

Review

# Green New Deal Policy of South Korea: Policy Innovation for a Sustainability Transition

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**Abstract:** This paper explores the recently announced “Green New Deal” policy of South Korea as a sustainability transition strategy. Originally proposed as a post-COVID-19 stimulus plan, the Green New Deal is a sustainability-centered strategy for building a low-carbon and climate-neutral economy. The Green New Deal sets out eight targets to be accomplished under three strategic areas: green urban development, low-carbon decentralized energy, and innovative green industry. The Deal also takes measures to protect the people and sectors at a higher risk of being left behind in the process of the economic transition. It is an upgraded version of the “Green Growth” national policy, with more emphasis on sustainability in addition to the growth aspect. This paper will examine the accomplishments and challenges during the Green Growth policy era and argue why the transition to the new Green New Deal is necessary for a sustainability transition.

**Keywords:** energy policy; Korea; Green New Deal; sustainability; climate change; sustainable development; green growth; carbon neutrality; renewable energy

## 1. Introduction

The COVID-19 pandemic has caused an unprecedented crisis around the globe. Controlling the spread of the disease and recovering from the economic downturn is a top priority for governments. Large-scale crises force us to significantly rethink our social systems and to build them anew [1]. As the world currently experiences the effects of a pandemic, the global community is recognizing the urgent need for climate actions more than ever. The COVID-19 challenge provides an opportunity for re-evaluating impacts and, at the same time, for refreshing public awareness about the grave threats of environmental and health problems that require comprehensive public policy responses. In other words, the pandemic may expedite the transition towards a sustainable future.

Indeed, many of the world’s major economies, including the European Union, have designed their COVID-19 recovery plans with a strong focus on a transition to a “decarbonized” economy. Most recently, Chinese President Xi Jinping, at the 75th session of the United Nations General Assembly, stated that China aims to reach its CO<sub>2</sub> emission peak before 2030 and to achieve carbon neutrality before 2060. He also called for a “green recovery of the world economy in the post-COVID era” and efforts to achieve sustainable development in all countries [2]. Although not yet materialized as a concrete policy, China’s intention to join other nations in progressing towards carbon neutrality looks encouraging [3].

South Korea’s Green New Deal policy is another national strategy for the post-COVID era. First proposed by the ruling Democratic party ahead of the April 15th parliamentary election in 2020, it is a massive government-led program to offset the impact of the COVID-19 pandemic and to lay the foundations for future economic growth. The Green New Deal is one of the two components of the “Korean New Deal” (Digital New Deal and Green New Deal)—with an initial budget of 160 trillion

KRW (142.62 billion USD) over the next five years. The Korean New Deal established a short-term goal to create 340,000 jobs within two years to induce production of 49 trillion KRW and to reduce social costs by 40 trillion KRW.

South Korea currently leaves large footprints in the global climate change landscape. It is the seventh largest national CO<sub>2</sub> emitter and one of the Organization for Economic Cooperation and Development (OECD) countries with the fastest-growing greenhouse gas (GHG) emissions [4]. Its emissions steadily increased at 2% a year from 2000 to 2017, and the country's industrial structure remains carbon-dependent. South Korea's Nationally Determined Contribution (NDC) proposes an economy-wide target to reduce GHG emissions by 37% below business-as-usual (BAU) emissions of 857 MtCO<sub>2</sub>e/year in 2030 [5]. In absolute terms, this is a target of 539 MtCO<sub>2</sub>e/year excluding land use, land-use change, and forestry (LULUCF) (that is, 81% above 1990 emission levels and 24% below 2017 levels). Based on the recently adopted revised 2030 GHG roadmap, South Korea intends to achieve a 32.5% emissions reduction below BAU domestically. The remaining 4.5% can be achieved through international market mechanisms [6]. One of the main cross-sectoral policy instruments implemented to date is the Korea Emission Trading Scheme (ETS) launched in 2015. It is East Asia's first nationwide mandatory ETS and the second-largest carbon market after the EU ETS [7]. It covers 68% of national GHG emissions and nearly 600 companies from 23 sub-sectors of the steel, cement, petrochemical, refinery, power, construction, waste, and aviation sectors.

South Korea imports 95% of its energy needs from overseas [8]. It gets around 40% of its electricity from coal and has been a major financier of coal plants abroad. The third Energy Master Plan up to 2040, adopted in June 2019, together with the 2017 power sector plan for the period up to 2030, aims to increase the renewable electricity share to 20% by 2030 and 30% to 35% by 2040, which is up from 3% in 2017. The Renewable Portfolio Standard (RPS), which replaced a previous feed-in-tariff (FIT) scheme and has been in place since 2012, is the main policy instrument to promote renewable energy. The RPS scheme requires major electric utilities to increase their renewable and "new energy" share in the electricity mix to 10% by 2023 [9].

Against this backdrop, South Korea's Green New Deal aims to achieve net-zero emissions and to accelerate the transition towards a low-carbon and green economy. It is the first commitment of its kind in East Asia. To accomplish the Green New Deal goals, the government selected a total of eight tasks divided into three areas: green industry innovation, green infrastructure construction, and low-carbon energy implementation. Through these tasks, it plans to reduce greenhouse gases by 16.2 million tons and raise energy efficiency by 30% in the environment [10].

The next section discusses the evolution of the Green New Deal as a viable concept and a policy framework. The concept of sustainable development and its related concepts are compared and evaluated. As other Green New Deal policies, the EU's and U.S.'s cases are presented next. The following section will look into the details of the Korean Green New Deal policy. We will then compare three Green (New) Deal policies, along with a comparison between Korea's 2009 Green Growth and 2020 Green New Deal policies, and finally, we will show why the transition to the Green New Deal policy will be necessary for the post-COVID era.

## 2. Convergence of Exit Strategies? Precursor to Korea's Green New Deal

### 2.1. Conceptual Discussion: Sustainable Development, Green Economy, Green Growth, and Green New Deal

#### 2.1.1. Sustainable Development

The publication of Carson's *Silent Spring* in 1962 pushed the issues of environmental degradation and resource depletion into the center of the public debate. The emphasis on the issue of environmental protection and economic growth was evident in the publication of *The Limits to Growth* report by the Club of Rome in 1972. The report stated that, without "growth-regulating policies," population and economic output would collapse by the mid-21st century after experiencing exponential growth. The authors of the report used the word 'sustainable' to describe the desired "state of global equilibrium," which

means “sustainable without sudden and uncontrolled collapse,” and “capable of satisfying the basic material requirements of all of its people” [11].

From the 1970s, the existing notions of ‘progress’, ‘growth’, and ‘development’ were being challenged at several international conferences, starting from the United Nations Conference on the Human Environment (UNCHE) held in Stockholm in 1972. Since then, the concept of ‘sustainable development’ emerged as a compromise between the notions of development and conservation. In the 1980s, a new paradigm became more popular and widely used. The United Nations commissioned a report to identify long-term environmental strategies, and the World Commission on Environmental and Development (WCED), also known as the Brundtland Commission, submitted their report with the title “Our Common Future” in 1987. The report provided the first definition of sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [12]. The concept was reaffirmed at the United Nations Conference on Environmental Development (UNCED) in 1992. It has three core pillars: economic growth, environmental maintenance, and social equity [13].

Amongst numerous commitments, the UNCED called upon governments to develop national strategies for sustainable development, incorporating policy measures outlined in the Rio Declaration and Agenda 21. Although subsequent international conferences have tried to elaborate the principle and core pillars of it, they have not reached a universal consensus, with the limited exception of the United Nations-adopted Sustainable Development Goals in 2015. In other words, the concept of sustainable development, due to its general and broad scope, needed more detailed action plans, roadmaps, and policy frameworks.

### 2.1.2. Green Economy, Green Growth, and Green New Deals

The concepts of green economy, green growth, and green new deals have emerged from different sources through the work of different organizations and with different target audiences [14]. However, the distinctions among them have become blurred and they are sometimes used almost interchangeably. Table 1 presents some representative definitions of each concepts.

**Table 1.** Concepts related to the Green New Deal.

Concept	Source	Definition
Green Economy	UNEP, working definition (UNEP, 2010)	“... a system of economic activities related to the production, distribution, and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks or ecological scarcities ...”
Green Growth	OECD, 2011	“... aims to foster economic growth and development, while ensuring that natural assets are used sustainably, and continue to provide the resources and environmental services on which our well-being relies ...”
Global Green New Deal	UNEP, 2009	“a set of globally coordinated large-scale stimulus packages and policy measures that have the potential to bring about global economic recovery in the short term, while laying the foundation for sustained economic growth in the medium and long term.”

Green economy is one of the suggested ways to achieve sustainable development in order to overcome its ambiguity. It is defined by “a system of economic activities related to the production, distribution, and consumption of goods and services that result in improved human well-being over the long term while not exposing future generations to significant environmental risks or ecological scarcities” [15]. According to a United Nations Environment Program (UNEP) briefing, the green economy “seeks to drive the growth of Gross Domestic Product (GDP) and jobs through shifting investments towards clean technologies and natural capital as well as human resources and social institutions” [16]. Thus, in a green economy, growth should (i) entail public and private investment that reduces carbon emissions and pollution, (ii) enhance energy and resource efficiency, and (iii) prevent the loss of biodiversity and ecosystem services [16]. Put differently, it urges investment in clean and

environmentally friendly technologies. Green economy thus prioritizes the economic component of sustainable development by greening the economic sector. This line of thought implies that capitalism can become “green” by pursuing growth and that the ecological and climate-related areas can become a new engine for growth. The green economy concept received significant international attention when it was recognized as one of two themes for the 2012 UN Conference on Sustainable Development (Rio+20).

However, the concept and the achievement of green economy have been frequently criticized. One can critique that the green economy may be a more appropriate strategy for advanced countries because it requires specific enabling conditions, such as investment, innovation, and technological solutions [17], and underdeveloped nations may lack the independent resources to support the research and development of clean technologies. Other critiques focus on the broad difficulty of implementing institutional and structural changes in the current systems and the green economy concept’s oversimplified and optimistic outlook [18]. In addition, the green economy is too ambiguous and, thus, subject to many different interpretations [19].

The concept of green growth was promoted as a possible way of introducing a new, low-emission model of sustainable development for fast-developing Asian countries. The OECD Ministerial Council Meeting in June 2009 approved a declaration acknowledging that green and growth can go hand in hand, and the Council asked the OECD to develop a green growth strategy bringing together economic, environmental, technological, financial, and development aspects in a comprehensive framework [20]. Since then, the OECD has become a major proponent of green growth and supports efforts of countries to implement green growth. An OECD document provides that green growth “aims to foster economic growth and development, while ensuring that natural assets are used sustainably, and continue to provide the resources and environmental services on which our well-being relies . . . ” [21].

Conceptually, the green economy describes results (static), whereas green growth emphasizes change (dynamic). Green growth may be narrower in terms of scope, but it is a more detailed policy strategy framework to develop measurable quantitative indices. Whilst the green economy is criticized as a “practical trade-off” between environmental sustainability and economic growth, green growth pursues “synergy” between the two. Put simply, green growth does not just achieve absolute decoupling of economic growth and environmental sustainability, but it also tends to be an engine toward another kind of growth by suggesting detailed policy strategies. In doing so, green growth can be a trigger or motivation for developing countries to pursue environmental protection for economic growth with the support of global organizations, such as the World Bank and the OECD. In a sense, green growth is a “bottom-up” approach of greening products, processes, services, technologies, and supply chains compared with the “top-down” approach of the green economy, which involves strategic, macro-economic policies addressing system challenges [22]. Therefore, green growth has successfully supplemented sustainable development, overcoming the limitation of its vagueness as an instrument or implementation strategy.

Another related concept is the global Green New Deal proposed by the UNEP. This is regarded as the first usage of the term by any international organization. In March 2009, the UNEP issued a major policy brief, the ‘Global Green New Deal’, which aspires to find means to coordinate various national economic stimuli in the midst of global recession. It called on governments to allocate a significant share of stimulus funding to green sectors and set out three objectives: (i) economic recovery, (ii) poverty eradication, and (iii) reduced carbon emissions and ecosystem degradation [23]. The four most crucial sectors for implementation are: energy-efficient buildings, sustainable transport, sustainable energy, and agriculture and freshwater.

These earlier concepts preceding the Green New Deal policies nowadays basically follow the basic premise of green capitalism. They are not anti-capitalistic and do seek to change the basic structure of the economic system. The green economy, green growth, and green new deal concepts have succeeded in reinvigorating the global debate on how to redefine our economic model to achieve the overarching agreed-upon goal of sustainable development. The various definitions of these concepts are generally

consistent, with both having sustainable development as their ultimate objective and being a means to reconcile tensions between the economic and environmental pillars without ignoring social aspects [24]. The interrelationship among different concepts has more to do with diplomatic dynamics rather than conceptual differences.

South Korea, like many nations around the world, embraced the notion of sustainable development as a guiding principle in its environmental law and policy, including the Framework Act on Environmental Policy (1990) and the Sustainable Development Act (2007). Green growth was first introduced as a policy directive in Korean environmental law and policy in 2009, with the subsequent enactment of the Framework Act on Low-Carbon Green Growth ('Green Growth Act') in 2010. Under the Green Growth Act, green growth is defined as "growth achieved by saving and using energy and resources efficiently to reduce climate change and damage to the environment, securing new growth engines through research and development of green technology, creating new job opportunities, and achieving harmony between the economy and environment" (Article 2). Accordingly, Korea set its first greenhouse gas emissions reduction target and became one of the few countries with a national-scale emissions trading system. South Korea also played a leading role in developing the green growth idea internationally. It was instrumental in the establishment of the Global Green Growth Institute (GGGI) in Korea as a non-profit foundation, which was elevated to a new international organization at the Rio+20 Conference in June 2012. The GGGI is dedicated to diffusing green growth as a new model of economic growth worldwide.

## 2.2. European Green Deal

In the European context, the Green New Deal idea first emerged in Britain in 2008. The Green New Deal Group, composed of a group of environmentalists and economists, called for systemic change to the global economic model as an essential precondition for decelerating climate change. Their first report maintained the importance of seven key goals for the United Kingdom: (i) a massive environmental transformation of the economy to tackle the triple crunch of the financial crisis, climate change, and insecure energy supplies; (ii) jobs—more jobs and secure jobs; (iii) investment now to tackle the current recession and an investment for the future; (iv) new checks, balances, and direction for a banking system that has become unfit for purpose; (v) greater security for pensions and savings; (vi) warm homes in winter—protecting the public from high and volatile energy prices and ending fuel poverty; (vii) showing real world leadership—setting an example and helping to build global security [25]. As this was written at the height of a globally contagious financial crisis, it adopted a more internationalist perspective.

Ten years later, the European Commission presented the European Green Deal as a community-wide policy in December 2019. It was proposed as the EU's comprehensive climate action plan and growth strategy, with the overarching objective of making Europe the world's first climate-neutral continent by 2050. The European Green Deal is the latest update in a lineage of EU climate policy packages, such as the European Climate Change Program (ECCP) and the Climate and Energy Package (CARE). As such, the European Green Deal encompasses the implementation of the EU's GHG emissions reduction target for 2030, which is set at a minimum of 50% and an ambition of 55% compared with 1990 levels.

As Table 2 shows, the European Green Deal proposes a comprehensive climate action framework, encompassing a wide range of policy areas and emphasizing inclusivity among Union members. The major parts include: (i) net climate neutrality by 2050; (ii) decoupling economic growth from resource use; and (iii) Just Transition (articulated as "leaving no one behind"). Under the Green Deal, existing environmental policies will be integrated, with the aim of establishing a 'circular economy' and preserving ecosystem biodiversity. The policy scope of the European Green Deal includes streamlining and/or replacing existing policies (e.g., phasing out fossil fuel subsidies, the EU ETS) as well as extending to a diverse range of sectors (e.g., farm to fork, sustainable mobility, biodiversity).

**Table 2.** Major policies of the EU Green Deal.

	Contents	Timetable
Climate Action	Climate neutrality by 2050. Increasing the greenhouse gas (GHG) emissions reduction target for 2030 (currently 40%) to at least 50% and towards 55% compared with 1990 levels.	European ‘Climate Law’ by March 2020
Biodiversity Protection	All EU policies should contribute to preserving and restoring Europe’s natural capital. The EU will prepare a new EU forest strategy.	Biodiversity Strategy for 2030 by May 2020. Implementation plan by 2021
Sustainable Agriculture	Enhancing sustainability in agriculture and promoting ecofriendly products through the Common Agriculture Policy (CAP). ‘Farm to Fork’ strategy to introduce ecofriendly technology in agricultural products and to promote ecofriendly product production. At least 40% of the common agricultural policy’s overall budget and at least 30% of the Maritime Fisheries Fund would contribute to climate action. National strategic plans for agriculture fully reflect the ambition of the Green Deal and the Farm to Fork Strategy. Stimulate sustainable food consumption and promote affordable healthy food for all.	Farm to Fork Strategy by May 2020.
Clean Energy	Increase energy efficiencies and expand the renewable energy. Review the regulatory framework for energy infrastructure (TEN-E Regulation) to ensure consistency with the climate neutrality objective. Foster deployment of innovative technologies and infrastructure (e.g., smart grids, hydrogen networks, Carbon Capture and Storage, energy storage).	Review and propose to revise the relevant energy legislation by June 2021. Reflect the new climate ambition in updating their national energy and climate plans in 2023.
Sustainable Industry	Address the green and digital transformations in the EU industrial strategy. The new circular economy action plan is planned to resolve the current recycling rate of 12%. This will stimulate the development of lead markets for climate-neutral and circular products in the EU and beyond.	European Industrial Strategy by March 2020. Circular Economy Action Plan by March 2020.
Buildings and Renovation	Vigorous enforcement of the legislation related to the energy performance of buildings and assessment in 2020 of Member States’ national long-term renovation strategies.	Propose to work with stakeholders on a new initiative on renovation in 2020.
Sustainable Mobility	Ending fossil-fuel subsidies and extension of the ETS to cover the maritime sector. Automated and connected multimodal mobility together with smart traffic management systems is needed. About one million public recharging and refueling stations are needed for the 13 million zero- and low-emission vehicles. Will review the Alternative Fuels Infrastructure Directive and the TEN-T Regulation to accelerate the deployment of zero- and low-emission vehicles and vessels.	Adopt a strategy for sustainable and smart mobility in 2020. Mobility as a Service (MaaS) solution. Revise the legislation on CO <sub>2</sub> emission performance standards for cars and vans by June 2021.
Zero-pollution ambition for a toxic-free environment	Action to prevent pollution from being generated as well as measures to clean and remedy it. Will review EU measures to address pollution from large industrial installations.	Adopt a Zero-Pollution Action Plan for air, water, and soil by 2021.

The European Commission’s proposed European Climate Law is a powerful means to achieve net zero GHG emissions for EU countries by 2050. It adopted some tools, mainly cutting emissions, investing in green technologies, and protecting the natural environment; most importantly, it requires that these tools be deployed in a socially fair and cost-effective manner. The legislation not only functions as a system for providing predictability, but also includes a monitoring mechanism every five years. It also accords public participation a key role for enhancing public acceptance. Now, the European Climate Law proposal was submitted to the European Parliament for review, and the Parliament recently raised the existing target of 50–55% emissions reduction by 2030 to 60% [26].

In order to achieve the climate and energy target of 2030, an investment of 260 billion EUR is required from the public and private sectors [27]. For this, the EU established its Sustainable European Investment Plan, funded with 20 percent of profits from the EU ETS. It is noteworthy that the Just Transition Fund would be instituted as a part of the Sustainable European Investment Plan. The Fund is prepared for the Just Transition Mechanism in the form of financial support and technical assistance to help people, businesses, and regions that are most affected by the move towards the low-carbon economy. A core part of financing is the private sector; thus, the EU aims to design its Sustainable Finance Strategy, which effectively supports sustainable activities by establishing a taxonomy. They also re-constituted the financial system by evaluating green assets and stranded assets, typically coal-fired power generators. Additionally, it designed a ‘Carbon Border Tax’ to protect European steel and other energy-intensive industries from cheaper competitors with lower climate change reduction policies.

The EU is clearly committed to a ‘green’ recovery from the COVID-19 crisis, with the European Green Deal at its center. Europe has demonstrated a more unified approach on global actions, both in the COVID-19 pandemic and in environmental action. Innovative use of EU institutions, policy, and financial instruments in this crisis may have ongoing ramifications for thinking about the implementation of the European Green Deal.

### 2.3. The U.S.'s Green New Deal

Variations of the Green New Deal proposals have been around for years in the United States. Thomas Friedman touted the imperatives of launching a Green New Deal in 2007 in a New York Times article [28]. The idea was taken up by President Obama, who included the Green New Deal in his platform. It was later incorporated into the 2009 stimulus package, the American Recovery and Reinvestment Act (ARRA). The Green New Deal at this point, however, was an idea in the making, reflected in specific initiatives but not fully materialized as a concrete policy.

Howie Hawkins of the Green Party, who ran for governor of New York in 2010, was one of the first American public figures to bring the “Green New Deal platform” into a mainstream politics. Then an American youth-led political movement coordinated by Sunrise, this platform rose to prominence in the Democratic mid-term primaries in 2018. Since then, a more leftist version of the Green New Deal has emerged, framing the climate challenge as one of capitalism and deep structures of social inequity [1]. The Green New Deal policy platform proposes a new ‘sustainable transitions policy’ with a wider mix of interventions than just market-based instruments [29]. A pair of congressional resolutions known as the Green New Deal (House Resolution 109 and S. Res. 59, sponsored by Rep. Alexandria Ocasio-Cortez (D-NY) and Sen. Ed Markey (D-MA)) were released in the 116th United States Congress in February 2019. Afterwards, Senator Bernie Sanders developed the Green New Deal resolution into a full-fledged and budgeted policy [30]. Democratic U.S. Presidential Candidate Joe Biden’s climate change plan embraced much of the Green New Deal resolution. Now, the “Green New Deal” is receiving a spotlight in the U.S. more than ever.

The Green New Deal resolution calls for a “national, social, industrial, and economic mobilization at a scale not seen since World War II and the New Deal era” in order to decarbonize the U.S. economy by 2030 while stimulating investment to build new engines for economic productivity. It positions addressing structural inequality, poverty, and neoliberal-driven welfare state retrenchment at its center. The Resolution sees the climate crisis as interlinked with deeply entrenched racial, regional, and gender-based inequalities in income and wealth, and so insists on tackling these with an array of programs that have hitherto been seen as disconnected. The main goals and relevant projects are presented in Table 3.

As implied by the name “Green New Deal,” it is mainly comprised of public economic policies that are intended to channel investment into new, sustainable paradigms for economic growth. The Green New Deal also aims to meet the needs of Relief, Reform, and Recovery (also known as the 3Rs). The Resolution clearly states that the United States is facing “a four-decade trend of wage stagnation, deindustrialization, and anti-labor policies” and “a new national, social, industrial, and economic mobilization” on an unprecedented scale is necessary. Thus, the Green New Deal sets out “to create millions of good, high-wage jobs in the United States” through a series of national programs, including “making public investments in the research and development of new clean and renewable energy technologies and industries.”

The Resolution clearly defines that “human activity is the dominant cause of observed climate change over the past century” and climate change is constituting “a direct threat to the national security of the United States.” In addition, climate change is alleged to have exacerbated “systemic injustices by disproportionately affecting” socially disadvantaged groups of people. As a remedy for the current crisis, the Resolution calls for the launch of a “ten-year mobilization.” As the plan, the Resolution declares “achieving net-zero greenhouse gas emissions through a fair and just transition for all communities and workers” as the main objective. More specifically, the plan includes “repairing and upgrading the infrastructure in the United States” in order to mitigate the effects of climate change, “meeting 100 percent of the power demand in the United States through clean, renewable, and zero-emission energy sources” and “overhauling transportation systems in the United States to remove pollution and greenhouse gas emissions.” However, it does not include an effective strategy for directly and rapidly reducing greenhouse emissions through fossil-fuel restrictions. There was only the implicit assumption that public investment in technology and infrastructure would energize

market forces to automatically drive down emissions [31]. In light of climate skepticism by parts of the American public and some elected officials, the first goals of the Green New Deal may be to frame a public policy debate that accepts the need for climate change response and economic transition and creates a framework for action at both the federal and state levels.

**Table 3.** Goals and relevant projects in the U.S. Green New Deal Resolution.

Goals	Projects
Net-zero GHG emissions through a fair and just transition	Meeting 100% of the power demand through clean, renewable, and zero-emission energy sources
Millions of new high-paying jobs	Building resiliency against climate-change-related disasters for community-defined projects and strategies Mitigating and managing the long-term adverse health and economic effects of pollution and climate change Repairing and upgrading the infrastructure by eliminating pollution and GHGs, guaranteeing universal access to clean water, and reducing the risks posed by climate impacts
Sustainable infrastructure and industrial policy	Energy-efficient, distributed, and smart power grids to ensure affordable access to electricity Restoring natural ecosystems through land preservation and afforestation Restoring and protecting threatened, endangered, and fragile ecosystems
Clean air, water, climate and community resiliency, healthy food, access to nature, a sustainable environment	Cleaning up existing hazardous waste and abandoned sites to ensure economic development and sustainability Identifying other emission and pollution sources and creating solutions to remove them Promoting the international exchange of technology, expertise, products, funding, and services to restore the status of the U.S. as an international leader on climate action
Justice and equity for frontline and vulnerable communities	Upgrading all existing buildings to achieve efficiency Massive growth in clean manufacturing to remove pollution and GHG emissions Removing pollution and GHG emissions from the agricultural sector and building a more sustainable food system through collaboration with farmers and ranchers Overhauling transportation systems through zero-emission vehicles, public transit, and high-speed rails

The Resolution sees that the climate change crisis and long-lasting economic recession have exacerbated social injustice. The resolution declares that the United States is facing “the greatest income inequality since the 1920s,” especially between races and genders. The Resolution defines the present income inequality as “systemic injustices” and proposes that the Green New Deal will be comprised of programs “to counteract systemic injustices.” More specifically, the Resolution sets out that the following should be reflected in specific plans for accomplishing the Green New Deal’s goals: “providing resources, training, and high-quality education, including higher education, to all people of the United States, with a focus on frontline and vulnerable communities,” “prioritizing high-quality job creation and economic, social, and environmental benefits in frontline and vulnerable communities, and deindustrialized communities that may otherwise struggle with the transition away from greenhouse gas intensive industries,” and “guaranteeing a job with a family-sustaining wage, adequate family and medical leave, paid vacations, and retirement security to all people of the United States.”

The Resolution is non-binding. It says nothing about how achieving its goals would be funded, enforced, or implemented, except that “a Green New Deal must be developed through transparent and inclusive consultation, collaboration, and partnership with frontline and vulnerable communities, labor unions, worker cooperatives, civil society groups, academia, and businesses.” The detailed policy programs are expected to be elaborated further, particularly following Joe Biden’s inauguration as U.S. president.

### 3. Korean Green New Deal

#### 3.1. Major Areas and Tasks

South Korea’s Green New Deal plan emerged as a direct response to the COVID-19 pandemic, unlike the European Green Deal and U.S. Green New Deal, which preceded it. The main difference of the Green New Deal from previous policy measures is that it not only responds to the climate crisis, but tries to eradicate social inequality and poverty. This is generally in line with the EU’s and the U.S.’s approaches. This is not the result of the leftist turn in politics. In fact, the Green New Deal was

inserted into the Korean New Deal at the last minute, reflecting an intent to join the broader global trends in green new deal policy [32].

The Korean Green New Deal identifies three main areas and eight specific implementation targets (see Table 4). The government projects that a total of 73.4 trillion KRW (42.7 trillion KRW from the treasury) will be invested and 659,000 jobs will be created. Investment funds to support Green New Deal projects are expected from public and private sources.

**Table 4.** Specific tasks and creation of jobs in the Korean Green New Deal.

Area	Tasks	Budget (trillion KRW) (by 2022))	Budget (trillion KRW) (by 2025)	Jobs (thousand)
	Total	19.6	42.7	659
	Subtotal	6.1	12.1	387
Green Transition of Infrastructures	Turning public facilities into zero-energy buildings	2.6	6.2	243
	Restoring the terrestrial, marine, and urban ecosystems	1.2	2.5	105
	Building a management system for clean and safe water	2.3	3.4	39
	Subtotal	10.3	24.3	209
Low-Carbon and Decentralized Energy Supply	Building a smart grid for more efficient energy management	1.1	2.0	20
	Promoting renewable energy use and supporting a fair transition	3.6	9.2	38
	Expanding the supply of electric and hydrogen vehicles	5.6	13.1	151
	Subtotal	3.2	6.3	63
Innovation in the Green Industry	Promoting prospective businesses to lead the green industry, and establishing low-carbon and green industrial complexes	2.0	3.6	47
	Laying the foundation for green innovation via the research and development (R&D) and financial sectors	1.2	2.7	16

The first area is the green transition of infrastructures. Investment of 30.1 trillion KRW (including 12.1 trillion KRW from the treasury) will be made by 2025 to create 387,000 jobs. Implementation of renewable energy equipment and high-performance insulation to make public buildings green and energy-efficient is planned as one of the largest projects that will create the most jobs. By conducting a comprehensive diagnosis on the climate and environmental challenges of a city, the government plans to restore the terrestrial, marine, and urban ecosystems. Next, the entire water supply system will be made smart through the use of information and communication technologies (ICTs) and artificial intelligence (AI).

The second area is the low-carbon and decentralized energy supply. Investment of 35.8 trillion KRW (including 24.3 trillion KRW from the treasury) will be made by 2025 to create 209,000 jobs. Specific tasks include the establishment of a smart grid for more efficient energy management. Promoting renewable energy use and supporting a fair transition is another task. To reduce greenhouse gases and fine dust and to be competitive in the future global car market, the supply of electric and hydrogen vehicles and acceleration of ecofriendly conversion of old diesel vehicles and ships will be made.

The third area is the innovation in the green industry. Investment of 7.6 trillion KRW (including 6.3 trillion KRW from the treasury) will be made by 2025 to create 63,000 jobs. Incentivizing prospective businesses to lead the green industry and establishing low-carbon and green industrial complexes are main tasks. In order to lay the foundation for green innovation, a loan of 1.9 trillion KRW will be introduced for the green sector, including investment to prevent the environmental pollution of businesses, and a joint fund made up by the public and the private sectors will be set up for 215 billion KRW to foster green businesses.

### 3.2. Specific Projects

The government has identified 10 specific projects for the Korean New Deal. Among them, five projects relate to the Green New Deal.

### 3.2.1. Green Remodeling

In order to induce energy efficiency improvement in private buildings, public buildings take the lead in reinforcing energy performance by installing solar power and replacing ecofriendly insulation materials. Over a period of 15 years, the government will work on installing solar power for public rental housing (225,000 units), daycare centers, health centers, and medical institutions, and on replacing high-performance insulation materials. Using high-efficiency energy equipment and ecofriendly materials, national and public daycare centers (440) and national sports centers (51) will be newly built. Energy reduction facilities, such as solar power systems and LED lighting, will be installed (1148 locations) for cultural facilities, such as museums and libraries, and energy efficiency will be promoted in government buildings.

### 3.2.2. Green Energy

The Green New Deal contemplates expanding large-scale research and development (R&D), demonstration projects, and facility supply to foster the ecosystem of new and renewable energy industries, such as solar power and wind power (land and sea). The government plans to increase renewable power generation from the current 12.7 GW to 42.7 GW by 2025. In the case of wind power, a feasibility study will be conducted in up to 13 areas and phased construction of demonstration complexes will be initiated in order to find locations for large-scale offshore wind farms. Regarding solar power, a resident participatory benefit-sharing project will be introduced and loan support for rural and industrial complexes will be expanded. The government also plans to support 200,000 households with the cost of installing new and renewable facilities for private use, such as in houses and shopping malls. The government also intends to develop source technology for the entire cycle from production to utilization of hydrogen and to build “hydrogen cities”. Three hydrogen cities will be created by 2022, and three additional cities will be created by 2025.

### 3.2.3. Ecofriendly Mobility of the Future

The Green New Deal plans to increase the number of electric cars from 90,100 (as of 2020) to 1.13 million electric vehicles (cumulative) and to expand charging infrastructure (15,000 quick chargers and 30,000 slow chargers) by 2025. It will also supply 200,000 hydrogen vehicles (cumulative), such as passenger cars, buses, and cargo, install 450 charging infrastructure units (cumulative), and establish a hydrogen distribution base, such as a hydrogen production base. The Green New Deal will support the conversion of old diesel vehicles into liquefied petroleum gas (LPG) and electric vehicles as well as the early scrapping of vehicles, and will support the conversion of civilian ships and government ships (34 ships) into liquefied natural gas (LNG)- or hybrid-fueled ships as well as the attachment of an emission reduction device (Diesel Particulate Filter) to 80 other government ships.

### 3.2.4. Green and Smart Schools

The installation of energy-saving facilities supports environmentally friendly classrooms, while the use of technology-based educational materials provides a learning environment that incorporates a blend of both online and offline methods. The energy efficiency of old school buildings, including at least 2890 elementary, middle, and high school buildings, will be enhanced through the installation of solar panels and ecofriendly insulation. The plan to provide full Wi-Fi coverage in 380,000 classrooms by 2024 will be completed ahead of schedule, by 2022.

### 3.2.5. Smart and Green Industrial Complexes

The Green New Deal will convert industrial complexes into smart and ecofriendly manufacturing spaces with digital-based high productivity (smart), high energy efficiency, and low pollution (green). It plans to establish a simulation center for manufacturing process testing (three locations) and a remote monitoring system to detect hazardous chemicals based on artificial intelligence (AI) and

drones. Smart ecological factories (100 locations) and pollutant reduction facilities that minimize pollutants will be built; for example, by building a smart energy platform that visualizes energy generation and consumption, monitors and controls in realtime through a control center (10 locations), and reuses waste heat and other wastes. Clean factories (1750 locations) reducing pollution based on individualized solutions for businesses will be established. It supports the interconnection of waste recycling between companies (81 industrial complexes), the recycling wastes in industrial complexes for reuse as raw materials or energy by other companies, and the installation of fine dust reduction facilities in small-scale workplaces (9000).

#### 4. Discussion

We reviewed three different types of Green (New) Deal strategies from the EU, U.S., and South Korea. In this section, those national plans are compared for some common and distinctive aspects, and the Korean case is discussed in light of the previous Green Growth strategy. We expect that this comparison will have implications not only for Korea, but also for various countries that are considering Green New Deal strategies.

##### 4.1. Comparison of the EU, U.S., and Korean Plans

Overall, the EU, U.S., and Korean cases all share one goal—tackling the climate change crisis and shifting toward a sustainable society. They all offer solid frameworks around which to shape the policy ambition for large-scale investment programs to foster a green economic transition ([29], p. 8). This common vision has been found in several aspects, such as urgent climate action, net-zero ambition, and mobilizing industry for clean energy. They aim to reduce carbon emissions from the transportation, energy, and construction industry sectors by promoting clean technologies, typically renewables and hydrogen. To support this plan, all strategies not only encompass the research, development, and distribution (R&DD) of renewable technologies, but also broaden the scope toward financing, market reform, and legal and regulatory changes. As shown in Table 5, the three plans, however, do not go beyond the Paris Climate Agreement pledges. Moreover, there is a general lack of legally binding legislation for the government to achieve annual reductions according to a fixed carbon budget, except for EU's proposed European Climate Law. Although the Korean Green New Deal contains comprehensive and powerful policy drives for a sustainable society, it only provides the goal of 'net-zero carbon emissions by 2050' without explicitly stating any specific target or action plans to reduce GHG emissions. The only emission reduction target specified is 16.2 million tons, and this is less than the target of the "2030 National Greenhouse Gas Reduction Implementation Plan (2018)." On the contrary, the EU set near-term, binding deadlines for administrative action and compliance by entities regulated by the Green Deal.

None of the Green New Deals have embraced the importance of community-wide engagement, both to increase understanding of the emergencies among the public and to persuade individuals to take personal actions to reduce emissions. Green New Deal policies are needed to remove barriers and create incentives, but full mobilization will require widespread citizen engagement. Democratic and participatory governance is crucial for building social acceptance and legitimacy.

The European Green Deal explicitly mentioned the necessity of the Just Transitioning and allocated separate funding for it. There is support for a just transition in the low-carbon-distribution energy promotion in the Korean Green New Deal in principle, but no detailed plan has been put forward. There are no strategies to transform socioeconomic systems for climate crisis and just transition strategies for laborers and community residents. More detailed proposals are needed to specify the relevant contents and how to materialize them. Moreover, the European Green Deal provides the circular economy transition as its core agenda, but Korea separately pursues resource-circulation-related policies. The Korean Green New Deal should clearly state the circular economy target and link the existing "Reuse Waste Management Comprehensive Plan" and the "Basic Resource Circulation Plan."

Critics argue that the main purpose of the Korean Green New Deal is not to properly respond to climate crisis and biodiversity restoration, but to provide opportunities for enterprises in the midst of climate crisis. On the other hand, both the EU and U.S. provide nature-based solutions to climate change. In addition, the Korean Green New Deal is not sufficiently focused on invigorating the clean technology ecosystem, which is reflected in its insufficient funding. For instance, the government introduced a business cluster for hydrothermal energy with a spending of 1.2 billion KRW, which is criticized as having a size “merely that of a demonstration project” [33]. About 30.7% of the budget is allocated to the R&D of electric and hydrogen energy cars. On the other hand, only 21.5% is allocated to the establishment of the renewable energy infrastructure and the energy transition support.

**Table 5.** Comparison of the Green New Deal policies of the EU, U.S., and Korea.

Area	Tasks	EU	US	Korea
Broad Goals	Urgency and immediate action	√	√	△
	Equity and just transition	√	√	△
	Exceed Paris pledge	△		
	Specific emission reduction target/year	√		
	Stakeholder participation	√	√	
Nature	Biodiversity	√	√	
	Ecosystem restoration	√	√	√
Adaptation and Resiliency	Climate resiliency	√	√	
	Clean water	√	√	√
Electricity	100% renewable		√	
	Smart grids	√	√	√
Transportation	Clean public transit	√	√	
	Zero-emission vehicles	√	√	√
Buildings	Upgrade and renovation	√	√	√
	Affordable housing		√	
Food and Farming	Sustainable food	√	√	
	Sustainable farming	√	√	
Business and Industry	Circular economy	√		
	R&D	√	√	√
	Green finance	√		√
International	International cooperation	√	√	
	Carbon border tax	√		

△: Partial incorporation.

Beyond the issue of budget, some scholars and non-governmental organizations (NGOs) point out that the Korean plan should be broader and more comprehensive to transform social and economic sectors as well [34]. This major structural transition toward a more sustainable and resilient direction seems to be harmonized with the “New Deal” approach, as it implies the need for a brand-new social contract between the government and people to deal with shocks from the climate crisis. Finally, food and farming measures are missing in the Korean plan, whereas the EU’s and the U.S.’s plans provide them as a crucial part.

#### 4.2. Comparison with Green Growth

As South Korea has been implementing the Green Growth strategy for a decade, it seems inevitable to compare the Green Growth approach and the Green New Deal plan. As presented in Table 6, the National Strategy for Green Growth of 2009 aimed to (i) contribute to climate change adaptation and energy independence; (ii) create a new engine of growth; and (iii) provide the living standards and national status. The Korean government planned to inject a total of 107 trillion KRW (equivalent to 2% of the GDP) into the green growth sector from 2009 and 2013 [35]. To facilitate this, a Presidential

Commission on Green Growth was established. This highest-level Commission acted as a control tower to coordinate inter-agency differences and to come up with coherent policies. The aggressive stance toward climate change taken by the conservative presidential administration of Lee Myung-Bak came as a surprise because previous liberal administrations failed to produce meaningful climate change legislation.

**Table 6.** Strategies and policy directions of the Green Growth strategy (2009).

Strategies	Policy Directions
Climate change adaptation and energy independence	1. Efficient GHG emissions reduction 2. Reduction of fossil fuel usage and energy independence 3. Strengthening adaptation capacity
Creating new engine of growth	4. Developing green technology as new engine of growth 5. Greening of traditional industry and promoting green industry 6. Enhancing industrial structure 7. Laying a foundation for a green economy
Improving living standards and national status	8. Creating a green homeland and transportation 9. Green revolution in everyday life 10. Taking an international leadership role for the Green Growth

A majority of policy areas of the 2009 Green Growth are not dissimilar to the 2020 Green New Deal. Transitional strategies to green industry are the most important focus for both plans. Korea did not design its green growth policy as a mere response to global climate change. Rather, this policy was always viewed through the lens of economic growth and national interest [18,36]. Indeed, some criticize the Green New Deal as not being “new” enough, a mere repetition of the policies of the previous Green Growth policy. Moreover, the stated projects and budgets are largely a repetition of existing energy operational plans.

Then why is the transition from Green Growth to the Green New Deal necessary? Is the Green New Deal strategy a better plan to achieve sustainability? We need to examine the legitimate rationale of such a transition by closely looking at the underlying concepts. The Green New Deal has three components: green, new, and deal. Let us examine these one by one.

First, why “green,” and how much is “green”? The “green” turn of the government policy was already made in Green Growth. However, there were disagreements and controversies over what it means to be “green,” for instance, regarding the nuclear industry and a large infrastructure construction project that the government promoted. Green Growth 2009 identified the nuclear industry as a new engine of growth. The Four River Restoration Project, a signature project of Green Growth, has been criticized by many as greenwashing because it will inversely damage the nearby environment and its inhabitants. The Project accounted for 63.7% of the budget for “climate change adaptation and energy independence,” which is responsible for 50% of the total investment in the green economy [37]. Responding to suspicion that the Green New Deal is rebranding Green Growth 2009, the government stressed that its green drives would focus on digital infrastructure instead of relying on construction projects [38].

Is the definition of “green” in the Green New Deal different from that of Green Growth? How can we determine if an industry is green or not? The Green New Deal should not roll back or relax any green, low-carbon, or climate-resilience policies. There should be no more “yellow-green” or “light green” in the Green New Deal. Green must be “real green,” and there should be a societal consensus on demarcation of the green-ness. In the Korean Green New Deal, one important benchmark will be the transition from fossil fuel energy to renewable energy, as well as the economic and political restructuring for decarbonization. Investment should focus on renewable energies and technologies and should be used as a chance to stop subsidizing environmentally harmful practices. It should also not support sectors that further the climate crisis. In this context, a Korean Green Taxonomy, similar to

the EU Taxonomy, can be developed to attract private investments to green industries and to strengthen public–private partnership as well as to improve the green financing policy for the Green New Deal.

Second, why “new,” and how is this novelty justified? The main justification of being “new” is the urgency of climate action. There is a growing consensus in both science and politics that we are in a state of crisis. The situation has changed significantly in the last 10 years since the Green Growth strategy was designed. For example, the purpose of the Green Growth Act is to “pursue the harmonized development of the economy and environment” through “realization of a low-carbon society” [39]. We now understand that “low carbon” will not be enough, and we need to transition to “net-zero carbon” and start designing a “post-carbon” economy. This requires a fundamental change in the way we produce and consume energy and goods. To reflect this change, a “new” deal must be struck. Thus, the Green New Deal seems to be a sound alternative approach and a better conceptual platform to fulfill the carbon neutrality ambition.

Third, why “deal,” and how can a deal be achieved? A deal is not a deal when the stakeholders are not fully included. Although the concept of green growth seeks the integration of economic growth, environmental protection, and social fairness, various scholars have criticized the Act as insufficiently reflecting the social dimension, which requires public participation and public acceptance. Critics of Green Growth have argued that Green Growth focuses on balancing the environment and the economy, without due consideration of the “equity” element [40].

The Green New Deal strategy can highlight the social dimension more than the Green Growth approach. Of course, it will surely produce both winners and losers, but the policy must ensure safety and inclusiveness. The equity element has become much more important in the current context because the impact of climate change has begun affecting the most vulnerable members of our society. We have seen this from floods, heat waves, and, above all, COVID-19. Rebuilding the collapsing economy with regard to those without the means to adapt needs to be the core principle for the post-COVID policy.

While the Green Growth project emphasized economic growth, the Green New Deal places more weight on sustainability. The Green New Deal concept incorporates more protection for the “have-nots” compared to Green Growth. The Just Transition mechanism in the European Green Deal can be a benchmarking element for Korea. In this context, President Moon Jae-in recently declared balanced regional development as another pillar of the Korean New Deal. He is seeking synergy between the Korean New Deal and the major policy task of fostering the economic development of regions outside the greater Seoul area. Accordingly, the Green New Deal should also correct uneven development between urban and rural areas in South Korea.

Another stated purpose of Korean Green Growth is to demonstrate to the world Korea’s emerging status as a responsible and sophisticated stakeholder and co-solver of international problems ([40], p. 307). The Lee administration wanted to transform Korean green growth into an international asset ([36], p. 521). Korea now hosts the Green Climate Fund Secretariat, and the Korean government chartered and provided essential funding for the Global Green Growth Institute. As a host nation of P4G (Partnering for Green Growth and the Global Goals 2030) this year, Korea contributes to the development of public–private partnerships to deliver on the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. In each case, Korea has thus far been able to infuse its international leadership roles with the goals and the policy tools for the Green Growth framework ([40], p. 316). Korea should continue the legacy of Green Growth. It should continue international engagements by providing active and detailed contributions to international collaborations. In this context, any potential inconsistencies between national policies and international cooperation policies must be reconciled. For instance, a number of overseas coal power projects were criticized when several state enterprises (including the Korea Electric Power Company and the Export–Import Bank of Korea) invested in these projects, which run counter to the Green New Deal policy.

Finally, a proper legal landscape needs to be established to implement the Green New Deal policy. What should be the legal framework of the Green New Deal? Should we enact a separate Act on the Green New Deal in the legislature? If so, what might be the form of the law? Will it be a special law

within the existing Green Growth Act, or will it be a whole new framework law? If we enact it as a framework law, what will be the relationship between the Green Growth Act and the Green New Deal Act? In addition, there are other related laws, such as the Sustainable Development Act and the Energy Act, to consider in connection with designing the legal framework for the Green New Deal. Whatever form the legal framework eventually takes, these laws should be synergistically streamlined and consolidated to propel the engines for fulfilling the Green New Deal's policy objectives. Laying out the proper legal infrastructure is as important as establishing the industrial or technological infrastructure.

## 5. Conclusions

Efforts to pursue sustainability, from the formation of the sustainable development concept to exploring an adequate instrument to achieve sustainable development, have been made. Green economy and green growth are regarded as meaningful but unsuccessful attempts. This is because those concepts and global efforts could not adequately tackle the global climate change crisis. Rather, there are many doubts about whether we can reach the 1.5 °C global temperature goal.

In that regard, the Green New Deal plan has been a hot button and national aspiration for achieving sustainability. It is also true that there are significant difficulties and hurdles. Nevertheless, if the Green New Deal framework fully embraces the three pillars of sustainability, it would be a stronger and more comprehensive means to achieve sustainable development than any other existing strategies not just in Korea, but internationally. In conclusion, despite its theoretical challenges, Korea's Green New Deal can be a useful steering concept that captures the momentum of the COVID-19 recovery, can transform it into an effective climate response policy, and can ensure a just transition for the most vulnerable members of the community. The concept is not specific to Korean cultural, political, or even economic circumstances; instead, it can be modified and deployed in other nations. Further, the inclusive and opportunistic nature of the Green New Deal means that it can be a cornerstone of international economic and environmental cooperation.

There is a greater consensus around the world about the need for active government and public investment to help the economy, underpinned by a recognition of the importance of equity to address issues of inequality and disadvantaged regions ([29], p. 5). Substantial momentum exists behind the Green New Deal initiative at this point. There is an immediate need for quantitative easing due to the economic depression from COVID-19. Governments around the world are already injecting billions of dollars. This is a top priority for every nation. Green Growth, on the other hand, was never able to get in the front seat. Now, we finally have a powerful engine charged with political consensus and financial resources—and with the right vision, we could steer this momentum into the right direction.

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