

ASEM Eco-Innovation Index 2015

Country Report

Republic of Korea

ASEM SMEs Eco-Innovation Center

Contents

Contents	i
Table Contents	ii
Figure Contents	ii
List of Contributors.....	iii
I. Country Introduction.....	1
1. General Information	1
2. National Production Factors	2
A. Institution.....	3
B. Human Resources	3
C. Technology and Innovation	3
D. Infrastructure.....	4
3. Market Structure.....	4
4. Corporate Structure	4
5. Environmental Sustainability.....	5
II. Major Eco-Innovation Status.....	6
1. Definition of Eco-Innovation.....	6
2. Major Eco-Innovation Organizations.....	7
3. Selected Eco-Innovation Areas of Korea.....	12
III. Eco-Innovation Policy Analysis.....	14
1. Eco-Innovation Policy Network and Governance	15
2. Balance in Supply and Demand of Eco-Innovation Policies.....	16
A. Eco-Innovation Supply Side	17
B. Eco-Innovation Demand Side	18
3. Key Role of National Roadmap	20
IV. ASEI Result Analysis	22
V. Eco-Innovation Best Practices.....	25
VI. Comprehensive Analysis.....	27
Appendix	31

Tables

Table 1 Country profile	1
Table 2 Description of major business	9

Figures

Figure 1 National Competitiveness Factors	2
Figure 2 Status in Korea Environmental Secotr Status	5
Figure 3 Overall Environment of Eco-Innovation	14
Figure 4 Major Eco-Innovation Policy-Making Organizations and Intermediators	16
Figure 5 Korea's Eco-Innovation Support Policy-Making Status	17
Figure 6 ASEI Results (Korea)	24
Figure 7 Eco-Innovation Policy Recommendations	28

List of Contributors

Research Coordinator

Kijoo Han, EcoServices Consulting Co., Ltd.

Lead Authors

Eunkyung Jang, EcoServices Consulting Co., Ltd.

Misun Park, Seoul National University

I. Country Introduction

1. General Information



Table 1 Country profile

Categories	Contents
Jurisdiction	- Civil law
Language	- Korean
Population	- 52 million
Income	- GDP per capita: USD 27,970 (2014) ¹ - GDP per capita: USD 34,356 (ppp terms, 2015)
Industry	- Industry structure: 3:39:58
Sustainable Index	- Sustainable social index: 5.33 - Sustainable environmental index: 4.61
HDI	- 0.891, High
Business Environment	- Ease of doing business report 2015: 5 out of 189 (up 2 ranking) - Global competitiveness index 2015: 26 out of 144 (down 1 rankings) - Index of economic freedom 2015: 39 out of 157 (down 6 rankings) - Global Innovation Index 2015: 14 out of 141 (up 2 rankings)

In 2010, Republic of Korea joined OECD DAC and became the first country to become a donor country that used to receive aid. Korea's GDP per capita increased from \$150 in the 1960's to over \$1,000 in the 2000's. As of 2015, Korea is the country with 11th largest economic power in the world (GDP, current price) with the GDP per capita

¹ World Bank website, 2015.12, <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

reaching about \$ 34,356.

Under government's concentrated R&D support and based on the catching up type of research and development, Korea has achieved an unprecedented growth. The scale of R&D support compared to GDP increased from 0.5% in the 1960's to 2.5% in the 2000's. The basis of Korea's such rapid growth is attributed to high education level, which is proven by the fact that Korea's human development index ranks higher than that of Japan as of 2014 and lies in the higher range globally.

In the 90's, Korean government cooperated with the private corporations to promote G7 project, through which Korea was able to create various innovations that became foundation to current success in semiconductor, mobile communication and display industries. However, recent national research projects are not bringing innovative performance that lead to future economic leap despite the investment of 18 trillion Won. In order to increase R&D innovation performance and overcome the limitations of the existing catching up paradigm, Korean government recently announced R&D Innovation Plan and is preparing for the new era of leap for technological innovation.

2. National Production Factors

Korea's national competitiveness was evaluated to be the 26th among 144 countries. In more detail, it was ranked in the 20th place for basic production factors, 25th place in the efficiency improvement area and 22nd place in the innovation and enhancement area (WEF, 2015).

On the other hand, innovation index of Korea is showing a consistent increase as it scored 14th place among 141 countries compared to 16th place in 2014 and 8th place in 2013. Innovation area was in 15th place and the production area was in the 11th place.

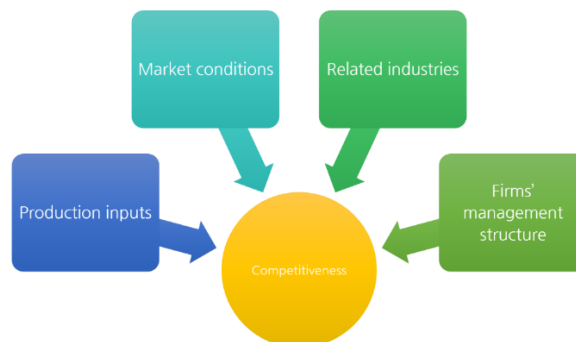


Figure 1 National Competitiveness Factors

A. Institution

Compared to other areas, institution was in the 82nd place among total of 144 countries. Property rights and intellectual property rights act as safety devices that ensure economic performance without risking technologies achieved through eco-innovation being stolen or copied, but Korea was ranked in the 64th and 68th place for the property rights and intellectual rights, respectively, which is lower than those of countries with similar economic size. In addition, public confidence about politics, decision-making transparency, and legal framework efficiency for new regulations came out to be quite low. The burden of government regulations that companies feel was very high, in the 96th place, and companies' ethical conduct came out to be very low, in the 95th place. The efficiency of board of directors, or the corporate governance structure that acts as internal determinant of eco-innovation, was in the 126th place, conveying high inefficiency (WEF, 2015). However, the quality of regulations came out to be relatively high and even improved from the previous year (INSEAD, 2015).

B. Human Resources

Korea's Elementary Education rate is 99.1 %, which is extremely high compare to other countries, but the quality of Elementary Education was in the 44th place, which is relatively low. The rates for higher education and college education were 97.2% and 98.4%, respectively, and that for college education is second highest in the world. Still, the quality of education system was found to be low (WEF, 2015). Among the total college graduates, 31.1% were found to have studied science-technology, showing higher human pool for technology area. R&D expenditure per GDP was 4.25, second highest in the world, and number of researchers per population was 5th highest in the world. Research competency of top universities ranked in high place and showed high level of competency in human resources in the science and technology area (INSEAD, 2015).

C. Technology and Innovation

Knowledge creation and patent creation by domestic resident per GDP of Korea were found to be the highest in the world. The ratio of high-tech manufacturing companies was 53.6%, which is the 6th highest in the world (INSEAD, 2015). On the other hand, availability of advanced technology and technology absorption by corporate stayed in the mid-level, while direct foreign investment and technology transfer were relatively low (WEF, 2015).

D. Infrastructure

Korea's infrastructure for ICT sector came out to be the highest in the world and general infrastructure also came out to be high. However, energy usage compared to GDP, environmental performance, and ecological sustainability that contains environmental management certification came out to be relatively low, suggesting insufficient infrastructure for the transition to a green economy (INSEAD, 2015).

3. Market Structure

High level of market competition in the area was observed, as well as the market dominance of few corporates, despite moderate efficiency of anti-monopoly policy, as it ranked in the 120th place among 144 countries. This characteristic is especially noticeable since Japan, a neighboring country, was ranked in the 2nd place, showing extremely low level of monopoly. Incentive effectiveness of tax credit, which induces investment, appeared to be low (WEF, 2015). Investment environment for the market was in good condition, with relatively high credit rating. GDP ratio of venture capital, which is very important in eco-innovation, was observed to be in the middle (INSEAD, 2015). Export-centered economic development showed greater scale of overseas market, compared to the domestic market. Total GDP ratio for export and import came out to be 55% and 50.9%, respectively, showing higher dependence on the overseas markets (WEF, 2015).

4. Corporate Structure

Advancement in the business, shown through superior competitiveness, range of value chain, control over global share, and sophistication in the manufacturing process and marketing strategies, appeared to be moderate (WEF, 2015). GDP of R&D expended by private corporate was second highest in the world and the total R&D was 75.7%, which was the highest in the world. R&D expenditure in overseas was relatively low but the import of high-tech and loyalty payment was high. There was high level of joint research between universities and industries (INSEAD, 2015).

5. Environmental Sustainability

Environmental Sustainability

Sustainability adjusted GCI of Korea, announced by the World Economy Forum (WEF), was ranked in the 22nd place in 2014, among 113 countries. The sustainability adjusted GCI is calculated by applying major indices of environment and social sectors to the economic index measured by the WEF. Environmental sustainability adjusted GCI is composed of the stringency and enforcement of environmental regulation, incompliance to international treaties, water stress, water resource treatment, carbon intensity, fish resources, forest coverage, fine dust concentration and natural environment quality.

Stringency and enforcement of Korea's regulations were in the 46th and 39th place (among 113 countries), respectively, which are in the mid-range. In contrast, incompliance to international treaties came out to be high, in the 13th place. Water stress was in the 95th place; water resource treatment and carbon intensity were in the 15th and 56th place, respectively. Fish resource was in the 11th place; forest coverage was in the 44th place; fine dust concentration as in the 108th place; and the environmental quality was in the 64th place.

Environment Performance



Figure 2 Status in Korea Environmental Sector Status

II. Major Eco-Innovation Status

1. Definition of Eco-Innovation

In relation to eco-innovation, Korean law defines green growth, green technology, green industry, green product, green life, and green management. This law is subdivided into smaller sections according to the scope of eco-innovation. ‘Green technology,’ ‘Green technology’ and ‘Green management’ define product eco-innovation in the supply side, process eco-innovation, and the scope of organization and market eco-innovation, while ‘green life’ defines demand side and ‘green industry’ and ‘green growth’ contains definition of green economy through eco-innovation. The terminologies defined in the law are as follows.

- “Green technology refers to the technology that minimizes emission of greenhouse gas and contaminants by preserving or making most efficient use of energies and resources throughout the entire process of social, economic activities and includes greenhouse gas emissions technologies, efficient energy utilization technology, clean production technology, clean energy technology, resource recycling and eco-friendly technologies (including related convergence technologies), etc.”
- “Green product refers to the products that minimize emission of greenhouse gases and contaminants or the investment of energy and resources.”
- “Green management refers to a way of management undertaken by a corporate to preserve and efficiently use resources and energy in its business activities and to minimize emission of greenhouse gases and contaminants, while fulfilling social and ethical responsibilities.”
- “Green life refers to preserving energy and minimizing contaminants by recognizing seriousness of climate change.”
- “Green industry refers to all industries that provide goods or services that can help improve environment and enhance efficiency of energy and resources to achieve low carbon green growth in economy, finance, construction, transportation, logistics, agriculture, forestry and marine products and tourism.”
- “Green growth refers to one that is achieved in balance with economy and environment when energy and resources are being used efficiently to reduce environmental damage and new growth engine is found through development of clean energy and green technology to create new jobs.”

2. Major Eco-Innovation Organizations

In 1995, ‘Law on Environmental Technology Development and Support’ was enacted, under which Korea Environmental Corporation, Sudokwon Landfill Site Management Corporation, Korea Institute for Advancement of Technology (KIAT), Korea Evaluation Institute of Industrial Technology (KEIT), Korea Institute of Ceramic Engineering and Technology, Korea Testing Laboratory (KTL) and special production technology research centers were established and foundation of private environment venture companies were supported. In particular, the KIAT 1) researches and studies policies and technologies to foster environmental technologies and industries, 2) discovers and supports promising environmental industries, 3) activates investment for environmental industries and does financial support works, 4) promotes demand for environmental services, such as environmental technology, environmental facilities, environmental products, environmental finances and related consulting, 5) researches and studies localization of Korea’s environmental technologies, and 6) prepares foundation for eco-innovation support by specifying businesses on climate change training and PR.

Green technology development is supported by "Technology Development Promotion Act" and "Industrial Technology Innovation Promotion Act," and prototyping and release of the developed technologies are supported by relevant Acts. Through “Promotion of Green Product Act,” legal basis was laid for purchasing of eco-friendly, eco-innovation products of public institutions.

Similar to other countries, Ministry of Environment and Ministry of Trade, Industry and Energy are the authorities that establish and enforce policy measures to promote eco-innovation in Korea. South Korea’s eco-innovation has complexity in the way it is approached as it is sometimes used to respond to international trade barrier or the demand for environmental technology in North America or Europe and sometimes used to ease the burden on the environment as a means of dealing with the environmental policy. STEPI and Korea Institute for Industrial Economics and Trade are the research institutions in charge of the policy measures to achieve Korea's green growth strategies and support corporations to achieve technological innovation for projects like Techno Park, industrial complex, etc. Since Korea Environmental Industry & Technology Institute is under the Ministry of Environment and is in charge of operating policies that support corporate activities, it has a clear direction in regards to implementing eco-innovation policies between the Ministry of Environment and the Ministry of Trade, Industry and Energy. In addition, it carries out research support and business management support at the same time, while also operating and supporting environmental labeling and carbon labeling related to the green market, to promote eco-innovation.

A notable part in the supporting policy institutions is that Korea's eco-innovation policies are specified within the scope of work of affiliated organizations of the Ministry of Environment and municipalities, and are supported with specific goals. The OECD report (2011) mentioned the need for an approach that switches attention to the beneficial part of the existing policy focus on green technology itself. On this note, the policies that support a corporate's technological innovation are being enforced in techno parks and municipalities of the regions and supporting R&D of small and medium-sized enterprises in the area. Hence, it seems necessary to focus on the role of municipalities and regional techno parks for the expansion of eco-innovation policies.

Main Policy Actors and Policy Mediators

Major policy actors in Korea are the Ministry of Environment, Ministry of Trade, Industry and Energy, Ministry of Future Creation Science, and Ministry of Land, Infrastructure, and Transport from the central government departments; and Korea Environment Corporation, Korea Environmental Industry and Technology Institute, and Energy Corporation from the affiliated organizations; and Science and Technology Policy Institute Korea Industrial Research Institute from research institutes.

Ministry of Environment (ME) is the most important ministry that is responsible for environmental protection and pollution prevention, and manages affiliated organizations related to environmental technologies.

“Korea Environment Corporation (KECO) was founded in 2010, when the Environmental Management Corporation and Korea Environment and Resources Corporation were merged. Its legal basis is defined as the following by the Korea Environment Corporation Act: Korea Environment Corporation shall contribute to eco-friendly development of Korea by facilitating environmental pollution prevention, environment improvement and resource recycling and promoting effective operation of greenhouse gas reduction programs to respond to climate change.”

The major duties include: respond to international treaties about environment issues, such as climate change and greenhouse gas emission reduction; develop and support policies related to environmental improvement and resource recycling; restrain outbreak of waste and circulate its use and eco-friendly processing business; install and operate environmental complexes for waste/sewage treatment facilities and waste-to-energy plant; test/analyze/toxicity test/evaluation manage environmentally harmful chemical substances; install and operate control center and environment monitoring network for air and water; and support creation of eco-friendly cities that minimize carbon production.

Korea Environmental Industry Technology Institute (KEITI) was founded as a corporate body of Korea Institute of Environmental Science and Technology (KIEST) and KOECO, based on the laws related to supporting environmental technology development enacted in 2005. In 2009, a part of the above law was revised and the two institutions were merged to form Korea Environmental Industry Technology Institute. It shares its vision of realizing environmental welfare, in which environment and economy co-exist with the general direction of eco-innovation. The organization's goal is to develop environmental technologies, nurture environmental industries and expand green lifestyle. In Korea, it performs the most critical role in practicing eco-innovation in the below major business areas: environmental R&D, environmental industries, overseas expansion, environmental specialists, environmentally friendly marks and certifications, and environmentally friendly lifestyle and safety welfare support projects.

Table 2 Description of major duties of KEITI

Major Business	Description
Environment R&D	<ul style="list-style-type: none"> -Develop global top environmental technologies -Develop advanced technologies in environment industry -Develop public technology based on environmental policies -Develop technologies for environmental services -Future promising businesses -Develop soil and groundwater pollution control technology -Develop CO₂ storage environment management technology -Develop new technologies to converge environment -Climate, waste resources, life sympathy, birds projects -R&D performance expansion project
Promote Environmental Industries	<ul style="list-style-type: none"> -Financial support -Consulting · fostering support -Establishment/venture support -Provision of environmental information
Support Overseas Expansion	<ul style="list-style-type: none"> -Establish master plan to improve environment of the developing country -Support validity testing of overseas environmental projects -Support localization of joint international environment technologies -Export consultation, financial support -Operate international environmental industry cooperation center -Build cooperation network -Provide international information

Foster Environmental Specialists	<ul style="list-style-type: none"> -Specialized graduate school for the professional degrees (Master's & Ph.D.) -Operation of training for the current workers in the environment industry -Operation of training to connect employment of green business -Operate cyber environment practical training system -Support employment at the green business -Exhibition for the environmental industry works
Environmentally Friendly Marks and Certifications	<ul style="list-style-type: none"> -Environment mark certification -New technology certification · technology verification -Certification for carbon labeling -Green certification -Product environment level test analysis -Qualification assessment for environmental impact assessor -Operation of environmental information disclosure policy
Environmentally Friendly Lifestyle and Safety Welfare	<ul style="list-style-type: none"> -Operation of green card policy -Distribution and expansion of eco-friendly lifestyle and products -Policy support for chemical substances · risk-prone products -Environmental health, welfare and stable policy support

Ministry of Trade, Industry and Energy (MOTIE, former Ministry of Knowledge Economy) is in charge of works related to industry, trade, energy and resources. MOTIE supports industries focused on innovation and establishes policies related to energy conservation, alternate energy, energy security and other domestic or international resources.

Ministry of Land, Infrastructure and Transport (MOLIT) supports the eco-innovation approach for the system related to architecture and urban planning.

Korea Energy Agency (KEA, former Korea's Energy Management Corporation: KEMCO) supports the following areas related to energy: improving energy efficiency, responding to climate change, renewable energy, and reducing household energy. In particular, energy efficiency improvement is being supported in many segmented and detailed areas. In industry, building, transportation and equipment areas, too, the EnMS, energy retrofit fund, management of companies specialized in energy conservation, diagnosis and certification, indication of energy consumption efficiency grade for automobile and high efficiency energy material verification businesses.

Ministry of Science, ICT and Future Planning (MSIP, former Ministry of Education, Science and Technology: MEST) performs tasks related to development, convergence and innovation of research and development of scientific technologies. The MSIP is in charge of national planning, adjustment and evaluation of science and technologies.

Although it does not have policies focused on eco-innovation, like Ministry of Environment or Ministry of Trade, Industry and Energy, it supports basic science, such as technology convergence, space industry, and atomic energy.

Science and Technology Policy Institute (STEPI) analyzes overall issues of economic society related to scientific technological activities and contributes to the establishment of scientific technological policies. In 1987, after Center for Science and Technology Policy = (CSTP) was established as an affiliate of Korea Advanced Institute of Science and Technology (KAIST), it went through various changes to become the influential research institution in the present date. It is an important organization that preforms policy researches by approaching eco-innovation in industries. Recently, Ministry of Science, ICT and Future Planning proposed a way to merge STEPI and KISTEP into KISTEP for the budgetary innovation. The major projects of the STEPI are as follows:

- Analysis and research on the R&D activities of science and technology and technological innovation
- Development of alternative to science and technology policy & research and advice on establishing technology management strategy
- Interdisciplinary research on the interaction of science-technology and economy-society
- Regional cooperation in science and technology & research and analysis on global trends in international cooperation and science and technology policies
- Commission, consignment and collaboration of research service with government, industry, academia and foreign institutions
- Promotion, dissemination and training of research results

Korea Institute for Industrial Economics & Trade (KIET) aims to become a think tank for the development of Korean industries and to propose future vision by analyzing structural changes in the world industry. It has conducted industrial researches on the development direction of environmental businesses, green competitiveness, and green growth.

Korean Agency for Technology and Standards establishes national industrial standards related to environment and performs technological assessment. Its major responsibility is to ensure compliance to international standards and inspect/verify quality of industrial products and new technologies.

Korea Institute of Industrial Technology (KITECH) researches traditional production technologies and converged technologies of IT and NT. In relation to the eco-innovation, it supports resource savings, energy efficiency, process optimization and distribution of practical skills. In particular, Korea National Cleaner Production Center (KNCP) within the KITECH operates dissemination and diffusion of clean production systems and green

business partnerships, local eco-innovation business, green business model projects, eco-industrial park construction project, and clean production education.

Korea Environmental Industry Association (KEIA) was established in 2012 by the ‘Environmental Technology and Environmental Industry Act,’ which was enacted in 2011, to foster environmental industries. It acts as a window to the institutional needs to the environmental industry companies and performs projects to remove barriers to business process, facilitate information exchange between related networks and overseas expansion.

Jeju Energy Corporation (JEC) was established in accordance with the special law for installation of Jeju Special Self-Governing Province and creation of free international city. It executes wind energy businesses and public management of wind energy resources and performs 「Carbon Free Island Jeju by 2030」to realize energy independence of Jeju region, and activate regional economy and nurture wind energy industry as a new growth engine industry².

3. Selected Eco-Innovation Areas of Korea

Major Areas of Eco-Innovation

South Korea has announced seven new growth engine industries³ and 27 green technology industries⁴ related to Framework Act on Low Carbon Green Growth. Considering the competitiveness in the international market, photovoltaic, fuel cell, LED, and green cars are associated with green cluster industry.

The national awareness of the importance of eco-innovations that lead green growth has expanded to 105 complexes in 12 regions in 2015 since the test demonstration of Eco Industrial Parks (EIP) in Pohang, Ulsan and Yeosu in 2003. Further to the EIPs, which were promoted as a part of resource recycling, green industry innovation cluster, including fuel cells, photovoltaics, LED and green car, is being promoted to ensure green industry competitiveness.

In Korea, a series of manufacturing plants was constructed and the distribution of household fuel cell is being supported by policies since the completion of POSCO-FCE Alliance in September, 2008, which was the world’s largest and Asia’s first fuel cell manufacturing plant for power generation. This provider-led market is formed in the power generation area, which is undergoing gradual development as it is expected to have mass supply after 2020.

2 <http://www.jejuenergy.or.kr/>

South Korea has not been leading the global market in the eco-innovation industry compared to other innovation-driven industries, such as IT industry. Europe and North America have been leading the renewable energy industry and China has been focusing national support on eco-innovation, making Korea reluctant to invest on the field. Korean companies will need innovative approaches to dominate the new market in a new eco-friendly market.

Eco-Innovation Status in Renewable Energies Field

Climate change and energy security issues have facilitated eco-innovation in the energy sector. In all areas of energy supply and consumption, efforts have been made to promote energy efficiency and alternative energy sources. In the supply sector, the proportion of renewable energy was increased through the feed-in tariff policy and the RPS system. In the demand sector, there was an attempt to increase portion of renewable energies and improve energy efficiency in companies and households. Energy efficiency was improved through companies' voluntary energy target management system and greenhouse gas trading scheme was made official in 2015. The private sector has made general subsidies for renewable energy supplies, but the amount was insufficient to convert the full rate and the size of the market was not large enough.

In the meanwhile, the development direction to switch the city into renewable energy in some local government units was established. Jeju Special Self-Governing Province has set up a vision of "carbon-free island 2030," promoting global eco-platform projects such as renewable energy storage system (ESS), fuel cell environment-friendly power generation business, eco-friendly cars, etc. By 2030, they plan on bringing eco-friendly cars to all of Jeju. It includes business strategy related to supply and market. Such clear presentation of market potential will become a definite incentive for Korea enterprises.

Korea is currently a follower to the advanced European countries in eco-innovation. The market share of renewable energy is low but under government support, it is approaching the market with vision progressively. In order for the domestic companies to demonstrate the potential of the future market and to be equipped with competitiveness required in the market, it will be necessary to come up with strategic plan for supply and demand in the national level.

III. Eco-Innovation Policy Analysis

Along with economic and social areas, where eco-innovation takes place, deciding factors of implementation and expansion of eco-innovation are related in a system, as shown in the below figure, for the national policy and environmental resources areas. ASEM eco-innovation index considers political support of the government as one of the input areas for the implementation of eco-innovation and measures it as ‘eco-innovation supporting environment.’ Specific indicators for ‘green R&D expenditure of government,’ ‘implementation of environmental regulations,’ ‘green technology investment environment,’ and ‘investment on small and mid-size enterprises for green innovative technologies’ reflect government’s regulatory and economic support for small and mid-size enterprises.

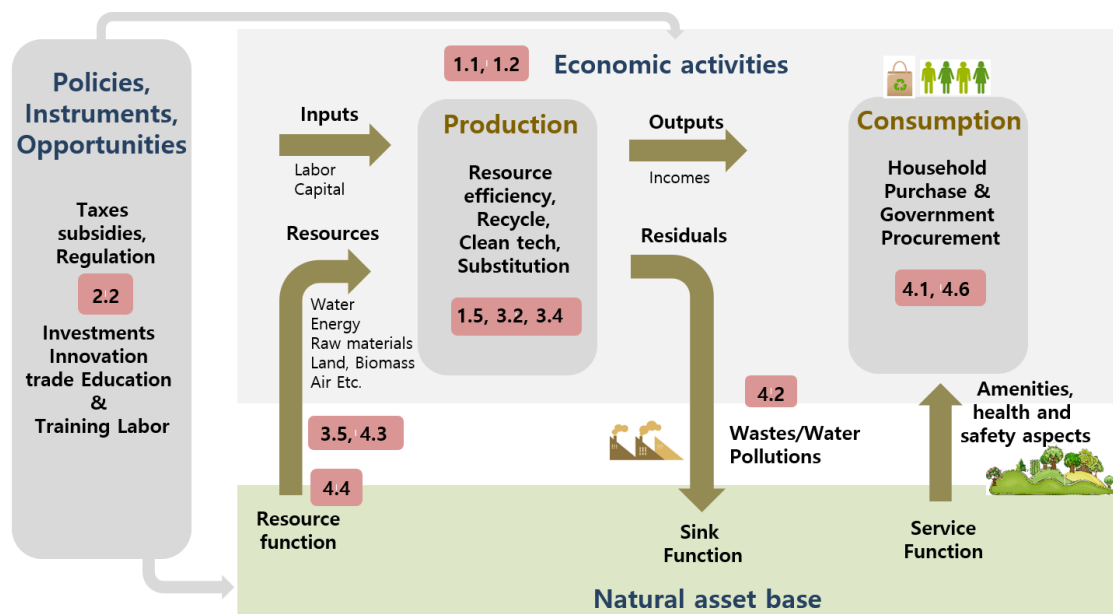


Figure 3 Overall Environment of Eco-Innovation

In the present chapter, governance, balance and role of eco-innovation policies were analyzed to examine the government’s political efforts in more depth. In the governance part, activities and roles of the major institutions that support eco-innovation were analyzed; for balance, the relationship between the policies for supply and demand was analyzed. Lastly, roles of national regime, national roadmap and related laws in establishing eco-innovation policies of Korea were analyzed.

1. Eco-Innovation Policy Network and Governance

Governance for eco-innovation can be explained in terms of structure and procedure when a government is performing tasks related to eco-innovation policies. Eco-innovation policy tasks include prioritization, cooperation with various organizations to support eco-innovation, assessment of related issues and revision of plan by monitoring. In Chapter 2, organizations that perform tasks related to eco-innovation are introduced and their policy measures are studied for policy analysis in Chapter 3 (attached table).

In many countries, eco-innovation is supported by the ministries that are in charge of environmental policies and technological development and innovation and it is the case in Korea, too, as Ministry of Environment and Ministry of Trade, Industry and Energy are in charge. Though eco-innovation policies are related to environmental policy and industrial policy, they are approved differently. While the Ministry of Environment aims to make transition to green economy by improving overall industrial characteristics, the Ministry of Trade, Industry and Energy views it as one market and one industry, in order to build competency and strategies to respond to international regulations. Ministries related to regional development or public infrastructure is also related to eco-innovation, so Ministry of Land, Infrastructure and Transport is in charge of the relevant eco-innovation area. Sometimes related works are taken care of by inter-agencies or Energy Management Corporation or Korea Forestry Promotion Institute, without going through Ministry of Environment. On the other hand, the Ministry of Environment, Ministry of Trade, Industry and Energy and Ministry of Land, Infrastructure and Transport cooperate to operate institutions for improvement in renewable energies of buildings or energy efficiency. The role of institutions under the Ministry of Environment, or the Korea Environmental Industry & Technology Institute, is sometimes considered more important and these policy enforcement tasks are completed by the related institutions.

Though Korea was not included in the cross-national eco-innovation policy initiative like ETAP of Europe, it was influenced by the OECD Summit and UN agencies and global NGO in Korea office is supporting Korean companies for the implementation of eco-innovation. For example, ICLEI in Korea is supporting eco-innovation in local governments. On the other hand, Jeju Island established Jeju Energy Corporation to build foundation for business and create independent agency for related projects.

Beyond performing eco-innovation, Korea is setting a new growth direction for green growth, promoting the establishment of GGGI international organizations to facilitate

sustainable development and green growth, and is supporting green growth in the developing countries.

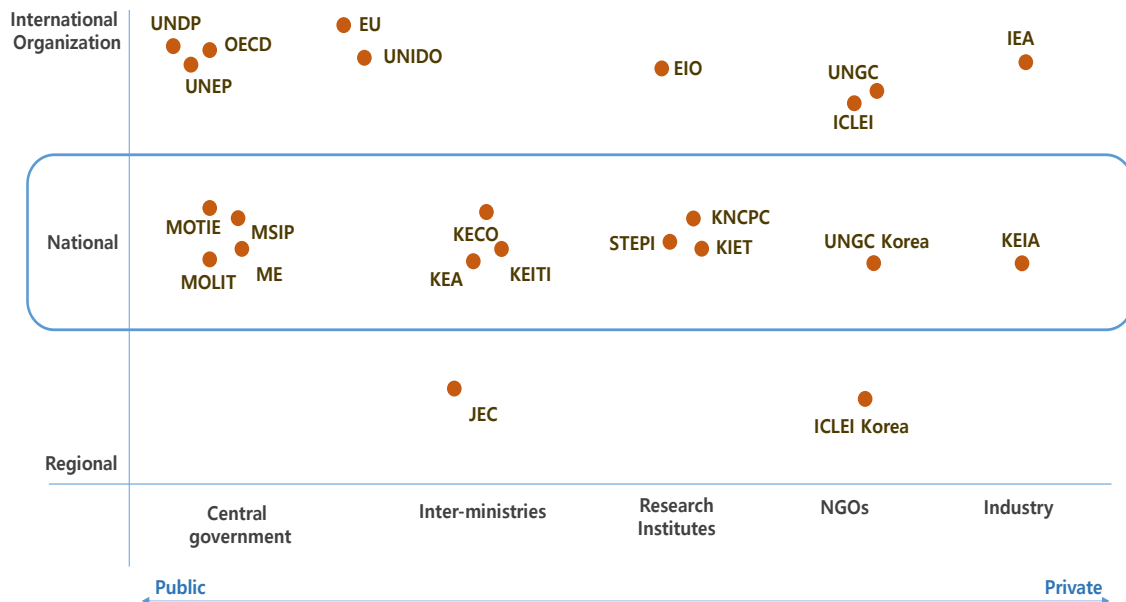


Figure 4 Major Eco-Innovation Policy-Making Organizations and Intermediators

2. Balance in Supply and Demand of Eco-Innovation Policies

Eco-innovation policy consists of incentives that facilitate investment and market demand for the supply sector such as R&D technology. For the efficiency and effectiveness of the policy, it is necessary to operate an integrated support system for both sectors³. South Korea also has a higher demand of policy support, as below, but the supply sector also showed overall high level. In addition, ‘Carbon Free Island 2030’ of Jeju Island passed the positive signals of market demand to associated companies by creating a demand market. South Korea's eco-friendly market is divided into former and latter areas. Challenges in the ‘latter’ area, which is already dominated by Europe, Japan and North America, call for massive investment because of uncertainties in the market. As China has also succeeded in seizing the global market with the government’s intensive support, it seems difficult for Korean companies to actively get involved in the existing market. As such, showing government-initiated potential market will convey positive message to corporations. Companies will be able to

3 OECD, 2011, Better policies to support Eco-innovation, p. 33

produce products that reflect actual demand of the market and contribute to improving the related capacity of the market.

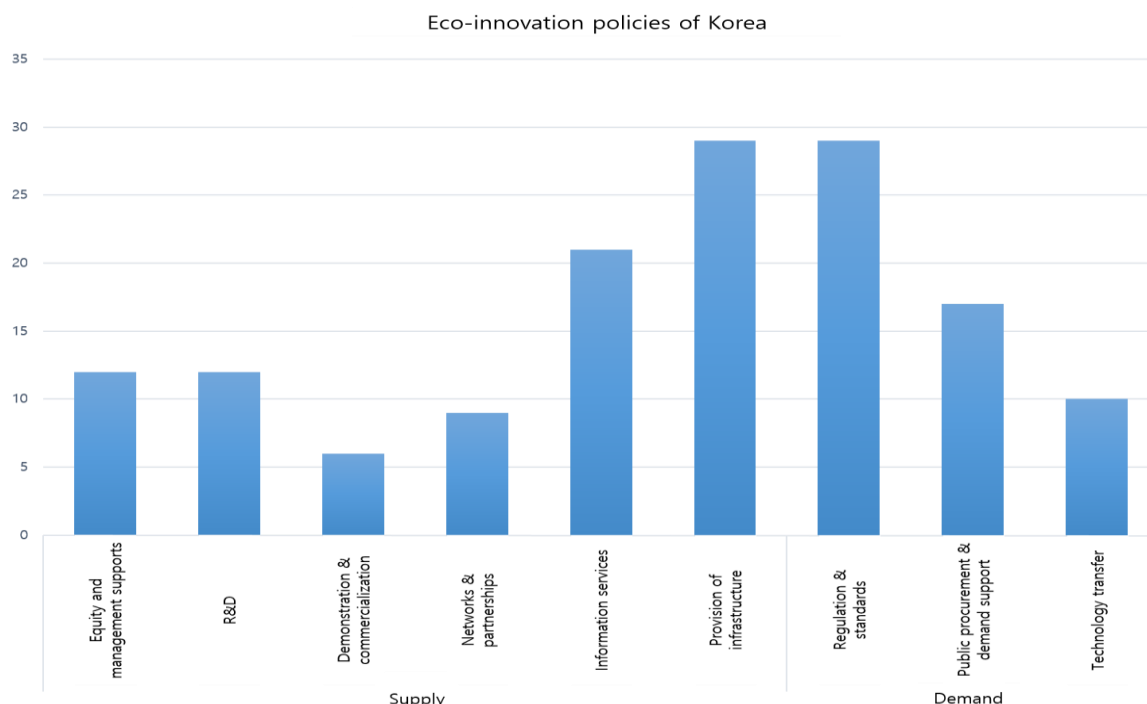


Figure 5 Korea's Eco-Innovation Support Policy-Making Status

A. Eco-Innovation Supply Side

South Korea is supporting eco-innovation in the supply side, which is represented by the green technology R&D, with capital and management, R&D, prototyping and commercialization, networks and partnerships, and information related infrastructure services. The management and R&D are provided with massive support from the government, as well as public procurement and green growth. In particular, information services that make overall conditions favorable and commercialization support for infrastructure are vulnerable areas in the supply side. Realizing this, there are many detailed policies that are established to support eco-innovation of small and mid-size enterprises.

Through environment policy loans, corporate facility and operation are being supported to foster recycling industry, the supply of natural gas facilities, and environment industry. In the energy sector, especially, energy diagnosis and management of small and mid-sized enterprises are supported, as well as their international certification to guard against environmental regulation of international markets.

Based on global top environmental technology development project and environmental industry advanced technology development project, more than 12 project areas are being provided of R&D support. Technological support is being carried out not only in the manufacturing sector but also in the environmental service area, future-promising environmental technology, and new environmental convergence technology development project, which targets new markets. Prototyping and commercialization are the areas that are often left out in the policy support and funding, unlike technological support and market incentive policy. By raising awareness in these areas, Korea is providing support for environmental policy fund, environmental business development and investment attraction.

Support for building networks and partnerships is one of the areas that are easily done in formality but hard to deal with. In order to help companies, build networks and partnership with shared interest, conference and environmental fair are being hosted every year, through which council operations, collaborative environment mentoring support, green-up program for the SME, and co-prosperity of the large, medium and small enterprises are supported.

In the supply side, Korea operates the most number of programs in information service and infrastructure areas. Taking advantage of the competitive ICT, it has established portal sites and DB that provide related information and operates exhibitions, conventions and educational programs in balance. A specialized information system has been created to support overseas expansion and provide overseas market information and green investment. In the infrastructure area, many graduate programs are in operation to train highly talented personnel and provide general professional development opportunity. Environmental industry venture support center and associated employment program are in operation, as well as policy development project and the training program to strengthen local capacity for energy. Lastly, collective energy projects support improvement in resource usage efficiency within the industrial complex and the renewable energy town.

B. Eco-Innovation Demand Side

Demand for eco-innovation sector is an important part of the incentives for enterprises to take initiative to bring innovation in eco-friendly direction. Optimistic outlook for the demand of future eco-friendly products serves as a determining factor that induces technological eco-innovation. However, political commitment from the government and the international community is required to increase the incentives of the market because the demand market alone is not strong enough to lead the eco-innovation of

enterprises. South Korean government has introduced a variety of policy measures to increase the incentive function of the market.

The greatest feature in the demand policy in Korea is the moderate regulation that invites voluntary participation. Certification-based policies, rather than obligatory regulations, are being operated in every department and organization that is involved in eco-innovation. In the demand side, regulation and standards have the most number of policies and ministries and institutions operate relevant policies on their own.

Regulatory standards that facilitate eco-innovation include standard for contamination emission and waste treatment, such as Renewable Portfolio Standard (RPS), Renewable Portfolio Agreement (RPA), Renewable Fuel Standard (RFS), Renewable Heat Obligation (RHO), Effective Energy Management Strategies for Public Building Sector, and Average Fuel Economy for Automobile in the energy area.

Related programs include greenhouse gas emissions trading scheme, Standby Program, greenhouse gas and energy target management system for a building, carbon-neutral program, and greenhouse gas and energy target management system. The energy area requires submission of demand plan and utilization, which include the building energy savings plans and energy use reporting system.

The certification system is operated by sound means. Institutions are supported of incentives and operated so as to enable companies to improve voluntarily. The labeling system that provides environmental information has been particularly used widely, along with certification system. Typical carbon labeling scheme is in operation, along with building energy efficiency rating, tire energy efficiency and labeling system, transport energy efficiency certification system, energy efficiency level indication (banned when not met), renewable energy technology standardization, energy management system certification, environmental mark, green certification system, new technology certification/technology verification system, environmental product testing and analysis, environmental impact assessor qualification, green building certification, and high-efficiency equipment certification.

A separate law has been enacted for public purchase and purchase support. Based on "Act on Encouragement of Purchase of Green Products " and "Green Growth Act," public green purchase system, eco-friendly purchasing system for the industry and high-efficiency energy priority purchasing system for public organization and Public Procurement Service are in operation. Carbon points, carbon cash back schemes, and carbon green mileage system provide incentives for private green consumption. Also purchase subsidy and tax benefits are offered for the distribution of electric cars, as well as campaign to improve awareness for eco-friendly consumption.

Technology transfer support is being operating for overseas markets. It is operating support projects such as environmental R&D technology transfer and intermediary support programs, as well as establishment of master plan to improve environment in developing countries, feasibility studies of international environmental projects, and operation of cooperation network. Within the country, patent technology transfer support program is in progress.

3. Key Role of National Roadmap

Korea has announced Five-Year Plan for Green Growth (2009-2013), aiming to become world fifth largest green power by 2050. With climate change, energy independence, new growth engines, and improvement of quality of life and national status as the three largest strategies, it has been enforcing the following ten strategies: efficient reduction of greenhouse gas, non-petroleum and energy independence, increased adaptation for climate change, green technology development and growth motorization, greening of industry and green industry development, upgrading industrial structure, green economy base composition, creation of green land and transport, green revolution in daily life, and world best national green growth implementation. In order to achieve such a policy objective was conducted with financial support and regulatory policy.

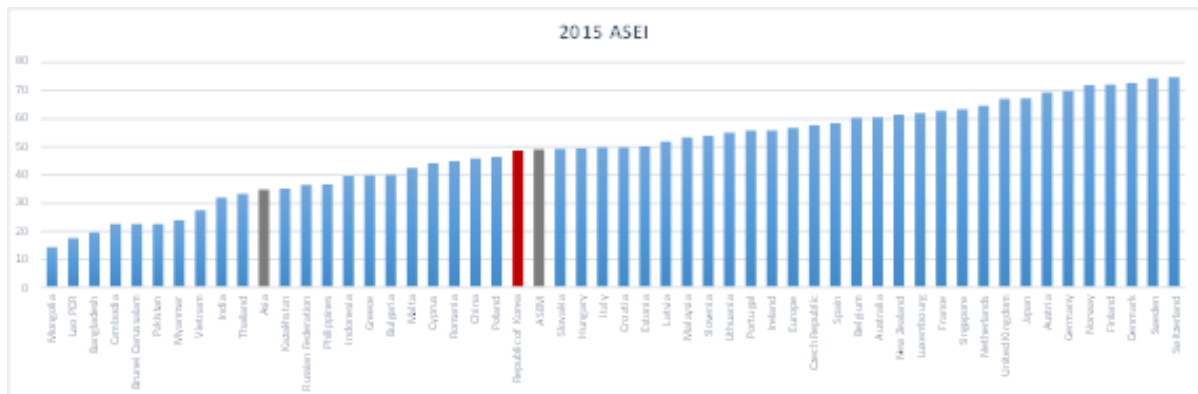
Korea's national legislation and plans serve a pivotal role in establishing related eco-innovation programs (refer to Appendix 1. Policy Support Questionnaire). Centering on the Green Growth Act, supporting policies related to eco-innovation are under way. Laws related to Development of and Support for Environmental Technology and Environmental Industry Act, Framework Act on Environmental Policy, Promotion of Saving and Recycling of Resources, Regulation on Support for Renewable Energy Equipment, Energy Use Rationalization Act, Integrated Energy Supply Act, Renewable Portfolio Standard and Renewable Fuel Standard Management Operation Manual , Act on Encouragement of Purchase of Green Products, Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy, Support For Environmental Technology Act, and Act on the Promotion of the Development and Distribution of Environmentally Friendly Automobiles are becoming the basis of specific programs and system introduction.

Legal foundation for the support in the supply side was established based on the "Development of and Support for Environmental Technology Act " (enacted in 1994, revised in 2015). Through this law, global top environmental technology development and R&D are being supported. In the "Framework Act on Low Carbon Green Growth", enacted in 2011, environmental technology responding to climate change are being

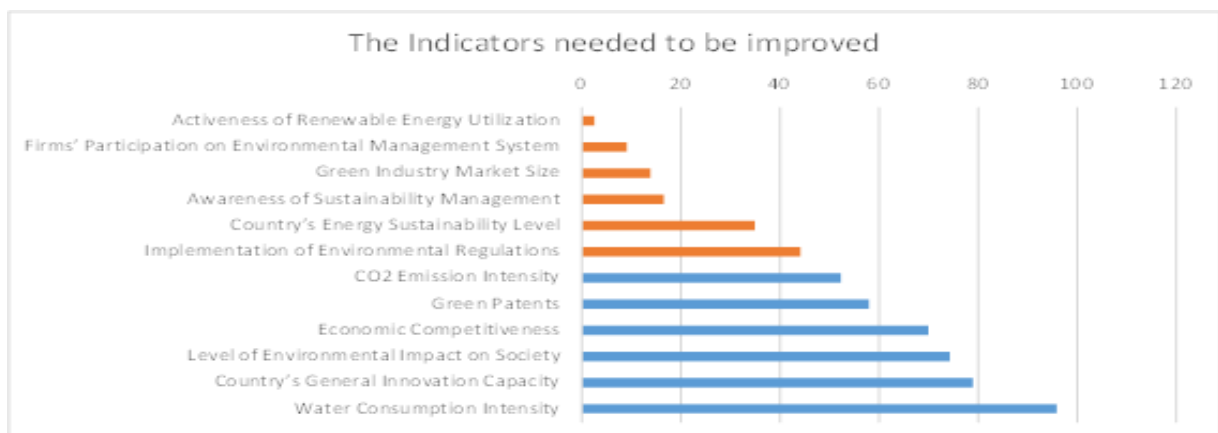
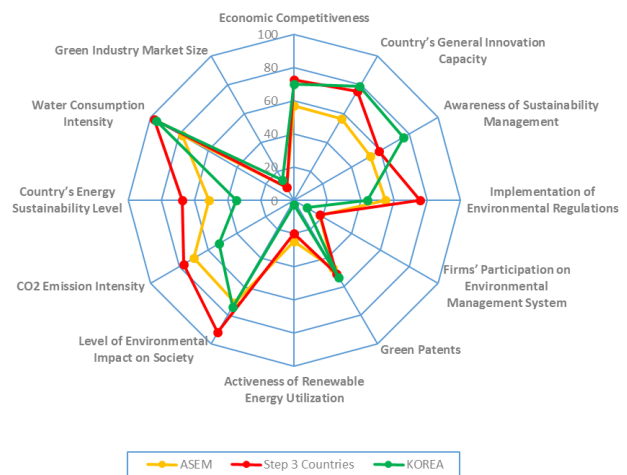
developed. With these laws, " Framework Act on Environmental Policy," "Toxic Chemical Control Act," "Promotion of Saving and Recycling of Resources" are being used to provide financial support and infrastructure for industrial development for eco-innovation in corporates.

In the energy sector, policy measures for renewable energy and energy efficiency improvement are being established in ministries and offices, based on the "Regulation regarding Support of New and Renewable Energy Equipment," "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," "Energy Use Rationalization Act," "Integrated Energy Supply Act," and "Green Growth Act."

IV. ASEI Result Analysis



	Score
ASEI 2015	48.76
Eco-Innovation Capacity	74.88
Economic Competitiveness	69.92
Country's General Innovation Capacity	78.93
Awareness of Sustainability Management	75.79
Eco-Innovation Supporting Environment	44.12
Implementation of Environmental Regulations	44.12
Eco-Innovation Activities	21.80
Firms' Participation on Environmental Management System	9.05
Green Patents	53.81
Activeness of Renewable Energy Utilization	2.55
Eco-Innovation Performance	54.24
Level of Environmental Impact on Society	74.30
CO ₂ Emission Intensity	52.31
Country's Energy Sustainability Level	34.94
Water Consumption Intensity	95.84
Green Industry Market Size	13.81



ASEM Eco-Innovation Index is composed of four evaluation areas of eco-innovation capacity, eco-innovation supporting environment, eco-innovation activities, and eco-innovation performance. South Korea was ranked in the 30th place in the 2015 ASEI, among 51 member countries of ASEM. In contrast to its mid-high placement in 2014, the placement went down to the middle group. In 2014, the capability area was relatively high, and the support environment, activities and performance areas were relatively low. In terms of the evaluation areas, the capability and performance increased significantly (51.80 → 74.88) and (33.04 → 54.24), respectively, while the support environment stayed about the same (44.04 → 44.12), and the activities decreased (31.42 → 21.80).

South Korea has achieved technological innovation with government-led support policies and excellent human resources, enhancing national competency and performance. However, environmental regulation that facilitates eco-innovation came out to be low, resulting in low activity and performance. The 2015 ASEI result was lower than the average of the ASEM countries, because most of the European countries leading the EU are well-equipped with eco-innovation policies, hence have higher performance and activities.

In regards to the underlying factors of eco-innovation, Korea showed low level of management participation and eco-friendly technologies despite innovative development in overall production sector. It seems necessary to discover national infrastructure and new market to make transition to green economy. The lack of competitive superiority, compared to Europe, Japan and other leading countries, deters major Korean companies from entering the green market. They will need to seek new opportunities through the existing advancement in the IT industry, reflect the market condition and international trend, and take systematic approach that closely connects technology, demand and support policies.

In terms of specific areas, eco-innovation capacity was ranked in the 13th place from the total. Within the Asian countries, it was the third, after Singapore and Japan. Among the 28 countries in the same economic group (step 3 countries) classified by the WEF, Korea was in the 13th place. Potential to improve national competitiveness, general innovation capacity, and awareness level of corporate environmental management are included in this category, for which Japan has earned high scores in all areas.

Korea was ranked in the 32nd place, the 6th place within the Asian countries, and 26th place within the same economic group for the eco-innovation. The eco-innovation activity also ranked in the lower range, in the 38th place overall, 12th among the 20 Asian countries, and the 21st place in the same economic group. Detailed indicators in

this area are environmental management participation level, green patents, and renewable energy distribution levels. Both the environmental management participation level and the renewable energy level came out to be low and all of the ASEM countries showed low range of activities. Although renewable energy appeared to be very low in Korea, many policies are in the initial stages and they have great potential for development as to support transition to renewable energies.

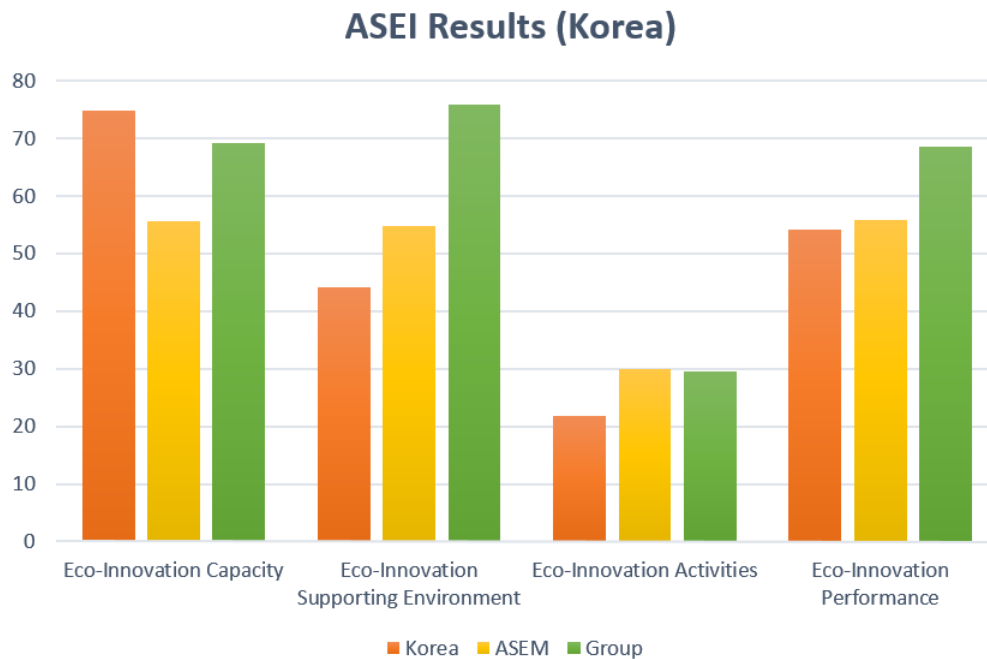


Figure 6 ASEI Results (Korea)


In terms of eco-innovation performance, Korea was ranked in the 33rd place in overall, the 6th place among the Asian countries and 27th place out of 28 countries in the same economic group. South Korea showed relatively low performance compared to the countries in similar stage of economic development but was close to the average of ASEM. Aggregate greenhouse gas emissions and energy sustainability level came out as low, confirming that these are the areas Korea needs to focus on. Energy sustainability in Korea was lower in energy security and environmental energy, compared to energy equity. One of the reasons why environmental energy came out low is the slowing down of natural gas use in industries due to the increase in the price compared to that of the oil in 2013~2014⁴. Aggregate greenhouse gas emissions intensity, too, was low, but the introduction of mandatory greenhouse gas trade system in 2015 is expected to establish system to reduce and improve greenhouse gas.

⁴ http://www.keei.re.kr/web_keei/

V. Eco-Innovation Best Practices

❑ Combined Heat and Power Plant

- South Korea installed 380MW scale IGCC power plant for clean electricity production
- It shows higher efficiency (42%) than the existing IGCC efficiency (38~40%), and is expected to increase to 48-50% if the large-capacity and high-performance equipment in gas turbine technology is successful
- Unlike conventional coal gasification, it applies technology to remove the pollutants before fuel combustion and discharges in LNG level
- Through domestication of clean generation technologies, the technological foundation has been laid for the Korean IGCC construction, as well as that of synthetic natural gas (SNG), clean fuel (Di-methyl Ethel: DME), and hydrogen generation plant. A 50-ton SNG production plant is being built in Gwangyang, Jeollanam-do by Posco and the Integrated Gasification Fuel Cell Combined (IGFC) and Carbon Dioxide Capture & Storage are being developed in conjunction with the coal to liquid (CTL) plant to produce artificial petroleum and liquid fuel.

Category	Description
Business Name	Taeon IGCC Plant Project
Business Purpose	To build a Korean-style IGCC plant and realize design technologies independence to reduce greenhouse gas emissions and achieve renewable energy goals
Plant Type	Integrated Gasification Combined Cycle
Plant Capacity	380W (GT: 230MW, ST: 150MW)
Construction Period	2011.11 ~ 2015. 11 (4 years)
Fuel Used	Coal (910,000 ton annually, 3,000 ton daily)
Total Project Cost	Approx. 1,367.2 billion Won (government subsidy of about 120 billion Won)
Picture	
Major Supplier	Gasification facilities (Doosan Heavy Industries), Oxygen (Doosan Construction/AP), Combined Cycle(GE)
Source	https://taean.iwest.co.kr/build/build_01.asp

❑ Municipal Green Growth

- Technologies and competitive environment related to electric car
- Overall environment of electric car market
- Main challenges related to electric car technologies
- National policy

Category	Description
Business Name	Carbon Free Island Jeju
Business Purpose	To respond to climate change, achieve energy independence, and foster new growth engine for green industry
Business Description	Establishment of Carbon Free Island (completed in 2012.08) -Supply renewable energy for 100% of electricity (diesel→wind energy, solar energy, and power storage system), electric car, smart grid, etc. Plan alternative to renewable energy by 2030, expand distribution of electric car (30% transition by 2020, 100% transition by 2030)
Expected Effects	Achieve national vision for low carbon green growth; prepare nationalization foundation; foster eco-friendly, high efficiency green car industry; and develop smart grid, offshore wind power-related business and technologies to prepare export foundation
Business Period	Carbon Free Island: 2011.11~2013.10 (2 years) Replace 100% with renewable energy: ~2030 Distribute electric cars: ~2030
Source	Carbon Free Island Jeju by 2030 (2012)

VI. Comprehensive Analysis

In the current chapter, barriers of Korea's eco-innovation are discussed and new opportunity areas are proposed. The proposals are made by interviewing experts of the field⁵.

Eco-Innovation and National Competitiveness

Korea's eco-innovation was approached from the new industrial development perspective for national competitiveness rather than mere innovation. Green growth strategies that were enforced in top-down method weakened as the political power changed. Besides, it did not cover broad range to bring change to overall social structure. However, the approaches taken by the municipalities in related industries are noteworthy.

Korea's eco-innovation was developed somewhere in between national competitiveness and environmental regulations. Traditionally, environmental industry has been developed with environmental regulations, waste/ water resources, although the development was restricted to the domestic market and to responding to environmental regulations, mostly. In the international level, the SMEs and small hidden enterprises progressed. Eco-innovation related to energy is divided into renewable energy and energy conservation, in relation to the national energy security and climate change. Energy conservation is further divided into the manufacturing process and energy conserving products. Through the preparation period for the voluntary reduction, it was developed into a mandatory greenhouse gas trade system.

Domestication of technologies in new industries related to renewable energy became the background of not being able to enforce aggressive transition due to lack of national competitiveness. As for the fuel cell area, though it is equipped with international competency, other areas are missing large scale technological development investment. While some overlapping policies are being enforced by the Ministry of Trade, Industry and Energy and Ministry of Environment, it still lacks sufficient investment to further develop related industries. With regards to architecture, eco-friendly material and construction technology are developed to increase energy efficiency. Although many legal regulations and policy measures for energy efficiency have been introduced, those for improving energy efficiency in small and old buildings need to be developed more.

⁵ The authors acknowledge Dr. Jun Lee from the Korea Institute for Industrial Economics & Trade, Dr. Sang In Kang from the Korea Environment Institute and Dr. Tae Woo Roh from Sooncheonhyang University for their valuable comments and inputs.

New Opportunities for Eco-Innovation

Creating added values of ICT-based eco-innovation

South Korea has the world's best ICT infrastructure. Google has recently acquired a company specialized in meters that measure water usage with 2 billion USD. Participation to eco-innovation by an ICT company is not rare anymore. Tesla became successful not as an automobile company but as an ICT company. The greatest potential of eco-innovation is in creating great added value by understanding the supply of eco-innovation and its potential and opportunities. Investment in the ICT company's monitoring business like Google can create value by establishing software foundation. Korea's excellent ICT technology has great potential to lead creative economy by making new discovery of eco-innovation value. It seems necessary for the government to provide political support and vision to facilitate major ICT companies' participation on eco-innovation.

Identification of best practices of developing countries through ODA support

Identification of best practices effectively demonstrates tangible results from potential buyers. Korea's technology development model has leadership to diffuse green growth in Asian countries. Korea's best practices will be used to implement and diffuse eco-innovation in developing countries and to provide business opportunities to Korean companies. For this, Official Development Assistance (ODA) of Korea shall make strategic approach and active investment.

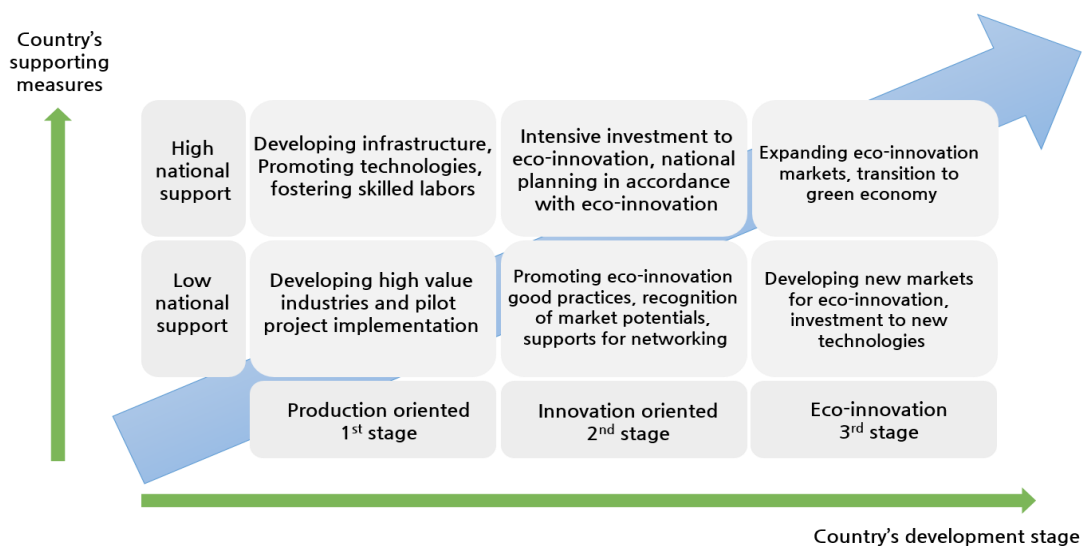


Figure 7 Eco-Innovation Policy Recommendations

Analysis of Driving Factors and Barriers of Eco-Innovation

The OECD report (2011) mentioned that Korea has established a clear policy to support eco-innovation. In this report, the following five points of eco-innovation policies are discussed. First, national strategy about eco-innovation has advantages but also

limitations. Second, from the green technology perspective, the existing innovation shall make transition to environmental benefits. Third, eco-innovation policies are related to industry and competition issues. Fourth, as time goes by, role of coordination will become important and there needs to be a layer between the government, public and private sectors. Lastly, technology transition model focused on eco-innovation is required.

[Appendix Support Policy Table]

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
Supply Side	R&D Support	R&D Fund	· "Development of and Support for Environmental Technology Act" (enacted in 1994, revised in 2015) Article 9 Promotion of the Environmental Technology Development	· Global top environmental technology development project	Korea Environmental Industry and Technology Institute	2011-2020 (10years)	782 billion	O[5]
				· Development of Advanced Technology for Environment Industry Project		2011-2020 (10 years)	451 billion Won	
				· Development of Environmental Service Technology Project		2013-2020	Within 10 billion Won	
				· Promising Green Technology Industrialization Project		2010 ~	23,142 million Won	
				· Soil and Groundwater Pollution Control Technology Development Project		2008-2017 (10 years)	163.1 billion Won	
				· CO ₂ Storage Environment Management Technology Development Project (Development verification and law system management of environmental management technology development for CO ₂ ground geological storage)		2014~2021 (8 years)	41.3 billion Won	
				· R&D result diffusion project - Collaborative environmental technology development support and mentoring - Environmental R&D technology transfer and intermediary support - Environmental technology development result exhibition				
		Collaborative Grant	· According to "Framework Act on Low Carbon Green Growth," develop core technologies in the climate change response part of the environment area to reduce greenhouse gas and adapt to climate change	· Environmental technology development project for climate change response		2013~2020	83.5 billion Won	
				· Environmental Convergence Technology Development Project	Korea Environmental Industry and Technology Institute	2009~	52,224 million Won (matching fund)	
				· Waste-to-Energy Technology Development Project		2013~2020 (8 years)	134.1 billion Won (50~ 70% support)	
			· "Development of and Support for Environmental Technology Act" (enacted in 1994, revised in 2015) Article 9 Promotion of Environmental Technology Development Projects	· Life Sympathy Environmental Health Development Project		2012~2021(10 year)	163.9 billion Won (50~100%	

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
							support)	
				· Demonstration of Bird Inspection & Removal Technology Development		2014~2017	18 billion Won (50~75% support, matching fund)	
	Industry Promotion (Corporate-funded)	Venture Fund		· Foster environmental venture enterprise and entrepreneurship · Support residency in Environmental Venture Technology Business Incubator · Environmental Venture Technology Business Incubator entrepreneurship infrastructure and program support	Korea Environmental Industry and Technology Institute, Environmental Venture Technology Business Incubator			
		Public Fund	<ul style="list-style-type: none"> · "Green Growth Act" Article 21 Green Technology & Green Business Support for Small and Mid-Sized Enterprises · "Development of and Support for Environmental Technology Act" Article 5-2, Clause 4, Item 13 and "Enforcement Decree of the Development of and Support For Environmental Technology Act," Article 16-3, Item 3 · "Environmental Policy Basic Act" Article 56 · "Toxic Chemical Control Act" Article 4, Clause 2 · "Conservation of Resources and Recycling Promotion Act" Article 31, Clause 1 · "Development of and Support for Environmental Technology Act" Article 5-3, Article 6, Article 13-3; Enforcement Decree of the Development of and Support For Environmental Technology Act, Article 17 	· Environmental Policy Financing Support Project	Korea Environmental Industry and Technology Institute			
				· Green Business Development (GBD) Support_Establish Business Foundation			90% government, 10% private	
				Green Business Development (GBD) Support_Promote Business Development			80% government, 20% private	
				<ul style="list-style-type: none"> · Green Business Development (GBD) Support_Attract Business Investment · Investment briefing and conference to attract domestic and international investment 			100% government (indirect support)	
			<ul style="list-style-type: none"> · "Regulations to Support Renewable Energy Facilities" (Ministry of Trade, Industry and Energy Notice No. 2015-153) 	· Financial support for renewable energy facilities, production and operation fund	New & Renewable Energy Center, Ministry of Trade, Industry and Energy			
				<ul style="list-style-type: none"> · Financing Energy Utilization and Rationalization Fund · Install energy-saving facilities, such as waste heat recovery power generation, replacing old boilers, high-efficiency LED lighting, etc. 	Korea Energy Agency			
			<ul style="list-style-type: none"> · Companies registered to the Chairman of Korea Energy Agency (Minister of Trade, Industry and Energy), according to the Article 25 of Energy 	· Financial support for Energy Service Company (ESCO)	Korea Energy Agency			

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			Use Rationalization Act, and Article 30 of the Enforcement Ordinance of the Same Law for the equipment, facility, asset and technical professionals · Energy Use Rationalization Act Article 25 (Support of Energy Service Companies), Article 26 (Revocation of Registration of Energy Service Companies), Article 27 (Restriction of Registration of Energy Service Companies)					
		Tax System Support ⁶	· According to Article 43 (Expansion of Green Building), Clause 3 and Article 54, Clause 8 of “Green Growth Act,” the government may provide financial support or reduce tax for the one of following items (1. Buildings that scored 80 points or more according to Article 14 of the “Green Building Construction Support Act”; 2. Buildings with Green Building Certificate according to the “Green Building Construction Support Act”; 3. Buildings certified with Building Energy Efficiency Rating according to “Green Building Construction Support Act”)	· Tax system support for energy utilization and greenhouse gas reduction	Korea Energy Agency			O[1]
		Management Certification		· Energy Management System (EnMS) Certification	Korea Energy Agency			
		Commercialization Support		· Commercialization of eco-friendly product and service	Korea Environmental Industry and Technology Institute			
	Process Improvement	Support improvement of facilities and equipment		· Support facilities that are designed to reduce greenhouse gas and energy	Korea Energy Agency			
	Organizational	Corporate training		· Operation of environmental industry incumbents education programs	Korea Environmental			

6 According to Article 43 (Expansion of Green Building), Clause 3 and Article 54, Clause 8 of “Green Growth Act,” the government may provide financial support or reduce tax for the one of following items
 1. Buildings that scored 80 points or more according to Article 14 of the “Green Building Construction Support Act”; 2. Buildings with Green Building Certificate according to the “Green Building Construction Support Act”; 3. Buildings certified with Building Energy Efficiency Rating according to “Green Building Construction Support Act”

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
	capacity (Training Support)	support		· Cyber job fairs	I Industry and Technology Institute			
		Consulting and administrative support		· Green-up program for SMEs				
				· Supporting expansion of environmental management in the non-manufacturing industries				
				· Expansion, establishment of foundation and promotion of Environmental Management · Operate environmental management council for each field (construction, health care) · Develop standard manual for environmental management in each industry · Co-operation of promotion week · Host agreement ceremony (Ministry of Environment-participating enterprises-KEITI)				
				· Disseminate and expand eco design				
				· Operational support for the Green Company Appointment System · Provide preferential support to and revitalize green companies · Host Green Company Awards and Green Management International Conference				
				· Green product standard code (country list G2B identification number, distribution standard code) registration support				
				· Provide comprehensive data about environmental industry and technology				
				· Appoint/support excellent environmental enterprise · Strengthening enterprise competitiveness and support branding · Connected support for excellent environmental enterprises				
				· Energy supporter business for SMEs	Korea Energy Agency	2009 ~ onward		
			· Energy Use Rationalization Act Article 32 (Energy Diagnosis, etc.) · Energy Use Rationalization Act Enforcement Ordinance Article 39 (Specification of Criteria for Examination Institution) · Regulations for Energy Diagnosis (Ministry of Trade, Industry and Energy Notice No. 2014-	· Diagnose energy · Operate energy diagnosis system	Korea Energy Agency			

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			236)					
				· Support obtainment of new & renewable energy certification from abroad	New & Renewable Energy Center (Korea Energy Agency)			
	Industrial Support (Network)	Cluster, research park, etc.	· Green Growth Act Article 22 (Institutions Supporting the Construction of Green Technology / Green Industry Cluster or Complex	·				O[1]
			· Integrated Energy Supply Act · Related notices such as technical standards of integrated energy facilities	· Integrated energy supply business	Korea Energy Agency			
		Technology platform and innovation network	·	· Environmental Management Information Portal	Korea Environmental Industry and Technology Institute			
			· "Energy Use Rationalization Act" Article 57, Clause 1 (Energy Use Rationalization and Greenhouse Gas Reduction Business)	· Green Growth Partnership of Large, Medium and Small Enterprises	Korea Energy Agency	2007 ~		
		Support sharing of vision						O[5]
Demand Side	Regulation and Standards	Setting Regulations and National Goals, Emission Trading System, Etc.	· "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy" · "Renewable Portfolio Standard and Renewable Fuel Standard Management Operation Manual" (Ministry of Trade, Industry and Energy Notice No. 2015-155) · "Certificate Issuance and Trading Market Operation Rules" (New & Renewable Energy Center Notice No. 제 2015-1)	· Renewable Portfolio Standard (RPS)	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy	2012 ~ onward		O[1]
				· Renewable Portfolio Agreement (RPA)		~ 2011		
				· Feed in Tariff support project		~ 2011		
			· "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy" · "Renewable Portfolio Standard and Renewable Fuel Standard Management Operation Manual" (Ministry of Trade, Industry and Energy Notice No. 2015-155) · "Certificate Issuance and Trading Market	· Renewable Fuel Standard (RFS)		2015 ~		

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			Operation Rules” (New & Renewable Energy Center Notice No. 제 2015-1)					
				· Renewable Heat Obligation (RHO)		2016 ~		
				· Operation of Carbon-Neutral Program	Korea Energy Agency	2008 ~		
			· “Green Growth Act” Article 46	· Operation of greenhouse gas emission trading system	Korea Environment Corporation	2015 ~		
			· “Green Growth Act” Article 25 - Setting and Managing National Goal for Greenhouse Gas Reduction	· Operation of greenhouse gas and energy target management system		2011 ~		
			<ul style="list-style-type: none"> · “Energy Use Rationalization Act” (enacted in 1979, revised in 2014) · “Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy” (enacted in 1987, revised in 2015) · “Development of and Support for Environmental Technology Act” (enacted in 1994, revised in 2015) · “Act on the Promotion of Saving and Recycling of Resources” (enacted in 1992) 					
		Performance standard, labeling, certification system, etc.	<ul style="list-style-type: none"> · “Green Growth Act” Article 19 - Certification of Compliance of Green Technology and Green Project and Confirmation of Green Enterprise · Green buildings that have been certified as per Article 16 of “Green Building Construction Support Act” · Buildings that have been certified for the energy efficiency rating as per Article 17 of “Green Building Construction Support Act” 	<ul style="list-style-type: none"> · Environmental Certification · New Technology Certification and Technical Verification System · Carbon Labeling Certification · Green Certification · Product Testing & Environmental Analysis · Environmental Impact Assessor Qualification · Operation of Environmental Information Disclosure System · Green Building Certification 	Korea Environmental Industry and Technology Institute			O [1],[5],[7]
	Creation of Demand	Green Demand_Green Procurement and Green Purchase ⁷	<ul style="list-style-type: none"> · “Green Growth Act,” Article 20: Purchase Promotion of Green Products by Public Institutions (Notice on the direct purchase green construction materials and purchasing tips to promote joint procurement of green products) · Act to Promote Purchase of Environmentally- 	<ul style="list-style-type: none"> · Joint procurement of green products system · Eco-friendly procurement support system in the industries · Green market 	Korea Environmental Industry and Technology Institute			O [1],[3],[4],[5],[6]

7 “Green Growth Act,” Article 20: Purchase Promotion of Green Products by Public Institutions (Notice on the direct purchase green construction materials and purchasing tips to promote joint procurement of green products)

· Act to Promote Purchase of Environmentally-Friendly Products (enacted in 2005)

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
		Tax Support	<p>Friendly Products (enacted in 2005)</p> <ul style="list-style-type: none"> · “Energy Use Rationalization Act” Article 15: Energy efficiency rating 1 products; Article 18: excellent standby power products; Article 22: high-efficiency energy equipment and material certified products or equivalent · Certified products for new and renewable energy equipment as per Article 13 of “Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy,” or equivalent · Green marked products as per Article 17 of “Development of and Support for Environmental Technology Act,” or equivalent · Products considered as excellent under “Act on the Promotion of Saving and Recycling of Resources,” or equivalent 					
			<ul style="list-style-type: none"> · Article 22 and 23 of “Energy Use Rationalization Act” about certification and maintenance of high efficiency energy appliances · “Regulations Regarding Promotion of Distribution of High Energy Efficiency Appliances” (MOTIE Notice No. 2015-36) 	<ul style="list-style-type: none"> · Certification of high efficiency energy appliances · Financing and tax reduction of facilities using certified products · Preferential purchasing of high energy efficiency appliances by public organizations · Preferential purchasing by the Public Procurement Service · Recommend use of high efficiency certified products in multi-unit houses or office buildings larger than 3000m², or when building new buildings · Provide support subsidies to install high-efficiency certified products 	Korea Energy Agency, Ministry of Trade, Industry and Energy			
		Domestic demand_R&D procurement	<ul style="list-style-type: none"> · “Development of and Support for Environmental Technology Act,” Article 19,3: Preferential Use of New Technology or Verified Technology 					O [5]
		Domestic demand_facil	<p>Energy Use Rationalization Act “Article 10 ~ 12</p> <ul style="list-style-type: none"> · “Enforcement Decree of the Development of and 	<ul style="list-style-type: none"> · Consultation about Energy Use Plan 	Korea Energy Agency	1991 ~ onward		

-
- “Energy Use Rationalization Act” Article 15: Energy efficiency rating 1 products; Article 18: excellent standby power products; Article 22: high-efficiency energy equipment and material certified products or equivalent
 - Certified products for new and renewable energy equipment as per Article 13 of “Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy,” or equivalent
 - Green marked products as per Article 17 of “Development of and Support for Environmental Technology Act,” or equivalent
 - Products considered as excellent under “Act on the Promotion of Saving and Recycling of Resources,” or equivalent

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
		ity	Support For Environmental Technology Act," Article 20~26 · "Consultation about Energy Use Plan and Procedure" (MOTIE Notice No. 2012-54)					
		Overseas demand		· Establishment of environment improvement master plan for developing countries	Provide 400~600 million Won per country	2007 ~ present		
				<ul style="list-style-type: none"> · Support feasibility studies for international environmental projects · Support international joint localization of environmental technologies · Operate Environmental Industry Export Support Service Center - Export consulting through overseas support group - Create and distribute Guide Book for overseas expansion of environmental businesses · Support export financing of overseas environmental projects - Carbon Fund investment support project · Operating Environment Industry International Collaboration Center (China, Vietnam, Indonesia, Colombia, Algeria) · Support creation of cooperation network - Establish Global Green Business Partnership - Dispatch environment market pioneer group to overseas promising markets · Provide overseas information - Develop and operate Trade and Environment Information Network (TEN) - Online export support 	Korea Environmenta l Industry and Technology Institute			
	Technology Transfer	consulting		<Local Municipalities> · Patent technology transfer support project (Patented technology distribution business) (Daejeon, Daejeon Techno Park)				
		Financial and tax support for technology transfer						
	Private	Green		· Carbon cash back system (Korea Energy Agency,				

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
	consumption support	consumption support		MOTIE) · Carbon point system (local government, Ministry of Environment) · Green mileage system, green card system operation (Ministry of Environment) · Nationwide green campaign (designate eco-friendly consumption week, credit card paper receipt disuse campaign, carbon offset reforestation project) · Promoting eco-friendly consumption and education (smile story blog, teacher training on climate change and eco-friendly consumption)				
			· "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," Article 27	· Solar energy rental business	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
			· Act on the Promotion of the Development and Distribution of Environmentally Friendly Automobiles," Article 15	· Popularization of electric car · Performance testing of electric cars, installation and operation of public charging infrastructure, public relations, and operation of charging infrastructure information system	Korea Environment Corporation			
		Tax support of green products		· Carbon cash back system	Korea Energy Agency, Ministry of Trade, Industry and Energy			
		Subsidy (brochure and purchase subsidy)	· "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," Article 21 (MOTIE Notice No. 2015-153)	· Support distribution of renewable energy to single and multi-unit residencies · Support distribution of renewable energy to buildings	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
		Support awareness improvement	· "Act on Encouragement of Purchase of Green Products", Article 15,2: fostering of green product promotion related institute for	· Nation-wide green life movement · Low carbon, green lifestyle practice expansion plan ⁸	Korea Environmental Industry and			O [2]

⁸ In order to meet mid-term greenhouse gas reduction goals for 2020, need to reduce greenhouse gas in the living practices; detailed, sector-specific plans are created to bring nation-wide movement of green living practices. 2009.08. The Presidential Committee on Green Growth, Ministry of Environment

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			promotion of green product and customer training		Technology Institute			
				· Operate 'Love Environment Public Information Center'	Korea Environment Corporation			
			· "Energy Use Rationalization Act", Article 57	<ul style="list-style-type: none"> · Nation-wide energy conservation campaign · General public PR campaign · Operate green energy experience center · Education about energy saving to future generations · Energy and climate change experts training program · Global energy education · SESE country program · Energy tomorrow program · Online energy classroom program 	Korea Energy Agency			
	Market structure	Distribution support		· Select renewable energy distribution project participating companies	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
Policy impact, network support	Regulatory policy	Regulation	· "Green Growth Act," Article 37 - Control of Average energy consumption efficiency and greenhouse gas emission of automobile	· Building greenhouse gas · energy target management system	Korea Energy Agency	2009 ~		
			<ul style="list-style-type: none"> · "Energy Use Rationalization Act," Article 8 and Enforcement Decree Article 15 · "Regulation on Promoting Energy Use Rationalization in Public Institutions" (MOTIE Notice No. 2014-196) 	· Energy use rationalization in public institutions	Korea Energy Agency, Ministry of Trade, Industry and Energy	1996 ~		
			<ul style="list-style-type: none"> · "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," Article 12, Clause 2 and Decree of Enforcement of the same law, Article 15 · "Regulation regarding support of new and renewable energy equipment," Article 44 (MOTIE Notice No. 2015-34) 	· Mandate supply of renewable energy in public buildings	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy	2004 ~		
			<ul style="list-style-type: none"> · "Energy Use Rationalization Act," Article 9 and the Enforcement Decree, Article 16 (DSM investment plan of energy supplier) · MOTIE Notice No. 2014-192 (Regulation 	· Energy supplier DSM investment	Korea Energy Agency	1995 ~		

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			regarding operation of DSM Investment project of energy supplier)					
			<ul style="list-style-type: none"> · “Energy Use Rationalization Act,” Article 17 (Average energy consumption efficiency system) · MOTIE Notice No. 2015-62 (2015.04.08.) (Regulation on energy consumption efficiency of automobile and grade labeling) · “Framework Act on Low Carbon Green Growth,” Article 47 (Greenhouse gas management in the traffic sector) · “Ministry of Environment Notice No. 2014-235 (2014.12.30.)” (Notice related to automobile average energy consumption efficiency standard, permitted level of greenhouse gas emission and application and management of standards) 	<ul style="list-style-type: none"> · Average automobile energy consumption efficiency system 	Korea Energy Agency, Ministry of Trade Industry and Energy, Ministry of Environment	2006 ~ onward	Fines imposed on violating enterprises	
			<ul style="list-style-type: none"> · “Green Building Construction Support Act,” Article 14 and Enforcement Decree Article 7, Standards for energy conservation in building (Ministry of Land, Infrastructure, and Transport Notice No. 2013-587) 	<ul style="list-style-type: none"> · Building energy saving plan 	Korea Energy Agency, Ministry of Land, Infrastructure, and Transport	2003 ~		
			<ul style="list-style-type: none"> · “Regulation on Energy Efficiency Labeling and Standards,” based on “Energy Use Rationalization Act,” Article 15, 16 (No.2015-37, 2015.03.12) 	<ul style="list-style-type: none"> · Energy efficiency rating label - System of efficiency management target product, obligatory reporting of importers and prohibited sales of substandard products 	Korea Energy Agency, Ministry of Trade, Industry and Energy	1992 ~		
			<ul style="list-style-type: none"> · “Act on the Promotion of Saving and Recycling of Resources,” Article 12 (Cost of waste disposal) · “Enforcement Decree of Act on the Promotion of Saving and Recycling of Resources,” Article 10, Clause 1, Item 6 	<ul style="list-style-type: none"> · Waste disposal fee system · Producer responsibility recycling system 	Korea Environment Corporation			
		Standard						
		Soft instrument	<ul style="list-style-type: none"> · “Green Building Construction Support Act,” Article 17 (Building Energy Efficiency Rating Certification) · “Rules on Building Energy Efficiency Rating Certification” (Ordinance of the Ministry of Land, Infrastructure and Transport No. 6, enacted on 2013.05.30) · “Building Energy Efficiency Rating Certification 	<ul style="list-style-type: none"> · Building Energy Efficiency Rating Certification 	Korea Energy Agency, Ministry of Land, Infrastructure, and Transport, Ministry of Trade, Industry			

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			Standard" (Ministry of Land, Infrastructure and Transport Notice No. 2013-248, MOTIE Notice No.2013-34, 2013.05.30)		and Energy			
			<ul style="list-style-type: none"> · "Energy Use Rationalization Act," Article 15 & 16 · MOTIE Notice No. 2015-62, 2015.04.08.」 (Regulation on energy consumption efficiency of automobile and grade labeling) · Joint Notices by MOTIE, MOE and MOLIT (Automobile energy consumption efficiency, greenhouse gas emission and fuel consumption test method) 	· Automobile energy consumption efficiency and rating system	Korea Energy Agency, Ministry of Trade, Industry and Energy, Ministry of Environment, Ministry of Land, Infrastructure, and Transport	1988 ~		
			· "Energy Use Rationalization Act," Article 18~21 (Specification and Labeling of Standby Power Reduction Target Product, Warning Sign and Maintenance)	· Standby Power Reduction Program	Korea Energy Agency	1999 ~		
			<ul style="list-style-type: none"> · "Energy Use Rationalization Act," Article 15 & 16 (Designation and maintenance of energy efficiency equipment) · MOTIE Notice No. 2014-227(2014.11.25.) (Regulation on automobile tire energy efficiency measurement and labeling system) 	· Tire energy efficiency and rating	Korea Energy Agency, Ministry of Trade, Industry and Energy	2011 ~		Present 2008 IEA high-efficiency tire distribution rate
			· "Energy Use Rationalization Act," Article 28 (Support of enterprises that have provided voluntary agreement)	<ul style="list-style-type: none"> · Greenhouse gas emissions reduction support system in transportation sector - Transport energy efficiency certification system - Energy use reporting system in transportation sector 	Korea Energy Agency	2010 ~		
			<ul style="list-style-type: none"> · "Renewable Energy Act," Article 20 (Support of international standardization of renewable energy) · "Industrial Standardization Act," Article 5 (Enactment of Industrial Standards) 	<ul style="list-style-type: none"> · Standardization of renewable energy technologies - Solar energy, wind turbine system, fuel cell system 	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
				· Operation of KS Certification System for renewable energy	New & Renewable Energy Center (Korea Energy Agency), Ministry			

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
					of Trade, Industry and Energy			
				· Operation of carbon point system	Korea Environment Corporation			
	Establishment of foundation	R&D Infrastructure	· "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," (Establishment of Basic Plans)		New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
				· Environmental policy-based public technology development project	Korea Environmental Industry and Technology Institute			
				· Environmental Venture Technology Business Incubator				
		Facility	<ul style="list-style-type: none"> · "Energy Act," Article 7 (Establishment of local energy plan) · "Energy Use Rationalization Act," Article 3 (the responsibilities of the government and users of energy suppliers) MOTIE Notice No. 2011-592 (Local energy conservation project operation instruction) 	<ul style="list-style-type: none"> · Local energy conservation project - Municipal energy sector workforce education and training projects - Municipal feasibility study for energy use rationalization - Development of local energy policy and energy business statistics survey project - Promotion of energy-saving for local residents - Installation or replacement of excellent energy-saving products - Local characterization of energy-saving operations 	Korea Energy Agency, Ministry of Trade, Industry and Energy	1993 ~		
			<ul style="list-style-type: none"> · "Regulations on Housing Construction Standards," Article 64, Clause 3 · MOLIT Notice No. 2012-661 (Construction Standard and Function of Environmentally-Friendly Residential Building) 	<ul style="list-style-type: none"> · Dissemination of 2 million eco-friendly housing (Eco house performance evaluation) - Targeted on 30 or more multi-unit housing, 1 million newly built residential green homes, and 2 million existing residential green homes 	Korea Energy Agency, Ministry of Land, Infrastructure, and Transport	2009 ~		
			<ul style="list-style-type: none"> · "Electricity Business Act," Article 47 · "Power Industry Infrastructure Project Operating Regulations," Article 4 · "Power Efficiency-Improving Project Management Guidance," Article 3 	<ul style="list-style-type: none"> · Power Efficiency-Improving Projects - Support high efficiency appliance distribution (KEPCO) - Load management device distribution support projects _ cool storage equipment, remote management of air-conditioning equipment, maximum power management devices (KEPCO) - Load management device distribution support projects _ district cooling system (Korea Energy Agency) 	Korea Energy Agency, KEPCO, Korea Gas Corporation and municipalities			

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
				<ul style="list-style-type: none"> - Load management device distribution support projects _ gas cooling system (Korea Gas Corporation) - Vulnerable measuring power efficiency improvement projects (municipalities) 				
			<ul style="list-style-type: none"> · "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," Article 27, Clause 1, Item 3 · "Regulation regarding support of new and renewable energy equipment," Article 44 (MOTIE Notice No. 2015-34) · "Regulation on Support for Renewable Energy Equipment" (New & Renewable Energy Center Notice No. 2012-20) 	<ul style="list-style-type: none"> · Support distribution of new & renewable energy to local municipalities 	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
			<ul style="list-style-type: none"> · "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy," Article 27 · "Regulation regarding support of new and renewable energy equipment," Article 44 (MOTIE Notice No. 2015-34) 	<ul style="list-style-type: none"> · Renewable energy convergence support - Fusion of energy sources - Business complex district 	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy			
				<ul style="list-style-type: none"> · Establish eco-friendly energy town 	New & Renewable Energy Center (Korea Energy Agency), Ministry of Trade, Industry and Energy, Ministry of Environment, MSIP, Ministry of Agriculture and Forestry			
	Manpower Training	Expert training and education support	<ul style="list-style-type: none"> · "Green Growth Act," Article 18,4 - Nurturing Professional Workforce to Establish Standardized Foundation · "Development of and Support For Environmental Technology Act" (enacted in 1994, revised in 2015), Article 11: R&D Center <p>Refers to the R&D Center that is always equipped with the research personnel in the environment are in accordance with "Basic Research</p>	<ul style="list-style-type: none"> · Support specialized graduate professional education for Master and Ph.D. degree - Graduate school specialized in waste-to-energy / knowledge-based environmental services (2009 ~) - Graduate school specialized in eco-design (2009-2013) 	Korea Environmental Industry and Technology Institute			O[1]

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			Promotion and Development Act on Support,” Article 14, Clause 1, Item 2.					
			· “Green Building Construction Support Act,” Chapter 7 Building Energy Assessor Article 31~34	· Building Energy Assessor	Korea Energy Agency, Ministry of Land, Infrastructure, and Transport			
				· Nurture professional workforce in greenhouse gas management · Special graduate school for climate change · Designation of green campus and operational support	Korea Environment Corporation			
		Technical workforce employment support	· “Development of and Support For Environmental Technology Act,” Article 32,4 Attraction and Utilization of Environment Technology Workforce	· Support recruitment of science and engineering workforce and mediate talented personnel (Korea Industrial Technology Association, Ministry of Science, ICT and Future Planning) · Associated education programs for employment in environment industries · Employment support in environmental industries · Environmental industry job fairs	Korea Environmental Industry and Technology Institute			O[5]
	Network	Information share, forum	· “Development of and Support For Environmental Technology Act”: domestic and international environment technical workforce exchange program, environmental technology information exchange program to activate development projects of Korea Environmental Industry and Technology Institute · “Development of and Support For Environmental Technology Act,” Article 19,6: specify and share excellent environmental company by considering sales and excellent business performance, utilization of the possessed technology, marketability of green product, potential for new job creation, and development potential · “Development of and Support For Environmental Technology Act,” Article 19,7: install and operate environmental technology/information system to provide information related to distribution of environmental technologies and provide research development information in	· Publication of Environmental Issue Analysis Report (KEITI Insight)	Korea Environmental Industry and Technology Institute			O [5]

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
			association with National Science and Technology Information System					
				· Host Eco-Expo Korea				
				· Environmental Industry and Technology Information System · Environmental Research Information System · Cyber Environment Practical Training Systems				
				· Green Product Information System (GPIS) · Cyber-environment expo system (ECOEXPO) · Environmental Management Information Portal · Environmental Employment Portal				
				· Establish eco-friendly construction material DB				
				· Operate integrated international environment information network portal (global integrated export support portal) · Environmental industry electronic trading support system				
				· Provide environmental statistics information	Korea Environment Corporation			
				· Energy Expo Korea	Korea Energy Agency	1975 ~		
				· Establish foundation for greenhouse gas reduction in local municipalities, technical support and training · Operate Greenhouse Gas Reduction Council · Operate Climate Change Promotion Portal Site	Korea Environment Corporation			
		Green Financing	· "Framework Act on Low Carbon Green Growth", Article 28 (Support and Activation of Finance) · "Framework Act on Environmental Policy," Article 24 (Distribution of Environmental Information) · Include in "New Growth Engine Project and Strategy" (09.1) ※ Through "Green Financing Promotion Plan," among the New Growth Engine Projects, establishment and operation of green financing information system (enVinance) is selected as a project to be supervised by Ministry of Environment (2009.05)	· Establish and operate green financing information system (enVinance)	Korea Environmental Industry and Technology Institute	2009~		
		Support research cooperation						O [5]

Category	Policy	Specific Program	Law and National Plan	Program and System	Support Agency	Period	Budget	Remarks
		Cooperation Organization	· Based on "Development of and Support For Environmental Technology Act," established Korea Environment Corporation, Sudokwon Landfill Site Management Corporation, Korea Institute for Advancement of Technology (KIAT), Korea Evaluation Institute of Industrial Technology (KEIT), Korea Institute of Ceramic Engineering and Technology, Korea Testing Laboratory (KTL), Korea Environmental Industry & Technology Institute and professional production technology research institutes					
	Related industry	Value chain related industry						

I : Environmental management and resource management, II : Waste, III : Energy/Renewable Energy, IV : Green Technology, V : Climate Change

- 1: Green Growth Act, 2010 (including Enforcement Decree of Green Growth Act (2010))
2. Act on Encouragement of Purchase of Green Products (enacted in 2005, partially revised in 2013), Purchasing Tips to Promote Joint Procurement of Green Products, 2010 (enactment abolished in 2014)
3. Energy Use Rationalization Act (enacted in 1979, revised in 2014)
4. Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy (enacted in 1987, revised in 2015), an established rule (2015.01.28)
5. Development of and Support for Environmental Technology Act (enacted in 1994, revised in 2015)
6. Act on the Promotion of Saving and Recycling of Resources (enacted in 1993, revised in 2014), an established rule (enforced in 2016.1.21.)
7. Green Building Construction Support Act (enacted in 2012, revised in 2015)
8. Rules on Building Energy Efficiency Rating Certification (enacted in 2013.05.20)