

# Green Transition in South Korea

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GREEN  
GROWTH IN  
ACTION



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<sup>1</sup> Alternative titles are "Challenging Opportunities in Korean Green Transition" or "Challenges and Opportunities of Green Transitioning in South Korea".

## Introduction

The Green New Deal (henceforth, GND) proposal has emerged as a dominant policy proposal to address climate change along with tackling other issues: social inequality and economic recession exacerbated by the COVID-19 pandemic. The GND recalls a concept that emerged in the 2010s, “green growth”, since both assert that economic recovery can be decoupled from climate change, ecological breakdown and excessive use of depletable resources. The Republic of Korea (ROK) that was the first OECD country to have produced a comprehensive green growth strategy in 2008<sup>2</sup> announced the adoption of the Green New Deal in 2020. This article reviews the Korean green growth strategy in 2010s and compares it to the Korean GND in 2020s.



<sup>2</sup> OECD. (2011). The Implementation of the Korean Green Growth Strategy in Urban Areas.



## The Salient Features of Korea's Green Growth Model in 2010s

In 2008, the green growth strategy was first proposed as an alternative growth model for Korea that had concerned its slowdown in the rate of GDP growth and the extreme national dependence on imported energy. Former president Lee stated that Korea could recover its high GDP growth rate if the current carbon-intensive economy were to be transformed to a low-carbon economy.

The key policy goals of the Lee's green growth model were the creation of green jobs and new growth engines by enhancing the global competitiveness of green industries, limiting GHG emissions and transitioning towards a low-carbon economy. However, these were mostly long-term goals that were unlikely to be achieved within the five-year term of an administration. Moreover, the public consensus on green growth and a low-carbon economy was not strong since the public was concerned that a low-carbon transition would hamper the international competitiveness of Korea's carbon-intensive manufacturing sectors that has led economic growth. To overcome this weak base, a strategic approach to green growth was made by the Lee administration.

The first feature to compensate the weak base was the Lee administration's strong top-down leadership that led the green growth initiatives and positioned green growth as a national priority (GGGI, 2015). This was reflected in the governance framework of implementing green growth. The Presidential Committee on Green Growth (PCGG) was formulated as the advisory committee for the President to promoting the national agenda on green growth. Its involvement was understood as a strong signal that the President's office truly intended to implement green growth policies. Its strong position allowed the PCGG to legislate new laws and put forth policy measures to support green projects not only in the public sector but also in the private sector, and coordinate the conflict of interests among ministries and stakeholders<sup>3</sup>.

The second feature to enhance the green growth initiatives was its solid legal foundation. Once the policy decisions on low-carbon transition were made, the government made it an irreversible reality by ratifying it into the law. The result was the first and highest legal base for green growth: The Framework Act on Low Carbon and Green Growth (Framework Act). It was established in 2010 with the explicit aim to achieve the national emissions reduction target set the year prior. As shown in Table 1, the definition and detailed goals of a low-carbon green growth, the institutional framework pursuing a low-carbon green growth and the various mitigation and adaptation policies were stipulated under the Framework Act. Included policies were the target management system, the emissions trading scheme, green transport systems, low-carbon green buildings, green financing, promotion of a green lifestyle, and encouragement of green innovation and R&D investments. Since 2010, the Framework Act has been revised several times and has evolved into the so-called 'Korea's Climate Change Response Act', which is currently being legislated by the National Assembly to ratify into law.

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<sup>3</sup> Given the close correlation between GDP growth and GHG emissions, policy conflicts are likely to arise at any time between the Ministry of Environment (MOE) and growth-oriented authorities.

Table 1. Contents of the Framework Act on Low Carbon, Green Growth

	Contents	Article
Purpose	Foster Low-carbon Green Growth	1
Definition	Define terminologies	2
Actors	Define the roles and responsibilities of relevant actors (central government, local government, firms, the public)	4,5,6,7
Legal Hierarchy	<b>Hierarchy of the Framework Act</b> The Framework Act shall apply in preference to other Acts	8
Governance & Institutional framework	<b>Presidential Committee on Green Growth</b>	14-21
	Establish a High-quality, Corporate-wide GHG Inventory system	44, 45
	<b>Establish a Green Industry Investment Company</b> , a public-private partnership corporation, investing assets in green and allocate its returns to investors.	29
	Reporting and Penalty	60, 62, 64
Basic Principles	<b>Twin targets: national competitiveness and sustainable development</b> by gradually reducing the use of fossil fuels and fostering green technology and green industries  <b>Implement green policies in a balanced manner</b> (by considering various sectors, such as finance, industry, science and technology, environment, land, and culture)  <b>Gradual transformation of an energy and resource intensive economy into a low-carbon green economy</b> by creating green industries, transforming existing industries to green, and connecting them with related industries  <b>Just-transition:</b> No region and no one left behind in a low-carbon transition	22
	Promote international cooperation on low-carbon green growth	37, 61
Regulatory Framework	<b>Better regulation</b>	36
	<b>Establish a Master plan responding climate change:</b> every 5 years for 20 years	40
	Establish and implement a Master plan for sustainable development	50
	<b>Energy Policies:</b> provide low carbon principles for energy policies and basic energy plans	39, 41

Contents		Article	
Industrial Strategy	<b>Creation of green jobs and green industries</b>	35	
	Support green technology and green industries	23	
	Develop clusters and complexes for green technology and low-carbon industries	34	
	<b>Technical support for green innovation</b>	31, 32	
	Support green technology and green industries using subsidies, preferential guarantee credits, and tax exemptions; Establish standards and provide necessary support		
	Promote green R&D and commercialization	26	
	<b>Utilize ICT technology</b> to improve energy efficiency and cut GHG emissions	27	
	<b>Support for SMEs</b> that are engaged in green technology and business	33	
Stimulate a circular economy	24		
Mitigation	<b>Non-market Policy:</b> Target management system on energy use and GHG emissions	42	
	<b>Encourage voluntary action to reduce GHG emissions</b> prior to implementation of TMS and ETS	43	
	<b>Market-based Policy:</b> Emission Trading System	46	
	<b>Taxes:</b> Environment-friendly taxation system (carbon tax included)	30	
	<b>Sector policy</b>	<b>Transportation:</b> Establishing low-carbon transport systems	47, 53
		<b>Green Buildings</b>	54
		<b>LULUCF:</b> Promote eco-friendly agriculture & fisheries; Expand carbon sinks	55
		<b>Land Management:</b> Greenizing land-management	51
		<b>Behavior Change:</b> Promotion of green life styles	49,57-59
		<b>Water Management</b> responding to climate change	52
	<b>Regional Development:</b> Promote ecotourism	56	
<b>Adaptation</b>	<b>Assessment climate change impact and implement adaptation measures</b>	48	
<b>Finance</b>	<b>Green Finance:</b> Financial support for green growth	28	
<b>ESG</b>	<b>Promote green management</b> in the private sector by implementing following policies: - Technical support for transition to an eco-friendly production system - Disclosure of green management performance - Support of green management of SMEs	25	

Source: Framework Act on Low Carbon, Green Growth (in 2010 and amended in 2011, 2013, 2016, 2017, 2018 and 2019)

It is worth emphasizing that a fairly effective institutional mechanism was established before introducing climate change policies. Pursuit to Article 42 of the Framework Act, the GHG and Energy Target Management Scheme (TMS), a command-and-control policy aimed at curtailing energy use and GHG emissions, was adopted in 2012. Under the TMS, firms and facilities that emit GHG emissions or use energy above the threshold were obligated to report their emissions and energy usage to the corresponding line authorities<sup>4</sup>. Their report was reviewed by an authorized third party. The Korea Energy Agency (KEA) and the Korea Environment Corporation (KECO) have been in charge of supervising the MRV (measurement, reporting and verification) system of GHG emissions<sup>5</sup>. The verified emission data is stacked on the national GHG emissions inventory system that is managed by the Greenhouse Gas Inventory and Research Center of Korea (GIR). The Framework Act provides legal guidance for setting up this process of producing, verifying and registering emissions data at the micro-level; and managing data inventory. While Article 42 of the Framework Act and its Enforcement Decree stipulate the details of the MRV system for an entity's GHG emissions, Article 44 mandates the establishment of the GIR as a public institution to manage the national GHG inventory system with the verified firm-and-facility level emissions data. The TMS, the MRV system, the GHG inventory system and public institutions associated with these enable the Framework Act to build a high-quality time-series emission database at the entity-level and to design a data and evidence-driven climate policy. In particular, the TMS serves as a stepping stone to the KETS, since it allows large emitters to become familiar with the MRV system, improves the capacity of public institutions and line authorities to handle GHG emissions data as well as proceed the consultation with their covered entities, and helps policy makers determine the optimal stringency of a climate policy.

The Framework Act provided a long-term vision of green growth that is effective from 2009 to 2050. These long-term visions do not come true by themselves. To reach these goals, the interim progress needs to be evaluated and the mid-term plan aiming at positioning on the right path toward green growth should be made in a systematic and organized manner (GGGI, 2015). To facilitate the preparation of mid-term plans, Article 4 of the Enforcement Decree of the Framework Act requires the establishment of a 'Five-Year Green Growth Plan' every five years to implement the national strategy for green growth (GGGI, 2015).

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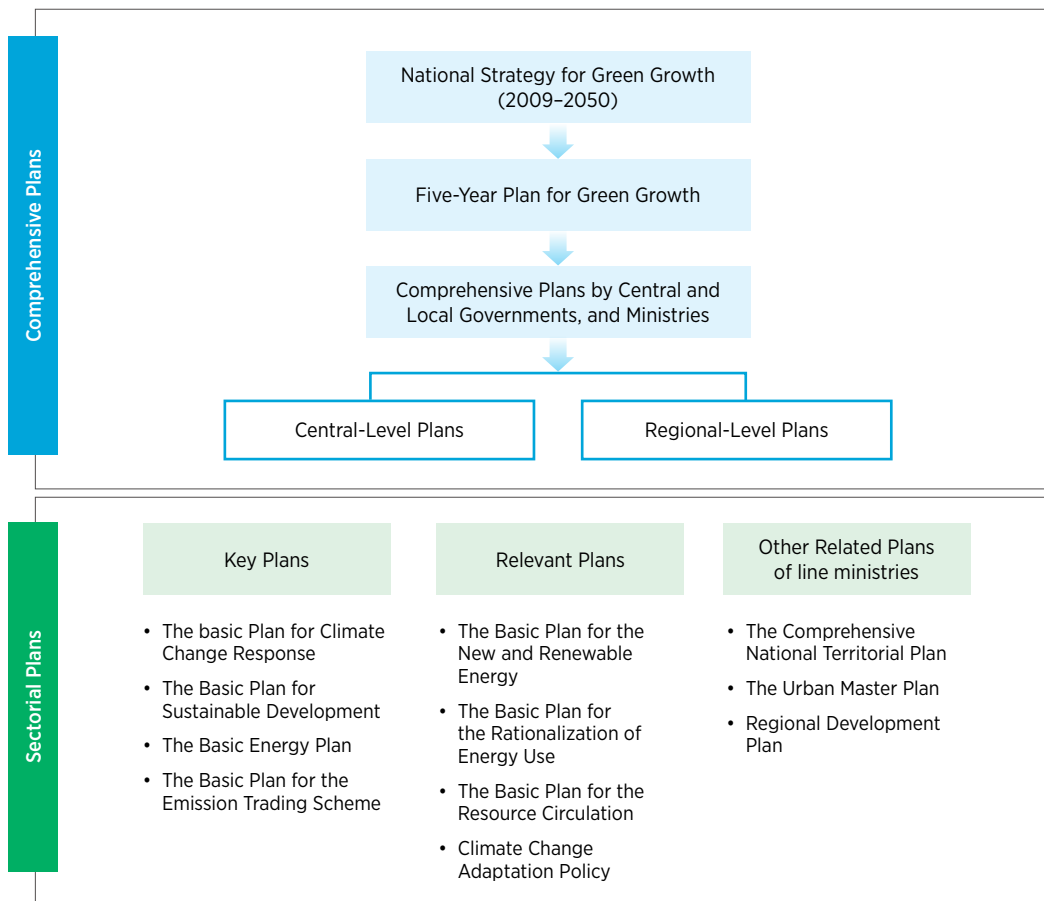
<sup>4</sup> If either the actual emissions or energy usage exceeds each target, a lump sum penalty will be imposed regardless of the excess (Oh et al., 2017).

<sup>5</sup> The KEA (former the Korea Energy Management Cooperation) was established in 1980 under the Ministry of Trade, Industry and Energy. Initially, its function was to improve the efficiency of the national energy use, but since 2005, it has been added to contribute to reducing GHG emissions ([www.energy.or.kr](http://www.energy.or.kr)). The KECO was established in 2012 under the Ministry of Environment, with the mission of improving environmental quality and promoting resource circulation.



Figure 1 shows the framework of green growth plans. Once a Five-Year Green Growth Plan is put forth, the PCGG, relevant central government ministries and Local Green Growth Committees (LGGCs) establish a comprehensive basic plan, as a follow-up policy to back up the Five-year Plan, every five years. These comprehensive basic plans serve to achieve goals defined by either the Framework Act or the corresponding Five-Year Green Growth Plan (KEI, 2014). Although green growth strategy was pursued in a top-down manner, the implementing bodies included the central administrative body and local administrative body (see Figure 1). The former is composed of the PCGG, relevant line ministries and public institutions, the latter refers to Local Green Growth Committees (LGGCs) and Green Growth Consultative Groups (GGCG). The GGCG promotes green growth at the local level and gathers feedback from businesses, local residents and civil societies (GGGI, 2015).

**Figure 1. The Framework of Plans relevant to the Green Growth Initiatives**



Source: Korea Environmental Institute. (2014) and GGGI (2015)

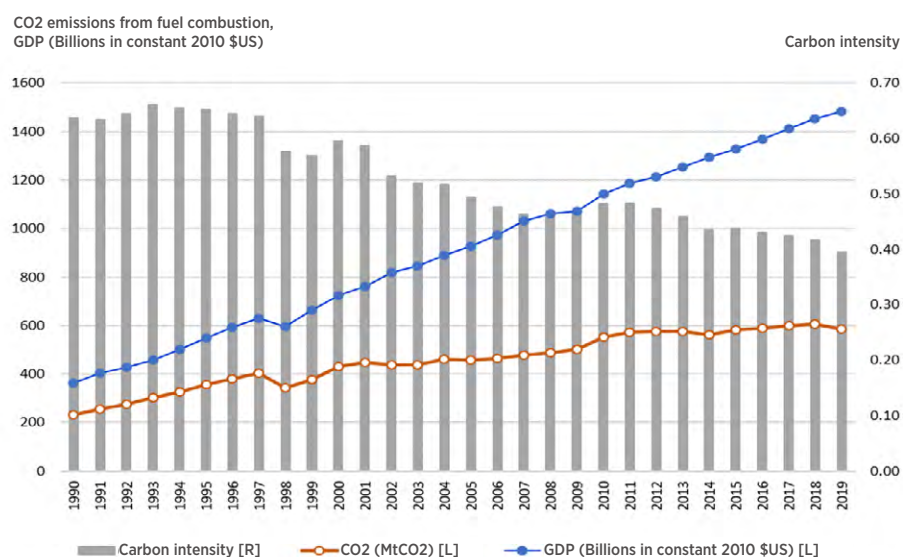
As shown in Figure 1, sectorial plans need to be established periodically. Some are directly linked to green growth. Those are other sectorial plans that are remotely related to the Framework Act or Five-Year Green Growth Plans. So, coordination needs to be made to magnify the synergy effect or avoid potential conflicts.

## GHG Emissions and GDP Growth after the adoption of Green Growth Initiatives

In 2010s, Korea's green growth strategy, as a top-down system driven by the strong will of its political leader, was hailed as a new growth model (Garbier, 2010). It has been considered as a low-carbon transition plan for developing economies that cannot give up economic growth to follow and adapt with climate change. As mentioned in Hickel (2020), there are doubts as to whether the decoupling of GDP expansions from CO<sub>2</sub> emissions is truly possible, for there is little evidence that demonstrates it.

The ROK's history of GDP alongside carbon intensity<sup>6</sup>, while suggesting a deviation from Hickel's predictions, does not wholly support it, as, while respectable, there has only been mediocre progress towards this decoupling (see Figure 2)<sup>7</sup>.

Figure 2. GHG Emissions, GDP and Carbon Intensity in Korea (1990-2019)



Source: IEA, CO<sub>2</sub> emissions from combustions (Million tonnes of CO<sub>2</sub>), CO<sub>2</sub> Highlights 2020; the World Bank data, GDP (Billions in constant 2010 \$US).

Although the rate of economy-wide decoupling is slow, Korea's manufacturing sector has swiftly transitioned into a collection of low-carbon industries. While the contribution of the manufacturing sector toward GDP is maintained at about 25 percent, its proportion of CO<sub>2</sub> emissions is smaller and has decreased over time (see Table 2). In 2005, Korea's manufacturing sector exhibited some of highest carbon intensity levels in the world. However, in fourteen years after that, Korea experienced a sharp decline in carbon intensity (from 0.311 to 0.192).

<sup>6</sup> measured as GHG emissions (MtCO<sub>2</sub>e) per real GDP (billion US\$)

<sup>7</sup> Korea's annual growth rate during 2005-2019 for GDP and CO<sub>2</sub> emissions from fuel combustion is 3.4 percent and 1.8 percent, respectively. Comparisons of these figures to those of Japan (0.6 percent for GDP and -0.7 percent for CO<sub>2</sub> emissions), the U.S. (1.8 percent for GDP and -1.3 percent for CO<sub>2</sub> emissions) and China (8.7 percent for GDP and 4.3 percent for CO<sub>2</sub> emissions) indicate that, compared to that of Japan and the U.S., Korea's decoupling rate is closer to that of China's.

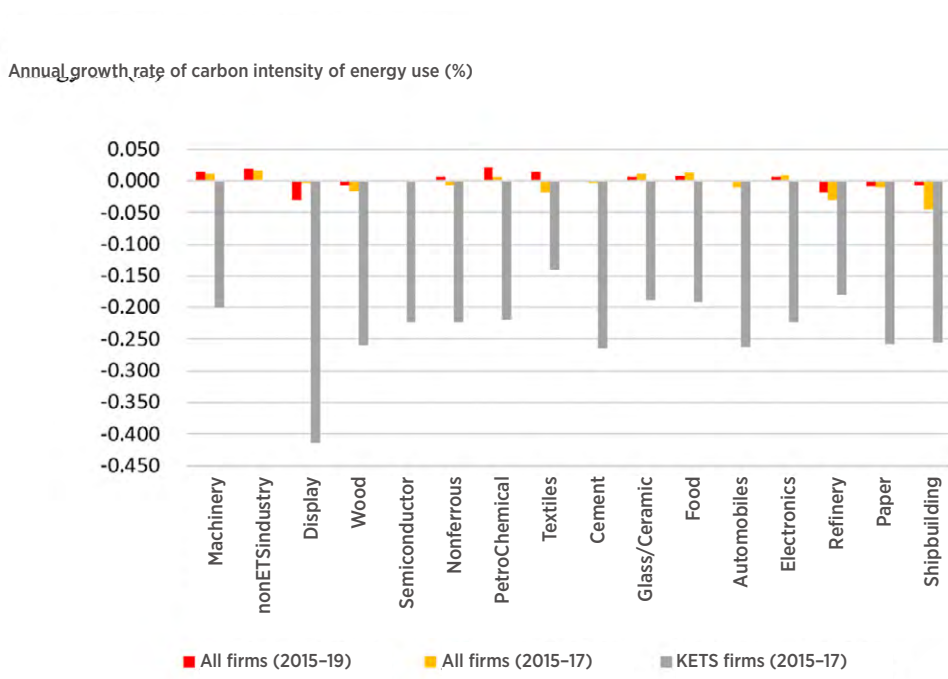
Table 2. GHG emissions, GDP and Carbon intensity of eight economies (2005-2019)

Category	Year	ROK	Japan	China	USA	Germany	France	UK
<b>Total</b>								
<b>CO2 (MtCO2)</b>	2005	457.7	1181.5	5407.5	5703.2	786.9	371.7	531.6
	2010	550.9	1131.8	7831.0	5352.1	758.8	340.1	476.6
	2014	562.7	1193.3	9116.3	5046.6	723.1	297.6	408.7
	2018	605.8	1080.7	9528.2	4921.1	696.1	303.5	352.4
	2019	586.2	1066.2	9809.2	4766.4	659.1	293.2	339.2
<b>GDP (Billion 2010 \$US)</b>	2005	926.3	5672.3	3562.1	14332.5	3202.9	2536.8	2418.8
	2010	1144.1	5700.1	6087.2	14992.1	3396.4	2642.6	2481.6
	2014	1293.3	5916.3	8327.2	16254.3	3638.6	2750.7	2679.5
	2018	1453.1	6170.3	10873.1	17960.9	3922.6	2927.8	2874.2
	2019	1482.8	6187.0	11520.0	18349.1	3944.4	2971.9	2913.6
<b>Carbon intensity (A)</b>	2005	0.494	0.208	1.518	0.398	0.246	0.147	0.220
	2010	0.482	0.199	1.286	0.357	0.223	0.129	0.192
	2019	0.395	0.172	0.851	0.260	0.167	0.099	0.116
<b>Annual growth rate of A</b>	2005-10	-0.514	-0.953	-3.256	-2.147	-1.883	-2.561	-2.661
	2010-19	-2.167	-1.562	-4.482	-3.471	-3.176	-2.910	-5.410
	2005-19	-1.580	-1.345	-4.046	-3.000	-2.716	-2.786	-4.437
<b>The proportion of manufacturing sector to the entire economy</b>								
<b>CO2 (%)</b>	2005	16.18	20.50	32.62	8.37	12.04	14.82	10.40
	2010	14.24	19.83	33.45	8.72	12.79	13.46	9.08
	2014	13.66	19.18	31.72	8.66	12.44	15.70	9.60
	2018	11.89	17.74	27.99	9.32	14.27	13.21	9.08
	2019	12.28	17.98	27.19	9.63	15.07	13.68	9.43
<b>GDP (%)</b>	2005	25.74	21.64	32.09	12.99	20.07	12.25	10.60
	2010	27.44	20.83	31.61	11.93	19.70	10.33	9.53
	2014	27.04	19.73	30.40	11.65	20.22	10.28	9.39
	2018	26.64	20.75	27.84	11.20	20.08	9.89	8.97
	2019	25.32	20.75	26.77	10.93	19.11	9.82	8.68
<b>Carbon intensity sector (B)</b>	2005	0.311	0.197	1.543	0.256	0.147	0.177	0.216
	2010	0.250	0.189	1.361	0.261	0.145	0.168	0.183
	2019	0.192	0.149	0.865	0.229	0.132	0.137	0.127
<b>Annual growth rate of B</b>	2005-10	-4.26	-0.85	-2.47	0.35	-0.31	-1.10	-3.23
	2010-19	-2.90	-2.58	-4.92	-1.45	-1.07	-2.19	-4.02
	2005-19	-3.39	-1.97	-4.05	-0.81	-0.80	-1.80	-3.74

Source: IEA, CO2 Highlights; WB, Development Indicators (2005-2020)

Given that the lion’s share of GHG emissions in the manufacturing sector has been applied by the carbon pricing under the Korea’s emission trading scheme (KETS), it is plausible that the KETS adopted in 2015 has contributed to the rapid decline of the carbon intensity in the manufacturing sector. This is supported by Figure 3 which shows that, while the average annual growth rates of carbon intensity of energy use of all firms in the manufacturing sector have seen minuscule decreases if not increases, those of KETS entities in this sector have seen immense decreases during Phase 1 of the KETS<sup>8</sup>.

**Figure 3. Annual growth rate of carbon intensity of energy use by manufacturing sectors**



Source: Korea energy agency, NETIS database (2015-2019); GIR, the National GHG Inventory data (2015-2017).

<sup>8</sup> The steel sector is not included in this graph, as over this span, a carbon-efficient firm was put out of commission due to an external incident, which caused an external effect on its rate.

In the present day, the KETS has stepped into its third phase, scheduled from 2021 to 2025. While Phases 1 and 2 were designed as passive mechanisms towards lower carbon emissions, Phase 3 takes a much more aggressive stance on reducing carbon emissions. During Phase 1 of the KETS, the thin market problem was pertinent, but the volume of transactions has increased over time. The total volume of allowances traded in 2019 was KRW 1,083 billion (38 million tons), more than 16 times the 2015 volume of KRW 62.4 billion (5.7 million tons)<sup>9</sup>.

**Table 3. Performance of KETS (2015-2019)**

Category	Unit	2015	2016	2017	2018	2019
Total Traded	10K CO <sub>2</sub> e	570	1,200	2,630	4,730	3,800
Average Price	KRW	11,013	17,068	20,951	22,120	28,445
Total Value	Billion KRW	62.5	204.1	550.3	1,047.5	1,083.1

Source: GIR (2020)

## Delayed Decarbonization Outcomes in the Power Sector

The adoption of several mitigation policies stated in the Framework Act has been delayed. Fossil fuel subsidies have not been phased out as scheduled, and coal remains the major source of electricity generation. Until recently, no significant progress has been made in Korean energy policies. Despite President Moon's RE3020 policy, Korean electricity prices do not capture carbon costs and are regulated at a low level, which makes it difficult for renewables and green hydrogen to evolve as a meaningful energy source (Oh et al., 2021b).

As a consequence, Korea's total GHG emissions are still formidable. With the exception of 1998, Korea's GHG emissions have steadily increased, peaking at 2018 where the total GHG emissions was at 727.6 MtCO<sub>2</sub>e, more than twice its 1990 emission levels, before starting to decline in 2019 (see Figure 1). Hitherto, Korea remains a heavily emitting country, ranking at 8th and 9th largest in the world in 2018 and 2019, respectively.

<sup>9</sup> Recently, the permit price fell from KRW 39,000 in January 2020 to KRW 14,300 in April 2021, owing to the ongoing COVID-19 pandemic. To defend this weakened price, the government announced a plan to postpone the scheduled auctions. Despite downsizing the total free allowances for the Phase 3 of the KETS, a price trend reversal is unlikely to occur. As the government plans to upgrade the 2030 reduction target, it is expected for Korea's MOE to amend the KETS.

## Korea's Green New Deal 1.0 (announced in July 2020)

The ROK has faced growing international pressure to focus on tackling climate change by dramatically limiting its GHG emissions to the IPCC Special Report-recommended net-zero levels by 2050. Internally, Korea's recent economic growth rates were even lower than 2008, when the green growth strategy was first considered. Additionally, there is a phenomenon where permanent jobs are being replaced by temporary ones and automated, resulting in increased demand towards economic growth and job creation.

In 2020, the COVID-19 pandemic further exacerbated an already receding global economy as well as unemployment and inequality. Albeit not as seriously as those suffered by other countries, Korea experienced a negative GDP growth in 2020 at -0.96%. In the same vein as the EU Green Deal, the Korean New Deal (K-ND) was released on July 14 as a response and recovery against the pandemic. It consisted of two deals: a Digital New Deal and Green New Deal. It also included a set of overarching policies to enhance employment and social safety nets<sup>10</sup>. The K-ND planned to invest about 98 billion USD (114 trillion Korean Won) in creating 1.9 million jobs by 2025.

Since its announcement in July 2020, the Green New Deal (K-GND) has been at the core of the nation's economic policy. While K-GND is a COVID-19 recovery strategy, it also is keen on laying out preemptive measures to prepare for a post-COVID global market, where low-carbonization, eco-compatibility, modernization, and quality job creation capabilities are believed to be instrumental to a country's competitiveness and sustainability. The following elaborates on three policy domains highlighted under the K-GND.

**1) Urban Space and Living Infrastructure:** The first action is green remodeling, designed to produce eco-friendly energy buildings and reduce energy consumption by installing solar panels and replacing insulation with eco-friendly materials. Old public buildings such as public rental houses, day-care centers, community health facilities, museums, libraries, and other government-owned facilities more than fifteen-years old are the initial objectives of the project. Additionally, the Green Smart School Project aims at renovating old buildings in public and private schools. The project includes financial support for ICT facilities to ensure digital transformation in schools, so it is classified as a task in the intersection of the Digital and Green New Deals.

The command-and-control approach such as "public sector GHG and energy target management system" also sees utility in this area. K-GND also aims to restore terrestrial and marine ecosystems by carrying out the following projects: investment in the development of mudflats, national parks, and smart green cities; the creation of forests and gardens near roads, industrial complexes, and schools in urban area; and the restoration of damaged urban areas.

Regarding water management, the government plans to replace aged water pipes and install advanced water treatment facilities in purification plants.

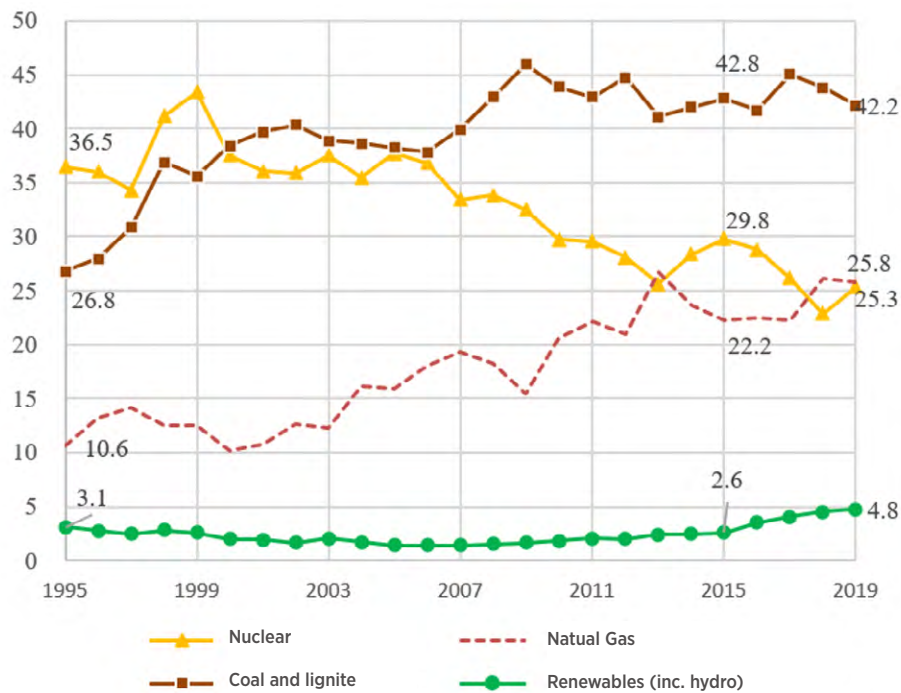
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<sup>10</sup> Chowdhury, S. South Korea's Green New Deal in the year of transition, 2021.02.08 ( <https://www.undp.org/blog/south-koreas-green-new-deal-year-transition>)

**2) Energy Sector:** GHG emissions from the energy sector account for 87% of the nation’s CO2 emissions. Therefore, low-carbonizing the energy sector is an indispensable approach towards green development in Korea, and the Moon administration is following suit by declaring it a key climate policy. In particular, the electricity supply is of central concern. Much attention has been paid to the government’s stated goal of 30-35% renewable energy by 2040 (MOE, 2019). Until recently, the power supply from solar energy has increased, at the cost of other renewable energies being neglected.

Therefore, it is natural that K-GND plans to implement policies such as: increasing the usage of renewable energy, phasing out coal power plants, managing energy demand through curtailing usage and improving efficiency, replacing fossil fuel vehicles with EV and fuel cell EV vehicles, and promoting the replacement of old diesel cars and ships. Action plans include increasing offshore wind farms, providing concessional loans to renewable energy facilities installed in residential homes and shopping malls, developing three hydrogen pilot cities, and to foster hydrogen-specialized companies to expand the supply of hydrogen.

**Figure 4. Share of Energy Sources in Electricity production**



Source: World Bank, Enerdata (search date: 2020.12.31)

**3) Industrial Sector:** Korea's Green New Deal includes: First, projects to reduce the energy consumption of existing industries; Then, measures to foster green industry enterprises; And finally, introductions of green finance projects to promote R&D and eco-friendly green investment from corporations.

For existing manufacturers, subsidies are provided to companies that diagnose the characteristics of GHG and pollutant emissions and invest in facilities to mitigate them. In order to reduce the usage of energy in industrial complexes, an integrated power grid control center will be established to collect and manage energy usage data using ICT, and subsidies will be provided to recycle waste between enterprises in the same industrial complex. For SMEs in the environment and renewable energy sector, the government will expand the scale of financial investment to support green technology R&D such as a large-scale Carbon Capture Utilization and Storages (CCUS) and an Energy Storage System (ESS), and to build a green industry cluster in five sectors nationwide (clean air, bio material, hydro thermal energy, solar panel and EV battery recycle, waste recycle).

Furthermore, the government is planning to launch the Climate-Response Fund with the size of 2.1 billion USD to financially support the GND and just-transition. Institutionally, a taxonomy required to determine whether various economic and industrial activities are appropriate for the Green New Deal policy and guidelines will be made to gradually expand the disclosure of environmental information by companies.

It is expected that the transition cost will be high for regions where many coal power plants operate, carbon-intensive firms are clustered, and the regional population structure is not prepared to push for a green transition. The policy response to this obstacle is the Just Transition program within K-GND.

A long-term strategy that aims to push for a low-carbon green growth economy by the year 2050 was stipulated by Article IX of the Framework Act. A more direct approach while preserving its spirit, the Moon administration announced the Green New Deal and 2050 Carbon-neutrality pledge in July and October in 2020, respectively. In line with its 2050 Net-zero target, Korea's 2030 NDC target is being elevated to 40% reduction compared to the 2018 emission level, instead of its previous target of 24.4% compared to the 2017 emission level.

However, the goal to reach carbon neutrality by 2050 is very ambitious for the Korean economy, consisting significantly of energy- and carbon-intensive manufacturing sectors. In the presence of this obstructions, the government announced execution strategies with carbon neutrality by 2050 on December 7, 2020. Five key elements were emphasized: Expansion of clean power and hydrogen fuel across all sectors, Significant improvement of energy efficiency, Commercial development of carbon removal and utilization technologies, Augmentation of the circular economy with the purpose of industrial sustainability, and Enhancement of carbon sink technology.

In addition to climate policy within a jurisdiction, a series of actions devoted to green transition in developing economies were also announced at P4G (Partnering for Green Growth and the Global Goals) Seoul Summit on May 30, 2021. First, South Korea will significantly increase its official development assistance (ODA) associated with climate and green projects by 2025 in





order to help developing countries achieve green recovery. The government is planning to meet the OECD average (28.1%) by 2025, compared to 2019, in which the green ODA accounted for 19.6% of the total ODA<sup>11</sup>. Second, it will create a 5 million USD Green New Deal trust fund at the Global Green Growth Institute (GGGI) so that it can assist in drafting custom-tailored green growth policies for developing countries. Third, Korea will offer 4 million USD new grants to P4G for its sustainable operation and contribute to the expansion of green growth projects.

This long path toward carbon neutrality will be headed by the Carbon Neutrality Committee (CNC), established on May 30, 2021. Its function may be similar to the Lee administration's PCGG, but on a grander scale<sup>12</sup>. Similar to PCGG, the CNC will be co-chaired by the Prime Minister and a private-sector representative, and its members will consist of government officials from different ministries as well as private sector companies, experts, NGOs and labor union representatives. According to Rödder (2020), environmental NGOs play a vital role in climate communication through their awareness-raising activities and educational campaigns. Given that the proportion of environmental NGOs (eNGOs) to the size of non-government sector CNC members is about 30 percent and the private-sector co-chair has been actively involved in eNGOs, the role of eNGOs in the CNC seems to be quite significant. On the contrary, the industrial sector appears to be under-represented in the CNC. Considering that the success of the green transition lies on the active participation of the private sector, the composition of the CNC, with only ten members from industries, does not seem to reflect this arrangement.

<sup>11</sup> <https://www.mk.co.kr/news/economy/view/2021/05/520206/>

<sup>12</sup> It consists of ninety-seven committee members, including a Prime Minister and seventeen Ministers of line authorities.

## **Korea's Green New Deal 2.0 (announced in July 2021)**

The GND has made significant progress in several sectors. The first sector is Green Smart City projects such as either establishing new negative energy buildings or renovating old buildings for improved energy efficiency, and installing renewable energy facilities. The second is decarbonization and decentralization of the power sector; namely, transformation into a Green Smart Grid by installing smart meters, expanding renewable power capacity and establishing the infrastructure for a hydrogen energy-based economy. The 3<sup>rd</sup> is to foster green industrial clusters in the five leading areas such as air-pollution abatement technologies, bio-materials, hydrothermal energy, waste management, and a circular economy. Not only that, but the government has also nurtured firms that are advanced in eco-friendly manufacturing sectors.

Statistics show that the K- Green New Deal has been effective in creating new jobs during the GND 1.0 period (July 2020 – June 2021). According to the Labor Force Survey in Korea, seven sectors recorded the largest number of jobs as well as the largest new jobs since 2015 and six out of 7 sectors are related to the Green New Deal. Those are power generation, waste management, recycling, construction engineering services, and two technology service sectors. These 6 sectors provided about 671,000 jobs, 26,500 new jobs, and plan to hire more in the future.

In July 2021, the government announced the K-New Deal 2.0. Several new tasks have been further added to the 1.0 such as Metabus-related projects in the Digital New Deal domain, in the Green New Deal domain, the social and information infrastructure project for carbon-neutrality such as developing environmental impact assessment matrices, carbon and waste footprints, and climate-related financial information disclosure systems.

In the K-New Deal 1.0, the safety net goal was proposed as a sub-policy. However, it has now been upgraded to the 3<sup>rd</sup> New Deal, the Human New Deal in the K-New Deal 2.0. The Human New Deal calls for social-environmental justice and inequality reduction. Its top-priority is to create jobs, in particular, high-quality jobs for young adults. This is one policy-code to the two main issues in Korea, transition from decarbonizing carbon-intensive economy and insufficient quality job opportunity for job candidates in their 20s and early 30s.

The government believes that there is large potential in generating such jobs in the process of green transition. To do so, fiscal input has been expanded. The target public expenditure for the entire K-New Deal by 2025 has been expanded from 98 billion USD to 137 billion USD. The target number of new jobs has also been increased from 1.9 million to 2.2 million. Thirty-eight percent of the total target budget; that is, 52.5 billion USD, will be devoted to the GND from 2020 to 2025.

## The Future of Korea's Green Transition in 2020s

While the central government makes climate policy decisions, local governments perform the administrative task of implementing those policies. For this reason, the vision and capacity of local governments are critical in determining the performance of GND policies and a carbon-neutrality policy. In Korea, 'Carbon Neutral Local Government Coalition for Action' was formed in July 2020, to gather local governments' willingness to implement the goal of carbon neutrality, before the 2020 official statement of the central government declaring carbon neutrality. In line with this Action plan, a few of the local governments participated in this coalition<sup>13</sup>. In May 2021 about seven months after President Moon's carbon neutrality pledge, every local government declared its agreement to achieve the stated goal<sup>14</sup>. Gwangju metropolitan city, one of the first local government municipalities to declare carbon neutrality, has set regional plans for carbon neutrality by 2045, which includes a RE100 for corporates operating in Gwangju by 2030, a city-wide RE100 by 2035, and energy independence by 2045<sup>15</sup>.



<sup>13</sup> Daegu Metropolitan City, Suwon City, Sejong Special Self-Governing City, and Chungcheongnam-do (<https://www.mk.co.kr/news/economy/view/2020/07/696226/>)

<sup>14</sup> Among them, seventeen metropolitan cities and two-hundred twenty-six local governments have established regional carbon neutral implementation plans to support the nation-wide 2050 carbon neutrality ([https://www.korea.kr/news/policyNewsView.do?newsId=148887778&call\\_from=rsslink](https://www.korea.kr/news/policyNewsView.do?newsId=148887778&call_from=rsslink))

<sup>15</sup> [https://library.gri.re.kr/download.do?gs\\_gubun=pms&filename=0111311100/20210165/Issue2021-451.pdf](https://library.gri.re.kr/download.do?gs_gubun=pms&filename=0111311100/20210165/Issue2021-451.pdf)

However, there are concerns that the capacity of local governments may not be good enough to implement their announced actions. According to Steiner (2010), there are two sources of variation in their capacity. The first is the level of financial resources for investment and recurrent costs at the local level. Without the respective financial sources, governments are not able to perform their assigned functions of policy-making and service delivery. The second is a composite index capturing the level of technical and administrative capacity of local governments. In both indices, the capacity of implementing climate policies has been less developed for local governments than for the central government. Therefore, the success of the K-GND or the achievement of carbon neutrality depends in part on how quickly the capacity of local governments will improve.

The second determinant is the extent to which the private sector can be mobilized. Transition to a net-zero carbon economy will require significant investment and innovation, and more importantly, a shift in the way not only governments but also private firms make decisions<sup>16</sup>. The public budget for the K-GND is about USD 0.07 trillion over six years (2020-2025), much smaller than the EU's seven-year budget of USD 2 trillion (EU Commission, 2019)<sup>17</sup>. As was declared, the government budget only serves as seed money to initiate a grand transition, with large-scale investments to be made in the private sector. More than one-hundred financial institutions, including Shinhan Financial Group and KB Financial Group, have acknowledged that climate change is key to managing business risks and have been actively involved in climate financing. The total assets under management of these institutions are approximately 5 trillion USD in 2020. There is a noticeable move: South Korea's National Pension Fund, the world's third-largest pension fund with 872.5 trillion won (\$783.42 billion) in assets as of the end of March 2021, announced its commitment to supporting coal-free power by cutting investment in any projects for new coal power plants at home and abroad<sup>18</sup>. Green wave is not limited in the financial sector. Private firms in the manufacturing sector are also very active in green transition. For example, SK, Samsung, Hyundai, and Hanwha, have committed to RE100 and ESG management, and plan to establish a climate-friendly global value chain (see Table 3). Hyundai, SK, POSCO, and Hyosung have decided to participate in hydrogen energy projects propelled by the government. As already established global corporations, they will contribute towards increasing climate investment domestically or internationally.

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<sup>16</sup> OECD, Private Sector Engagement to Address Climate Change and Promote Green Growth (Private Sector Peer Learning Policy Brief 4), available at <https://www.oecd.org/dac/peer-reviews/Policy-Brief-4-Private-Sector-Engagement-to-Address-Climate-Change-and-Promote-Green-Growth.pdf>; accessed 22 August, 2021.

<sup>17</sup> Korea's budget for the GND in 2021 is 504.4 billion won, which is about 0.39 percent of GDP. This is much smaller than the proportion of the federal government budget for climate actions in Germany (about 1 percent for last two years).

<sup>18</sup> Reuters, S.Korean pension fund pledges to limit investing in coal projects (2021.05.28)

Table 3. Examples of Commitments to Net Zero in the private sector

Company	Commitment
<b>LG Energy Solution</b>	LG E.S. has committed to sourcing 100% renewable electricity by 2030. ( <a href="http://www.there100.org/re100-members">www.there100.org/re100-members</a> )
<b>SK Group (SK Hynix, SK Telecom, SK Materials, SK Siltron, SKC, SK Holdings)</b>	SK Group has committed to sourcing 100% renewable electricity by 2050 (for SK Holdings, 2040). ( <a href="http://www.there100.org/re100-members">www.there100.org/re100-members</a> )
<b>Hyundai Motor Group (Hyundai Motor Co., Kia Corp., Hyundai Mobis Co., Hyundai Wia Corp, Hyundai Transys Inc.)</b>	Hyundai Motor Group declared to achieve the RE100 target by 2050 and meet carbon neutrality in the entire process from manufacturing to handling vehicle wastes to contribute to the world's circular economy. (Pulse, 2021.07.08)
<b>Samsung C&amp;T</b>	Samsung C&T announced that the company would exit the coal business. (Reuters, 2020.11.12)
<b>Samsung Fire &amp; Marine Insurance Co Ltd., Samsung Life Insurance Co Ltd</b>	Samsung financial units stated that they will no longer make new investments in coal power-related business and will not invest in corporate bonds issued for the purpose of building coal-fired power plants going forward. (Financial Times, 2020.11.12)
<b>Naver, the largest portal operator in South Korea</b>	Naver said that it will cut its GHG emissions to zero by 2040. (The Korea Herald, 2021.05.28)
<b>Hanwha Solution</b>	Hanwha Solution has committed to sourcing 100% renewable electricity by 2050. (Business Korea, 2021.02.10)
<b>Korea Water Resources Corporation (K-water)</b>	K-water is committed to reach 100% renewable electricity by 2050. ( <a href="http://www.there100.org/re100-members">www.there100.org/re100-members</a> )
<b>KB Financial Group, Shinhan Financial Group</b>	Two largest private financial groups in Korea joined RE100 and declared ESG management. They would exit the coal-business. ( <a href="http://www.newspim.com/news/view/20210104000926">www.newspim.com/news/view/20210104000926</a> )

Obviously, the change has begun. However, given the fact that Korea's transition cost is much larger than that of other economies, reaching net-zero emissions still remains an ambitious goal. The key to its success will be a strong price signal to build a base for a low-carbon green transition (Oh et al., 2021a). Therefore, the presence of a strong carbon price will be the third determinant of K-GND and the achievement of carbon neutrality. If Korea emerges successful in properly setting the carbon price, investors will be motivated to actively join this long-term low-carbon transition.

## Reference

- Hickel, J. (2020). "Is Green Growth Possible?" *New Political Economy* 25(4), 469-486.
- Korea Environmental Institute. (2014). A Study for the 2<sup>nd</sup> Five-Year Green Growth Plan.
- The Ministry of Environment (2019). The 2<sup>nd</sup> Climate Change Basic Plan (reported on October 22, 2019).
- The Ministry of Environment (2020). "Total GHG emissions has increased by 2.5% in 2018 and estimated to decrease by 3.4% in 2019," Report on September 29, 2020.
- GIR (Greenhouse Gas Inventory and Research Center, the Ministry of Environment) (2019). "Korean Emissions Trading System Report (2018-2020)".
- Barbier, E.B. (2010). "How is the Global Green New Deal Going?" *Nature* 464 (7290):832-833.
- Oh, H., Oh, I.Y. and Hong, I.K. (2021a). South Korea's 2050 Carbon Neutral Policy, *East Asian Policy*.
- Oh, H., Kim, J. and Hyon, J. (2017). Korea's approach to overcoming difficulties in adopting the emission trading scheme, *Climate Policy* 17(8), 2017: .947-961.
- Oh, H., Oh, I.Y. and Kim, J. (2021b). A Green Approach for the Pandemic in South Korea, working paper.
- Rödger, S. (2020). The Ambivalent Role of Environmental NGOs in Climate Communication, *Journal of Science Communication* 19(6): 1-9.
- Steiner, S. (2010). How Important is the Capacity of Local Governments for Improvements in Welfare? Evidence from Decentralized Uganda, *Journal of Development Studies* 46(4): 644-661.





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