

South Korea's Renewable Energy Policy: Coming Together or Drifting Apart?*

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South Korea's incumbent Moon Jae-in administration announced its ambitious policy goals of increasing renewable energy and cultivating the related domestic industry. The 20% target for renewable energy's share by 2030 marks a clear departure from the conservative position of previous administrations. The proposed policy tools—including large-scale project-based aid, favorable loan terms, the RPS system with weighted REC, and the Korean-style FIT model—involve some elements of prohibited and actionable subsidies under the ASCM. This study concludes that the direction of South Korea's energy policy is right, but it needs to be depoliticized and its speed readjusted.

Keywords: *renewable energy, prohibited subsidies, actionable subsidies, agreement on subsidies, South Korea*

1. INTRODUCTION

Global energy policy is in flux due to the so-called energy trilemma: countries can hardly have energy security, energy equity, and environmental sustainability all at the same time (World Energy Council, 2016). A reliable energy supply is crucial for economic growth and national security in an era of the fourth industrial revolution. The gap between energy-rich and energy-poor adds a new twist to the social welfare debate. Whether it is a security or equity issue, environmental concerns must be taken into account to prevent the climate catastrophe towards which the global community is currently heading.

The pressure is evident in the traditional energy industries, most notably fossil fuels and nuclear energy, which have shaped the industrial revolution and post-war prosperity. In sharp contrast, renewables have entered the global energy race to solve the impossible trinity, not only as a supplement to but also as a replacement for the traditional energy sources. However, national efforts to promote a domestic renewable energy industry have resulted in unintended consequences: trade restrictions and potential violation of trade rules.

The problem is that various forms of government subsidies and research and development (R&D) funds for renewable energy may cause thorny legal issues in relation to “disguised trade-restrictive measures.” The World Trade Organization (WTO) Agreement on Subsidies and Countervailing Measures (ASCM) prohibits “export” and “local content” subsidies and also stipulates that subsidies causing any adverse effects on the interests of other members are subject to challenge, either through the WTO dispute settlement mechanism or through countervailing measures. Many, if not all, government subsidies for the renewable energy sector fall into this category. The tension between trade and the environment is thus rising as

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illustrated by the increasing number of disputes submitted to the WTO's Dispute Settlement Body (DSB) in recent years.¹

To be sure, some countries try to make those subsidies compatible with trade rules and the relevant international standards.² Nevertheless, many others are tempted to promote their own renewable energy industry, which is believed less competitive compared to its traditional counterparts. More than 150 countries have their own national targets for the renewable energy supply ratio, and most of them have government supporting mechanisms (REN21, 2017).

South Korea stands out in this regard. Its quantitative target for greenhouse gas reduction is not necessarily impressive.³ But its renewable energy policy is more ambitious and fast-paced than ever. The incumbent President Moon Jae-in has pledged and begun to pursue "zero nuclear" and "zero fossil fuel" initiatives. The allocated budget for renewable energy in 2018 has nearly doubled compared to the previous year.⁴ The *3020 Renewable Energy Implementation Plan* (hereafter the *3020 Implementation Plan*) will increase renewable energy's share of the energy mix from its current level of 7% to 20% by 2030. The previous target was set at 11% by 2035. This is a clear departure from the conservative projections under previous administrations.

The prospects for the South Korean renewable energy policy are mixed. On the positive side, it will certainly promote renewables. On the negative side, it includes many elements potentially subject to legal challenges. The latter aspect is the focus of this study. Given the low level of global competitiveness, South Korea's renewable energy sector would require lots of government support. The renewable energy sector has not yet reached grid parity, meaning that the cost of electricity generated by renewable energy sources is higher than other sources. Most renewable energy in South Korea comes from burning biomass and waste.⁵ As a result, South Korea lags far behind global leaders such as Germany, China, and the US in terms of both technology and culture for renewable energy (Hyundai Research Institute, 2018: 7).

The remainder of this study is divided into three sections. Based on the existing literature, Section II reviews the evolution of South Korea's renewable energy policy. This section highlights the significance and limits of government-led renewable energy policy since the 1980s. The top-down nature is most obvious in the latest initiative launched by the Moon

¹ As of June 2018, 11 disputes have been submitted in relation to renewable energy subsidies, many of which revolve around either feed-in tariff (FIT) programs or local content requirements (LCRs).

² For instance, some European countries such as France, Slovenia, Germany, and the UK are phasing out FITs (REN21, 2017: 124).

³ As a signatory party of the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), South Korea has pledged to cut emissions 37% below business-as-usual (BAU) levels by 2030 across all economic sectors. The BAU standard scenario can be misleading, if not deceptive, because it is based on projections of future emissions if no action is taken.

⁴ The Moon administration asked for KRW 1.9 trillion (USD 1.7 billion) for renewable energy, but the National Assembly settled for KRW 1.2 trillion (USD 1 billion). The renewable energy budget for 2017 was approximately KRW 720 billion.

⁵ The environmental consequences of burning bio materials and waste have been controversial, especially because they emit carbon dioxide into the atmosphere. Bioenergy is often criticized in relation to deforestation and food security (Abbasi and Abbasi, 2000; Panwar, Kaushik and Kothari, 2011).

administration. From the perspective of trade policy, it is noted that South Korea's renewed enthusiasm for renewable energy is ipso facto problematic, if not altogether a deviation from trade rules, as government subsidies and incentive mechanisms could cause trade disputes and increased friction with South Korea's trading partners.

From the viewpoint of the WTO's ASCM, Section III examines potential legal issues rising from the Moon administration's renewable energy policy. In order to achieve its pledged goal by 2030, the Moon administration is toying with various policy tools including the expansion of the renewable portfolio standards (RPSs) system and the reintroduction of the feed-in tariffs (FITs) program. Many of these tools contain elements of subsidies that are deemed inconsistent with WTO rules. Although the recent ruling of the *Canada-Renewable Energy/Canada-FIT Program* (WT/DS412·DS426/R) (hereafter the *Canada-FIT Program*) case is considered a favorable decision for renewable energy subsidies, the WTO's DSB did not conclusively deny the possibility of regarding FITs as such.⁶ Most notably, some of the Moon administration's measures to promote the renewable energy sector are subject to prohibited subsidies, while others can possibly be challenged under the WTO subsidy rules.

Section IV concludes that the direction of South Korea's energy policy is right, but it needs to be depoliticized its speed readjusted. With an unambiguous and less ambitious policy goal for sustainable energy mix, South Korea will benefit from launching and establishing a breeding ground for renewable energy and clean technology solutions.

2. RENEWABLE ENERGY POLICY OF SOUTH KOREA, PAST AND PRESENT

2.1. Before the Moon Administration

As a resource- and energy-poor country, South Korea has placed the highest priority on energy security. Its constitution mandates the government to regulate and promote the development of natural resources, including energy. The developmental state thus characterizes South Korea's energy structure in line with its economic development agenda (Kim, 2017: 207-208).

South Korea was neither an early adopter nor a late adapter in renewable energy technology development. However, the centrality of government is no less significant in the renewable energy sector than in others. Having survived the two oil shocks in the 1970s, the South Korean government began to diversify energy sources and reform the consumption structure. First adopted in 1987 to promote renewable energy, the *Alternative Energy Development Promotion Act* provided a legal framework for alternative energy R&D. As a result of the 1997 revision, the act strengthened the public management system and financial support for renewable energy in line with the global climate change regime (MOTIE and KNREC, 2016: 69-75; Ham, 2018: 478-481).⁷

⁶ The Appellate Body (AB) distinguished between government subsidies that conferred benefits in existing markets and that created new markets. Noting that the FIT in question created a new market of renewable energy, the AB concluded that due to a lack of sufficient evidence it could not make a definite decision on whether the FIT conferred benefits (Charnovitz and Fischer, 2015).

⁷ Having served as the legal basis to promote renewable energy, it went through several revisions and was renamed the *Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy* (hereafter the *Renewable Energy Act*) in 2004.

As global interest in the environment and sustainable development grew rapidly at the turn of the new millennium, the then Kim Dae-jung administration further strengthened government support for renewable energy. In 2001, the First Renewable Energy Technology Development and Diffusion Basic Plan (2001–2010) was announced, setting a 2% target for renewable energy supply by 2003, while initiating the mandatory use of renewable energy in public organizations, tax incentives, and subsidies. Under the Second Basic Plan (2003–2012), the then Roh Moo-hyun administration set a primary energy supply target of 5% for renewable energy. Nevertheless, the renewable energy policy was placed at a lower level of policy hierarchy and thus received low priority. The energy policy, whether traditional or renewable, remained strongly subordinated to the goals of economic development and industrialization (Choi, 2005).

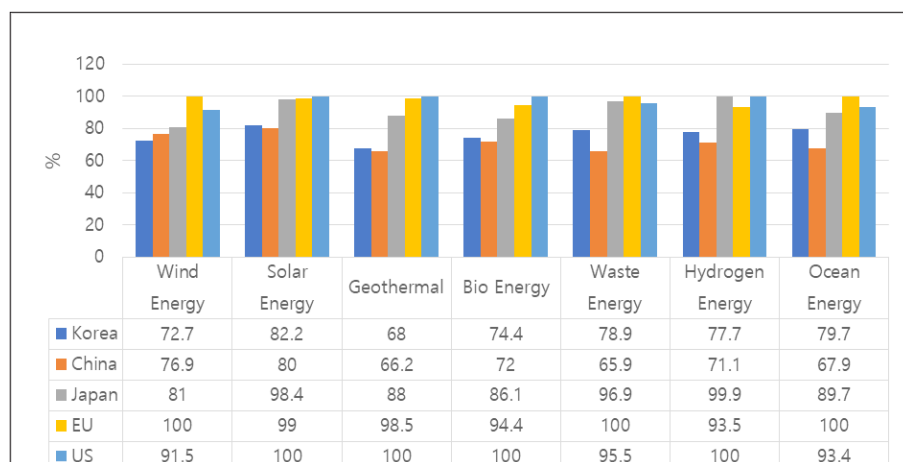
It was under the Lee Myung-bak administration (2008–2012) that renewable energy was first brought to center stage, at least in rhetoric. Under the slogan “low carbon, green growth,” the government set a grid parity target by 2020 and a primary energy supply target of 11% for renewable energy by 2030. In 2010, it also enacted the Green Growth Framework, which still provides the legal framework to support green businesses as part of an effort to mitigate climate change (Lee, 2014).⁸ Nevertheless, the Lee administration shifted away from its earlier emphasis on the environment itself to the focus on the spillover effects on related manufacturing industries, as illustrated by a larger budget allocation to the latter than the former (Yang, 2013).

In the meantime, South Korea’s policy experiments have revolved around two specific tools: the FIT and the RPS.⁹ The Kim administration first adopted the FIT in 2002 to support the domestic supply of renewable energy, but the Lee administration abruptly terminated it in 2011, mainly due to the unexpectedly high financial burden. There was a sharp increase in solar panel construction in 2008 due to technology development in solar energy and a decrease in unit price. In order to mitigate the financial burden, the government first tried to put a cap on the amount of subsidized energy generation, but it could not be reversed. Even without any new entries since 2012, the FIT budget remains over USD 2.6 billion (MOTIE and KNREC, 2016: 702). From the viewpoint of industrial policy, it failed to promote the domestic renewable energy industry due to a surge in Chinese imports (Koo, 2013; Kim and Park, 2016).¹⁰

⁸ The *Framework Act on Low Carbon, Green Growth* (Green Growth Framework) includes several provisions such as Article 23 (cultivating and supporting the green economy), Article 31 (support and preferential treatment for green technology and green industry), and Article 33 (supporting small- and medium-sized businesses), all of which call for government subsidies for less carbon-intensive industries.

⁹ Under the FIT, the government typically provides cost-based compensations to renewable energy producers, since the production cost of renewable energy is much higher than that of traditional energy sources. Long-term contracts, usually over 15 to 20 years, enable renewable energy producers to gain sustainable profits. In contrast, the RPS is a quantity-based policy and requires energy producers to generate a certain level of renewable energy. It operates with renewable energy certificate (REC) trade mechanisms, in which energy producers with surplus capacity can sell their REC to either the government or those who cannot meet their assigned quotas on their own (Kwon, 2014).

¹⁰ Aside from explicitly promoting environmental consciousness, the South Korean government implicitly wanted to cultivate the domestic green industry. Ironically, however, the enlargement of renewable energy capacity came mainly from low-priced Chinese imports such as wind turbines and

Figure 1. Renewable Energy Technology Level by Sector.

Source: Based on the KISTEP, 2017: 64.

The Lee administration replaced the FIT with the RPS in 2012, requiring large public electricity producers to increase the production of electricity from renewable energy sources. Those electricity producers are given weighted RECs based on six criteria, including the impact on the environment, technology, and industry, decreased carbon emissions, and the potential endowment of the resource (MOTIE and KNREC, 2016: 696). Under the RPS, electricity producers have some flexibility in fulfilling their production quotas. To mitigate the instability of electricity prices, the contract period was extended to 20 years from 12, and in 2017 long-term fixed pricing was introduced (MOTIE and KNREC, 2016: 86–104).¹¹

While there is no consensus on which policy is better than the other, the FIT is considered more effective in promoting investment in renewable energy as it ensures profits, while the RPS is thought to be more efficient and market friendly (Kwon, 2014). Sim and Jeong (2013) find that the RPS better protects domestic providers, while Yoo (2015) finds a positive effect of the FIT on the export of bio, hydro, thermal, solar, and wind energies. More broadly, the FIT tends to be more effective among OECD countries, whereas the RPS has proven to be more effective than the FIT among non-OECD countries (Lim and Jo, 2017).

In the meantime, according to the Fourth Renewable Energy Basic Plan (2014–2035) released in 2014, the 11% target year was rescheduled to 2035. Yet, President Park Geun-hye (2013–2017), coming from the same conservative political party, largely inherited her predecessor's energy policies. Despite its rhetorical achievements, the Park administration was equally unimpressive in its performance on renewable energy policy. As with its predecessors, it continuously fell short of what it had officially pledged. On the surface,

solar cells. The South Korean government belatedly realized that it could not support and promote its domestic equipment industry without violating the WTO's ASCM. Thus, a large amount of South Korean taxpayer money was used to support the purchase of cheaper and low-end Chinese products by domestic installation businesses.

¹¹ A fixed price based on the combination of RECs and the system marginal price (SMP) will be subject to fewer fluctuations.

South Korea's renewable energy sector reached 7% of the total energy supply. However, the performance is questionable as nearly 50% of South Korea's "new and renewable energy" comes from biomass and waste burning with a mixture of coals (Lee, 2014; Lee, K., 2017; Lim and Jo, 2017).

It is no surprise that South Korea's renewable energy sector lacks international competitiveness. For instance, solar cells/modules and wind turbines have little price competitiveness against Chinese products. The renewable energy management system needs further development. In terms of technology, South Korea lags behind developed countries such as the US, Japan, and members of the European Union (Shim and Jeong, 2013; Federation of Korean Industries, 2016; Hyundai Research Institute, 2018).

2.2 Under the Moon Administration

The incumbent President Moon has emphasized renewable energy since his presidential candidacy in April 2017. Out of the top 100 policy priorities announced shortly after the inauguration, three policies are related to renewable energy: (1) the development and promotion of green energy (task number 37), (2) the transition to safer and cleaner energy and the abandonment of nuclear energy (task number 60), and (3) the development of an implementation system for the new climate change regime (task number 61). The *3020 Implementation Plan* revealed intentions to increase RPS generation targets, to reintroduce the FIT program for small-scale suppliers, and to promote the engagement of local residents and cooperatives in the renewable energy industry through various measures, including readjustments of weighted REC calculations (MOTIE, 2017a).

As noted above, South Korea's energy policy is closely related to industrial policy. Both policy areas are governed and coordinated by the Ministry of Trade, Industry and Energy (MOTIE). The potentially conflicting policy goals are demonstrated most clearly in the *3020 Implementation Plan*. On the environmental policy side, it aims for clean energy transition. Combined with the zero nuclear policy, the Moon administration emphasizes renewable energy as a safer and cleaner source. In response to criticism that certain renewable energy sources are detrimental to the environment, the plan includes a scheme to reduce the reliance on biomass and waste burning.¹² It aims to provide an additional 48.7 GW of renewable energy, 97% of which will come from solar and wind power by 2030. Given that the total amount of solar and wind energy in 2017 reached 6.9 GW, its goals are clearly ambitious. To achieve those goals, a grand new investment of more than USD 80 billion will be needed, of which USD 16 billion will be covered by the government budget (MOTIE, 2017a: 2).

Moon's renewable policies reflect the general framework of industrial policies. The overall industrial policy roadmap includes two related policy goals (innovative economy and inclusive growth) and three strategies: advancing industry and creating "new industry" using smart technologies, intensifying future-oriented symbiotic cooperation among different stakeholders, and promoting local engagement for innovative growth (see Table 2).¹³ The

¹² In 2016, renewable energy in South Korea constituted 38% solar, 8% wind, 16% biomass, and 25% waste. The Moon administration aims to change the composition to 57% solar, 28% wind, 5% biomass, and 6% waste by 2030. Energy generated from waste is to remain constant in absolute terms (Kwak, 2018: 27).

¹³ The "new energy industry," incorporating international and communication technology into the energy sector, is one of the five targeted industries to receive special support from the government

Table 1. The Moon Administration's Industrial Policy Roadmap.

Vision	Global innovation country	
Goals	<ul style="list-style-type: none"> • Innovative economy through future industrial structure innovation • Inclusive growth with small- and medium-sized enterprises (SMEs) and the public (creating over 300,000 high-quality jobs by 2022) 	
	Three strategies	Six policy tasks
	1. Advancing industry and creating "new industry"	(1) Pursuing leading projects of new industry (2) Recovering growth dynamics in the main industry
Tasks	2. Intensifying future-oriented symbiotic cooperation	(3) Cultivating SMEs as new leading figures of growth (4) Creating values through symbiotic cooperation across sectors
	3. Cultivating local points of innovative growth	(5) Cultivating national innovation clusters (6) Supporting the expansion of local innovation capacities

Source: Created by the authors based on MOTIE, 2017: 7.

2020 Implementation Plan largely follows the same framework. First, for innovative growth, the plan includes initiatives to support the renewable energy sector ranging from R&D to overseas market entry support. While the R&D level in renewable energy remains low compared to nuclear energy, it has steadily increased. For the fiscal year 2018, the planned government R&D budget for renewable energy is at USD 87.3 million (Nam, 2018). In the short term, R&D will focus on reducing production costs and increasing technological competitiveness, while the long-term goal is to develop leading technologies. R&D clusters of related industries and universities are to be constructed. For the solar energy, examples of proposed research areas include creating a symbiotic business model for solar energy and agriculture and building integrated photovoltaic (PV) systems. Renewable energy using smart technologies will receive special attention (Nam, 2017; Kim, H., 2018).

Foreign market entry support has been carried out since 2011 with a budget of USD 8 million, but the budget was halved in 2013 and sustained a similar level until 2018. The related budget is expected to regain its initial level of USD 8 million starting from 2019 (MOTIE, 2018b: 434). USD 9 million in loans have been provided to small- and medium-sized renewable energy businesses for foreign market entry since 2015 (MOTIE, 2018). In addition to financial support, a comprehensive, one-stop support system for topics ranging from entry information about foreign markets and feasibility studies to expert consultations is being or will be provided.¹⁴

In another twist that surfaced under the Moon administration, renewable energy policy is being tied to local and regional engagement policy. Compared to their traditional counterparts, renewable energy sources including wind, solar, and biomass are significantly land intensive and their environmental implications are highly controversial depending

(MOTIE, 2017b). The renewable energy sector will also benefit from government efforts to enhance the technology used in the energy industry as a whole.

¹⁴ In 2015, the MOTIE announced the *Execution Guideline to Renewable Energy Foreign Market Entry Support*, which is still in force today (MOTIE, 2015).

Table 2. The Moon Administration's Renewable Energy Deployment Plan.

	1. Enlargement of civil engagement
	(1) Extension of urban private solar photovoltaic (PV) system
	(2) Support for small-scale businesses (lower than 100 kW) and cooperatives – Korean-style FIT model
	(3) Diffusion of solar PV in rural areas
Deployment plans	2. Introduction of local government land-planning system
	3. Initiation of large-scale project
	4. Improvement of deployment infrastructure for renewable energy
	5. Development of cleaner renewable energy
	(1) Increasing solar and wind energy (2) Lowering waste and wood pellet burning

Source: Created by the authors based on the *3020 Implementation Plan*.

on geographic location (Seager, Miller, and Kohn, 2009).¹⁵ Consequently, they present a significant challenge to local neighborhoods and their residents, and local consent is important for successful policy implementation (Park, Y., 2017; Woo, 2017; Kim and Jung, 2018). Against this background, the Moon administration has promoted local involvement to mitigate negative regional externalities such as noise and environmental damage, while mandating local governments to carry out environment impact assessments to select construction sites (Kwak, 2018: 27).

For the purpose of promoting local engagement, the Moon administration has reintroduced the Korean-style FIT model and support for rural residents generating solar energy. In addition to obtaining public support and achieving ambitious deployment objectives, civil participation is essential to revitalize local economies. The new models of the Korean-style FIT and weighted REC scheme are designed to serve that purpose as well. The new FIT model obliges six big electricity generators to purchase renewable energy produced by small businesses under 30 kW and cooperatives or agricultural associations under 100 kW at a price set under the current RPS mechanism. It is expected that 50,000 jobs will be created in the renewable energy sector once the plan is successfully implemented (Hahm, 2017; MOTIE, 2017c).

One of the flagship projects of the Moon administration is the Saemanguem Renewable Energy Cluster. The land reclamation project on the Saemanguem tidal flats in North Cholla Province, which had been launched in 1991, was completed in 2010 after a series of delays and postponements, effectively adding an area of about 400 km² to the Korean peninsula. The Moon administration plans to dedicate nearly 9% of the area to a renewable energy cluster by 2022. The plan includes solar and wind power generators, for which public fund worth USD 513 million and private capital worth USD 9 billion are to be set up (Korea Energy Economics Institute, 2018).

¹⁵ For 1 GW of electricity to be generated by solar and wind power, 33 million m² and 165 million m² of land are required, respectively, whereas nuclear energy requires 363,000 m² of land (The Asan Institute for Policy, 2018).

While South Korea's efforts to stimulate the green and clean energy sector is laudable, the speed at which it is aiming to achieve an energy transition remains controversial. It is feared that replacing nuclear energy with renewable energy will undermine the stable supply of electricity and reasonable electricity prices (Park, M., 2017; Yoon, 2017). A study on the security implications of the energy transition policy notes that the expected commercial capacity for renewable energy could be substantially lower than the potential technological capacity. Considering the intermittent characteristics of renewable energy, a large-scale energy saving system needs to be developed in addition to new renewable energy generators, which will take considerable time (Sim, 2018: 14–15).

Many policy experts agree that government subsidies and tax incentives are inevitable in the creation and cultivation of a sustainable renewable energy market (Kim, 2017: 223). While the Moon administration has not provided a specific number for the cost of the energy transition, some analysts predict that the zero nuclear policy will cost over USD 200 billion (Lee, H. S., 2017). The installation cost of renewable energy alone could exceed USD 300 billion (The Asan Institute for Policy, 2018).¹⁶ Aside from the questionable effectiveness of financial support,¹⁷ subsidizing renewables risks opening a Pandora's box of trade disputes for South Korea. The emphasis on local participation may work as a disguised form of trade protection, which will be discussed in more detail below.

3. WTO COMPATIBILITY ANALYSIS

Under WTO ASCM Article 1.1, a subsidy is “deemed to exist if there is a financial contribution by a government or any public body within the territory of a Member” or if “there is any form of income or price support in the sense of Article 16 of GATT (Subsidies)” and “if a benefit is thereby conferred.” If a subsidy is found to be “specific to an enterprise or industry or group of enterprises or industries” (Article 2.1) and cause “adverse effects to the interests of other Members” such as “(a) injury to the domestic industry of another Member; (b) nullification or impairment of benefits accruing directly or indirectly to other Members; (c) serious prejudice to the interest of another Member” (Article 5), it is considered “actionable.”¹⁸

In the existing literature on the WTO compatibility of “green subsidies,” the growing consensus is that government subsidies to incubate an infant industry conflict with the ASCM as long as they distort the market mechanism and constitute unfair discrimination against foreign firms (Rubini, 2012; Lewis, 2014; Lee 2016; Chung, 2017).

The *3020 Implementation Plan* is no exception. In particular, favorable loans, the Korean-style FIT program, weighted RECs, and specific R&D programs can be seen as “actionable” subsidies because they are likely to cause adverse effects to other countries. Even worse, the proposed support for overseas market access and the emphasis on local engagement can be

¹⁶ At the moment, the transition to renewable energy is not cheap at all. For instance, Germany, one of the few countries that have successfully eliminated nuclear energy, has spent an additional USD 27 billion to annually subsidize renewable energy (Oh, 2017).

¹⁷ For instance, Aguirre and Ibikunle (2014) find that fiscal and financial instruments are negatively linked with renewable participation.

¹⁸ Prohibited subsidies (Articles 3 and 4) are exempted from the specificity test, but a positive decision on the existence of a subsidy is a prerequisite.

seen as export subsidies and import substitution subsidies, respectively, both of which are “prohibited” under the ASCM.

This section explores the compatibility of the measures related to the *2030 Implementation Plan* with the ASCM rules, focusing on three related issues: (1) whether or not subsidies can be deemed to exist; (2) whether or not some measures fall into the category of “prohibited subsidies”; and (3) whether or not some subsidies are “actionable.”¹⁹

3.1 The Existence of Subsidies – A Benefit Analysis

A subsidy can take many forms, including grants, loans, equity infusion, loan guarantees, tax credits, and goods or services, other than general infrastructure (ASCM Article 1.1). The *2030 Implementation Plan* pledges financial contributions to large-scale renewable energy projects, R&D funds,²⁰ and innovation clusters for the “new industry” in energy. In addition, the Korean-style FIT model, RPS mechanism with weighted REC system, favorable government loans, and tax incentives require financial contributions (or their equivalents) by the government. As such, they are most likely to be considered “subsidies” under the ASCM.²¹

A more contentious issue is the so-called benefit analysis. It has been noted in previous disputes that a benefit “does not exist in the abstract, but must be received and enjoyed by a beneficiary or a recipient” (*Canada-Aircraft*, WT/DS70/AB/R, para. 156). Both the panel and the AB of the *Canada-FIT Program* found that the FIT fell under the definition of a subsidy.²² However, the AB distinguished circumstances under which government

¹⁹ Even if a measure is found to be in violation of the ASCM, it could be allowed as a general exception under GATT Article 20. In particular, climate change mitigation and/or adaptation measures, including renewable energy promotion initiatives, may be subject to exception clauses such as (b), (d), (g), and (j) of Article 20. However, the applicability of the GATT general exception clauses to the violation of the ASCM is controversial (Asmelash, 2015: 280; Shadikhodjaev, 2015: 10–11). This study does not address this issue any further due to its inconclusive status.

²⁰ Originally, R&D was categorized as “permissible subsidies” under the ASCM, but the related provisions expired on 31 December 1999. As a result, there are only two categories of subsidies: prohibited and actionable.

²¹ Combined with the REC, the RPS includes elements of financial contribution as defined by the ASCM. Lodefalk and Storey (2005) claim that if the government chooses to distribute initial carbon emission allowances through gratis allocation rather than auctioning, it could qualify as a subsidy. In the *US-Softwood Lumber IV* case (WT/DS257/AB/R, para.75), the right to harvest timber was considered as a subsidy under ASCM Article 1.1 (a) (1) (iii). This shows that financial contribution can take immaterial form, such as granting rights. Carbon emission credits and weighted REC can be considered in a similar light. If a government distributes carbon emission credits without a charge, it could constitute a financial contribution compared to distribution through auctioning. Moreover, if certain kinds of renewable energy are given higher weight in the REC, it could result in financial benefits for those who generate them.

²² In 2010, Japan requested consultation regarding Ontario’s FIT program, and the European Union (EU) followed in 2011. In particular, the complainants challenged the domestic content requirements (DCRs). The government of Ontario and its agencies guaranteed a fixed price for renewable energy produced, given that a minimum required domestic content level was satisfied. Both Japan and the EU clarified that they were not challenging the general purpose of the FIT program to promote renewable energy. The panel concluded that the measure was in violation of the ASCM, but was overturned by the AB. Nevertheless, the AB confirmed that the local content requirement of Ontario’s

intervention creates a new market that would not have existed without subsidies.²³ While the AB's decision on the *Canada-FIT Program* is regarded as having enlarged policy space for governments by allowing a separate benchmark for a newly created market such as renewable energy, it did not grant immunity from the ASCM (Bohanes, 2015: 7-9; Lee, 2016: 617). The AB concluded that a benefit analysis was impossible because it could only review legal arguments.²⁴ In the next disputes, the panel will demand adequate evidence as required for a benefit analysis, which means that measures such as the FIT may be found to have conferred benefit in the new market (Charnovitz and Fischer, 2015). Thus, the Moon administration's renewable energy policy will have to go through a stricter benefit analysis.

The ASCM does not provide specific calculation methods for benefit analysis, but in previous disputes, Article 14 served as the guiding principle.²⁵ The increase in capital inflow alone is not sufficient to prove benefit, but favorable investment conditions indicate the government intention to confer benefits to the renewable energy sector. In 2016, USD 5.5 billion in public investment was given to the renewable energy sector, but USD 8.8 billion is needed annually to achieve the goals (Park, 2017).²⁶

Public spending on renewable energy is rapidly increasing. The central government's renewable energy budget for 2019 surpasses USD 1 billion, which is an almost 20% increase from 2018 (Jung, 2018). Combined "public" subsidies on renewable energy in 2017 amounted to USD 1.8 billion, more than half of which went into the solar energy sector (Ann, 2018).

In 2017, 71 projects related to renewable energy received financial support worth a total of USD 7.48 million, and in 2018 USD 13.9 million has been allocated (KEA, 2018). The R&D budget to enhance the technological competitiveness of renewable energy for 2018 is USD 184 million, which will mainly be used for the solar and wind sectors. One of the aims is to domestically develop essential and critical components to enhance the global competitiveness of the renewable energy sector (MOTIE, 2018: 211–224).

The proposed reform of the RPS with weighted RECs and the Korean-style FIT model both potentially confer benefits to South Korean businesses. RECs can be traded for profit and giving higher weights to certain domestic businesses is therefore synonymous to giving financial benefits. The Moon administration has launched a new Korean-style FIT model

FIT was in violation of GATT Article 4 (National Treatment) and the Agreement on Trade-Related Investment Measures (TRIMS) Article 2.1 (National Treatment and Quantitative Restrictions) (Shadikhodjaev, 2013: 864).

²³ The AB stated, "While the creation of markets by a government does not in and of itself give rise to subsidies within the meaning of the SCM agreement, government interventions in existing markets may amount to subsidies when they take the form of a financial contribution, or income or price support, and confer a benefit to specific enterprises or industries" (WT/DS412/AB/R·WT/DS426/AB/R, p.127).

²⁴ The DSU circumscribes the AB's scope of review to legal analysis. The AB "may uphold, modify or reverse the legal findings and conclusions of the panel" (DSU Article 17.13).

²⁵ The problem is that such methods tend to inflate the benefit. Using the market price as a benchmark to analyze benefits does not take into account externalities, such as the cost of setting up REC trading mechanisms (Henschke, 2012: 43–49).

²⁶ The *2030 Implementation Plan* only shows expected public investment for the new installation of renewables, which is at USD 16 billion. Some predict that the overall investment needed for a complete energy transition will reach as high as USD 124 billion over the course of 14 years (Park, 2017).

to complement weighted RECs, targeting SMEs and local social cooperatives in particular. Those recipients will be guaranteed stable prices for 20 years, a definite advantage over their competitors. According to the 2018 second round of calls for proposals on renewable energy financial support, for the second half of 2018 USD 93 million in subsidies is designated for the creation of environmentally friendly energy towns and rural solar businesses. A record of local residency over one year is a mandatory condition for the financial support (KNREC, 2018).

In sum, various measures proposed by the Moon administration can be considered subsidies under the ASCM to the extent that they are designed to provide domestic firms with benefits, possibly at the expense of South Korea's trading partners.²⁷

3.2 The Existence of Prohibited Subsidies

The Moon administration's support for the renewable energy industry has significant aspects of export and local content subsidies, which are prohibited under the ASCM. The UN Conference on Trade and Development (UNCTAD) module on ASCM defines export subsidies as "subsidies contingent, in law or in fact, whether solely or as one of several other conditions, upon export performance, including the programs enumerated in the Illustrative List of export subsidies in Annex I" (UNCTAD, 2003: 14). Import substitution subsidies are defined as "subsidies contingent whether solely or as one of several other conditions, upon the use of domestic over imported goods" (UNCTAD, 2003: 17). Prohibited subsidies do not require a specificity test, and the ASCM regulates prohibited subsidies more strictly.²⁸

(1) Export Subsidies

South Korea is one of Asia's largest petroleum product exporters (US EIA, 2018). Its exports of petroleum-related products have increased from 59.7 million tone of oil equivalent (toe) in 2013 to 67.5 million toe in 2016 (Korea Energy Economics Institute, 2017: 23). In the first half of 2018, the export of petroleum-related products increased by 32.6% compared to the same period in 2017, at a recorded total of USD 18.8 billion (Cho, 2018).

In sharp contrast, the contract amount of overseas engineering procurement construction (EPC) for South Korea's electricity-generating companies decreased from USD 17.4 billion in 2012 to USD 4 billion in 2016 (The Export-Import Bank of Korea, 2017: 9). The main cause for such a sudden drop is the shrinking market for fossil-fuel-generated energy provided by EPC projects, about 95% of which were conducted by South Korean firms.²⁹

Faced with new challenges in the fossil-fuel-related export sector, the Moon administration is investigating the possibility of promoting renewable energy as a new export

²⁷ An interview with a high-ranking MITIE official in charge of industrial policy revealed that the South Korean government official position is that all these support initiatives are by no means more beneficial to South Korean firms than the support provided by other major countries for their renewable sectors.

²⁸ For instance, the dispute settlement procedure is accelerated for the alleged prohibited subsidies. Furthermore, while DSU Article 21.3 allows "a reasonable period of time" for the implementation of DSB recommendations, ASCM Article 4.7 calls for the subsidy to be withdrawn "without delay."

²⁹ Other reasons include local content requirements enforced by importing countries and the decreased technological gap between South Korea and its traditional client countries (The Export-Import Bank of Korea, 2017: 10–12).

engine. As noted above, however, the problem is that South Korea's renewable energy sector has yet to achieve global competitiveness, particularly in intermediary goods as well as in the bio and wind power sectors.³⁰ Although South Korea shows some strengths in the solar energy sector, the volume of export and productivity has decreased since 2012, which was when the RPS replaced the FIT (Yoo, 2015: 115).

To reverse the situation, the Moon administration has explicitly promised export assistance.³¹ Finding additional export markets has become imperative for two reasons. First, due to the limited size of the domestic market, renewable energy firms need to go abroad to establish economies of scale. Second, South Korea's solar energy industry relies heavily on export to the US, but President Donald Trump is determined to protect the American solar energy sector by imposing safeguard duties on its rivals, including South Korea (Rizzo, 2018).³²

The Fourth Renewable Energy Basic Plan, which came months after the Second Energy Basic Plan, includes a clause for the expansion of a foreign market for renewable energy as one of its tasks. As demonstrated earlier in Section II, the *3020 Implementation Plan* explicitly calls for export subsidies. A comprehensive, one-stop export service has been pledged. The government promised to increase financial support, including favorable loans for outbound SMEs. The Korea New and Renewable Energy Center (KNREC) is commissioned to support outbound renewable energy firms by providing technical and administrative assistance such as acquiring overseas licenses for energy installation and pioneering new foreign markets.

According to the MOTIE (2018b: 428–435), eight cases of overseas license assistance, 17 feasibility studies, seven cases of individual support for participation in foreign exhibitions, and various other support was provided in 2017. Admittedly, the feasibility studies and consultation support are not given explicitly “contingent upon export performances.” However, the assistance is aimed at exports, a sign of de facto conditionality (WTO, 2018a: SCM Article 3 Jurisprudence, 5–6). As for the overseas license assistance, a subsidy status can be granted only after the foreign license is achieved.

The Moon administration also gives priorities to renewable energy firms in insurance initiatives such as the Trade Insurance Special Support program. Operated by a public enterprise, namely the Korea Trade Insurance Corporation (KTIC), the program was introduced in 2014 to provide outbound SMEs with insurance for exports with an annual budget of USD 250 million (KTIC, 2018). These financial measures are problematic vis-à-vis ASCM Annex 1 (j) and (k), which prohibit discriminatory insurance programs and interest rates favorable for exporting businesses.

Many countries are tempted to, or actually do, provide export subsidies to enlarge the global market share of their firms. But export subsidies are condemned for their high

³⁰ Compared to its overall international competitiveness in renewable energy technology, South Korea is particularly weak in intermediary goods (Yoo, 2015).

³¹ In 2017 South Korea's renewable energy exports reached USD 3.8 billion, marking a 22% increasing from USD 3.1 billion in 2016. Overseas factory revenues in 2017 decreased from the preceding year's USD 2.1 billion to USD 1 billion, 71% of which was solar energy and the remaining 29% wind power (KNREC, 2018a).

³² Until 2017, 70% of solar module exports from South Korea found a destination in the US, making the solar energy industry vulnerable to the protectionist measures of the Trump administration (The Export–Import Bank of Korea, 2018: 18–19).

trade restrictiveness. They distort the world market by allowing otherwise uncompetitive enterprises to compete (Collie, 2000). Whether the Moon administration has more programs and initiatives to carry out its objective of increasing renewable energy needs further clarification, but the government intention to support exports is undeniable.

(2) Import Substitution Subsidy

In the renewable energy sector, import substitution subsidies often take the form of local or domestic content requirements. Although the LCR distorts the market mechanism and causes an inefficient distribution of resources, it is an attractive policy option to promote local enterprises and industries. It also helps to prevent government funds from being used to support foreign firms. Many countries—including Brazil, South Africa, China, and the US, to name just a few—continue to use LCRs to promote their domestic industry over imports. However, in the *Canada-FIT Program* and *India-Solar Cells (WT/DS456/R)*³³ cases, the WTO Panel and the AB found that Ontario and India violated WTO provisions.

As mentioned above, the Moon administration's emphasis on local engagement inherently involves the characteristics of LCR. The proposed Korean-style FIT model and REC reform package are designed to promote local participation. In addition, to support social cooperatives that have no financial capabilities, the Ministry of Economy and Finance (MOEF) has reportedly asked the Korean Credit Guarantee Fund, a public financial institution, to extend credit guarantees for promising SMEs so that they can borrow up to 90% of the required funds for solar projects from commercial banks. There have been allegations that for the remaining 10% the government has pressured commercial banks to unconditionally grant loans to social cooperatives that have applied for local solar projects. If the allegations prove to be true, it would constitute discriminatory favors for those social cooperatives over other businesses, including foreign firms (Lee, S., 2018).³⁴

Newly proposed measures imply that the government prefers local power suppliers to foreign ones, effectively preventing them from accessing the electricity market in South Korea. The South Korean government faced severe criticism for its previous FIT program, which eventually gave financial benefits to Chinese solar module producers (Koo, 2013). The Moon administration seems committed to not repeating the same mistake, but this time at the expense of foreigners. Even in the renewable energy cluster projects such as in Saemangeum, the South Korean government publicly expressed its intention to favor local participation.

³³ In the *India-Solar Cells* case, India's DCR in the Jawaharlal Nehru National Solar Mission (National Solar Mission, or JNNSM) was at the heart of the dispute. The government of India contracted solar power developers to purchase solar energy, and a mandatory DCR was imposed on the solar power developers. In the first request for consultation, the US government saw that the measures by India were in violation of GATT Article 3.4, TRIMS Article 2.1, and ASCM Articles 3.1(b), 3.2, 5(c), 6.3(a), and 6.3(c). However, from the addendum of the request for consultation, the US government dropped the charges against the ASCM. It is noteworthy that the AB report for the *Canada-FIT program* was circulated during the period of the two requests. The US government appeared to have realized that invoking the ASCM violation was exorbitant and that the GATT violation was sufficient to restrain India's practice. The Panel and the AB ruled that India's DCR measures were inconsistent with Article 2.1 of the TRIMS agreement and GATT Article 3.4. The measures were not covered by the derogations of GATT Article 3.8(a) nor could they be justified under the general exception clause of GATT Articles 20(j) and (d) (Lee, K., 2017).

³⁴ It is also becoming a political scandal as many of the recipients of favorable loans are allegedly political allies of the ruling progressive party.

The Head of Saemangeum Development and Investment Agency, Lee Chul-Woo, stated that the consortiums and firms with local entities and locally produced materials would be given a special consideration (Lee, H., 2018).

A more nuanced but equally problematic provision aimed at substituting imports is the *U-turn Supporting Law*.³⁵ It offers employment subsidies and tax incentives for firms returning their production facilities back home. Hanhwa Qcell, one of the world's largest solar cell producers, received benefits under the scheme. In February 2018, Hanhwa Qcell decided to employ an additional 500 workers at the Jincheon factory located in Choongbook Province, instead of building a new solar cell module factory in Malaysia.³⁶ President Moon welcomed the decision and personally visited the Jincheon Hanhwa Qcell factory for encouragement. Although there are no dispute cases as of yet, probably because there are too many WTO member countries that use the reshoring policy, such a move is questionable from the perspective of WTO regulations.

In sum, some measures adopted by the Moon administration to promote renewables can be considered as prohibited because the benefits are conferred either in the form of export assistance and/or LCRs. In particular, although the proposed reforms of the FIT and the RPS are designed to lower internal conflict against large generating companies and to promote local engagement, the higher weight for civil-society-funded or locally funded renewable energy projects is likely to provide benefits for domestic groups of enterprises and industries in violation of WTO rules.³⁷

3.3 The Existence of Actionable Subsidies

Measures that do not constitute prohibited subsidies can be “actionable subsidies” under the ASCM if they are found to be specific and cause adverse effects to the interests of other member countries. According to Article 2.1, there are three different types of specificity: (1) enterprise specificity, (2) industry specificity, and (3) regional specificity. Specificity can either be de jure or de facto. Article 2.1(c) stipulates that even if a government grant appears to be nonspecific on the façade, upon consideration of certain factors, it can constitute de facto specificity.³⁸ The panel for the *US-Subsidies on Upland Cotton* case explained that while Article 2.4 requires that specificity be demonstrated with positive evidence, the

³⁵ In 2013, the *U-turn Supporting Law* was introduced to encourage reshoring and bring production facilities back to the homeland. Only four firms moved production facilities back in 2017, but there is renewed attention to the law under the Moon administration (Shin, 2018).

³⁶ The CEO, Seoung-Yeon Kim, admitted that the decision was made from a “sense of responsibility to promote domestic employment and strategic cultivation of solar industry in South Korea” (Ahn, 2018).

³⁷ As noted above, the *US-Softwood Lumber* case has upheld that the government’s granting right for national and/or local projects can be considered a subsidy because a benefit is deemed to exist even without a direct transfer of money or goods as long as the recipient is better off due to more advantageous conditions than those available on the market (Kim, 2011: 88).

³⁸ Factors to consider include the “use of a subsidy program by a limited number of certain enterprises, predominant use by certain enterprises, the granting of disproportionately large amounts of subsidy to certain enterprises, and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy.” The “extent of diversification of economic activities within the jurisdiction of the granting authority” and the “length of time that the subsidy program has been in place” also need to be taken into account (ASCM Article 2.1(c)).

Table 3. The Size of the Renewable Energy Industry in South Korea.

Number	2014	2015	2016	% change (2015 → 2016)
Businesses	438	473	405	-14.4%
Employees	15,545	16,177	14,412	-10.9%
Sales (KRW billion)	9,905	11,307	10,089	-10.8%
Domestic demand (KRW billion)	4,501	4,975	4,115	-17.3%
Export (KRW billion)	3,221	4,074	3,545	-13.0%
Overseas production (KRW billion)	2,182.	2,257	2,428	7.6%
Investment (KRW billion)	870	796	688	-13.6%

Source: Korea Energy Agency, 2016 Renewable Energy Industry Statistics, p. 13. (USD 1 = KRW 1,130 as of 16 October 2018).

provision does not include detailed criteria to determine specificity and that a case-by-case decision is thus necessary (WT/DS267/R).

The disclosed government plans and press releases show that the Moon administration intends to specifically support the renewable energy industry. The panel for *US-Softwood Lumber* CVDS ruled that in the meaning of ASCM Article 2, “industry” does not “refer to enterprises producing specific goods or end-products” and hinted that subsidies limited to a single large industry will not be found specific (WT/DS257/R, para. VII.571). In other words, if a subsidy is dedicated to a particular industry with a limited size, it could be deemed “specific” in the spirit of the ASCM. The renewable energy sector in South Korea is relatively small with only about 400 businesses and 15,000 employees (Korea Energy Agency, 2016). Thus, the potential complainants will be able to claim that the supporting measures are either industry-specific or enterprise-specific.

If the South Korean government’s R&D support is focused on solar and wind energy generation, the two subcategories of renewable energy that the government has announced to cultivate through industry specificity will be easier to establish. Moreover, the cultivation of regional development projects and local innovation clusters contains regional specificity elements. Of course, there is a possibility that the DSB will rule against specificity.

First, if the grants are given automatically and if certain criteria are fulfilled, specificity will not be established. ASCM Article 2.1(b) requires that all criteria or conditions for grants “must be clearly spelled out in law, regulation, or other official document, so as to be capable of verification.” South Korea could argue that the conditions for support are automatic, but the criteria for evaluation are not transparent. The Eighth Basic Plan for Long-term Supply and Demand indicates that only a selected number of large-scale projects for renewable energy expansion with a high level of local receptivity will be funded, but no details are available as of yet about the selection criteria. Such measures will not be exempted as “non-specific” under the ASCM.

Secondly, if the South Korean government’s measures are interpreted as providing general infrastructure, they will be exempted from the specificity criteria.³⁹ The ASCM

³⁹ ASCM Article 1.1(a)(1)(iii) excludes general infrastructure from the definition of subsidies.

recognizes the usefulness of and inevitable need for subsidies to supply public goods, and it does not completely ban subsidies in this regard. The South Korean government can argue that the installation of energy deployment networks in rural areas is a form of delivering general infrastructure. Lee (2017: 138) goes so far as to claim that measures taken in response to climate change can be generally considered as providing “green infrastructure” to increase the range of permitted subsidies. At the moment, however, such a claim has not been accepted by the DSB.

4. CONCLUSION

This study contributes to the growing literature on the relationship between “green subsidies” and international trade rules by exploring the possibility of South Korea’s aggressive renewable energy initiatives centered on the *2030 Renewable Energy Implementation Plan* to be challenged under the WTO ASCM.

The Moon administration announced ambitious policy goals to increase renewable energy and cultivate the related domestic industry. The 20% target for renewable energy’s share by 2030 marks a clear departure from the conservative position of previous administrations. The proposed policy tools—including large-scale project-based aid, favorable loan terms, the RPS system with weighted REC, and the Korean-style FIT model—involve some elements of prohibited and actionable subsidies under the ASCM.

This conclusion does not mean that questionable measures by the South Korean government are all WTO-illegal. No one can say for sure until certain measures are challenged in the WTO dispute settlement procedure and the DSB renders its final verdicts. In addition, “everyone’s hands are dirty” to the extent that many countries are tempted to, or actually do, provide support, either prohibited or actionable, for their domestic renewable enterprises and industries in an era of climate change.

Nevertheless, the Moon administration should take note of the fact that export subsidies and LCRs are prohibited under the existing global trading regime, and whether or not its policy tools violate trade rules will be judged not by their intention but by their results. In this regard, some measures to promote renewable energy export and local engagement are highly problematic. It is understandable for the South Korean government to be concerned with its renewable energy policy and thus to make reform efforts toward the FIT and the RPS. However, the preferential treatment of SMEs and social cooperatives as well as the strict residential requirements for renewable energy projects are likely to violate WTO rules.

Other supporting measures initiated by the Moon administration are legally questionable and actionable as they are designed to confer benefits specifically to South Korean renewable energy firms at the cost of foreign enterprises and industries.

The South Korean case shows how easily a popularity-oriented government can be captured by emerging renewable industries and activists. It also demonstrates that, no matter how well intentioned, renewable policy can drift from its original “environmental” purpose as it responds to various political, social, and economic forces. Renewable energy policy thus requires a careful balance among different policy goals—that is, a trilemma among energy security, energy equity, and environmental sustainability. Abandoning the free trade principle is not a solution to the trilemma. The history of international trade has proven that government subsidies will eventually lead to the distortion of the global market and possibly a trade war.

While subsidies may be effective in the short term, there are less trade-restrictive methods to promote renewable energy. For instance, reducing subsidies for fossil fuels can contribute to the increasing price competitiveness of renewable energy in the market. Instead of hastily pursuing short-term outcomes, the Moon administration should take the time to establish a solid infrastructure and framework so that South Korea's renewable energy industry can firmly take root and achieve sustainable growth rather than seeking rents from ill-designed policies.

Mitigating and adapting to climate change requires global collective efforts. No man (or country) is an island in this context. The same is true for the WTO. The lack of clear exception clauses in the ASCM has caused many trade disputes over grey areas and failed to stop member countries from giving out R&D or environmental subsidies rather recklessly. The WTO agreement may require amendments to reconcile the principle of free trade and environment sustainability. At the same time, a highly export-dependent country such as South Korea cannot simply ignore the existing WTO regime. In conjunction with efforts to reform the international economic institution to better harmonize trade and the environment, governments should seek less restrictive measures for a sustainable linkage between trade and the environment.

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