broader system of European energy and climate governance which regulates how progress towards targets is realised and monitored. Member States are required to produce (a) National Long Term Strategies with an



horizon of at least 30 years, to be updated every 10 years, or 5 when necessary; and (b) National Energy and Climate Plans (NECPs) with a 10-year horizon, to be updated every 10 years.

The NECPs provide a detailed assessment of national and sectoral contributions to achieving the EU and national targets, together with a description of specific sectoral measures to ensure these contributions are delivered, including financial support. The NECPs also notably include estimates of the national investment required to achieve the targets and are linked to other strategic documents. Member States have to publish a progress report on the implementation of the NECPs every two years. There is ongoing work to better integrate this regular planning and monitoring process for climate and energy policy into the broader system of macroeconomic governance, i.e. the European Semester, in order to better align policymaking in these different areas.

Two additional pillars of the Commission's legislative activity are the preparation of impact assessment studies accompanying its proposals, and the involvement of stakeholders at all levels. During the preparatory phase, the Commission engages with and collects feedback from businesses, civil society and citizens, through workshops, public hearings and online consultation platforms where written feedback can be submitted during public consultation periods.²⁸

The Commission is required to publish impact assessment reports for initiatives that are expected to have significant economic, social and environmental effects, for instance legislative proposals and interventions with regard to financial programmes. Impact assessments are published together with the Commission's proposals and are also made available when

collecting stakeholders' feedback, for example, when preparing the revised climate target for 2030. This exercise provided the analytical base for the development of the Fit for 55 package, while each individual component of the package was also accompanied by specific impact assessment studies, e.g. on the reform of the ETS.

2.3 Latest policy developments influencing the implementation of the European Green Deal

The COVID pandemic

The COVID-19 pandemic began only three months after the EGD communication was published and its development and implementation were inevitably shaped by this event. However, the health emergency and the economic crisis triggered by the COVID-19 pandemic have not altered the commitment to deliver on the EGD. On the contrary, the pandemic has actually strengthened the desire to prevent further climate change, and green investment has become an integral part of national government fiscal stimuli in the EU.

In the midst of the first COVID-19 wave, in the spring of 2020, a common EU fiscal policy response was launched: the Next Generation EU (NGEU). Complementary to the pre-pandemic EU budget of the Multiannual Financial Framework (MFF), the NGEU is a €806.9 billion programme which offers an unprecedented amount of additional EU financing to the Member States.²⁹

Contributing to the green transition was identified as one of the key priorities for the NGEU. Overall, at least 30% of the total funding endowment in 2021–2027,

28 This kind of stakeholder engagement for individual elements of the EDG was carried out over the course of 2020 and 2021 and was collected in three steps: the initial roadmap (initial legislative idea), an intermediate consultation phase and after the publication of the final Commission proposal.

29 The NGEU is divided into two components. First, a €83.1 billion top-up to the MFF, for instance with an additional €10.9 billion for the Just Transition Fund. Second, the creation of the Recovery and Resilience Facility, with €338 billion in grants and €385.8 billion in loans.

including both the NGEU and the MFF, will have to be spent on fighting climate change. The increased total budget and the emphasis on climate mainstreaming deliver a significant boost to EU green investment, substantially reducing the spending gap.

Climate spending makes up around 40% of the plans approved so far, as much as €198 billion (European Commission, 2022), and this has already boosted green investment across the EU in the course of the economic recovery from the COVID-19 pandemic. Financing investment in energy efficiency and renewable power not only makes a significant contribution to climate action, but also delivers lower fossil fuel consumption, a benefit that has become of great importance since the start of the Russian invasion of Ukraine.

Russia's invasion of Ukraine and the adoption of the Fit for 55 package

The devastating war in Ukraine, started by the unprovoked invasion of Donbass by Russian forces on 24 February 2022, has impacted the lives of thousands of soldiers and civilians,³⁰ destroyed buildings and infrastructure in many Ukrainian cities and affected the entire world by causing a spike in global natural gas and raw material prices. Immediately after the Russian invasion, the EU imposed economic sanctions on Russia, and Russia, in retaliation, restricted the supply of natural gas to Europe. The international price for natural gas soared by about 400% compared to the same period last year, which has led to a situation where heating for the coming winter of 2022–2023 has become a major concern for Europe, given its high reliance on gas for heating and power generation.³¹

30 Although official statistics have not been published, it is estimated that about 6 000 civilians and tens of thousands of Ukrainian and Russian soldiers have been killed.

31 The 27 Member States of the EU including Germany use natural gas as the main heating source in winter (50% of total heating fuel) and an important power source during peak demand (24.3% of the total electricity mix).

In March 2022, EU leaders responded to Russia's invasion of Ukraine by agreeing to eliminate Europe's dependence on Russian energy imports as soon as possible. In May 2022, the Commission published a plan for achieving this goal by the end of the decade: RePowerEU. The plan focuses on the reduction of natural gas imports, as the EU was importing almost half of its gas from Russia,³² and diversification of supply was limited by the availability of alternative pipelines and LNG terminal capacity. The core of the Commission's strategy is the implementation of the Fit for 55 package, which will deliver a reduction in fossil fuel consumption (116 billion cubic meters by 2030). The main component of this strategy consists of lowering the demand for fossil fuels, through an acceleration of the use of renewables for power generation³³ and of green hydrogen in industry. Measures to promote PPAs for renewables and carbon contracts for difference in industry will promote the adoption of greener technologies. In addition, the Commission suggests doubling the deployment of heat pumps over the next five years and investing in the expansion and modernisation of district heating networks.

Since the Russian invasion of Ukraine, investments in renewables and energy efficiency have remained a top priority, as their contribution to energy security in Europe has become more important. These developments have therefore accelerated the implementation of the Fit for 55 package. Moreover, they have resulted in raising the EU renewable energy and energy efficiency targets for 2030 and increasing the finance available for green investment.

32 Around 150 billion cubic meters per year.

33 The RePowerEU plan raises the 2030 target for renewable energy penetration from 40 to 45% and sets a new objective of deploying 320 GW of new solar power plants by 2025. A new EU Solar Strategy and the EU Solar Rooftop Initiative, together with the Biomethane Action Plan, provide regulatory and financial support for fast uptake of renewables.

3 Korean Green New Deal

3.1 The Korean Green New Deal in a nutshell

The Korean New Deal, announced on 14 July 2020, is a new national development strategy for Korea adopted by the Moon administration and resulting from two policy priorities: overcoming the severe economic recession following COVID-19 and initiating a structural transformation of Korean society. It represents a vision for the transformation of the current fossil-fuelled economy into a low-carbon one, overcoming the inequality manifested in social polarization at the same time, and surging forward into an inclusive society. Three main pillars are encompassed under the Korean New Deal: Digital New Deal, Green New Deal, and Human New Deal.

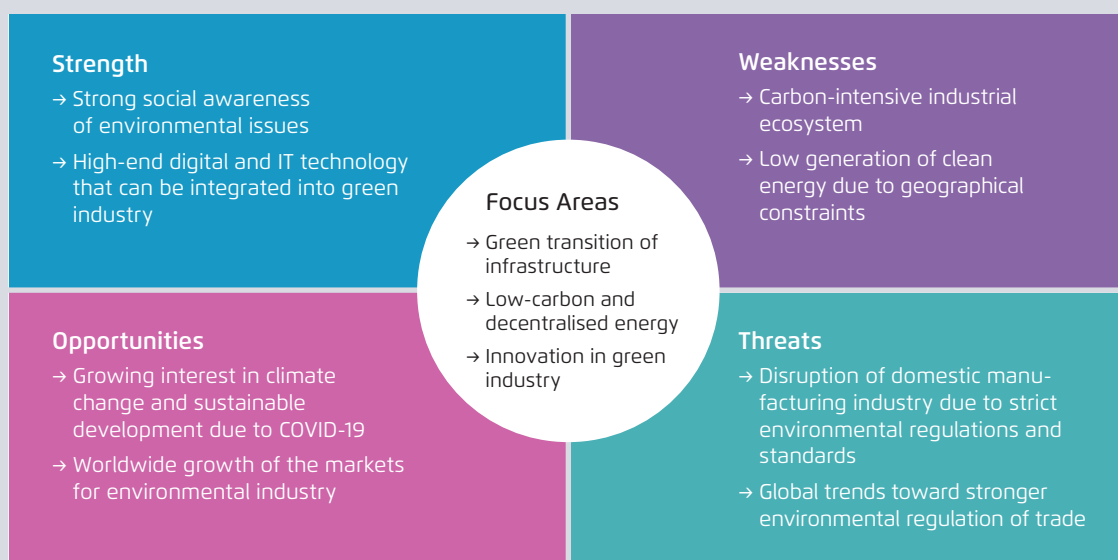
The Korean Green New Deal (KGND) is a green economic stimulus designed to accelerate the transi-

tion to an environmentally friendly, low-carbon green economy. It was born from the awareness that the Korean economy's traditional growth drivers, which were heavily reliant on fossil fuel imports, were slowing down. In addition, the transition to the digital economy has been accelerated by the non-face-to-face social routines that have emerged from the COVID crisis, and social awareness and consensus regarding environmental protection have rapidly spread. International momentum in favour of higher worldwide climate ambition also played a role in this context.³⁴ Meanwhile, Korean civil society has demanded a green fiscal strategy from the Korean government based on the Green New Deal proposal

³⁴ Announcements and reports from many international organisations proposing a green transition (see, IMF, OECD, IRENA) were discussed in Korea. It became clear that the world would accelerate its transition to a green economy at a very fast pace once COVID-19 was overcome.

SWOT analysis of the Korean Green New Deal

Figure 5



Government of the Republic of Korea (2020)

made in the US Senate in 2019. In June 2020, the second P4G Summit³⁵ was scheduled to be held in Seoul.³⁶ This raised the civil society expectations of a green finance strategy even higher, due to the symbolic significance of the first multilateral environmental conference to be held since 2017, the year the Korean government declared its first energy transition plan.

The KGND has three main priorities: a green transition of infrastructure to strengthen protection against climate and environmental risks; the promotion of low-carbon and decentralised energy sources, while providing social support for regions and groups negatively affected by the transition; and the development of a green industrial innovation ecosystem.

3.2 Main components of the Korean Green New Deal

Targets

The KGND does not set long-term targets, but only short-term indicators (up to 2025) for CO₂ reduction, job creation and public spending (see tables 2 to 4). It focuses on the implementation of detailed projects that will contribute to those objectives. This highlights the economic stimulus nature of the strategy. The government expects a 12.3 MtCO₂eq GHG reduction over the period 2021–2025 (cumulative) through the KGND, amounting to 20% of the total national reduction target (61.3 MtCO₂eq) by 2025. Of this, 6.5 MtCO₂eq is anticipated in the power sector and 2.3 MtCO₂eq in the industrial sector. In addition,

35 P4G – Partnering for Green Growth and the Global Goals 2030 – is a global platform supporting green partnerships for the creation of sustainable and resilient economies. P4G mobilises a global ecosystem of 12 partner countries and 5 organisational partners to unlock opportunities for more than 50 partnerships working in developing countries in five SDG areas: food and agriculture, water, energy, cities and the circular economy.

36 Due to the COVID-19 pandemic, the conference was held online in June 2021.

since the KGND aims to transform the socio-economic structure of the country in the aftermath of the COVID pandemic, an important performance indicator is job creation, with a target of 659 000 jobs to be created by 2025.

Budget

Within the framework of the KGND, the government plans to invest a total of ₩73.4 trillion (about €54.37 billion),³⁷ including ₩42.7 trillion from the national budget (the rest coming from regional government and private investments). This represents about 1% of Korea GDP, an amount comparable to the EU Green Deal spendings (0.7% of the EU GDP). In terms of budget planning, the KGND divides the period from 2020 to 2025 into three named funding periods for convenience. The budget spending for the year 2020 (“start of a great transition”) focuses on projects that can be implemented immediately and promise to revitalise the economy. The period from 2021 to 2022 (“lay a steppingstone”) creates a new growth path by means of a fiscal strategy that attracts private investment. The period from 2023 to 2025 (“great transition”) establishes a new growth path for the Korean economy by updating the KGND based on actual implementation progress up to 2022.

Sectoral policy framework of the KGND

→ Green transition of infrastructure

To accelerate the transformation of the existing infrastructure, the KGND announced several projects to (1) turn public facilities into zero-energy buildings, (2) restore the terrestrial, marine and urban ecosystems, and (3) create a management system for clean and safe water. To this end, a total of ₩30.1 trillion, including ₩12.1 trillion from the national budget, will be invested by 2025, and it is anticipated that these projects will create 387 000 jobs. In order to turn public facilities into zero-energy buildings, renewable energy equipment and

37 37.4% of total public spending planned in the Korean New Deal (₩114.1 trillion).

Expected greenhouse gas emissions reduction under the Korean Green New Deal		Table 2
Field	Green New Deal Project	Expected emissions reduction from the Green New Deal measures
Power	19 projects in total, including → support for renewable energy dissemination and finance → smart Electricity Platform for home use	6.5 MtCO ₂ eq
Industry	16 projects in total, including → clean factory, smart factory system → renovation of old water supply	2.3 MtCO ₂ eq
Building	4 projects in total, including → green retrofit, smart green city	0.3 MtCO ₂ eq
Mobility	24 projects in total, including → electric/hydrogen vehicles and charging infrastructure, green shipping	1.5 MtCO ₂ eq
Public facilities	12 projects in total, including → green retrofit of public buildings → green smart future school	1.1 MtCO ₂ eq
CCUS and Forestry	7 projects in total, including → restoration of coastal ecosystem → city forests to filter fine dust	0.3 MtCO ₂ eq
Others	9 projects in total, including → support for livestock manure management system → support for industrialisation of small and medium-sized green business	0.3 MtCO ₂ eq

Ministry of Environment of Korea (2020)

high-performance insulation will be used to make public buildings green and energy-efficient.³⁸ The energy efficiency of old school buildings³⁹ will be enhanced through the installation of solar panels and eco-friendly insulation.

38 For a total of 225 000 public rental housing units, 440 public day-care centres and 1 148 cultural facilities.

39 Including at least 2 890 elementary, middle and high school buildings.

To restore the terrestrial, marine and urban ecosystems, customised solutions based on environmental technology and information and communication technology (ICT) will be introduced in 25 regions by 2022. A comprehensive assessment of the climate and environmental challenges in city areas will be conducted. Urban green spaces will be created (with 630 ha of forest acting as a barrier against fine dust and associated health hazards). Ecosystems will be restored in 16 national parks.

Korean Green New Deal investment plan and job creation forecasts		Table 3
	2020-2022	2023-2025
Total investment plan (National budget)	₩32.5 trillion (₩19.6 trillion)	₩40.9 trillion (₩23.1 trillion)
Job creation	319 000	340 000

Government of the Republic of Korea (2020)

Finally, to improve water quality, about 200 water supply systems will be made smarter with the aid of ICT and artificial intelligence (AI) technologies.⁴⁰

→ **Low-carbon and decentralised energy supply**

The KGND also targets the promotion of low-carbon and decentralised energy systems, in particular through smart grids for more efficient energy management; renewable energy projects; and the expansion of electric and hydrogen vehicle sales. For these projects, a total of ₩35.8 trillion, including ₩24.3 trillion from the national budget, will be invested by 2025, which is anticipated to create 209 000 additional jobs.

In order to build a smart grid for more efficient energy management, advanced metering infrastructure (AMI), which is an integrated system of smart meters enabling two-way communication between suppliers and consumers, will be provided to 5 million apartments to help flatten out energy demand and save energy. In addition, an eco-friendly generation system will be established in 42 island regions to reduce the emission of pollutants from diesel-powered generators (by promoting mostly renewable energy facilities).

40 In addition, 12 water purification plants for interregional supply and old water supply pipes will be renovated (3 332 km by 2024) in order to improve water quality and prevent leakages.

In order to promote renewable energy use and ensure a fair transition, support will be provided to measure the wind conditions and conduct feasibility studies in up to 13 regions and thereby find sites for large-scale offshore wind farms of either the floating or fixed-bottom types. Community benefit sharing for renewable energy projects will be introduced. Higher support for loans in renewable energy will be provided to participating residents in farming areas and industrial complexes. And a fair transition will be ensured for those regions that foresee difficulties arising from a reduced use of coal and other traditional sources of energy by supporting their adjustment to the renewable energy sector (e.g. green mobility, digital management of renewable energy, platforms for offshore wind farms, etc.).

With regard to expanding the supply of electric and hydrogen vehicles, the provision of 1.13 million electric vehicles (EVs), including passenger cars, buses, and freight vehicles, will be supported along with the installation of 15 000 rapid chargers and 30 000 slow chargers. The provision of 200 000 hydrogen vehicles, also to include passenger cars, buses and freight vehicles, will be supported along with the installation of 450 charging facilities. Fuel cell plants and other infrastructure for the distribution of hydrogen will also be established. Last, but not least, the scrapping of old diesel cars and the transition to liquefied petroleum gas (LPG) or EVs will be supported.

Government's estimate of investment and employment effect of detailed projects in the Korean Green New Deal

Table 4

Sector	Tasks	Investment plan (National budget, trillion Korean Won)		Job creation (Thousand jobs)
		2020–2022	2023–2025	
Green transition of infrastructure	1. Turning public facilities into zero-energy buildings	2.6	3.6	24.3
	2. Restoring the terrestrial, marine and urban ecosystems	1.2	1.3	10.5
	3. Creating a management system for clean and safe water	2.3	1.1	3.9
	Subtotal	6.1	6.0	38.7
Low-carbon and decentralised energy supply	4. Building a smart grid for more efficient energy management	1.1	0.9	2.0
	5. Promoting renewable energy use and supporting a fair transition	3.6	5.6	3.8
	6. Expanding the supply of electric and hydrogen vehicles	5.6	7.5	15.1
	Subtotal	10.3	14.0	20.9
Innovation in green industry	7. Supporting new businesses to lead green industry, and establishing low-carbon and green industrial complexes	2.0	1.6	4.7
	8. Laying the foundations for green innovation via the R&D and financial sectors	1.2	1.5	1.6
	Subtotal	3.2	3.1	6.3
Total		19.6	23.1	65.9

Government of the Republic of Korea (2020)

→ **Innovation in green industry**

Lastly, in order to promote innovation in green industry, the KGND will support new business to lead green industry, and establish low-carbon and green industrial complexes; and lay the foundations for green innovation via the R&D and financial sectors. For these purposes, a total of ₩7.6 trillion, including ₩6.3 trillion from the national budget, will be invested by 2025, and it is anticipated that these projects will create 63 000 jobs.

In order to support new business in leading green industry and to establish low-carbon and green industrial complexes, the entire process of developing a business proposition (from R&D and testing to marketing) will be supported in 123 small and medium-sized enterprises (SMEs) in the environmental and energy sectors. A Green-Integrated Cluster will be set up as a regional hub supporting technological development, testing, manufacturing and marketing in the five leading areas, which are clean air, biomaterials, hydrothermal energy, future waste resources and recycling. To enable the real-time monitoring and

Sector	Key indicators	2020	2022	2025
Green retrofit	Improvement of old rental housing (thousands)	0	186	225
	Energy-efficient daycare centres (sites)	0	194	440
Rural and urban land	Fine dust blocking forests (ha)	93	243	723
	Smart Green City (locations)	0	25	
Green energy	Solar and wind power generation (GW)	12.7	26.3	42.7
	Core and new technologies for hydrogen	Basic level research		Establishment of core and new technology (by 2026)
	Smart power grids for apartment building (thousands)	150	5000	
Eco-friendly Mobility of the Future	Number of electric vehicles (thousands)	91	430	1130
	Number of hydrogen vehicles (thousands)	5	67	200
Smart and green industrial complexes	Clean factories (sites)	0	700	1750
	Pollution-preventive facilities for small businesses (sites)	4182	10182	13182
	Smart energy platforms (sites)	0	7	10

Government of the Republic of Korea (2020)

control of energy generation and consumption, 10 smart energy platforms based on a micro power grid will be established.

In order to lay the foundations for green innovation via the R&D and financial sectors, the KGND will enable testing and support for the commercial deployment of large-scale carbon capture utilisation and storage (CCUS) by 2023, and the technology to produce chemical feedstock and other useful materials from CO₂ will be developed. To promote resource recycling, support will be provided to develop remanufacturing technology (e.g. the disassembling and reassembling of old electrical equipment and machinery, engines and exhausts from specialised vehicles, etc.) and technology for collecting and utilising rare materials. A loan fund of ₩1.9 trillion will be available for the green sector, including for investment to prevent the environmental pollution of businesses; and a joint fund of ₩215 billion from the public and private sectors will be set up to advance green business.

Governance and monitoring

To ensure momentum for the implementation of the Korean New Deal, including the KGND, a Strategy Meeting on the Korean New Deal, chaired by the President, is expected to be held regularly. In addition, a Joint Committee between the government and the ruling Democratic Party has been established in order to enhance cooperation between the political party and the government on this.

In order to monitor the implementation, a ministerial meeting chaired by the Deputy Prime Minister of Economy will be held with the Minister of Environment and Minister of Trade, Industry and Energy. To support the meeting, a working-level task force has been established within the Ministry of Economy and Finance including staff from other relevant ministries.

Legal competence and implementation

The KGND was presented as a response to the economic crisis caused by the COVID-19 pandemic, and no law governing its design and implementation was adopted at the time of its announcement.

On 28 October 2020, in line with global international trends, President Moon Jae-in announced that Korea would aim for carbon neutrality by 2050. In December 2020, the Korean government submitted its *long-term low greenhouse gas emission development strategies* (LEDS) to the United Nations, including its 2050 carbon-neutral vision. This long-term vision did not match up directly with the KGND framework, but was part of a broader political commitment to accelerate the green transformation of the Korean economy.

After the declaration of the carbon neutrality goal, it became clear that the existing legal competence was insufficient to pursue carbon neutrality in the framework of existing legislation, especially in terms of aligning a priori incompatible areas of economic development and environmental protection (Jang, 2021). In response, some parliamentarians proposed a carbon neutrality bill. Discussion on this bill in the National Assembly began in February 2021, and the bill was reviewed during three hearings and five sub-committee consultations up to August 2021. In September 2021, the *Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis* (Carbon Neutrality Act) was enacted. With this law, Korea became the 14th country worldwide to adopt a carbon-neutrality law, highlighting the Korean government's commitment to deliver its fair share to dealing with the international climate crisis (Lee, 2021). The law includes new mechanisms for achieving carbon neutrality, such as climate change impact assessments and greenhouse gas reduction cognitive budgeting⁴¹ as well as various policies for a just

41 So-called *Green Budgeting*, a scheme that evaluates the effect on GHG emissions reduction of implementing various policies to which the government budget is committed and which reflects the results in ongoing government budgeting and action.

transition. To achieve the GHG reduction targets, legal procedures are introduced in the Act establishing a national strategy and basic plans and a monitoring framework for the implementation of the strategy.

Furthermore, the government adopted a more ambitious 2030 NDC on 27 October following wide consultations, in particular within the newly established National Carbon Neutrality Commission. The new NDC is aimed at reducing GHG emissions by 40% in 2030 (to reach 436.6 MtCO₂eq) compared to 2018 levels (727.6 MtCO₂eq), a significant improvement compared to the previous target (-26% over the same period). The additional reduction would come mostly from emissions in the power sector (including an increase in the share of renewable electricity from currently 6.4% to 30.2% in 2030) and an increase in CO₂ reduction overseas (carbon credits).

This enhanced NDC is seen as a realistic compromise between the conflicting positions of industrial interests and civil society demands.⁴² To achieve the targeted 40% reduction by 2030, an annual reduction of 4.17% is required (Choi et al, 2021).

3.3 Latest policy developments influencing the implementation of the Korean Green New Deal

Announcement of Green New Deal 2.0

The first year of implementation of the KGND saw an increase in public and private green investment accompanied by institutional progress. Several successful projects were launched in the areas of renewables and electromobility, laying the foundation for a low-carbon and eco-friendly transition. In addition, progress was made within various institu-

tional contexts, such as the introduction of PPAs, the enactment of the Hydrogen Act, and the establishment of the 2050 Carbon Neutrality Committee. Nevertheless, several weaknesses in the KGND became apparent under pressure both from the international community (in favour of higher commitments) and from social inequalities which had worsened since the COVID-19 pandemic.

Accordingly, the government announced the Korean New Deal 2.0 in July 2021 in order to address both domestic and international policy environment changes and to correct the failings that had become apparent in the implementation process.

In the KGND 2.0, a new strategy entitled *Building a Carbon Neutral Promotion Foundation* was introduced to support the efficient implementation of the carbon-neutral strategy. In particular, the government announced the introduction of an emissions measurement system, a carbon reduction programme for industries and a new impact calculation method in line with new international climate regimes (in particular related to the introduction of CBAM in the US and Europe).

The KGND 2.0 aims to accelerate the transition to a low-carbon economic structure by expanding and reinforcing the scope and scale of the existing KGND projects, launching additional projects to accelerate renewables and hydrogen development, and highlighting measures for a just transition. To meet these new objectives, the KGND 2.0 budget from the government was increased by ₩18.3 trillion (about 40%).

Presidential election in 2022

During the presidential election campaign, energy policy was one of the main political points of divergence among the presidential candidates. Candidate Lee Jae-myung of the Democratic Party promised a continuation of the energy transition policy initiated by President Moon, i.e. a gradual reduction of nuclear power plants and an expansion of renewable energy,

42 While industry was concerned about the NDC upgrade weakening its global competitiveness, civil society organisations argued that a 50% reduction by 2030 was necessary to achieve the global 1.5-degree maximum warming target.

Comparison of the National budget for Korean Green New Deal 1.0 and Korean Green New Deal 2.0			Table 6
2020-2025 (Unit: trillion Korean Won)	KGND 1.0	KGND 2.0	
Building a Carbon Neutral Promotion Foundation	N/A	4.8	
Green transition of infrastructures	12.1	16.0	
Low-carbon and decentralised energy supply	24.3	30.0	
Innovation in green industry	6.3	10.2	
Total	42.7	61.0	

Government of the Republic of Korea (2021b)

as his main pledges. By contrast, candidate Yoon Seok-yeol of the opposition People's Power Party proposed *realisable carbon neutrality* (i.e. slowing down the pace of the transformation) and *building a powerful nuclear power country* as one of his ten pledges.

Yoon Seok-yeol was elected president in March 2022. While some observers feared he would water down the carbon neutrality and NDC targets, the President reconfirmed the implementation of the 2030 NDC and the 2050 carbon neutral targets on 26 October 2022.

However, the new government is very sceptical about the Korean New Deal narrative, including the KGND. Indeed, the Korean New Deal was not mentioned at all in the 60-page report on the economic policy direction of the new government released on 16 June 2022. There is some criticism that the new government has discarded the values and spirit of the Korean New Deal and the focus on sustainability, inclusiveness

and regional initiatives for a green transformation (Kim, 2022), although the detailed projects of the KGND continue to be implemented as before.

Substantial changes have been observed in the implementation of the Korean New Deal. The Ministry of Economy and Finance has decided to end the tax benefits⁴³ for the New Deal infrastructure fund this year. In addition, access to the homepage introducing the Korean New Deal has been blocked (Song, 2022).

43 Revenue income tax rate of 9%, separate taxation benefits for three years, etc.

4 Assessment of the European and Korean Green Deals

4.1 Assessment of the European Green Deal

The implementation of the EGD has progressed well since its adoption, despite other challenging policy developments (COVID-19, Russian war of invasion in Ukraine). The economic downturn caused by the COVID-19 pandemic has obviously shifted policy priorities in the short term but has also helped the establishment of a green recovery narrative for Europe in the mid to long term. In addition, the global energy crisis, accelerated by the Russian war of invasion in Ukraine, has further strengthened the case for decarbonisation policies as a way to minimise reliance on fossil fuels imports, even though short-term measures have focused on securing sufficient fossil fuel capacities (gas and coal) to meet energy demand, especially during the winter. This situation has also challenged the EU's internal cohesion agenda. But in some countries, especially in Eastern Europe (which was historically sceptical

towards climate policies), the situation has in fact supported the reinforcement of climate ambition (Bocquillon and Maltby, 2017). However, strictly speaking, the EGD remains in its infancy (Bongardt and Torres, 2021), and there are concerns that larger-scale obstacles will appear from this point on, and it may even face strong resistance (García, 2022). In any case, reaching the greenhouse gas reduction targets (for 2030 as well as net zero in 2050) will be challenging, given the scale of the transformation (Janota, 2022).

Policy priority

When the President of the European Commission, Ursula von der Leyen, announced this new plan in December 2019, the EGD was clearly the most important of the EU policies. However, just a few months later, as the whole of Europe was hit by the COVID-19 pandemic, economic activity was paralysed, and the EGD was sidelined by health emergency measures and emergency economic relief.

	Announcement	Development		
		Legislation	COVID-19	Russian Invasion of Ukraine
Policy priority	Excellent	Excellent	Excellent	Good
Financial endowment	Fair	Fair	Good	Good
Legal competence	Fair	Good	Excellent	Good

Agora Energiewende (2022)

The initial countermeasures against COVID-19 clearly showed the mismatch between the long-term approach required by the EGD and practical short-term measures (Euractiv, 2020).

Nevertheless, European society became more aware of the importance of the green transition during the COVID-19 pandemic. As the pandemic restricted the ability to travel and wider economic activities, GHG emissions were significantly reduced, improving environmental conditions. In addition, heavy rains in western Germany in 2021 resulting in damage to people and property and deadly wildfires blazing around the world have made Europe consider *different* growth strategies (Wolf et al, 2021). Of course, it is undeniable that the COVID-19 pandemic has acted as a significant obstacle to the full implementation of the EGD, but the shift to a green economy has pointed towards a common solution for a sustainable society.

In addition, the energy crisis – brought on by the Russian invasion of Ukraine – meant that political leaders were not able to prioritise climate protection responses over short-term energy supply measures. A representative example is that the RePowerEU plan announced in May, while promoting a faster deployment of renewables and energy efficiency measures, also included building natural gas terminals and utilising thermal power generation to prevent energy shortages. In addition, several Member States pursued short-term measures to secure electricity supply through the use of fossil fuels (Germany keeping coal-fired power plants online longer than planned being an illustrative example). For this reason, contrary to the expectations of the EU, the lock-in of fossil fuel technologies was strengthened as a result of the war (Conti and Kneebone, 2022). However, political leaders recognised that the EGD, by boosting renewables and energy efficiency, can minimise fossil fuel import dependence in the mid to long term. And in practice, several concrete measures

have been adopted under the EGD⁴⁴ over the last two years (see details in Annex). Overall, climate mitigation remains one of the six core priorities of the Commission (Bassot, 2022).

Financial endowment

The Commission targets the mobilization of at least €1 trillion (about ₩1 350 trillion) in private and public capital up to 2030 to achieve the EGD's policy goals. The repurposing and expansion of existing EU funding (in the framework of the Sustainable Europe Investment Plan, which is mobilising resources from the EU MFF, and from the NGEU, a special financial plan for the recovery from COVID-19 will facilitate substantial green investment through (1) diversified utilisation, (2) mainstreaming climate protection, and (3) introducing the Do No Significant Harm principle, creating new investment opportunities, especially in the industrial, building, transport and energy sectors (Agora Energiewende, 2021). By targeting projects hitherto hindered by market failures, InvestEU is expected to leverage a significant amount of private capital into key sectors. The Commission estimates of the investment mobilised are nevertheless clouded by uncertainty, and only a small fraction of the financial firepower in the Sustainable Europe Investment Plan is effectively additional compared to what was available during the previous 2014–2020 EU budget period.

Both of the green deal budget plans mandated spending above the previous level on climate protection. As a result of the policy environment changes caused by COVID-19, it can be said that the financial conditions for the EGD have improved further.

44 The European Industrial Strategy and Circular Economy Action Plan, in March 2020; the EU strategies for energy system integration and hydrogen, in July 2020; Fit for 55, in summer 2021; and finally the agreement on the CBAM in March 2022.

Legal competence and implementation

Despite the unexpected policy environment changes, the legal implementation of the EGD has seen considerable progress, in particular with the adoption of the European Climate Law, which set legally binding climate targets. The EU Institutions and the Member States are thereby obliged to take the necessary measures at the EU and national levels to meet the targets, while taking into account the importance of promoting fairness and solidarity between Member States.

In addition, the Member States have been incorporating key elements of the EGD into national law, strengthening national political ownership of the deep decarbonisation agenda (Agora Energiewende and Ecologic Institute, 2021). As detailed measures for the implementation of the EGD take shape as planned (even if some delays have been observed), and as the roles and responsibilities of the institutions and the Member States become clearer, it can be said that the legal status of the EGD is also being strengthened.

4.2 Assessment of the Korean Green New Deal

While the KGND is a national sustainable development strategy in response to climate, environmental and economic crises, it is also clearly an economic recovery package (aiming at a better reconstruction, Moon et al, 2020) with the short-term objective up to 2025 of enabling concrete sustainable investment projects. It has a complex set of overlapping policy goals that focus on economic recovery through investment in the environment and energy sectors (Shin, 2020).

In terms of institutional development, the development of the KGND in waves can be evaluated very positively: the KGND 1.0 was launched in 2020; KGND 2.0 was announced in 2021 (following the one-year evaluation of the KGND), correcting some measures, introducing monitoring mechanisms and expanding project targets and scale; then, the Carbon Neutrality Act was adopted; and finally the 2030 GHG target (NDC) was strengthened. This development process enabled the gradual mainstreaming of

Qualitative assessment of the Korean Green New Deal

Table 8

	Announcement	Development		
		Legislation	KGND 2.0	Presidential election and new government
Policy priority	Good	Excellent	Excellent	Poor
Financial endowment	Fair	Fair	Good	Fair
Legal competence	Fair	Good	Good	Fair

Agora Energiewende (2022)

the KGND framework (more explicitly the climate protection policy component of the strategy).

Nevertheless, the KGND is insufficient to achieve Korea's long-term carbon neutrality goal since it doesn't set concrete targets beyond 2025. Furthermore, the KGND consists of several projects that had already been implemented by the government (*repackaging*). The government-led top-down initiative dominated the process of designing and implementing the KGND (Im, 2020), reducing the effectiveness of its implementation, and this was especially so due to the change of government in 2022.

It is in this context very regrettable that the KGND vanished from the political agenda at the same time as the new government was launched. Although detailed projects, such as those promoting energy efficiency, electric vehicles and green retrofit, are expected to continue, such individual projects cannot lead to a cost-efficient and effective green transition for the entire economy and society.

Policy priority

While the KGND was only added to the Korean New Deal as a second stage (in response to the COVID-crisis) (Jang et al, 2020), it was then immediately placed on top of the national political agenda. Three months after its announcement – and after the President's adoption of the carbon neutrality target – the political status of the KGND rose sharply (surpassing the two other New Deal pillars). After the declaration of carbon neutrality – which lead ultimately to the adoption of the Carbon Neutrality Act in September 2021 (supplementing the existing Green Growth Act from 2009) – the KGND was frequently mentioned as being the governing framework needed to achieve this target. Subsequently, in December 2021, the Korean government enhanced its NDC and submitted it to the UN, which also served as an additional opportunity to raise the political status of the KGND.

However, after the presidential election in March 2022 and the new government taking office in May, the political status of the KGND was totally reversed. Individual projects are still being promoted, but it is difficult to predict to what extent this will continue in the future, as the driving force behind the KGND has dissipated.

Financial endowment

The KGND included plans to invest a total of ₩73.4 trillion by 2025 to promote the green transformation, including ₩42.7 trillion from the government budget on top of the local government budget and private investment. The government managed to secure the highest environmental budget in the history of Korea (requiring the National Assembly to adopt a supplementary budget in 2020). Furthermore, despite criticism that the KGND bundles several already existing projects together, the financial endowment of the project is significant (in particular the acquisition of an additional budget of ₩1.4 trillion in 2020, just after the KGND was announced), showing the strong commitment of the government. Despite this positive assessment, the overall level of investment remains insufficient and the target year too near-term to bring about a fundamental green transition in Korea. Additional budgetary resources were also provided in the context of the KGND 2.0.

However, the new government applied significant restrictions to the KGND budget. Shortly after it came into office, it submitted a new budget bill to the National Assembly, cutting ₩1.1 trillion from the ₩33 trillion budget planned for the Korean New Deal in 2022. The budgets for some KGND projects were cut by 17–42% (including the green smart school construction project; the smart sewage management system; and the clean air conversion facility support project).

Legal Competence

The structure established by the government for the implementation of the KGND in 2020 (through a working-level task force based in the Ministry of Economy and Finance) is a sound framework. In addition, the Joint Committee established between the government and the ruling party to ease the legislative process is very useful for streamlining implementation.

With the adoption of the Carbon Neutrality Act in September 2021, the legal basis of the KGND has been strengthened. This Act (which entered into force in March 2022) introduces new targets and institutional arrangements that expand the legal scope of the KGND, in particular through (1) the adoption of mid-to long-term greenhouse gas reduction targets; (2) the establishment of the *2050 Carbon Neutrality and Green Growth Committee*⁴⁵, a public-private organisation that discusses the details of the implementation strategy; and (3) the adoption of implementation and monitoring frameworks (for both central and local government).

However, with the new government taking office (immediately after the Carbon Neutrality Act entered into force), the legal foundations for a successful implementation of the KGND have sharply declined. There are currently many doubts about whether the various strategies and plans specified in the Carbon Neutrality Act can be implemented, and if so whether they will actually bring about the green transition at scale.

4.3 Comparison between the EU Green Deal and the Korean Green New Deal

Although the EGD and the KGND both establish green policies as the core of a new growth strategy, there are significant differences in detailed policies and long-term roadmaps.

The EGD – a clear long-term green transition framework – strengthens the mid-term and long-term climate ambitions of the EU by improving existing climate protection and environmental policies (including the transition to a circular economy) while highlighting the role of mechanisms for a just transition. It also underlines the EU's role in facilitating international climate cooperation and supporting other countries in their efforts to fight climate change.

The KGND – which is a response to the economic recession caused by COVID-19 – is more short-sighted: it focuses on concrete investment projects, promoting jobs rather than a green transition of the whole economy. While the KGND is aimed at carbon neutrality, the time span of the measures is limited to 2025. In terms of greenhouse gas reduction, the level of ambition of the KGND is also modest (with a cumulative emissions reduction target of only 12.29 MtCO₂eq up to 2025).⁴⁶ And while circular economy policies are being pursued separately from the KGND, international cooperation was not included.

Policy priority

At the time of their announcement, the EGD and KGND were at the core of the political agendas in both countries. Their priority level has been strengthened through legislation and update processes, but they moved on very different paths once external policy

45 Before the Carbon Neutrality Act was adopted in September 2021, the *Presidential 2050 Carbon Neutrality Committee* was already up and running. The *2050 Carbon Neutrality and Green Growth Committee* was established by Article 19 of the Carbon Neutrality Act.

46 Which falls short in terms of renewables deployment and also compared to the targets set in the existing 2030 National GHG Reduction Basic Implementation Plan from 2018 (Jang et al, 2020).

High-level comparison of the EU Green Deal and Korean Green New Deal			Table 9
	EU Green Deal	Korean Green New Deal	
Visions	Economic transition to achieve climate neutrality by 2050	Responding to the economic recession caused by COVID-19 by evolving into a carbon-neutral society	
Timeframe	2019-2050	2020-2025	
Financial Endowment	€503 billion (to mobilise at least €1 trillion over next 10 years) + NGEU	₩61 trillion (about €45 billion) by 2025	
Legal basis	EU Climate Law	Carbon Neutrality Law	
Main responsible authorities	European Commission and Member States	Ministry of Finance and Ministry of Environment	
Main themes	Energy, industry, buildings, transport, agriculture, eco-systems and biodiversity, circular economy, cross-sectoral initiatives.	Infrastructure, energy, green industry, establishment of a carbon-neutral basis	
Complementary measures	NGEU, Fit for 55, RePowerEU	Green New Deal 2.0	

Agora Energiewende (2022) based on the official documents in the EU and Korea

environment changes occurred (in particular in the context of the change of government in Korea and the response to the energy crisis). In Europe, the EGD is expected to enhance the strategic independence of the EU (a policy priority triggered by the war in Ukraine), accelerating the phasing out of fossil fuel imports. The mainstreaming of climate protection through detailed policies in the EU (and their implementation at member state level) will need to be critically assessed during their implementation. But the framework contains important policy safeguards that should ensure a high level of ambition (for example, the EU tracks the proportion of spending in the EU budget that contributes to climate change objectives and sets a specific objective for each

budget period; the EU also revised the Energy Taxation Directive to remove environmentally harmful subsidies and tax exemptions). In Korea, the political priority accorded to the KGND has completely vanished following the presidential election in March 2022.

Financial endowment

At the time of their adoption, both green stimulus strategies were praised for the unprecedented scale of the financial resources announced. The EGD is encouraging private investment by announcing a long-term plan to use the European Investment Bank as a climate bank. In addition, the EGD’s financial plan includes new elements such as a just transition

mechanism and support schemes for industry decarbonisation, on top of existing supporting mechanisms (e.g. renewable energy policies). In response to external policy events (the COVID-19 pandemic, the global energy crisis), the EU expanded budget resources for the EGD.

By contrast, the KGND focused on repackaging and revamping existing projects to achieve results in a short period of time, i.e. up to 2025. It did not include either plans to go beyond the existing paradigm or any just transition mechanisms. Efforts were made to secure additional budget resources (in the context of KGND 2.0), but regrettably the financial scale of the KGND has shrunk since the new government came into office.

Legal competence

After the announcement of both green new deal strategies, the NDCs and long-term targets were incorporated into law in both countries.

The EGD adopted specific legislation for each sector and is refining its monitoring and implementation mechanisms. Implementation of supporting instruments is carried out at the same time as the strengthening of regulations. For example, the revision of the Renewable Energy Directive has strengthened mid-to long-term targets at Member State level, and the Building Energy Performance Directive has strengthened legal retrofitting and energy standards obligations.

The KGND had more limited success in bringing about a green transition, as it focused on the promotion of decarbonisation facilities while maintaining several existing regulations that ultimately favour carbon-intensive technologies. Since the new government took office, the legal status of the KGND is weakening.

5 Policy suggestions to refine and reinvigorate the Korean Green New Deal based on lessons learnt from Europe

Based on the above description and comparative assessment of the EGD and KGND, it is possible to propose some policy improvements to refine Korea's green stimulus strategy. Indeed, as highlighted before, while both Green Deals employ a comparable policy narrative framework, they differ significantly in their detailed policies and roadmaps.

Establish the mid- and long-term transformational nature of the Green Deal framework while strengthening its linkage to the achievement of climate neutrality objectives.

The Green New Deal policy concept should be revitalised and taken forward from a simple green stimulus package to a far-reaching transformative socio-economic programme. Such a programme must aim to turn the current Korean economic and institutional structures towards a sustainable green economy aligned with the 2050 carbon neutrality objectives adopted in 2020. In addition, this Green New Deal must help to build social awareness and introduce political-economic solutions on the way to a climate resilient economy that creates jobs and minimises social inequalities.

In order to achieve this goal, the KGND should be redefined as a mid- to long-term encompassing framework for the achievement of the climate goals adopted in 2020 and 2021 (carbon neutrality 2050, and new 2030 NDC) and should include long-term structural transformation strategies, target setting, institutional reforms, and investment projects for coping with the climate and environmental crisis. Only this will provide a way to align the current framework – which focuses mainly on short-term economic stimulus over five years in response to the COVID-19 crisis, and on short-term fiscal investment and budget measures – with Korea's long-term

national goals and commitments to the international community. This will also strengthen long-term economic competitiveness and prevent the climate crisis turning into an economic crisis (under the double impact of climate-related disaster and the climate barriers introduced by some of Korea's trading partners, such as the US and Europe).

In addition, it is necessary to select and execute investment projects that can be quickly implemented as an environmental and climate response in the short term. The Korean political context may not be conducive to the definition of long-term plans up to 2050, but a time horizon defined in decades is required to drive the necessary structural social change. Furthermore, since 2030 is a crucial turning point for evaluating and revising international efforts in the implementation of the Paris Agreement, the implementation of Korea's 2030 NDCs should be fully integrated into the design of the Green New Deal framework.

Reinforce the Green New Deal umbrella directly under the mandate of the President, and ensure it is established as the most comprehensive policy framework, taking priority over all other governmental policies.

Korea aims to be carbon neutral by 2050. Since the end of the Korean War, the country's rapid economic growth has relied heavily on fossil fuels. In order to reach carbon neutrality, it will inevitably have to break with established practices and adopt a new carbon-neutral socio-economic paradigm. This will be the country's biggest challenge in the years to come, much more difficult than Korea's economic reconstruction in the 1960s and 1980s. In short, the KGND is the main driving force for meeting this challenge and must take primacy over all other

government policies. The current level of ambition, scale and priority are all insufficient, especially compared to the EGD. A successful design and implementation of the Green New Deal will require a broader institutional and organisational basis, including more institutional capacity, and a higher budget. Fortunately, the Carbon Neutrality Act is already in place and the 2050 Carbon Neutrality Goal can be legally enforced based on this Act, providing a stable basis for the institutional, organisational, and budgetary requirements.

Above all, the implementation of the KGND must be anchored under the direct responsibility of the President. The 2050 Carbon Neutrality and Green Growth Committee, established by law as a public-private governance committee, will not have the power and mandate required to ensure the planning and implementation of the KGND unless the President takes over, given the very centralised political system. A green transition towards carbon neutrality can be accelerated only if it becomes a direct task for the President.

Identify and implement concrete lighthouse transformational roadmaps and projects

Many critics point out that the current KGND is merely a reshuffling of existing climate protection policies that the government has already started implementing in the past. Only a small number of new projects, such as the establishment of green industrial clusters, are actually included in the KGND. In order for the KGND to play a role as a long-term measure for a sustainable green transition, going beyond striving to achieve numerical targets as a short-term economic stimulus package, an overall roadmap for achieving carbon neutrality in each sub-sector needs to be set out, as it is in the EGD. Taking the energy sector as an example, renewable energy facilities should be promoted which will deliver the supply target for each period. In order to achieve a green transition of the whole economy and society, it is necessary to first present a mid- to long-term carbon

neutrality roadmap for each sub-sector emitting greenhouse gases. This means not only energy, but also manufacturing, agriculture, forestry, and waste.

This roadmap needs to include measures for the reform of social institutions and structures. Under the laws and systems created to maintain and expand the existing system, a green transition by means of technological factors (such as energy efficiency improvement or renewable energy expansion) alone is impossible. This is because a green transition can only be achieved if laws, institutions, and actors' perceptions and attitudes all change together. When preparing such a roadmap, it is necessary to conduct an impact assessment to analyse future repercussions. In the case of the EU, prior to legislation related to climate and energy, the impact assessment analysis has often been based on quantitative modelling which offers estimates of the effects on the economy, the environment and society. With this new roadmap, more emphasis must be put on defining in detail strategic projects that can trigger a substantial green transition with immediate policy initiatives, as carbon neutrality must be achieved within 30 years.

The transformation of the energy sector must be given top priority, given its weight in total greenhouse gas emissions.⁴⁷ First, overall energy demand must be reduced through energy efficiency measures in industry, households, and the public sector. Various energy-efficient technologies are already cost-competitive for energy retrofitting measures for buildings. The KGND should incentivise investment through a series of direct subsidies, tax incentives and higher standards and labels that will accelerate investment. In addition, investment in carbon-free renewable energy sources must be supported, in particular in intermittent renewable energy sources

⁴⁷ Energy-related emissions represented 80% (612 MtCO₂eq) of total emissions (705 MtCO₂eq) in 2019, followed by industrial process emissions (52 MtCO₂eq), agriculture (21 MtCO₂eq) and waste (17 MtCO₂eq). See <https://www.index.go.kr/unify/idx-info.do?idxCd=4288>

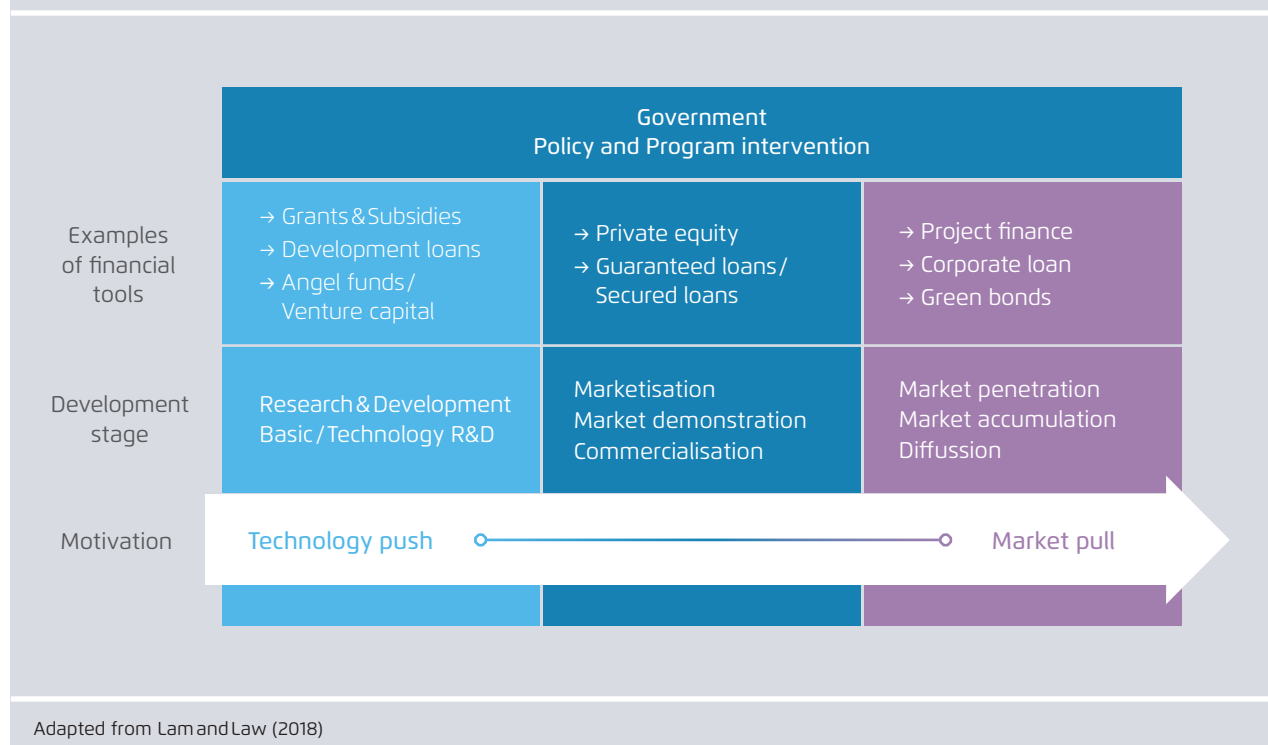
such as solar and wind that have great potential in rural areas, as well as dispatchable energy sources such as biomass, biogas and marine energy. To facilitate the integration of intermittent renewables in the electricity system, as well as accelerating the decarbonisation of other end-use sectors (in transport and industry) through electrification, new technologies – which are still not competitive yet – must be supported through investment and research programmes. The focus should be on battery storage technologies as well as on green technologies to decarbonise the steel, petrochemicals, automobile, and semiconductors sectors (those four sectors account for 80% of total industrial emissions in Korea today). R&D and investment programmes will be particularly important for the development of electrolysers (for the production of green hydrogen and green ammonia), DRI processes in the steel sector, and electric technologies for providing lower temperature heat. The race towards net zero has become a

key driver for ensuring the long-term competitiveness of industries exposed to global competition. Developing these technologies and know-how in Korea can ensure that the country will capture part of the global value-chain and become one of the leading markets.

The goals of the KGND include not only carbon neutrality but also economic growth and social equality. Therefore, a just transition mechanism must be prepared and implemented promptly to provide support for the affected areas and workers during the green transition. In regions dominated by fossil fuel industries (coal power, automobile industry) new economic streams must be developed (for example, in the area of renewable energy, electric vehicles, green hydrogen). Active training programmes (ideally linked to energy transition technologies, such as electric vehicles and renewable energy), as well as early retirement schemes, should be provided for

Schematic representation of basic relationships between stakeholders, financial tools, development stage and motivation for the roll-out of low-carbon technologies

Figure 6



workers directly affected by the transition. In addition, education programmes should be developed to teach the skills required for a green transition.

Secure sufficient public financial resources to support the green transformation

Considerable public and private funding is required to transform the entire economic structure of Korea so as to align it with its climate mitigation objectives. By way of comparison, Europe announced a €1 trillion investment plan over 10 years for the EGD. In August 2022, through the Inflation Reduction Law, the U.S. is planning a massive \$369 billion of public expenditure in a 10-year green transition investment. This is the largest public green public investment plan in U.S. history, and it demonstrates the country's willingness to become a world leader in green technologies, in particular green hydrogen.

Green New Deals are, by nature, a form of Keynesian stimulus. However, in the current framework of the KGND, the increases in government spending and the planned tax cuts are not proportionate to the scale of the transformation challenge. Ambitious budgetary measures for an effective green transition are required and must be adopted during every budgeting period. For instance, in order to reach the 2030 NDC target in the building sector, at least ₩580 billion (€430 million) of public funds are required annually to support the green retrofit and renewables heating, 2.4 times more than what the government budgeted in 2021 (GESI, 2022). These public fiscal measures and regulations need to support and accelerate private investments. Investors' risks can be alleviated by public support (tax exemptions, direct subsidies, etc.). In addition, a clear market price signal for CO₂ emissions the cost of which is expected to increase on the road to carbon neutrality – needs to be implemented through an ambitious and fundamental revision of the Korean ETS.

In addition, close monitoring of the government's spending is necessary. It is the responsibility of the state to check whether the government's fiscal policy

and the private investment it encourages have been used for green investments.

Green New Deal policies should be discussed with a wide range of stakeholders at national and regional levels to strengthen their acceptance

The existing KGND was developed as an economic response to the COVID-19 pandemic. It was developed and implemented in a top-down fashion by central government with little stakeholder involvement. However, given the transformative nature of the project, and in order to minimise conflicts between stakeholders, the strategy should be co-developed through wide consultation with a broad stakeholder group beyond governmental bodies (including academia, industry, civil society, and labour unions). Efforts to integrate opinions from various sectors are required to establish the KGND as a long-term framework that balances the interests of all involved stakeholders (winners as well as losers from the transition). In particular, it is essential to build social consensus at the regional level through the participation of local government, local residents, companies, investors, and representatives of civil society.

Lessons learnt from the EGD's inclusive consultation process could be helpful in this context. Stakeholders at all levels are involved in the Commission's legislative activity. During the preparatory phase, the Commission engages with and collects feedback from businesses, civil society organisations and citizens through workshops, public hearings and online consultation platforms where written feedback can be submitted during the public consultation periods.

Korea could strengthen its leading influential position in Asia through the promotion of a new Green Korea Wave

It is regrettable that the KGND focuses solely on the national agenda and policy measures are implemented only in Korea. Strengthening the international dimension of the KGND could accelerate the

response to climate change in Asia, at the same time promoting Korea's political and economic leadership.

Several countries in the region (in particular China, India and Japan, but also Indonesia and Vietnam) are planning to accelerate their energy transformation and support a green industrial policy agenda. The race for green technology leadership has started in the region. By supporting the green transformation in those countries, which are also important trading partners, Korea could strengthen its leading influential position in the region, prompting something like a New Korean Green Wave. In addition, a green transition could also be placed at the core of the agenda for the future of the Korean Peninsula. Joint projects involving South and North Korea within the scope of the KGND could deliver a new breakthrough in the deadlock existing between the two countries. Ultimately, this could create a stronger basis for further cooperation in response to climate change in Northeast Asia.

Annex

Legislative update since the adoption of the European Green Deal

Since the EGD foresees the revision of several EU regulations and directives, a series of specific legislative proposals has followed the EGD communication over the course of the last two years (Figure 7).

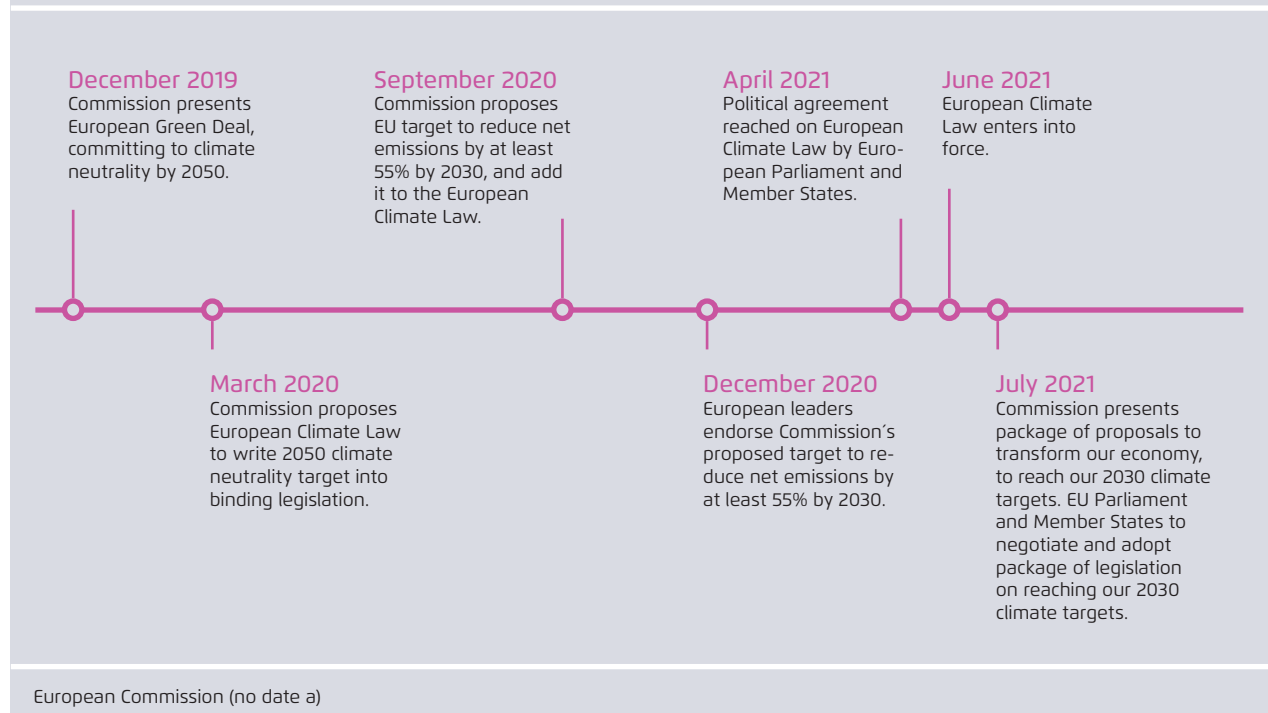
In July 2021, the Commission published the Fit for 55 package which included the proposals for new legislation on the EU ETS; the Effort Sharing Regulation; land use and forestry (LULUCF); an alternative fuels infrastructure; the carbon border adjustment mechanism; the social climate fund; RefuelEU aviation and FuelEU maritime; CO₂ emissions standards for cars and vans; energy taxation; renewable energy; and energy efficiency.

In October 2020, the Commission launched another pillar of the EGD, the Renovation Wave Strategy.⁴⁸ An action plan was also published, containing a policy timeline up to 2024 for the implementation of the strategy. Some key measures are: developing eco-design and energy labelling measures for heating and cooling in 2020; the revision of Energy Performance Certificates and a proposal to introduce mandatory minimum energy performance standards for all types of buildings in the EPBD in 2021; revising the climate-proofing guidelines for projects supported by the EU in 2021; the development of green public procurement criteria related to life cycle and climate resilience for certain categories of public buildings in 2022; a proposal on Building Renovation Passports and the introduction of a single digital tool

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Timeline of the EDG implementation up to the *Fit for 55* publication

Figure 7



unifying them with Digital Building Logbooks by 2023; and developing a 2050 whole life-cycle performance roadmap to reduce carbon emissions from buildings and advancing national benchmarking with Member States by 2023.⁴⁹

In December 2021, the proposal for the revision of the EPBD was published, including the new regulation on mandatory minimum energy performance standards and Energy Performance Certificates, improving how performance certificates account for the use of renewable energy.

49 https://eur-lex.europa.eu/resource.html?uri=cellar:0638aa1d-0f02-11eb-bc07-01aa75ed71a1.0003.02/DOC_2&format=PDF

EU funding structure

EU Green Deal funds		Table 10
1. Multiannual Financial Framework		
1.1 Regional and Cohesion Policy Funds	European Regional Development Fund (€191 bn) Cohesion Funding (€43 bn) European Social Fund (€88 bn) React-EU (Recovery Assistance for Cohesion and the Territories of Europe) (under NGEU) (€47.5 bn) Just Transition Fund* (JTF) (€17.5 bn) through both the NGEU (€10 bn) and the MFF (€7.5 bn).	
1.2 Other relevant funds under the MFF	Horizon Europe (€84.9 bn) Connecting Europe Facility (CEF) (€33.7 bn) LIFE – Programme for Environment and Climate Action (€4.8 bn) InvestEU (guarantee of €26.2 billion) Link to the Climate Roadmap of the European Investment Bank (EIB): The EIB is at the heart of EU programmes directed at co-financing specific projects (e.g. under InvestEU).	
2. Recovery and Resilience Facility	€672.5 billion - largest instrument of the Next Generation EU Fund (with €312.5 billion in grants and €360 billion in loans).	
3. Other relevant, non-MFF EU funds	ETS Innovation Fund (€10 bn between 2020-30) Modernisation Fund (Current estimate: €0.64 bn in 2021–2030) EU Renewable Energy Financing Mechanism	
<p>* JTF: The fund is focused on creating a fair job market for workers who are forced to leave the fossil fuel industry through reskilling & upskilling programs, R&D, the regeneration of sites, job seeking assistance, digitalisation, the circular economy and technical assistance. The fund excludes fossil fuels and nuclear power. National governments decide on how they distribute their national allocations of JTF funds across regions through Territorial Just Transition Plans (TJTP) which identify regions that need to transition from carbon-intensive industries, and which require Commission approval. Agora Energiewende (2021)</p>		

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