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REPORT

North Korea's Climate Change Policy in the Kyoto Protocol System

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Acronyms

AAS: Academy of Agricultural Sciences (DPRK)
CBDR: Common But Differentiated Responsibilities
CBS: Central Bureau of Statistics (DPRK)
CDM: Clean Development Mechanism
COI: Commission of Inquiry (UN OHCHR)
COP: Conference of the Parties (UNFCCC)
CRED: Center for Research on the Epidemiology of Disaster (Belgium)
CRS: Congressional Research Service (US)
EDCF: Economic Development Cooperation Fund
ENSO: El Niño Southern Oscillation
ESCAP: Economic and Social Commission for Asia and the Pacific (UN)
FDRC: Flood Damage Rehabilitation Committee (DPRK)
GCF: Green Climate Fund
GEF: Global Environment Facility
GGGI: Global Green Growth Institute
GHG: Greenhouse Gas
IDNDR: International Decade for Natural Disaster Reduction
IEA: International Energy Agency
IISD: International Institute for Sustainable Development
IPCC: Intergovernmental Panel on Climate Change
KCNA: Korean Central News Agency (DPRK)
KMA: Korea Meteorological Administration (ROK)
KPA: Korean People's Army (DPRK)
LUCF: Land-Use Change and Forestry
MCM: Ministry of City Management (DPRK)
MCMLEP: Ministry of City Management and Land and Environmental Protection (DPRK)
MEI: Ministry of Electricity Industry (DPRK)
MFT: Ministry of Foreign Trade (DPRK)
MLEP: Ministry of Land and Environment Protection (DPRK)
MOU: Ministry of Unification (ROK)
NCCE: National Coordinating Committee on Environment (DPRK)
NDC: National Defense Commission (DPRK)

NDC: Nationally Determined Contributions (UNFCCC)
NEPC: National Environmental Protection Committee (DPRK)
NIER: National Institute of Environmental Research (ROK)
ODA: Official Development Assistance
OECD: Organization for Economic Cooperation and Development
OFDA: Office of Foreign Disaster Assistance (US)
OHCHR: Office of the High Commissioner for Human Rights (UN)
PCGG: Presidential Committee on Green Growth (ROK)
PDS: Public Distribution System (DPRK)
PP: Polluter Pays
SAOS: State Academy of Sciences (DPRK)
SCST: State Commission of Science and Technology (DPRK)
SHMA: State Hydro Meteorological Administration (DPRK)
SPA: Supreme People's Assembly (DPRK)
UNCCD: UN Convention to Combat Desertification
UNDP: United Nations Development Programme
UNEP: United Nations Environment Programme
UNFCCC: United Nations Framework Convention on Climate Change
UNIDO: United Nations Industrial Development Organization
UNITAR: United Nations Institute for Training and Research
WEF: World Economic Forum
WFP: World Food Programme
WPK: Worker's Party of Korea (DPRK)
WWF: World Wildlife Fund

Executive Summary

The two Koreas' divergent growth and development paths resulting from political-economic or socioeconomic differences eventually have led to differences in environmental and ecological issues, North and South Korea typifying the problems facing poor and advanced countries respectively. Putting their differences aside, the two Koreas share certain environmental risks that derive from their common geographical location: the Korean Peninsula. The most representative of the many environmental risks they share is climate change. This report aims to explore North Korea's domestic and foreign policies in response to the crisis of climate change. In particular, it focuses on North Korea's climate change policy under the Kyoto Protocol system, which had set the first rules and norms for international cooperation coping with climate change since the launch of the UNFCCC.

Every climate policy is somewhat related to *adaptation* and *mitigation*, which the UNFCCC highlights as the two fundamental response strategies to address climate change issues. While *mitigation* looks at limiting climate change by reducing GHG emissions and by enhancing the use of clean and renewable energy resources, *adaptation* aims to lessen the adverse impacts of climate change through a wide-range of system-specific actions. The priority of North Korea's policy toward climate change has been to minimize direct damage from natural calamities caused by extreme weather events and to address food shortages and water management, which are indirect offshoots of natural disasters. In short, North Korea's approach to national capacity-building for climate change has been an adaptation policy rather than mitigation policy. A lack of mitigation policy in North Korea seems rational: North Korea's GHG emission levels have been quite low due to its decrepit economy and absolute energy shortages. North Korea's adaptation policy still appears to have focused on land management and restoration of a wrecked environment for the construction of basic infrastructure. North Korea has assumed an unusually active attitude toward international regimes and cooperation related to climate change. This was mainly because the Kyoto Protocol system under the UNFCCC-centered international climate change regime was driven by the principles of *Common but Differentiated Responsibilities* (CBDR) and *Polluter Pays* (PP). These principles of the Kyoto Protocol system made North Korea a beneficiary country that would receive financial and technological assistance from advanced economies, and the North Korean regime was able to transform its foreign policy to make good use of the international system under the name of the country's climate change diplomacy.

North Korea's impoverished economic conditions render the implementation of its climate change policy difficult without international cooperation or assistance. Hence, it has been heavily reliant on assistance and aid from international organizations or individual advanced economies in order to strengthen its national capacity-building. Yet, it remains questionable whether North Korea has sincerely followed international norms and efforts in global cooperation in responding to climate change as much as it has sincerely responded to domestic natural disasters since the Arduous March in the mid-1990s, or deliberately used the Kyoto Protocol system for its own diplomatic interest in securing international aid. For one, while North Korea actively sought financial and technological assistance from advanced economies based on the principles of CBDR and PP, it is doubtful whether it faithfully fulfilled the "common responsibilities" that were due from Non-Annex I Parties. In addition, doubts linger over the role of the NCCE (National Coordinating Committee on Environment), which has been responsible for the North Korean diplomacy and international cooperation on climate change, as well as the distribution of foreign aid during the Kyoto Protocol era.

The Kyoto Protocol's dichotomy of one side taking responsibility for its past wrongdoings and the other side receiving benefits for the current victimized outcomes almost came to an end, when the Paris Agreement was adopted by the world in 2015, with the launch of a post-Kyoto Protocol system, *i.e.*, the New Climate System. From then on, all the Parties of the UNFCCC are subject to similar levels of binding responsibilities, and whether North Korea will continue to be active about its diplomacy and international cooperation on climate change under the post-Kyoto Protocol era is left to be seen. In other words, we will certainly be able to confirm North Korea's sincerity toward international cooperation on climate change only when it is asked to take responsibility and make contributions.

The ramifications of climate change have been more serious for North and South Korea, the co-occupants of the Korean Peninsula, compared to the global average. Although they are bound to share the same ecological destiny, they have yet to even launch a discussion on climate change cooperation. Inter-Korean cooperation on climate change, mostly South Korea's assistance or aid to tackle climate change in North Korea as well as the Korean Peninsula, was neither sustainable nor long-term—

it was more like a one-off deal. In fact, inter-Korean bilateral cooperation has focused more on the South providing the impoverished North with humanitarian assistance and afforestation funds—in other words, hefty funding—than on the two Koreas working together to achieve the common goal of responding to the threats of climate change on the Korean Peninsula. The two Koreas need to propose and pursue initiatives that are for the common good of the Korean Peninsula, rather than cooperation that is rooted in one side's political and policy agenda. Only when this happens can the two Koreas build trust, and can South Korea truly be of help in North Korea's national capacity-building to cope with climate change risks.

Climate change on the Korean Peninsula seems to have had more important implications than anywhere else in the world. For the two Koreas, which share the Korean Peninsula, climate change is both a threat and an opportunity. As long as North and South Korea both respond to climate change and remain firmly committed to guaranteeing the sustainability of the Korean nation and the ecosystem of the Korean Peninsula, they may reduce the threat of climate change and at the same time establish peace on the Korean Peninsula. Furthermore, inter-Korean cooperation on climate change, a *low politics* issue, may help to defuse tensions from North Korea's nuclear threats and bring actual progress in the trust-building process of the Korean Peninsula.

I. Introduction: The Background

The seven decades of division and confrontation on the Korean Peninsula have prevented the two Koreas from preserving a single, unified socio-ecological system. The severance of traffic routes and the divergence of industrialization paths and urbanization processes have resulted in two very different residential environments that went beyond a natural ecosystem's adaptability. South Korea (ROK) has pursued economic development as its "growth pole development strategy" to increase the efficiency of land usage for land development and expansion of social overhead capital. Such an initial strategy, coupled with principles of market economy, has led to serious problems in the land and water management, and heavy population concentrations in major cities have surfaced as the biggest environmental challenge. The environmental risks faced by South Korea, which has attained phenomenal economic growth and entered a post-industrial phase in a short period of time, are not much different from those confronted by other advanced countries in that they arise from abundance and dissipation.

North Korea (DPRK), by contrast, has fostered local industries in rural areas as part of its strategy to strike a balance among all small- and medium-size cities across the country. Consequently, the North ended up with more farmland and bigger-size cities than before, but significantly reduced forests. Over-development of terraced fields and fuel supply shortages, in particular, have been the main causes of forest devastation. The accumulation of sediments in rivers has also posed a major problem for the management of water resources. After the Korean War, North Korea failed to achieve success in its early stages of industrial modernization and economic development due to its closed social structure, planned economy, and abnormal leadership. As a result, North Korea has joined the league of poor countries, sharing with them similar environmental problems arising from deficiency and neglect.

The two Koreas' divergent growth and development paths resulting from political-economic or socioeconomic differences eventually have led to differences in environmental and ecological issues, North and South Korea typifying the problems facing poor and advanced countries respectively. The two Koreas are each responding to disparate sets of environmental challenges due to their different industrialization and urbanization levels and disparate environmental strategies and policies. The two Koreas' policies toward environmental threats have been determined by their national capacities and

their sense of responsibility toward, and consideration for future generations. Putting their differences aside, the two Koreas share certain environmental risks that derive from their common geographical location: the Korean Peninsula. The most representative of the many environmental risks they share is climate change.

Ulrich Beck once quipped, "Poverty is hierarchical, while smog is democratic" (Beck 1992, p. 36). The risks of modern-day society have increasingly taken on the form of transnational and non-hierarchical catastrophes. Just like any other global issues, climate change is a common problem for the entire international community. It surpasses left-right ideologies; it transcends national boundaries. The dangers of climate change usually stem from disasters that imperil our lives every day, on a global level. The disasters include ecosystem destruction, gene manipulation, unprecedented diseases, and energy resource depletion.

As climate change progresses, it will inevitably pose to mankind risk factors that have never before existed. In fact, climate change is already increasing meteorological disasters, intensifying environmental damage, and aggravating ecological loss. The impact and seriousness of climate change are bound to appear in various forms across many fields besides the environment, such as food, water, and energy. Frequent natural disasters such as heavy rains, typhoons, snowstorms, and drought, for example, have had a direct and heavy toll in recent years. Due to the universality of climate change, the climate risks that North and South Korea are each facing will gradually escalate into more macroscopic and transboundary threats.

It has long been proven that anthropogenic influences—that is, the greenhouse effect from humans' use of carbon-based fuel—are the biggest cause of climate change.[1] Although a small group of scientists denies human impacts on climate change and claims that it is part of the earth's natural evolutionary cycle, "it is *extremely likely* that

1. In the late 19th century, Irish scientist Tyndall (1873) first proved that "radiant heat" produced by water vapor in the earth's atmosphere would warm up the earth. Swedish chemist Arrhenius (1896) also discovered that emissions of carbon dioxide (CO_2), commonly known as greenhouse gas (GHG), would cause global warming and, subsequently, climate change. GHGs can absorb and emit infrared radiation, but not radiation in or near the visible spectrum. The GHGs that make up the earth's atmosphere are, in the order of abundance, water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3).

human influence has been the dominant cause of the observed warming since the mid-20th century" (IPCC 2013, p. 17). Unless we can bring about a drastic civilizational change in the use of fossil fuel, which has hitherto been the backbone of industrialization and modernization, we will not be able to put a stop to climate change or reverse the current trend of global warming.

Global society will have no choice but to adapt itself to climate change and mitigate global warming. Climate change has now become an invariable—not a variable—in every country's domestic policy and diplomatic agenda for international cooperation, irrespective of whether it is an advanced country or an underdeveloped country. The principles of "Common But Differentiated Responsibility (CBDR)" and "Polluter Pays (PP)"—stipulated in the United Nations Framework Convention on Climate Change (UNFCCC) that took effect in 1994—have given both rich and poor nations alike shared responsibilities. Although the UNFCCC is not universally binding, this climate change regime has rendered it mandatory for all countries to weave, into their domestic and foreign policies, responses to and mitigation of climate change in a way that befits their national capacity. Such efforts are conducive to the immediate national interest of minimizing damage from climate change-caused disasters. More importantly, each country would be making investments in its future strategies and in the security of their posterity.

This report aims to explore North Korea's domestic and foreign policies in response to the crisis of climate change. In particular, it focuses on North Korea's climate change policy under the Kyoto Protocol system, which had set the first rules and norms for international cooperation coping with climate change since the launch of the UNFCCC. There are some reasons why the period of study is limited to the Kyoto Protocol era.[2] Above all, the current New Climate System launched as the Paris Agreement (2015), which replaced the Kyoto Protocol system, has changed the rules and norms that individual countries should follow. The most significant and substantial change between the two systems in the international rules and norms necessarily affecting all the individual countries' policy decision is that the CBDR and PP principles of the

2. In this report, the Kyoto Protocol era is defined as about 20 years between the mid-1990s and the mid-2010s or between 1997 (when the Kyoto Protocol was introduced to the UNFCCC regime) and 2015 (when the Paris Agreement was adopted for the New Climate System to replace the Kyoto Protocol system).

Kyoto Protocol system has been changed to the "Common Guidance with Flexibility" principle in the Paris Agreement system. In other words, in the Kyoto Protocol system North Korea and other underdeveloped economies, so-called Non-Annex I Parties under the UNFCCC regime, could only be treated as beneficiaries of international cooperation, free from mandatory and practical obligations to tackle climate change. Under the current Paris Agreement system, however, all countries including the Non-Annex I Parties need to contribute to international cooperation on climate change on the basis of their own "Nationally Determined Contributions (NDC)" submitted to the UNFCCC. North Korea is also expected to change its climate change policy in that it now has practical obligations under the New Climate System, and it will be possible to evaluate the policy according to the changed international rules and norms.

The more realistic reason why the scope of this report is set at the time of the previous international climate change system is the rareness of data and information on North Korea's climate change policy changed after the Paris Agreement became effective in 2016. The scarcity and exclusivity of data and information stemming from the closed nature of the North Korean system have long been a problem for research on North Korea's policy in other areas as well. Furthermore, it must be acknowledged that there is also a significant limitation in the development and evaluation of nations' climate change policies under the current international climate change regime, given that there has been no international consensus yet on the detailed implementation rules (so-called "rulebook") of the Paris Agreement, especially regarding the Article 6 on international carbon market and cooperative mechanism.

Because of the North Korean regime's abnormal and incompetent management of the state founded on "military-first politics (*Songun Politics*)" and closed totalitarianism, the international community's focus on North Korea is driven primarily by political and military factors. Pyongyang's interest in climate change, however, offers new insights into understanding the country's environmental policy and diplomacy. In fact, in no other area does North Korea wish for and pursue international cooperation with such a proactive and open attitude during the Kyoto Protocol era. This is because climate change is basically an apolitical issue, and owing to its severe lack of capacity-building ability, North Korea is one of those countries that most require outside assistance for its adaptation to and mitigation of climate change. Interestingly, however, North Korea shrewdly took advantage of the subtle tensions that exist between developed and underdeveloped nations—respectively categorized as Annex I (or Annex II) and Non-

Annex I Parties under the Kyoto Protocol regime—over the responsibilities and obligations deriving from the CBDR and PP principles. In that light, we may reasonably question whether North Korea was *politically* using the *apolitical* climate change issue for its own benefit in the Kyoto Protocol system.

II. Climate Change in North Korea and the Consequences

The IPCC Fourth Assessment Report (2007) points out that those regions and states that lag behind in economic and industrial development are prone to be more vulnerable to climate change. This argument is based on the undeniable fact that, the poorer a country, the less infrastructure it has with which to respond to extreme weather and natural disasters and the more difficult it becomes to use advanced technology to prevent or minimize damage. Furthermore, a poor country has very limited resources to acclimate its industries and way of life to the changing climate, and it is highly dependent on nature for securing food and water. In this vein, the impact of climate change on North Korea was bound to be bigger than any other countries, for the country has been economically behind because of its mismanagement of state. North Korea's vulnerability to climate change was the worst outcome that had resulted from its inadequate national capacity and policy failure to respond properly to the various symptoms of climate change on the Korean Peninsula.

1. Climate Change on the Korean Peninsula

Climate change on the Korean Peninsula has been even more serious than the global average. Carbon dioxide (CO_2) concentration, known as the main culprit of global warming, in the Korean Peninsula's atmosphere has increased at a faster rate than the global average. It climbed to 2.3ppm/year during the Kyoto Protocol era (between 1998 and 2008), which was higher than the global average of 1.9ppm/year during the same period. The growth rate of other GHGs, such as CH_4 and N_2O, also has exceeded that of the global average (NIER 2010). By the time the Kyoto Protocol was introduced, North and South Korea each had emitted more than twice the average amount of GHGs generated by the 122 developing countries belonging to the Non-Annex I Parties category under the UNFCCC. When the two Koreas' GHG emissions were combined, they were more than quintuple those of other individual Non-Annex I countries (UNFCCC 2005).

In addition to the significantly higher GHG concentration levels on the Korean Peninsula compared to other regions of the world, signs of global warming were more

Table 1. Total Aggregate Emissions and Removals of CO_2, CH_4 and N_2O in CO_2 Equivalent, Excluding and Including Land-Use Change and Forestry (LUCF), as of 1994

UNFCCC Non-Annex I Parties	Without LUCF (Gg)	With LUCF (Gg)
	Total	Total
	Average	Average
Africa (43 countries)	1,612,904.22	1,201,794.07
	37,509.40	27,948.70
Asia and the Pacific (41 countries)	7,929,689.69	7,614,071.57
	198,242.24	190,351.79
Latin America and the Caribbean (31 countries)	2,058,599.43	2,986,460.11
	66,406.43	96,337.42
Other (7 countries)	134,243.56	129,170.10
	19,177.65	18,452.87
Total (122 countries)	11,735,436.90	11,931,495.85
	96,192.11	**97,799.15**
North Korea (A)	**201,930.35**	**187,308.89**
South Korea (B)	289,458.00	263,223.00
Korean Peninsula (A+B)	**491,388.35**	**450,531.89**

Source: UNFCCC. 2005. *Sixth Compilation and Synthesis of Initial National Communications from Parties not included in Annex I to the Convention: Inventories of anthropogenic Emissions by Sources and Removals by Sinks of Greenhouse Gases.*

conspicuous on the Korean Peninsula than anywhere else during the Kyoto Protocol era. According to *The IPCC Fifth Assessment Report* (2013), global warming has been unequivocally in progress, and higher land and sea temperatures, glacial melting, and sea-level rises have ensued. For example, the earth's annual mean temperature rose by 0.85℃ over the past 133 years (1880-2012). In the meantime, the Korean Peninsula's annual mean temperature went up by 1.23℃ over the past three decades (1981-2010). North Korea's annual mean temperature increased by 1.4℃ during that time, indicating that global warming had taken a bigger toll on the North than South Korea, whose

annual mean temperature rose by 1.1℃ in the same period (KMA 2012). According to the North Korea's official data, between 1918 and 2000, annual mean temperature in North Korea increased by 0.19℃/10 years. This was more than three times higher than the average global warming rate from 1901 to 2000 (0.06℃/10 years; IPCC 2007). Meanwhile, from 1971 to 2005, North Korea's annual mean temperature increased by 0.35℃/10 years. In other words, North Korea became severely warmer in the latter half of the 20th century (MLEP 2012a).

Climate change has led to higher sea levels. The global mean sea level rose by 19cm over the past 110 years (1.7mm/year). Between 1993 and 2010, however, the earth's sea levels rose by 3.15mm/year, nearly twice the rate recorded between 1880 and 2012. (IPCC 2013). According to a study, the rate of sea-level rise around the Korean Peninsula between 1993 and 2011 was 3.57mm/year, higher than the global average (Cho 2011). Given the rate of global warming and sea-level rises—the vital signs of climate change—the effects of climate change were harsher on the Korean Peninsula than in other parts of the world during the Kyoto Protocol era.

2. Loss and Damage from Climate Change

Symptoms of climate change, as exemplified by the warming of the Korean Peninsula or by the sea-level rises, call for preparations against more changes to the ecosystem in the future, as well as new risks that our limited experiences have not yet taught us to foresee. Changes in climate not only affect its mean temperature or ecological system, but also increase the likelihood of aberrational weather-related natural disasters. The more pressing non-traditional security question for North Korea is whether it has the national capacity to respond to unusual or unprecedented weather phenomena which climate change is sure to bring.

Climate change has threatened mankind in various ways, and with the passage of time, its hazards will likely become more ominous. Some of its risks include severe and widespread damage to unique and threatened human and ecosystems, as well as substantial species extinction and threats to global food and water security. The expectation pitches the challenge as needing to identify the risks and deciding how to manage them. It also identifies various global risks, considering high probability and irreversibility, such as death, injury and disrupted livelihoods due to storm surges, coastal flooding and sea-level rise in low-lying communities, the breakdown of critical service

such as electricity, water supply and emergency services due to extreme weather, and food insecurity due to heat wave, drought, flooding and extreme rainfall, particularly in poorer countries (IPCC 2014).

At the 19th UNFCCC Conference of the Parties (COP19) in 2013, Rachel Kyte, Vice President of Sustainable Development at World Bank, stated that over the last 30 years the world has lost nearly 2.5 million people and US$4 trillion due to natural disaster. More than 80% of all the natural disaster cases were weather-related disasters such as typhoons, droughts and floods, which are known to be aggravated by global warming. This World Bank report synthesizes and analyzes in detail insurance companies' and think tanks' reports, which tabulate human casualties and damage to buildings from weather-related disasters, as well as the degeneration of water resources and employment losses from the disasters. Losses and damages from natural disasters have been rising over the last three decades, from an annual average of around $50 billion

Table 2. The Long-Term Climate Risk Index (CRI): Results (Annual Averages) in Specific Indicators in the 10 Countries Most Affected during the 1990s and 2000s

CRI 1992-2011 (1991-2010)	Country	CRI Score	Death Toll	Deaths per 100,000 inhabitants	Total losses in million US$ PPP	Losses per unit GDP in %	Number of events (Total, 1992-2011)
1 (3)	Honduras	10.83	329.25	4.96	679	2.84	60
2 (2)	Myanmar	11.00	7,137.25	13.79	640	1.41	37
3 (4)	Nicaragua	18.50	160.0	2.82	223	1.89	44
4 (1)	Bangladesh	20.83	824.4	0.58	1,721	1.18	247
5 (5)	Haiti	21.17	301.1	3.43	148	1.08	54
6 (6)	Viet Nam	23.67	433.15	0.55	1,741	1.06	214
7 (9)	**North Korea**	**26.00**	**76.65**	**0.33**	**3,188**	**7.64**	**37**
8 (8)	Pakistan	30.50	545.9	0.38	2,183	0.73	141
9 (55)	Thailand	31.17	160.4	0.26	5,413	1.38	182
10 (7)	Dominican Republic	31.33	211.6	2.47	185	0.35	49

Source: Germanwatch, *Global Climate Risk Index 2013*.

each year in the 1980s to just under $200 billion each year in the 2000s. About three quarters of those losses and damages were a result of extreme weather. The impacts were particularly crippling in smaller and lower-income countries that were least able to cope (World Bank 2013, pp. 5-9).

Climate Risk Index (CRI), which takes into account various socioeconomic factors such as natural disasters, populations, and GNP, shows how much damage each country has incurred from climate change-related natural disasters such as floods, typhoons, and high temperatures. According to *Global Climate Risk Index 2013*, during the 1990s and 2000s, the 10 biggest victims of climate change all proved to be underdeveloped and developing nations without adequate national capacities to properly respond to climate change. North Korea ranks seventh on that top-10 list, but viewed from GDP losses, North Korea is estimated to top that list.

There is a famous anecdote that clearly illustrates North Korea's inability to respond to disasters. Heavy rains caused rivers in Pyongyang to flood the city in the lead-up to the historic Second Inter-Korean Summit in 2007, causing the event to be postponed by approximately two months. The major rivers in and around the North's capital—Taedong, Botong, and Hapjang Rivers—all failed to perform their basic functions, and hence failed to be of assistance in countering the ill effects of climate change, owing to the country's negligent management of these rivers. North Korea was hard-hit by a series of natural disasters since the mid-1990s, commonly referred to as the Arduous March. The floods of 1995, which appear to have had a direct impact on the Arduous March, reportedly resulted in the worst natural disaster damage in North Korea's history in terms of economic losses and human casualties. Floods continued to plague North Korea in 1996, and from 1998 to 2000, the country suffered from serious droughts. Damage from such successive natural disasters crippled the North to a degree that they brought about a significant social transition.

Table 3. Top 10 Natural Disasters in North Korea, 1990-2015 (by Economic Damage)

Ranking	Disaster	Date	Damage (1,000 US$)
1	Flood	Aug 1, 1995	15,000,000
2	Storm	Aug 31, 2000	6,000,000
3	Flood	Jul 26, 1996	2,200,000
4	Flood	Aug 7, 2007	300,000
5	Storm	Aug 8, 1993	110,000
6	Flood	Jul 24, 2004	20,000
7	Flood	Jul 18, 2012	11,400
8	Flood	Oct 9, 2001	9,400
9	Flood	Jul 30, 1999	2,000
10	Storm	Aug 31, 2002	500

Table 4. Top 10 Natural Disasters in North Korea, 1990-2015 (by Numbers of Affected People)

Ranking	Disaster	Date	Total Affected
1	Flood	Aug 1, 1995	5,700,000
2	Flood	Jul 26, 1996	3,270,000
3	Drought	Apr 2012	3,000,000
4	Flood	Aug 7, 2007	1,170,518
5	Flood	Jul 12, 2013	848,690
6	Storm	Aug 31, 2000	627,180
7	Flood	Oct 1995	500,000
8	Flood	Jul 24, 2004	199,255
9	Flood	Oct 9, 2001	177,584
10	Flood	Jul 18, 2012	93,089

Table 5. Top 10 Natural Disasters in North Korea, 1990-2015 (by Numbers of the Killed)

Ranking	Disaster	Date	Killed
1	Flood	Aug 7, 2007	610
2	Flood	Jul 12, 2006	278
3	Flood	1987	231
4	Flood	Jun 30, 2005	193
5	Flood	Jul 26, 1996	116
6	Flood	Oct 9, 2001	114
7	Flood	Jul 18, 2012	88
8	Flood	1987	84
9	Flood	Aug 1, 1995	68
10	Storm	Aug 28, 2012	59

Source: *The OFDA/CRED International Disaster Database (EM-DAT)*. Data version - v12.07.

3. Climate Change and Social Transition in North Korea

Meredith Woo-Cumings (2002) offers an interesting case study on the "political ecology" of famine in North Korea, which draws a link between climate change and North Korea's famine during the Arduous March of the mid-1990s, and observes a concomitant social transition in the country. For Woo-Cumings, the biggest causes of famine in the modern era are environmental and ecological, not political and economic. She asserts, "Climatic change and aberrational weather may have much more to do with famine than regime type, especially in less sophisticated economies whose technology and economic resources are ill-equipped to deal with such aberrations (Woo-Cumings 2002, p. 2). In line with Mike Davis' analysis (2001) on El Niño Southern Oscillation (ENSO) and crop yields, Woo-Cumings sees the North Korea's famine during the Arduous March as a terrifying concoction of the changes in the global climate system rather than a failure of an ineffective communist economy system and a centralized public distribution system (PDS).

> To make a long story short, North Korea seems to have been at the center of a global ecological disaster—it was profoundly affected by the ENSO of 1997-1998, said to be one of the worst in recorded history going back some three hundred years. The information on this 1997-1998 El Niño is abundant, given how environmental issues have quickly worked themselves to the top of the UN agenda, and also within the framework of the International Decade for Natural Disaster Reduction (IDNDR). Nowhere, however, is North Korea mentioned in connection to El Niño—the same country suffering one of the most publicized famines in recent history (Woo-Cumings 2002, p. 28).

What makes this case study unique is that it argues that climate change has had far more implications for North Korea's famine and social transition than the nature of the country's political regime and economic system. This is in contrast to the general assessment of the international community that North Korea's famine during the Arduous March, and its continuing food shortages are due not just to natural disasters alone, but to its systemic and political abnormality. For example, the UN OHCHR's *Report of the Commission of Inquiry on Human Rights in the Democratic People's Republic of Korea* (2014) describes the severe famine that persisted in North Korea during the Arduous March not so much as an economic problem that had its roots in crop yield reduction and food shortages as it was systemic violence that resulted from political suppression and inequality. The North Korea's public distribution system (PDS), under which all legal rations of cereals were allocated, determined the people's entitlements to food on the basis of their age or professional status. As the UN report points out, "The State's monopolization of access to food has been used as an important means to enforce political loyalty. The distribution of food has prioritized those who are useful to the survival of the current political system at the expense of those deemed to be expendable" (UN OHCHR 2014, p. 15). North Korea presumably could have even used the disastrous consequences of climate change, which are apolitical, for the political gain of the regime.

In general, there would be various causes of food shortages besides climate change-induced natural disasters. Soil acidification, failed water management, and inadequate fertilizer and energy sources, for example, could lead to a decline in crop yields. North Korea was no exception. Adding to the North Korean regime's woes were its centralized PDS and its abnormal and inhumane state management. These directly contributed to the continued disastrous famine across North Korea, despite the assistance and food

aid it had regularly received from the international community.[3]

Analysis of the causes of North Korean famine in the 1990s begs the deeper question of whether it was the political regime, or "political ecology" effected by climate change, that had a bigger impact. This debate aside, there is a general consensus that a series of severe natural disasters in turn have led to a social transition in North Korea. The foremost task facing the Pyongyang regime in the mid-1990s, in the midst of a power transition following Kim Il Sung's death, was how to deal with severe natural catastrophes and the ensuing food shortages. As it underwent the Arduous March, North Korea abandoned its attempt at China-style reform and opening up and concentrated on preserving its system under the banner of "independent socialism" (also known as "socialism of our style") and military-first politics ("*Songun Politics*"). Pyongyang's strategy of independent socialism was, of course, aimed at warding off the potential ramifications of the socialist bloc's collapse in the early 1990s. All in all, it was an inevitable policy decision for Kim Jong Il, who had to maintain regime stability and solidify his power.

While North Korea's climate change of the mid-1990s had a profound impact on the country's foreign relations, the more significant domestic social change resulting from the natural disasters and the ensuing famine was the emergence of "*jangmadang* (markets)." In 1997, the UN's World Food Programme (WFP) witnessed malnutrition in North Korea and described the society as "walking the edge of a major famine." Without the help from foreign countries, North Korea was unable to respond adequately to the famine. For a while, China filled the gap left by the Soviet Union's collapse and propped up North Korea's food supply with significant aid. North Korea increasingly became more dependent on China than it was on the Soviet Union. However, when

3. To supply each of its 24 million people with the WHO's recommended daily intake of 2,130kcal, North Korea needs approximately 6.54 million metric tons of crops per year. The WFP, however, classifies North Korea as a country requiring emergency food assistance. Hence, supposing that North Korea is expected to provide only 75% of the WHO's recommended daily intake, that would be 1,600kcal. That translates into approximately 167kg of food needed for every North Korean, or approximately 5.23 million metric tons of crops per year for all North Koreans. Of the 5.23 million metric tons of crops, 4.05 million metric tons are needed for people's daily intake, 300,000 metric tons for feed, 170,000 metric tons for seeds, 122,000 metric tons for processing, and 580,000 metric tons for miscellaneous purposes. See Kim 2010, p. 227.

China faced its own grain shortfalls and need for hard currency in the mid-1990s, it sharply cut its aid to North Korea. The North Korean regime initially responded to this crisis by intensifying policies of increasing physical labor requirements and initiating austerity measures known as the "Eat Two Meals a Day" campaign. Devastating natural disasters caused by climate change, in combination with Pyongyang's incompetent politics and poor economy, led to countless deaths and mass starvation. That is, facing nationwide food shortages, the North Korean regime had no choice but to turn a blind eye to the spread of underground farmers' markets. These markets became an unofficially recognized mechanism for satisfying the basic needs of the people that could not be met through the traditional regime-operated PDS. In this light, climate change must be viewed as one of the key drivers of this socioeconomic transition, as it triggered the rise of markets in the country that had obstinately clung to a robust socialist and controlled system.

III. North Korea's Climate Change Policy during the Kyoto Protocol Era

Climate change has a direct and indirect bearing on a country's policy formulation. It figures directly into a country's current and future policy agendas, ranging from environmental policies closely aligned with the present living conditions and ecosystem; agricultural, fisheries, and forestry policies linked to the primary sector; and energy policies designed to cut GHG emissions based on the UNFCCC's guidelines or individual NDCs, to policies for responding to potential and unpredictable threats of climate change. As noted in the IPCC's various reports and Gwynne Dyer's bestseller, *Climate Wars: The Fight for Survival as the World Overheats* (2008), climate change has surfaced as a key factor not only in socioeconomic policies, but in various other policy areas that had been traditionally considered largely unrelated to climate, such as immigration and military.[4]

1. North Korea's Institutions for Environment and Climate Change

North Korea's basic land management failures, for example in regard to forests and rivers, were directly affected by the progress of climate change in the 1990s and ensuing extreme weather events and natural disasters. Faced with aggravated environmental conditions, the North Korean regime came to feel keenly that revamping its environmental policy for improved land management and environmental protection was a matter of national security in an era of climate change. Soon after he ascended to power in the mid-1990s, Kim Jong Il pointed out that "carrying out land management and

4. Climate change has had a deep impact on the foundations of the ideologies that prop up the North Korean system. The crux of North Korea's military-first politics is that military affairs must be of foremost consideration in all policy-making decisions, and it, alongside Kim Il Sung's *Juche Idea*, form the twin pillars of the North Korean system. As mentioned before, a series of severe natural catastrophes in the mid-1990s and the concomitant damage and famine formed the backdrop of military-first politics' emergence. Kim Jong Il, who succeeded to power at that time, understood that he could not pacify a disturbed population with the usual party-centered socialist ideas. Hence, he chose to unite the public in the name of military might by championing military-first politics. Jeon 2009, pp. 198-199.

environmental protection work well is a global trend and made efforts toward national capacity-building for land management."[5] The result was one of pleasant surprise. The North Korean regime was able to effect major institutional changes in environmental protection and land management. A review of North Korean sources shows that approximately 80% of its 53 climate change and environment-related legal provisions alleged by the North Korean regime were enacted after the mid-1990s.

Table 6. North Korea's Laws Related to Climate Change

No	Law	Date Enacted	Remarks
1	Law on Agriculture	Dec 18, 1998	Decree No. 290
2	Law on Aliens Enterprise	Oct 5, 1992	Decision No. 19
3	Law on Aliens Investment	Oct 5, 1992	Decision No. 17
4	Law on Atomic Energy	Feb 12, 1992	Decision No. 15
5	Law on Automotive Traffic	Feb 12, 1997	Decision No. 83
6	Law on Barrage	Mar 21, 2001	Decree No. 2140
7	Law on Border Quarantine of Animals and Plants	July 16, 1997	Decision No. 89
8	Law on City Management	Jan 29, 1992	Decision No. 14
9	Law on Coal	Jan 7, 2009	Decree No. 3044
10	Law on Control of Thermal and Pressure Equipment	Jan 24, 2007	Decree No. 2125
11	Law on Crude Oil	Jan 10, 2007	Decree No. 2112
12	Law on Education	July 14, 1999	Decree No. 847
13	Law on Electric Power	Dec 20, 1995	Decision No. 65
14	Law on Energy Management	Feb 4, 1998	Decision No. 108
15	Law on Environment Impact Assessment	Nov 9, 2005	Decree No. 1367
16	Law on Environmental Protection	Apr 9, 1986	Law No. 5
17	Law on Export and Import of Technology	June 10, 1998	Decision No. 119
18	Law on Fish Farming	Dec 18, 1998	Decree No. 288

5. Kim Jong Il's talk with senior functionaries of the Workers' Party of Korea (WPK) Central Committee, "On Bring About New Changes in Land Management Work" (August 11, 1996).

No	Law	Date Enacted	Remarks
19	Law on Fishery	Jan 18, 1995	Decision No. 49
20	Law on Foreign Trade	Dec 10, 1997	Decision No. 104
21	Law on Forest	Dec 11, 1992	Law No. 9
22	Law on Fruit Culture	Dec 4, 2002	Decree No. 3453
23	Law on Fuel for Resident	Dec 18, 1998	Decree No. 287
24	Law on Joint Venture	Sep 8, 1984	Decision No. 10
25	Law on Land Planning	Mar 27, 2002	Law No. 12
26	Law on Land	April 29, 1977	Law No. 9
27	Law on Landscape	Nov 25, 2010	Decision No. 1214
28	Law on Livestock Farming	Jan 12, 2006	Decree No. 1523
29	Law on Management of Pyongyang City	Nov 26, 1998	Decree No. 286
30	Law on Management of Veterinary Medicine	June 24, 1998	Decision No. 121
31	Law on Medicines Management	Nov 12, 1997	Decision No. 101
32	Law on Medium and Small Power Stations	April 11, 2007	Decree No. 2206
33	Law on Meteorology	Nov 9, 2005	Decree No. 1368
34	Law on Nature Reserve	Nov 25, 2009	Decree No. 445
35	Law on Organic Industry	Nov 23, 2005	Decree No. 1396
36	Law on Pollution Prevention in Taedong River	Feb 10, 2005	Decree No. 946
37	Law on Prevention of Infectious Diseases	Nov 5, 1997	Decision No. 100
38	Law on Prevention of Sea Pollution	Oct 22, 1997	Decision No. 99
39	Law on Protection and Control of Land and Environment	May 27, 1998	Decision No. 116
40	Law on Protection of Scenic Beauty Spot and Living Monument	Dec 13, 1995	Decision No. 64
41	Law on Protection of Useful Animals	Nov 26, 1998	Decree No. 283
42	Law on Public Health	Apr 3, 1980	Law No. 5
43	Law on Rivers and Streams	Nov 27, 2002	Decree No. 3436
44	Law on Road Traffic	Oct 6, 2004	Decision No. 709
45	Law on Sanitation	July 15, 1998	Decree No. 123

No	Law	Date Enacted	Remarks
46	Law on Science and Technology	Dec 15, 1988	Decision No. 14
47	Law on Sewer	Dec 10, 2009	Decree No. 486
48	Law on Tideland	July 20, 2005	Decree No. 1199
49	Law on Underground Resources	April 8, 1993	Law No. 14
50	Law on Veterinary and Anti-epizootic	Dec 17, 1997	Decision No. 105
51	Law on Wastes Disposal	April 26, 2007	Decree No. 2215
52	Law on Water Resources	June 18, 1997	Decision No. 86
53	Law on Waterway	Mar 10, 2004	Decree No. 314

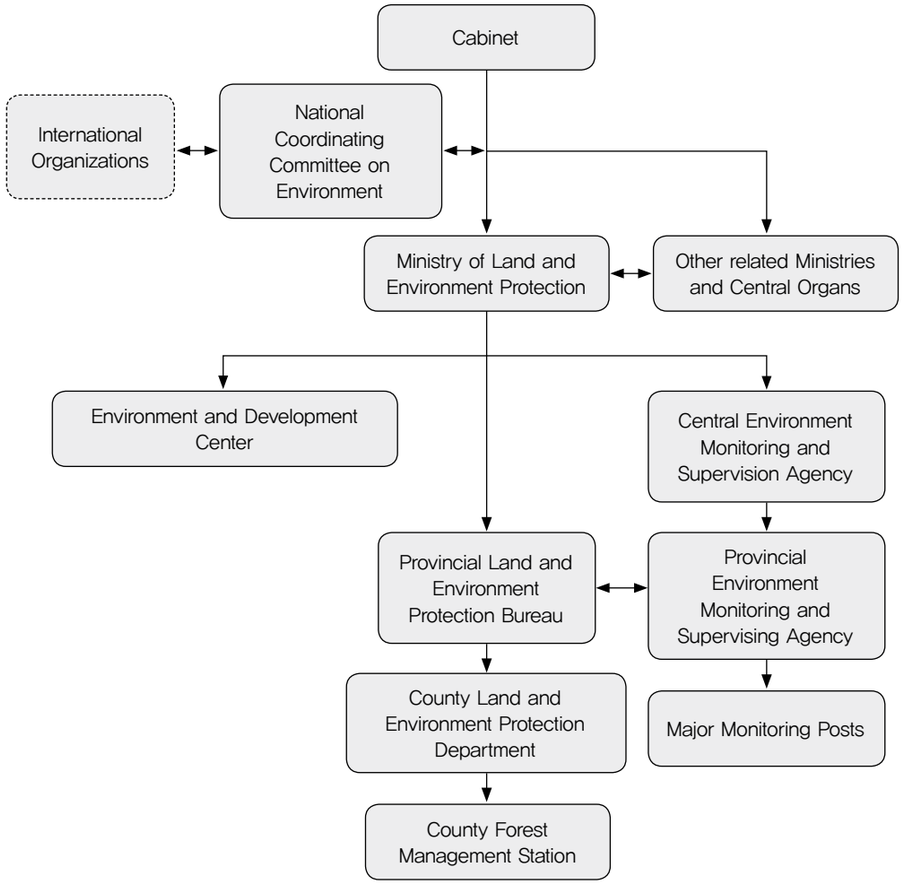
Source: MLEP. 2012a. *DPRK's Second National Communication under the UNFCCC*, pp. 45-46.

North Korea created its first-ever government agency for environmental and land management, so-called "Hydrometeorological Service," under the Administration Council's Agriculture Committee in July 1946. An equivalent of the Korea Meteorological Administration in South Korea, the Hydrometeorological Service was in charge of assessing weather conditions, gauging pollution levels, and managing rivers. When environmental issues surfaced as a major international concern, and weather anomalies brought to the fore various problems associated with land management, the North Korean regime in February 1993 established a "National Environmental Protection Committee (NEPC)" under the Administration Council to "faithfully perform North Korea's obligation to protect the global environment" (*Rodong Sinmun,* June 5, 1993). The duties and organizational structure of the NEPC remained veiled, but it is presumed to have been a nonpermanent office under the Administration Council.[6] The NEPC was upgraded to the "Ministry of Land and Environmental Protection" (MLEP) under the Administration Council in October 1996, becoming an official ministry in charge of environmental issues in North Korea.

6. Chapter 4, Article 39 of North Korea's Environmental Protection Law (enacted on April 9, 1986) stipulated that the Administration Council provided the state's unified guidance on environmental protection. It stated: "A non-standing environmental protection committee shall be created in the Administration Council to guarantee collective guidance on environmental protection and formulate necessary measures."

Two years later, in September 1998, a North Korean constitutional amendment replaced the Administration Council with a cabinet, and the MLEP and the Ministry of City Management (MCM) were integrated into the "Ministry of City Management and Land and Environmental Protection." Six months later, in March 1999, the Ministry of City Management and Land and Environmental Protection was again divided into the MLEP and the MCM. The MLEP has since overseen North Korea's environmental policy, land management policy, and climate change policy.

Figure 1. North Korea's Institutional Arrangement for Climate Change and Environment Management



Source: MLEP. 2012b. *DPRK Environment and Climate Change Outlook 2012*, p. 13.

One other North Korean central organ that draws attention is the "National Coordinating Committee on Environment (NCCE)." The NCCE is "responsible for coordinating policies among different ministries and is in charge of diplomacy and international cooperation on climate change" (MLEP 2012b, p. 11).[7] For these reasons, the NCCE is known to play a key role in drawing up and implementing North Korea's responses to climate change and its environmental policy. The NCCE will be examined more in a later chapter.

2. Mitigation Policy: The Economy in No Need of Emissions Cut

Every climate policy is somewhat related to *adaptation* and *mitigation*, which the UNFCCC highlights as the two fundamental response strategies to address climate change issues. While *mitigation* looks at limiting climate change by reducing GHG emissions and by enhancing the use of clean and renewable energy resources, *adaptation* aims to lessen the adverse impacts of climate change through a wide-range of system-specific actions (Fussel and Klein 2002). Mitigation, in the light of North Korea's situation and from a global perspective as well, could not be a policy consideration. In fact, mitigation did not appear to figure into any of major climate change policies in North Korea. Ironically, North Korea was one of a handful of countries that had significantly reduced their GHG emissions. The reasons were simple and free from any policy intentions: North Korea's collapsed economy and absolute energy shortages.

As Table 7 shows, North Korea's emissions of CO_2, the primary GHG, in 2011 went down by 43.1% from 1990. This is a major accomplishment when compared to a 49.3% growth rate in worldwide CO_2 emissions, or a 160.8% increase among Non-Annex I Parties (including North Korea) during the same period. Translating this into per capita figures, North Korean individuals' average CO_2 emissions in 2011 decreased by 53.2% compared to 1990. During the same period, global per capita CO_2 emissions

7. It is also possible that National Environmental Protection Committee (NEPC) was the predecessor of National Coordinating Committee on Environment (NCCE). However, according to official North Korean sources, including the DPRK's official documents submitted to international organizations and *Rodong Sinmun*, the NEPC belonged to the Administration Council, currently the Cabinet, but the NCCE is independent of the Cabinet. Furthermore, a review of the senior officials of the NCCE shows that the NCCE has closer ties to the WPK. Hence, the NEPC appears to be the predecessor of the Ministry of Land and Environmental Protection under the Cabinet.

Table 7. CO_2 Emissions Indexes (1990, 2000, and 2011)

	Countries	1990	2000	2011	% Change 1990-2011
CO_2 Emissions ($MtCO_2$)	**North Korea**	**114.0**	**68.6**	**64.8**	**-43.1%**
	South Korea	229.3	437.7	587.7	156.3%
	World	**20,988.7**	**23,758.6**	**31,342.3**	**49.3%**
	Annex I Parties	13,900.6	13,744.5	13,354.9	-3.9%
	Annex II Parties	9,794.8	10,996.5	10,363.0	5.8%
	Non-Annex I Parties	**6,469.4**	**9,177.7**	**16,873.7**	**160.8%**
CO_2 Emissions per Capita (tCO_2 per capita)	**North Korea**	**5.66**	**3.00**	**2.65**	**-53.2%**
	South Korea	5.35	9.31	11.81	120.7%
	World	**3.97**	**3.87**	**4.50**	**13.5%**
	Annex I Parties	11.82	11.16	10.33	-12.6%
	Annex II Parties	12.25	12.89	11.33	-7.5%
	Non-Annex I Parties	**1.57**	**1.88**	**2.98**	**89.4%**
CO_2 Emissions per GDP ($KgCO_2$ per 2005 US$1)	**North Korea**	**2.79**	**2.41**	**2.31**	**-17.3%**
	South Korea	0.64	0.65	0.56	-12.6%
	World	**0.69**	**0.60**	**0.60**	**-13.9%**
	Annex I Parties	0.56	0.44	0.36	-35.6%
	Annex II Parties	0.42	0.37	0.30	-29.3%
	Non-Annex I Parties	**1.22**	**1.11**	**1.11**	**-9.7%**

Source: IEA. *CO_2 Emissions from Fuel Combustion 2013* (http://www.iea.org/statistics).

went up by 13.5%, while per capita emissions among Non-Annex I Parties jumped by 89.4%. Yet, CO_2 emissions per GDP, which indicate energy efficiency ratio, show that North Korea's CO_2 emission cuts were not a result of its mitigation policy. When an economy produces the most economic output with the least emissions, CO_2 emissions per GDP are bound to be at their minimum. In other words, the more environment-friendly the use of energy in carrying out one's economic activity, the less costly it becomes, leading to the decoupling of economic growth and GHG emissions—that is, mitigation.

North Korea's CO_2 emissions per GDP decreased by 17.3% between 1990 and 2011. The global average was approximately 0.60-0.69 $KgCO_2$ per US$1 (using 2005 prices), and the average of Non-Annex I Parties (including North Korea) was approximately 1.11-1.22 $KgCO_2$ per US$1. By contrast, North Korea's CO_2 emissions per GDP were approximately four times the global average, and more than double the Non-Annex I Parties' average. In short, for the same amount of economic activity performed, North Korea had been emitting more CO_2 than other countries. As can be seen, energy shortages were the reason North Korea's CO_2 emissions were considerably smaller than those of other countries. This notwithstanding, the North Korean regime did not appear to be making any serious policy considerations or efforts to formulate a mitigation policy for reducing its carbon energy consumption.

One of the key points of mitigation policy is the utilization and popularization of renewable energy, which reduces GHG emissions. North Korea expressed interest in attracting investment in and introducing technology on renewable energy as a way of overcoming its energy shortages. It, however, seems that during the Kyoto Protocol era the North Korean regime viewed renewable energy not as a domestic policy but as a matter of international cooperation to attract foreign aid because its development and supply would require enormous financial investment. This, therefore, will be further addressed in a chapter on North Korea's diplomacy for international cooperation on climate change.

3. Adaptation Policy: The Nation in Desperate Need of Land Management

Most of the climate change policies that North Korea has carried out with or without any foreign aid or assistance may be classified as adaptation policies. As mentioned before, a series of climate change-induced natural disasters have engendered serious socioeconomic problems since the mid-1990s. In general, such problems are directly linked to the management and improvement of vulnerable environmental and social infrastructures. Owing to the long-pending problems of underdeveloped infrastructures, the current North Korean leader Kim Jong Un has proclaimed streamlining of land management and developing the national environmental infrastructure as key tasks for the country.

Such adaptation policies were the themes of the very first "*rojak* (work)" that Kim Jong Un issued to the masses soon after he gained all three major titles of Korean People's

Army (KPA) Supreme Commander (December 30, 2011), WPK First Secretary (April 11, 2012), and National Defense Commission (NDC) First Chairman (April 12, 2012).[8] The "work," published by *Rodong Sinmun* and Korean Central News Agency (KCNA) on May 8, 2012, was Kim Jong Un's talk with senior functionaries of the party, state economic organs, and working organizations on April 27, 2012. The work, entitled "On Bringing about Revolutionary Changes in Land Management in Line with Demands of Building a Socialist Powerful State," emphasizes national capacity-building centered on adaptation. The main points are as follows:

- Land management is far-reaching patriotic work for the wealth, power, and prosperity of the country and is noble work for providing excellent sites of living for the people.
- Land is the basic means of agricultural production and is a site of living for the people and the country's valuable treasure to be passed on to posterity. As such, we should thoroughly come up with measures for the rainy season, dredge riverbeds, and build dikes so as to prevent the burial or loss of tilled land.
- Forests, which account for nearly 80% of our land, are valuable resources of the country and treasures that we should pass on to posterity. Hence, we should turn all bare mountains into forests in the next 10 years.
- We have many rivers and streams, big and small, lakes, and reservoirs, and thus if can manage water well, we can prevent flood and drought damage and more excellently take care of the scenic beauty of the fatherland's land.
- Every year, we should designate November to next March as a forestry and underground resources preservation period, and March to July as a useful animal protection period, and carry out the country's nature conservation work intensively during these periods.
- We should vigorously carry out land management as all-party, nationwide, and all-people work, and party organizations should vigorously organize and mobilize party members and working people for land management and environmental protection work.

8. *Rojak,* meaning "work," in North Korea refers to the North Korean top leader's writings and talks. All "works" by the North Korean leader have the same effect as presidential orders in other countries and accordingly, they serve as the basis for subsequent policies. The "work" disclosed on May 8, 2012 is a second *rojak* made by Kim Jong Un. His first one announced on April 6, 2012, before he gained all the three major titles, was entitled, "Let Us Hold High Great Comrade Kim Jong Il as Eternal General Secretary of Our Party and Brilliantly Complete the *Juche* Revolutionary Cause."

Kim Jong Un's emphasis on land management and national capacity-building for disaster prevention in the first policy agenda published right after the official succession of the North Korean supreme power can be interpreted as his strong political will to preemptively respond to challenges from natural disaster intensified by climate change. His noticeable interest in the social infrastructure improvement projects was in fact not a new policy signal to the North Korean public, but rather an expression of his willingness to inherit and more actively pursue the large-scale nature renovation projects which had been initiated by his late father and predecessor, Kim Jong Il, in the name of "Gigantic Nature-Remaking Plan." North Korea's painful experience during the Arduous March in the 1990s, which failed to manage water resources effectively in the face of extreme whether events and climate change, resulted in an active water management policy to implement massive construction projects for irrigation, which was later named "the gravity-fed waterway construction." The first gravity-fed waterway construction of Kaechon-Lake Thaesung Waterway (160km) was initiated in 2000 and completed in 2002, and improved irrigation water problems that had made the residents suffer for a long time in South Pyongan Province and Pyongyang city. Baekma-Cheolsan Waterway (270km) of North Pyongan Province and Miru Plain Waterway (220km) of North Hwanghae Province were also constructed in 2005 and in 2009, respectively. In 2016, the 1st phase construction (190km) of South Hwanghae Province Waterway was completed, and Chongchon River-South Pyongan Province Waterway was launched to renovate or replace the old irrigation waterway (total 2,000km) of South Pyongan Province built in 1956. Just as improving water management is regarded as the most basic and important social infrastructure improvement policy in any country, the construction of multiple gravity-fed waterways has been a key agenda for North Korea's Gigantic Nature-Remaking Plan. Although neither the Gigantic Nature-Remaking Plan nor the large-scale waterway construction was not specifically designed to deal with climate change in the country, its policy agenda was no different from one of the most important *adaptation* strategies, *i.e.*, water management, and eventually resulted in the country's improved national capacity to cope with climate change.

North Korea's environmental pollution and destruction of its ecosystem already had reached a serious level even before climate change and aberrational weather emerged as major global environmental issues.[9] North Korea's environmental problems mainly

owed to the innate inefficiencies of its socialist system, an industrial structure with extreme environmental loads, an outdated industrial technology low in energy efficiency, a lack of investment in the environment due to a collapsed economy, a backward environmental technology, and an inadequate awareness about natural conservation. Hence, in a sense, the destruction of North Korea's land, nature, and ecosystem can be regarded as more a product of the authorities' policy failure than it is a direct result of climate change, comparing to the serious territorial losses and damages that small island developing states (SIDS) have been suffering from sea-level rises due to climate change. However, climate change and aberrational weather, which have had a direct impact on the Korean Peninsula since the mid-1990s, have assuredly added to the North Korean regime's environmental woes.

A case in point is the failed forestry policy that Kim Jong Un underscores in his "work" published in May 2012. Forestry protection and management are essential for climate change mitigation policy and adaptation policy as well, which numerous IPCC reports and the COP15 held in Copenhagen in 2009 especially highlighted. North Korea's basic policy toward forests prior to 2000, however, was one of active use and exploitation, rather than protection and management (Song, Park, and Youn 2012). The North Korean regime has traditionally fostered local industries in farming communities while pursuing balanced development of land. The industrialization of agricultural land and forests led to damaged woods and deforestation. Moreover, people who moved to local provinces began to engage in slash-and-burn farming and use forest resources for food and fuel supplies to overcome food shortages, and thus forests were relegated to objects

9. The causes of environmental destruction have long been subject to much debate. One representative view, offered by economists, is "market failure." According to this logic, environmental goods are commodities that have publicness and externality. As such, they cannot be properly distributed through market mechanisms, and thus they are bound to be abused or misused, leading to environmental pollution and destruction. In order to comprehend how environmental issues are perceived in socialist states, where private sectors and markets are prohibited, we must first broaden our scope of thinking. True to its reputation as the most closed country in the world, North Korea rarely discloses documents and data. Moreover, researchers in the North do not enjoy the freedom of independent thought. Consequently, there is a dearth of credible information or analysis on North Korea's damage from climate change, or the realities of its degraded ecosystem. This means that we can only derive our conclusions about North Korea's environmental issues by deducing and inferring, using available data and information. Jung 1995, p. 1.

of consumption. In particular, North Korea's fortification of the entire country under its "Four-Point Military Strategy," "Construction of Large-Scale Terraced Fields" campaigns in 1976 and 1981 according to the "Five-Point Guidelines on Nature-Remaking," and cutting down of lumber around the Tumen and Yalu ("*Amnok*") River areas to earn foreign currency from exports all were direct causes of North Korea's forest devastation. As a result, North Korea's timber forests significantly and constantly decreased in size—from 97,730km^2 in 1970 to 81,333km^2 in 1990 to 75,540km^2 in 2002—translating into a considerable increase in the country's deforested mountain areas.

Table 8. Changes in Land Use, 1990-2011 (km^2)

Year	1990	1993	1996	2002	2005	2011
Forest land	89,455	88,235	88,324	88,285	89,273	92,062
Timber forest **Non-timber forest** Non-forested area	**81,333** **4,324** 3,798	N/A	**81,150** **3,769** 3,402	**75,540** **8,700** 4,030	**76,432** **8,768** 4,073	N/A
Agricultural land	20,212	20,698	20,856	20,856	20,421	18,680
Industrial land	1,874	1,944	1,974	2,003	2,063	1,844
Water bodies	7,041	7,141	7,210	7,210	7,374	7,683
Residential land	1,359	1,507	1,557	1,597	1,659	1,595

Source: CBS 2012 and MLEP 2012b.

Not only is forest devastation harmful to biodiversity, it has destroyed the North's forest ecosystem. Furthermore, it has engendered other environmental issues, such as the loss of soil in cultivated mountain land due to heavy rains. When the evils of forest devastation spiraled out of control, North Korea attempted to protect its forests by enacting the Forest Law in 1992. The damage wrought by floods and droughts in the mid-1990s, however, only served to reinforce the importance of forest resources and did not bring any progress in afforestation. It was only in the 2000s that Pyongyang began to promote the idea of protecting forests and launch an afforestation movement on a full scale. North Korea, for example, established a 10-year afforestation plan in 2000 and began to receive funding from the South Korean government and private sector for creating forests. North Korea's non-timber forests have multiplied rapidly since then, as Table 8 shows. This is partly a result of the South Korean government's diversification of

assistance to North Korea since 1998, which enabled South Korean non-governmental organizations (NGOs) to help North Korea's efforts to rebuild forests. In the 2000s, North Korea was still unable to attain its afforestation goal, but at least it was able to plant countless saplings owing to its renewed interest in creating woods and aid from South Korea. Although the increase in North Korea's non-timber forests is a positive outcome of North Korea's adaptation policy, the country's deforestation remains an outstanding issue, as Kim Jong Un's work on land management suggests.

North Korea's climate change policy is still focused on land management aimed at forestalling damage from natural calamities. What merits attention, however, is that North Korea's central media since the early 2010s have increased their coverage of climate change issues. State-run media, such as *Rodong Sinmun,* began to cover the international community's responses to global warming and climate change and discuss North Korea's own policy options, portraying, as does any other country, climate change and ensuing water and food crises as key issues of this era which require international cooperation. This is a departure from the past, when state media usually discussed "natural disasters" or "land management" in connection with climate change, and illustrates the North Korean regime's increased interest in various global issues arising from climate change. Some such articles that *Rodong Sinmun* ran in the early 2010s are: "World Water Day: Water and Food Security" (March 22, 2012); "Climate Change Demands Urgent International Response" (February 4, 2012); "Crisis of Organisms Extinction Growing Worse by Day" (June 16, 2012); "In Response to Global Food Crisis" (October 16, 2012); "State of Our Country's Climate Change in Recent Years and Future Prospects" (July 15, 2013); "Montreal Protocol Should Be Urgently Implemented" (September 16, 2013); and "Climate Change Threatening Mankind's Survival" (March 10, 2014).

IV. North Korea's Climate Change Diplomacy and International Cooperation

As mentioned in preceding sections, North Korea's climate change policy has focused on national capacity-building founded on adaptation, rather than mitigation. Another key aspect of North Korea's climate change policy has been that the North Korean regime views climate change and the concomitant food, water, and energy crises as fatal outcomes of capitalist-style development and industrialization by Western powers represented by the United States. North Korea's argument—the success of the global fight against climate change hinges not only on international cooperation, but also on advanced nations' obligation to compensate for their past wrongdoing and their assistance to developing nations—underlay the traditional dilemma in international cooperation on climate change. In fact, it reflected a common perception of most developing countries, not just North Korea, and it was actually taken as a key principle of the Kyoto Protocol, *i.e.*, CBDR (Common but Differentiated Responsibilities). During the Kyoto Protocol era, consequently, North Korea's diplomacy on climate change has focused on obtaining international aid and cooperation by claiming advanced economies' responsibilities for causing climate change.

1. Unusual Pursuit of Diplomacy and International Cooperation

Of all topics of diplomatic and multilateral international cooperation, climate change is one of the very few areas in which North Korea has actively participated and shown high interest. This is highly unusual, considering how infamous North Korea has been for maintaining a closed system and staying away from international norms and cooperative regimes. As Table 9 shows, North Korea is a signatory to the majority of key international accords on environmental and climate change issues. One interesting observation is that North Korea began to join these international agreements on various environmental cooperation in earnest after the mid-1990s, when it began to suffer from a series of natural disasters.

North Korea started taking part in multilateral platforms on environment and climate change since the mid-1990s; hence, it would be fair to say that was the starting point of its climate change diplomacy. The North Korean regime's establishment of the

Table 9. Major Multilateral Environmental Agreements to which North Korea is a Signatory

International Conventions	Signed by Initial Signatories	Effective	Ratified in North Korea
Vienna Convention for the Protection of the Ozone Layer	Mar 22, 1985	Sep 22, 1988	May 5, 1995
Montreal Protocol on Substances that Deplete the Ozone Layer	Sep 16, 1987	Jan 1, 1989	May 6, 1995
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	Mar 22, 1989	May 5, 1992	Jul 10, 2008
UN Framework Convention on Climate Change	May 9, 1992	Mar 21, 1994	Dec 5, 1994
UN Convention on Biodiversity	Jun 5, 1992	Dec 29, 1993	Oct 26, 1994
UN Convention to Combat Desertification	Oct 14, 1994	Dec 26, 1996	Mar 28, 2004
Kyoto Protocol under UNFCCC	Dec 11, 1997	Feb 16, 2005	Apr 27, 2005
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	Sep 10, 1998	Feb 24, 2004	Feb 6, 2004
Cartagena Protocol on Biosafety	May 15, 2000	Sep 11, 2003	Jul 29, 2003
Stockholm Convention on Persistent Organic Pollutants	May 22, 2001	May 17, 2004	Aug 19, 2002
Paris Agreement	April 22, 2016	Nov 4, 2016	Aug 1, 2016

"Flood Damage Rehabilitation Committee (FDRC)" during the Arduous March to take charge of flood and drought damage recovery efforts appears to have been designed to mesh with the regime's international cooperation on climate change and environmental protection. The FDRC's predecessor was the "Flood Damage Committee (FDC)," which was created under the Ministry of Foreign Affairs in 1995 to obtain outside assistance and oversee domestic recovery work and medical treatment for the people. The FDC was renamed FDRC in 1997, when North Korea's damage from natural calamities reached a climax, and since then, its focus seems to have shifted primarily to obtaining foreign aid. The FDRC was in charge of appealing to the international community for assistance by publicizing to foreign media and international organizations about North Korea's loss and damage. It also functioned as the North Korea's official channel for receiving international aid and giving approvals to those international relief groups, or NGOs, who wished to open up offices in Pyongyang.

The FDRC was dissolved in 2005. At present, the National Coordinating Committee for Environment (NCCE) is believed to be in charge of North Korea's international cooperation on climate change as well as other environmental issues and appeals for foreign aid in the aftermath of natural disasters.

> The activities related to climate change in DPR Korea are guided by the corresponding institutions with well-organized structural arrangement, duty and function prescribed clearly. The UNFCCC focal point in DPR Korea is the National Coordinating Committee for Environment (NCCE). The NCCE, a non-permanent organization, founded in 1994, coordinates all activities in the country related to climate change. (MLEP 2012a, p. 44).

> NCCE is composed of representatives from concerned ministries and scientific institutions such as Ministry of Land and Environmental Protection (MLEP), Ministry of Agriculture, Ministry of Forestry, Ministry of City Management, Ministry of Power and Coal Industries, Ministry of Land and Marine Transport, Ministry of Fishery and the State Hydrometeorological Administration. (NCCE 2006, p. 10).

On the surface, the NCCE appears to be actively engaged in international cooperation on climate change. After all, as Table 9 shows, North Korea has vigorously joined multilateral agreements soon after the NCCE was established in 1994. It even seems to be an active participant of the UNFCCC, which is the central regime of global cooperation on climate change.[10] North Korea is one of the 142 Non-Annex I Parties to have submitted its *Second National Communication* in observance of the UNFCCC's requirement (Articles 4.1 and 12) during the Kyoto Protocol era.[11] Although North Korea does not belong to the Non-Annex I Parties that have submitted the *Third National Communication*, the positive attitude of North Korea toward international

10. North Korea signed the UNFCCC at the United Nations Conference on the Environment and Development in June 1992 and ratified it on December 5, 1994. For North Korea, the UNFCCC entered into force on March 5, 1995.

cooperation and observance of the UNFCCC's requirement can be said to be noteworthy, considering many underdeveloped countries did not submit their *Initial National Communication* until the mid-2010s. In this regard, it should be evaluated to some extent that North Korea made efforts to comply with international norms and responsibilities under the Kyoto Protocol system. However, in return, North Korea was rewarded handsomely by the international community for its diplomatic initiative vis-à-vis the UNFCCC during the Kyoto Protocol era.

As a Non-Annex I Party, North Korea actively received financial and technological assistance from advanced countries, *i.e.*, Annex II Parties[12], pursuant to the UNFCCC's Articles 4.3, 4.4, and 4.5, which stipulate that advanced nations must provide such assistance for Non-Annex I Parties as part of their "differentiated responsibilities." In particular, North Korea relied on foreign cooperation and outside financial and technological assistance to prepare the two *National Communications* that were

11. According to Articles 4.1 and 12 of the UNFCCC and Article 10 of the Kyoto Protocol, the signatory Parties were required to "formulate, implement, publish, and regularly update" their national GHG mitigation and climate change adaptation policies. In accordance with the principle of CBDR enshrined in the UNFCCC, the required contents of the National Communication and the timetable for their submission were different for Annex I and non-Annex I Parties. Each developed country included in Annex I should make its *Initial National Communication* within six months of the entry into force of the UNFCCC for that Party. Each Non-Annex I Party should submit its *Initial National Communication* within three years of the entry into force of the UNFCCC for that Party, or of the availability of financial resources (except for the least developed countries, who may do so at their discretion). Further, the Conference of the Parties (COP), at its 17th session, decided that non-Annex I Parties, consistent with their capabilities and the level of support provided for reporting, should submit their first biennial update report by December 2014; the least developed country (LDCs) Parties and small island developing States (SIDS) may submit biennial update reports at their discretion.
12. During the Kyoto Protocol era, the UNFCCC had 196 parties including all UN member states. There were 41 Annex I Parties, including the European Union (EU). These countries were classified as industrialized (developed) countries and economies in transition (EITs). EITs were former Soviet Union republics and Eastern European countries. Among 41 Annex I Parties, 24 (including the EU) were Annex II Parties made up of OECD members (excluding Turkey since 2002). Annex II Parties were required to provide financial and technical support to the EITs and Non-Annex I Parties (developing countries) to assist them in reducing their greenhouse gas emissions ("mitigation") and managing the impact of climate change ("adaptation").

submitted to the UNFCCC, and to carry out major national capacity-building projects for climate change. As Table 10 below shows, international cooperation and aid became an indispensable part of North Korea's traditional land management and environmental protection, as well as its climate change adaptation and mitigation policies. This was particularly true in areas where big budgets and advanced technologies were essential, some examples being development of renewable energy, protection of biodiversity, promotion of food security by enhancing agricultural productivity, and improvement of water security through effective water management.

Table 10. North Korea's Major International Cooperation Projects Related to Climate Change during the Kyoto Protocol Era

No	Project Title	Fund (US$)	Duration	Cooperating Organization
1	Enabling DPR Korea to Prepare its Initial National Communication in Response to its Commitments to UNFCCC	154,200	1997-2001	UNDP, GEF
2	National Biodiversity Strategy & Action Plan and Report to the COP	299,250	1998-2000	UNDP, GEF
3	Conservation of Biodiversity at Mount Myohyang in DPRK	750,000	2000-2004	UNDP, GEF
4	Strengthening Environmental Assessment and Reporting in DPRK	16,890	2001-2003	UNDP, UNEP
5	Coastal Biodiversity Management of DPRK's West Sea	774,523	2003-2006	UNDP, GEF
6	Enhanced National Capacity for Disaster Mitigation and Preparedness through GIS/RIS	504,822	2003-2006	UNDP
7	Strengthening Information Technology & Environment Monitoring Capability in DPRK Towards Sustainable Decision Making	344,830	2003-2006	UNDP, UNEP
8	National Capacity Needs Self-Assessment for the Global Environment Management (NCSA)	200,000	2004-2005	UNEP, GEF
9	Enabling Activity for the Preparation of the Second National Communication of DPRK to the UNFCCC (SNC)	405,000	2006-2012	UNEP, GEF

No	Project Title	Fund (US$)	Duration	Cooperating Organization
10	Capacity Building in Statistics Related to MDGs (MDG Project)	734,770	2010-2011	UNDP
11	Sustainable Rural Energy Development (SRED)	5,076,205	2010-2012	UNDP
12	Small Wind Energy Development and Promotion in Rural Areas (SWEDPRA)	725,000	2010-2013	UNDP, GEF
13	Improved Seed Production for Sustainable Agriculture (ISPSA)	1,822,455	2011-2014	UNDP/FAO
14	Reduction of Post-Harvest Losses for Food Security (RPHLFS)	1,798,686	2011-2014	UNDP/FAO
15	Strengthening of Food and Agriculture Information System	1,575,062	2011-2014	UNDP/FAO

Source: MLEP. 2012a. *DPRK's Second National Communication under the UNFCCC,* pp. 132-133; *GEF's Country Profile for DPRK*. Available at www.thegef.org/gef/country_profile/.

2. Doubts about North Korea's Sincerity toward International Cooperation on Climate Change

North Korea's impoverished economic conditions render the implementation of its climate change policy difficult without international cooperation or assistance. Hence, it has been heavily reliant on assistance and aid from international organizations or individual advanced economies in order to strengthen its national capacity-building. Yet, how sincere North Korea really was about promoting international cooperation on climate change, and whether it was truly in earnest about national capacity-building for climate change, does raise some questions. For one, while North Korea actively sought financial and technological assistance from advanced economies based on the principles of CBDR and PP, it is doubtful whether it faithfully fulfilled the "common responsibilities" that were due from Non-Annex I Parties. A case in point is, North Korea attended only 30% of the UNFCCC Conferences of the Parties (COPs) held during the Kyoto Protocol era (1995-2015). What is more, only twice or three times, as seen in Table 11 based on official UNFCCC documents, did the DPRK send policymakers who were directly involved in the country's policy and

Table 11. List of DPRK's Participants in the UNFCCC COPs

COPs	DPRK's Participants (Name & Title)
COP1, 1995 (At Berlin)	**Mr. SONG O Hong (Advisor, State Commission on Environment)** Mr. Ri Sang Yu (Counsellor, Embassy of the DPRK in Germany)
COP9, 2003 (At Milan)	**Mr. JONG Yun Hyong (Senior Adviser, NCCE)** **Mr. SIN Kyu-Sam (Officer, NCCE)** Mr. RI Yong Ho (Second Secretary, Embassy of the DPRK in Italy)
COP15, 2009 (At Copenhagen)	H.E. Mr. RI Hui Chol (Ambassador, Embassy of the DPRK in Denmark) Mr. KIM Chol Guk (Counsellor, Embassy of the DPRK in Denmark)
COP17, 2011 (At Durban)	Mr. PAK Song Yop (N/A) **Mr. RI Hak Chol (Senior Researcher, State Academy of Sciences)** Mr. RI Chol Song (N/A)
COP19, 2013 (At Warsaw)	Mr. KIM Ju Dok (Counsellor, Embassy of the DPRK in Poland) Mr. RI Chun Su (Secretary, Embassy of the DPRK in Poland)
COP20, 2014 (At Lima)	H.E. Mr. KIM Hak Chol (Ambassador, Embassy of the DPRK in Peru) Mr. SONG Se Il (First Secretary, Embassy of the DPRK in Peru)
COP21, 2015 (At Paris)	**H.E. Mr. RI Su Yong (Minister of Foreign Affairs, the DPRK)** H.E. Mr. KIM Yong Il (Ambassador, Embassy of the DPRK in France) **Mr. JON In Chan (Deputy Secretary, NCCE)** **Mr. JONG Myong Hak (NCCE)** Mr. RI Tok Son (Counsellor, Embassy of the DPRK in France) Mr. RI Soe Dol (Counsellor, Embassy of the DPRK in France) Mr. Yun Yong Il (First Secretary, Delegation of the DPRK to UNESCO) Mr. KIM Ju Song (Officer, Ministry of Foreign Affairs, the DPRK)
COP22, 2016 (At Marrakech)	Mr. CHOE Myong Nam (Deputy Permanent Representative, Embassy of the DPRK in Geneva) Mr. YUN Song Rim (Counsellor, Embassy of the DPRK in Geneva)
COP23, 2017 (At Bonn)	Mr. YUN Song Rim (Counsellor, Embassy of the DPRK in Geneva) Mr. JONG Myong Hak (Counsellor, Embassy of the DPRK in Geneva)
COP24, 2018 (At Katowice)	**Ms. RI Kyong Sim (Director General, MLEP)** **Ms. KIM Jong Ok (Senior Officer, MLEP)** **Mr. KIM Myong Hyok (Coordinator for UNFCCC, NCCE)**
COP25, 2019 (At Madrid)	**Ms. RI Kyong Sim (Director General, MLEP)** **Ms. KIM Jong Ok (Senior Officer, MLEP)** **Mr. SONG Chol U (Officer, MLEP)**

Source: *List of Participants*. At https://unfccc.int/documents.

international cooperation on climate change. Unlike other countries where climate change policymakers or experts were included in their delegations to the COPs, most of the North Korean delegations were made up of local embassy officials, and in fact only a very few responsible policymakers from the agencies in charge of the national climate change policies—such as National Coordinating Committee on Environment (NCCE) or Ministry of Land and Environment Protection (MLEP)—included in the delegations during the Kyoto Protocol era. It is noteworthy that North Korea has been dispatching its delegations to all the COPs since the COP21 in 2015 when the Paris Agreement was adopted, and the delegations have been all composed of actual climate change policymakers and experts from the NCCE or the MLEP, not simple diplomatic officials from local embassies, since the COP24 in 2018.

In addition, doubts linger over the role of the NCCE, which has been responsible for the North Korean diplomacy and international cooperation on climate change, as well as the distribution of foreign aid during the Kyoto Protocol era. Although North Korea has been very reliant on advanced economies and international organizations for financial and technological assistance in implementing its climate change mitigation and adaptation policies, the outside world knew little about the NCCE's role or organization, and the NCCE's activities remained opaque. North Korea's *Rodong Sinmun* and Korean Central News Agency (KCNA) in the mid-1990s reported only a few times on two NCCE Chairmen Ri Gun Il's and Hwang Sang Choon's activities.[13] The current chairman of the NCCE has been known to be Choe Su Hon since 2014,[14] who was a former diplomat and Vice Foreign Minister of North Korea, but never mentioned officially by state-run media during the Kyoto Protocol era (as of 2015) and even up to now. The various project proposals and documents that North Korea submitted to international organizations indicate that Ri Hung Sik, director of the DPRK Foreign Ministry's Disarmament and International Organizations Departments, doubled as Secretary General of the NCCE during the Kyoto Protocol era and occasionally played

13. At an event commemorating the World Environment Day in June 1993, NCCE Chairman Ri Gun Il, in a lecture entitled "Changes in Earth's Environment and Our National Duty," said, "We created the NCCE to faithfully protect the earth's environment, and we are taking a series of practical measures to effectively execute the Environmental Protection Law." In addition, KCNA reported in March 1994 that Hwang Sang Choon was appointed as the new NCCE chairman.
14. *GEF's Country Profile for DPRK*. Accessed on March 12, 2021. https://www.thegef.org/country/korea-dpr.

the operational focal point since the early 2000s.

According to North Korea's *Second National Communication*, submitted to the UNFCCC in October 2013, North Korea's national focal point for the UNFCCC was Jong Myong Hak.[15] Jong was neither a policymaker for climate change nor a diplomat for international cooperation. Jong has been a deputy to the DPRK's Supreme People's Assembly (SPA), the legislature, and first vice chairman of the WPK's Central Control Committee.[16] The WPK's Central Control Committee is responsible for the party's financial affairs and audit. Hence, why the North Korean regime has appointed a financial specialist, instead of an environmental or foreign policy expert, as the focal point for the country's international cooperation on climate change raises questions. Moreover, while Ri Hung Sik, long-time Secretary General of the NCCE, is certainly a career diplomat, he is son-in-law of Kim Kuk Tae, former chairman of the party Central Control Committee, who died in December 2013. This seems to indicate that Ri has had some ties to the WPK's Central Control Committee. This reinforces an assertion made by a US Congressional Research Service (CRS) Report (R40095), which said North Korea has failed to be transparent with the international community on how it allocates and uses foreign aid.

> [T]he North Korean government restricts the ability of donors to monitor shipments of aid. Multiple sources have asserted that a sizeable amount of the food assistance going to North Korea is routinely diverted for resale in private markets or other uses. … Moreover, the assistance is fungible, in that funds that the government otherwise would have spent on food can be spent on other items. (*Foreign Assistance to North Korea*, CRS Report R40095, 2014; pp. 13-14).

15. Although it is unclear when exactly Jong Myong Hak began to serve as the DPRK's national focal point for the UNFCCC, a review of North Korean media coverage of Jong suggests that he has been involved in environmental issues since at least September 2009. A KCNA report from September 29, 2009, entitled "Miru Plain Waterway Completed," for example, said that Jong attended a ceremony to mark the completion of the Miru Plain Waterway construction as first vice chairman of the party Central Control Committee.
16. Jong Myong Hak is the first vice chairman of the party Central Control Committee and an alternate member of the party Central Committee. Jong was a deputy to the Ninth, 10th, and 12th SPA, and in March 2014, he was elected to the 13th SPA.

North Korea has been welcoming of foreign assistance, but yet it has still remained reluctant to open itself up for aid-related matters in general, such as the international community's monitoring of distribution of aid. In other words, while the North Korean regime was highly enthusiastic about seeking support and assistance from advanced countries and international organizations to tackle climate change and enhance its national capacity, it was absolutely unwilling to give up its so-called "sovereignty" in order to keep its doors closed to the outside world. In fact, for example, when an international agency's Pyongyang-based office asked to monitor the distribution of relief aid in January 2001, the DPRK regime ordered the agency to withdraw from the country on the grounds of violating the country's sovereignty.[17] Most assistance provided in the wake of natural calamities qualified as humanitarian aid, and the urgency of the North Korean people's situation prevented the international community from insisting on monitoring.

The North Korea has assumed a highly proactive attitude in seeking international assistance and cooperation, citing loss and damage from climate change; and the principles of CBDR and PP stipulated in the UNFCCC have conferred on advanced economies a sense of responsibility to respond to North Korea's request for foreign assistance. The North Korean regime has conducted diplomacy on climate change, a serious global problem, in a somewhat abnormal manner. After overcoming the Arduous March in the 1990s with outside assistance, North Korea used the Annex II Parties' acts of responsibility for political gain with respect to climate change. North Korea, for example, manipulated images of the Taedong River floods in July 2011 to reinforce its case for more foreign aid, showing North Korea's abnormal diplomacy on climate change.[18] Foreign assistance on climate change goes beyond provisions of material goods; it involves various type of cooperating projects. In this light, the international community and international organizations should have more strongly called on the North Korean regime to open up. That would be the minimal mechanism for preventing the Pyongyang regime from politically taking advantage of international aid for climate change, which should be an apolitical in international cooperation. It would also increase the effectiveness of assistance and cooperation on North Korea's climate change and capacity-building on the Korean Peninsula.

17. "We Will Not Forgive Meddling with the DPRK's Sovereignty." KCNA, January 15, 2001.
18. On July 16, 2011, KCNA, North Korea's state-run news agency, released two photos of flooding in Pyongyang and Taedong River from the day before, calling for international assistance. Two days later, Associated Press (AP), which had distributed these photos and called on the international community for help, asked its client agencies worldwide to withdraw the KCNA's photos of flooding in the North's capital, saying that it appeared to have been altered through digital technology. See *The Korea Herald* (online), "Photo on North Korea suffering from flood is fake," July 19, 2011.

Table 12. List of Project Proposals for Financing

Category	Project Title	Budget (Million US$)		Duration (Years)	Executing Agency
		Total	North Korea		
Cross-cutting	Establishment of National Climate Change Centre and its capacity building.	1.0	0.3	3	NCCE
Inventory	Development of GHG Inventory Strategy and Capacity Building.	0.25	0.1	2	SAOS
	Preparation of biennial GHG inventory in DPRK	0.35	0.2	2	SAOS
Mitigation	Promotion of CDM Project Activities in DPRK	0.6	0.2	2	MFT
	Capacity Building of the CRUE	1.0	0.3	4	SCST, SAOS
	Clean Production and Energy Efficiency	1.0	0.3	3	SCST
	Energy Efficiency Standards and Labeling in DPRK	1.0	0.3	4	SCST
	Climate Change Technology Needs Assessment in DPRK	0.25	0.05	2	SAOS
	Chongchon River Cascade Hydropower Generation Project	80.0	78.0	7	MEI
	Replacement of Incandescent Lamps by CFLs/LEDs	40.0	10.0	5	MEI
	Capacity Building for Sustainable Forest Management	1.0	0.3	3	MLEP
	Production of Energy, Fuel and Fertilizer from Municipal Solid Waste	1.0	0.3	2	MLEP
	Capacity Building for Integrated Management of Solid Waste	0.7	0.2	2	MLEP

Category	Project Title	Budget (Million US$)		Duration (Years)	Executing Agency
		Total	North Korea		
Adaptation	Improvement of Climate Information Service in DPRK	0.5	0.1	3	SHMA
	Improvement of Observation Network in DPRK	2.0	0.5	3	SHMA
	Capacity Building for Integrated Water Resources Management in the Teadong River Basin	1.5	0.4	3	MLEP
	Recovery of Degraded Forest and Firewood Forest Management in Community Areas	1.0	0.3	3	MLEP
	Capacity Building for Integrated Management of Coastal Zones	0.9	0.3	4	MLEP
	Promotion of Development and Dissemination of Advanced Agricultural Technologies for coping with Climate Change	0.7	0.2	3	AAS
	Control of forest pests outbreaks by climate change and integrated forest pest management	3.0	0.9	3	MLEP
	Improvement of Ecosystem Conservation System in Coastal Zone of the Korean West Sea	0.2	0.07	3	MLEP
	Capacity Building for Improving the Community-based Disaster Management System.	1.5	0.5	3	MLEP

Source: MLEP. 2012a. *DPRK's Second National Communication under the UNFCCC*, pp. 146-157.

North Korea claimed that it was a victim of climate change under the dichotomy of the Kyoto Protocol system, which imposed obligations only on advanced countries to make up for their past GHG emissions. North Korea's proactive strategies on climate change diplomacy and international cooperation have been highly beneficial. The North continued to underscore a need for international cooperation and assistance to respond to climate change and asked for various forms of cooperation from the international community, as Table 12 shows. However, Pyongyang's sincerity toward climate change diplomacy, which it conducted with more vigor than in other global issue-areas, is now facing a litmus test in the current post-Kyoto Protocol system established since the

Paris Agreement became effective since 2016.

The Kyoto Protocol was founded on "the principles of CBDR and PP" between the Annex II and the Non-Annex I Parties. In the post-Kyoto Protocol system, however, it has been replaced with a new "legal instrument or an agreed outcome with legal force under the UNFCCC applicable to all Parties," pursuant to the *Durban Platform for Enhanced Action* hammered out in COP17 in 2011 (UNFCCC 2012, p. 2). That means, heavy emitters from the Non-Annex I Parties that were absolved of all responsibilities, such as China and India, and those countries that were recipients of sizeable aid packages from international organizations and advanced economies, such as North Korea, now have some binding responsibilities as well. In other words, in the current New Climate System, North Korea will no longer be able to ask for international assistance without having its own responsibilities or making some contributions, which it did not have before and that will likely pose an enormous challenge to its diplomacy and international cooperation on climate change.

V. Inter-Korean Climate Change Cooperation

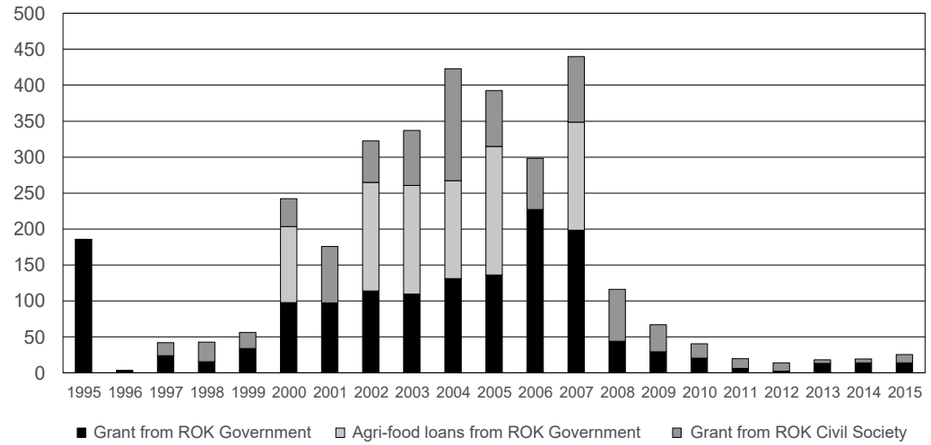
1. South Korea's Aid-Centered Cooperation with North Korea

As mentioned before, the impact of climate change has been heavier on the Korean Peninsula than the global average. Thus, promoting national capacity-building in North Korea, where infrastructure is poor, is indeed a most vital task. North Korea's response to climate change has a direct impact on South Korea's climate change policy, as the two Koreas geographically are on the same peninsula and biologically share one ecosystem. How North Korea improves its infrastructure and builds up its national capacity to deal with climate change is closely linked to the cost of reunification that both the two Koreans ardently desire. In contrast to the political reality, where the Korean Peninsula is divided into two, Article 3 of the South Korean Constitution stipulates: "The territory of the Republic of Korea shall consist of the Korean Peninsula and its adjacent islands." Pursuant to this "One Korea" principle, the South Korean law views North Korean territory as part of the South Korean territory. The South Korean government, thus, has been in a dilemma over the geographical scope of its climate change policy. From a traditional national security point of view, South Korea has no choice but to regard North Korea as the main enemy. In non-traditional security areas such as climate change and the environment, however, the South has to view the North not as the main enemy but as a partner for cooperation.

The South Korean government's humanitarian aid to North Korea for a decade since 2000 has amounted to a total of US$1.9 billion, accounting for 3.8% of North Korea's total national budget of US$49.77 billion. South Korean local governments also offered humanitarian aid of US$52 million, or mere 0.1% of the North's national budget. South Korean civic groups' humanitarian aid to North Korea amounted to US$670 million, making up an average 1.3% of the North's annual budget. In sum, South Korea provided North Korea with US$2.63 billion, amounting to an average 5.3% of the North's annual budget (Kim 2010, p. 236).

Diversified inter-Korean exchanges and cooperation are important for creating an atmosphere of reunification on the Korean Peninsula. The two Koreas' cooperation toward the protection of their shared ecosystem and environment and toward climate change will be vital for the future of a reunified Korean Peninsula. *The Agreement*

Figure 2. South Korea's Assistance to North Korea, 1995-2015 (in Billion KRW)



Note: This data does not include South Korea's Emergency Relief Assistance to North Korea.
Source: Office of Korean Peninsula Peace and Security Affairs, *Selected Documents and Data on Inter-Korean Relations*, 2016.5.

on Reconciliation, Nonaggression, and Exchanges and Cooperation between the South and North of 1992 is the most fundamental legal basis for inter-Korean exchanges and cooperation on climate change and environmental issues.[19] Article 3. 2-1 of the Agreement, "Protocol on the Compliance with and Implementation of Chapter III, Exchanges and Cooperation," discusses inter-Korean environmental cooperation in detail by stating: "The South and North shall exchange information and material in the areas of science and technology and the environment, have relevant organs, organizations, and personnel conduct joint studies, carry out research and surveys on strategies for rejuvenating inter-Korean cooperation on the environment and energy, cooperate on industrial technologies and pursue exchanges between engineers and experts in the industrial field, and jointly formulate environmental protection measures." Furthermore, the South Korean government's policy of rejuvenating civilian assistance

19. "Agreement on Reconciliation, Nonaggression, and Exchanges and Cooperation between the South and North" serves as the legal basis for inter-Korean cooperation on environmental issues, and it took effect on February 19, 1992 through inter-Korean high-level talks. Chapter 3, Article 16 of this agreement stipulates that the two Koreas shall carry out exchanges and cooperation in the environmental field.

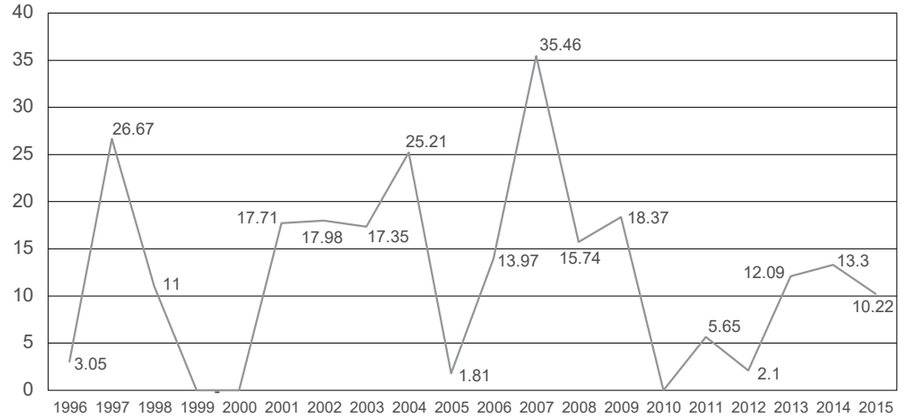
to North Korea, announced on March 18, 1998, and its announcement on February 10, 1999 of measures to diversify the channels of assistance to the North, enabled civic groups to take the initiative on inter-Korean environmental cooperation.

South Korea's measures on the civic sector's role also included the scope of providing assistance to North Korea, and they allowed for the restoration of forests and conservation of the environment to prevent natural disasters. In this vein, the North Korean forest restoration accounted for a large share of inter-Korean government- and civilian-level cooperation in the early 2000s. North Korea pushed for national capacity-building to respond to climate change and sought to attain that goal through its climate change diplomacy and cooperation. South Korea, in the meantime, cooperated with North Korea to revamp Pyongyang's climate change measures by providing direct assistance. As North Korea disclosed its loss and damage from climate change and officially asked for international assistance, South Korea offered financial donations and food aid. South Korea even arranged inter-Korean exchanges to help North Korea with national capacity-building, such as by sharing of afforestation and meteorological observation techniques.

Admittedly, such an approach by South Korea to a certain degree helped North Korea's afforestation efforts and recovery from a series of natural calamities that afflicted the country since the late-1990s and the 2000s. However, it was an impromptu approach that sought after palpable outcomes, rather than systematic cooperation that aimed at fundamentally solving problems. Consequently, inter-Korean cooperation on the environment and climate change was no better than North Korea's work with international organizations. At least with international agencies, North Korea was able to approach closer to its fundamental goal of national capacity-building.

Of course, it must be noted that South Korea has indirectly been a contributor to North Korea's climate change mitigation and adaptation projects with international organizations, because South Korea has been a donor to those international organizations from which North Korea receives funding for its various projects related to climate change, as seen in the above Table 10. For example, South Korea has paid its dues every year to international organizations like the UN Development Programme (UNDP), the biggest financial donor to North Korea for international cooperation projects, and the Global Environmental Facility (GEF). South Korea's contributions to these organizations have been on the rise. South Korea's indirect contributions to North

Figure 3. South Korea's Assistance to North Korea via International Organizations
(in Million US$)



Source: Office of Korean Peninsula Peace and Security Affairs, *Selected Documents and Data on Inter-Korean Relations*, 2016.5.

Korea via these organizations certainly must have helped the North find a fundamental solution for its national capacity-building. This notwithstanding, the two Koreas need to carry out cooperation programs designed to fundamentally assist in North Korea's national capacity-building and at the same time in the Korean Peninsula's capacity-building for climate change.

2. Seeking Better Inter-Korean Cooperation on Climate Change

Inter-Korean cooperation on climate change, mostly South Korea's assistance or aid to tackle climate change in North Korea as well as the Korean Peninsula, was neither sustainable nor long-term—it was more like a one-off deal. In fact, inter-Korean bilateral cooperation has focused more on the South providing the impoverished North with humanitarian assistance and afforestation funds—in other words, hefty funding—than on the two Koreas working together to achieve the common goal of responding to the threats of climate change on the Korean Peninsula.

It was with its adoption of "Low-Carbon Green Growth" in August 2008 as a future national strategy for climate change that the South Korean government began to chart a strategic and systematic plan for closer inter-Korean cooperation on climate change

on the Korean Peninsula. South Korea included the "building of a green Korean Peninsula that aims for a low-carbon society" in its "top 10 policies and top 50 tasks for a national strategy on green growth," announced in July 2009. Specifically, South Korea cited (1) improving inter-Korean relations by helping North Korea's restoration of forests, (2) building a green Korean Peninsula by achieving energy cooperation and establishing an ecological and environmental belt, and (3) coming up with a joint inter-Korean strategy on climate change and GHG emissions reductions (PCGG 2009). But, North Korea's sinking of the Cheonan in March 2010,[20] followed by its shelling of Yeonpyeong Island in November of that year,[21] as well as its continued nuclear blackmail, have all strained inter-Korean relations, and in the meantime, South Korea's "Green Korean Peninsula Policy" has gathered dust. The three inter-Korean Summits in 2018 brought high expectations for a new chapter of cooperation between the tow Koreas, but due to the circumstances at the time, the main agendas of the Summits were all political affairs such as denuclearization. Inter-Korean cooperation in response to climate change was only about enhanced inter-Korean collaboration in the North Korean forestry sector mentioned in the third Summits, but even it was only a symbolic declaration and has not provided any new opportunities for cooperation between the two Koreas.

Just as the *Agreement on Reconciliation, Nonaggression, and Exchanges and Cooperation between the South and North* of 1992 has become useless with North Korea's nuclear development, political tensions between North and South Korea fundamentally derive from North Korea's nuclear development, which can altogether destroy the Korean Peninsula. Ironically, as of 2013, North Korea's *Law on Environmental Protection*, which lays the basic legal ground for North Korea's environmental issues, clearly espoused denuclearization.

20. A North Korean submersible sank the ROK Navy's patrol ship Cheonan (PCC-772) in South Korean territorial waters near Baengnyeong Island on March 26, 2010. Forty ROK Navy officers and men died and six went missing as a result.
21. North Korea on November 23, 2010 committed an armed provocation of firing more than 100 shells on an ROK Marine Corps base and a civilian town in Yeonpyeong Island in the Yellow Sea. Two South Korean marines were killed and 16 were wounded, while two civilians died and 10 were injured. This was North Korea's first armed attack against South Korean civilians since the signing of the Armistice Agreement in July 1953.

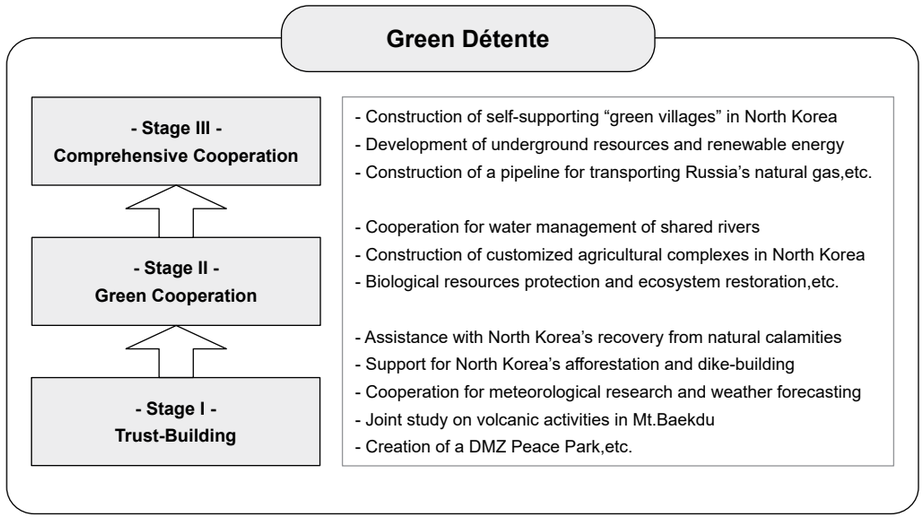
<North Korea's *Law on Environment Protection* (as of 2013)>

> Article 7. It is the consistent policy of the DPRK to prohibit the development, testing, and use of nuclear and chemical weapons and to prevent the destruction of the environment. The state shall actively struggle in opposition to the destruction of the environment due to the development, testing, and use of nuclear and chemical weapons on and around the Korean Peninsula.

In a sense, therefore, North Korea's nuclear development posed legal and institutional limitations to constructive inter-Korean cooperation on the environment and climate change during most of the Kyoto Protocol era. Later, North Korea's "Principle of prohibiting the development, testing, and use of nuclear and chemical weapons" disappeared from *the Law on Environmental Protection* with the revision of the Law on July 24, 2013.

North Korea's military-first politics and nuclearization, which transcended the law, politicized the apolitical issues of the environment and climate change, thereby stymieing inter-Korean cooperation on climate change. In other words, tensions in the *high politics* realm have been a stumbling block to the two Korea's cooperation on

Figure 4. South Korea's Green Détente Initiative



climate change, which is a matter of *low politics*. Conversely, one might envisage the two Koreas' defusion of tensions on the Korean Peninsula by devising a joint response to climate change and thus promoting non-traditional security. This is because the growing seriousness of climate change may transit the climate change issues from *low politics* to *high politics* (Carter 2014). It was against this backdrop that the South Korean government began to review a "Green Détente Initiative" in 2012.

The Green Détente Initiative calls for deepening inter-Korean cooperation in stages, as exemplified in Figure 4. Under this plan, the two Koreas begin by building trust by easing tensions and promoting bilateral cooperation in *low politics*. They ultimately work toward capacity-building for a low carbon-based "Green Korean Peninsula" and pursue economic cooperation and the more comprehensive energy development cooperation (Chu et al. 2013, pp. 5-7). Under the Green Détente Initiative, the two Koreas' apolitical confidence, attained by cooperating on climate change, will serve as the basis of mutual confidence. That, in turn, will enable North and South Korea to further develop their relationship, establish lasting peace on the Korean Peninsula, and lay the groundwork for reunification.

The South Korean government must take into account some issues as it promotes climate change cooperation with the North Korean regime in line with its green growth strategy. First of all, whether it is even possible for South Korea to push ahead with its Green Détente Initiative without any preconditions, such as North Korea's abandonment of its nuclear programs, will require further discussion. At any rate, first and foremost, it is important for the two Koreas to start building trust in completely apolitical matters. From a traditional security perspective, trust-building between the two Koreas by cooperating on climate change may not make much sense. As long as traditional *high politics* issues, such as nuclear weapons, continue to be viewed as more threatening than newly emerging global risks like climate change, inter-Korean cooperation on climate change that is not preceded by North Korea's renunciation of nuclear programs will fail to receive the South Korean public's endorsement. In this light, it is of vital importance to build trust in the first stage of cooperation by seeking only apolitical and neutral benefits for the Korean Peninsula rather than for North and South Korea.

Second, South Korea needs to find ways to reduce doubts about North Korea's sincerity toward cooperation on climate change and increase the North's transparency.

Skepticism about whether South Korea's direct humanitarian assistance to North Korea actually goes to the North Korean people who are suffering from natural disasters often has polarized the South Korean public. Transparency is slightly better ensured when cooperation with North Korea is multilateral and not bilateral and when there is an international agency to systematically oversee North Korea's endeavors. It is also high time for South Korea to chart a constructive strategy on offering indirect assistance to North Korea through international organizations like the GEF, the Green Climate Fund (GCF), and the Global Green Growth Institute (GGGI). The GEF has been one of the largest financial donors to North Korea for its international cooperation on climate change. The GCF has emerged as the top financial supporter of developing countries' efforts toward national capacity-building for climate change. The GGGI offers climate change strategies for developing nations. Moreover, the South Korean government needs to understand that its Green Détente Initiative must have international support, in the light of the geopolitical uniqueness of the Korean Peninsula.

Third, South Korea will likely have to keep making one-sided financial contributions to inter-Korean cooperation projects, given the wide gap in the economic capabilities of North and South Korea. Nonetheless, South Korea's own green growth strategies, such as linking North Korea's low GHG emissions and afforestation needs to future Clean Development Mechanisms (CDM), or Article 6 of the Paris Agreement, in the New Climate System, must be taken into account as well.[22] CDM projects created certified emission credits that project participants could sell to advanced and developed countries, which would count toward their GHG emission reduction targets. They would also provide complementary benefits to underdeveloped and developing participants, including technology transfers, rural energy provisions, pollution reductions, and economic development. Hence, South Korea's participation in North Korea's capacity-building and emission reduction projects to earn certified emission credits in international

22. During the Kyoto Protocol era, North Korea hosted six registered CDM projects in partnership with the Czech company Topič Energo SRO, at 1) hydropower stations including Hamhung Power Plant No. 1 in South Hamgyong Province; 2) Paekdusan Songun Youth 14 MW Hydropower Project No. 2 in Ryanggang Province; 3) Kumya Hydropower Plant in South Hamgyong Province; 4) Ryesonggang Hydropower Plant No. 4; 5) Ryesonggang Hydropower Plant No. 5; and 6) Ryesonggang Hydropower Plant No. 3 in North Hwanghae Province. Together, they account for an estimated annual reduction in CO_2e emissions of 193,475 metric tons (193.475 Gg, equating to 0.002% of North Korea's total emissions budget). See Habib 2013, p. 5.

carbon markets will bring tangible benefits to both North and South Korea.

Lastly, the South Korean government needs to consider not only its own political or policy priorities but also North Korea's climate change policy agenda for the sake of North Korea's independent national capacity-building. To that end, Seoul needs to think about the aforementioned climate change projects that the Pyongyang regime has already proposed to the international community (see Table 12). North Korea has usually carried out cooperation projects with international organizations such as the UNDP and the UNEP. It also has officially proposed and completed various projects in consultation with its international NGO partners. South Korea, for its part, has studied and helped to implement East Asia Climate Partnership (EACP) programs, or 21 "Landmark Projects" proposed by more than 10 East Asian countries and carried out with a US$200 million budget between 2008 and 2012. In so doing, South Korea played an invaluable role in the participating East Asian nations' national capacity-building endeavors (Kim and Choi 2013, pp. 193-197). Such experiences of North and South Korea will be sure to lay a solid foundation for their mutually beneficial joint projects on climate change. The two Koreas need to propose and pursue initiatives that are for the common good of the Korean Peninsula, rather than cooperation that is rooted in one side's political and policy agenda. Only when this happens can the two Koreas build trust, and can South Korea truly be of help in North Korea's national capacity-building to cope with climate change risks.

VI. Conclusion

Climate change has the dual characteristic of globalism and externality. Climate change is a global threat from which not one country on earth can be exempt. In the meantime, it remains unclear who should be held responsible for this phenomenon. Hence, for the international community to properly respond to climate change, every country must have a positive resolve and must be willing to play its part. Climate change, now an undisputed global threat, has surfaced as a key factor in not only individual countries' policies but in international diplomacy and cooperation.

The ramifications of climate change have been more serious for North and South Korea, the co-occupants of the Korean Peninsula, compared to the global average. Although they are bound to share the same ecological destiny, they have yet to even launch a discussion on climate change cooperation. South Korea in 2008 proclaimed "Low-Carbon Green Growth" as a future national strategy and has since worked out a comprehensive and strategic national agenda on sustainable growth and climate change. South Korea's green growth strategy drew interest from around the world, and, in fact, South Korea once won significant acclaim for its diplomatic leadership in the field of global climate change cooperation because it assisted in underdeveloped nations' efforts to promote eco-friendly development. North Korea's strategies and policies on climate change, unfortunately, remain veiled for the most part due to the country's unusual management of state affairs and to the closed nature of the regime.

Based on the little that is known about North Korea's climate change policy, mostly through North Korean state-run media or its diplomatic relationships, it may be said that North Korea has been focused on preventing and recovering from the damage of natural disasters, which climate change has aggravated, and that the North has been heavily reliant on international assistance. North Korea was affected by a series of natural calamities starting in the mid-1990s, which ushered in an era of the Arduous March, and as a result, it realized the seriousness of climate change and its threats. North Korea, however, failed miserably in environmental protection and land management, and the nation has been suffering from devastated land and underdeveloped infrastructure, which, in turn, debilitated its national capacity-building in responding to climate change. North Korea's failed land management and environmental protection policies were derived from inefficiencies that were innate to socialist systems, an industrial

structure with extreme environmental loads, an outdated industrial technology low in energy efficiency, a lack of investment in the environment due to a collapsed economy, a backward environmental technology, and an inadequate awareness about natural conservation. In addition, North Korea's other regime priorities, such as the fortification of the entire country under its "Four-Point Military Strategy" and its construction of terraced fields according to the "Five-Point Guidelines on Nature-Remaking," only exacerbated the country's environmental problems.

The priority of North Korea's policy toward climate change has been to minimize direct damage from natural calamities caused by extreme weather events and to address food shortages and water management, which are indirect offshoots of natural disasters. In short, North Korea's approach to national capacity-building for climate change has been an adaptation policy rather than mitigation policy. A lack of mitigation policy in North Korea seems rational: North Korea's GHG emission levels have been quite low due to its decrepit economy and absolute energy shortages. North Korea's adaptation policy still appears to have focused on land management and restoration of a wrecked environment for the construction of basic infrastructure. North Korea has assumed an unusually active attitude toward international regimes and cooperation related to climate change. This was mainly because the Kyoto Protocol system under the UNFCCC-centered international climate change regime was driven by the principles of CBDR and Polluter Pays. These principles of the Kyoto Protocol system made North Korea a beneficiary country that would receive financial and technological assistance from advanced economies, and the North Korean regime was able to transform its foreign policy to make good use of the international system under the name of the country's climate change diplomacy.

Global warming has affected the Korean Peninsula more than it has other areas of the world, and one cannot ascribe that simply to the two Koreas' carbon emissions alone. Climate is what conditions of the atmosphere are over long periods of time, and increased GHG emissions or rising temperatures in a certain region do not necessarily mean that they are responsible for the climate change in that region. When tabulating global GHG emissions, the world's historical aggregates, too, must be taken into account. This is basically why advanced countries' "responsibility" for past high GHG emissions surfaced in the discourse on international cooperation on climate change. The UNFCCC, the framework for international cooperation on climate change, took note of this responsibility debate in stipulating differentiated sets of responsibilities and

obligations for Annex I (or Annex II) and Non-Annex I Parties.

As the Kyoto Protocol system under the UNFCCC emphasized advanced countries' responsibility, North Korea appears to have conducted diplomacy and international cooperation on climate change more actively than in other fields. But it remains questionable whether North Korea has sincerely followed international norms and efforts in global cooperation in responding to climate change as much as it has sincerely responded to domestic natural disasters since the Arduous March, or deliberately used the Kyoto Protocol system for its own diplomatic interest in securing international aid. North Korea seems to have capitalized on its status as a Non-Annex I Party to maximize foreign assistance for its climate change policies and programs. However, the Kyoto Protocol's dichotomy of one side taking responsibility for its past, and the other side receiving benefits came to an end, when the Paris Agreement was adopted by the world in 2015, with the launch of a post-Kyoto Protocol system, *i.e.*, the New Climate System. From then on, all the Parties of the UNFCCC are subject to similar levels of binding responsibilities, and whether North Korea will continue to be active about its diplomacy and international cooperation on climate change under the post-Kyoto Protocol era is left to be seen. In other words, we will certainly be able to confirm North Korea's sincerity toward international cooperation on climate change only when it is asked to take responsibility and make contributions.

Inter-Korean cooperation on climate change is different from any other international cooperation, because it is obligatory from a national survival and coprosperity perspective. After all, the two Koreas share one geographical, meteorological, and ecological environment on the Korean Peninsula. The South Korean Constitution even stipulates that the entire Korean Peninsula is South Korean territory, despite the political and physical division of the peninsula. This shows vividly the Korean dilemma: the legal obligation of protecting the land and ecosystem from the threats of climate change and ensuring sustainability, and the reality where the two Koreas are locked in a political and military confrontation. South Korea's one-sided assistance—ranging from technical and financial assistance with North Korea's environmental restoration to humanitarian aid for its efforts to recover from natural disasters—has hitherto made up the bulk of inter-Korean cooperation on the environment and climate change. Such an assistance policy of South Korea failed to be consistent or sustainable, and all in all, it did not help much in terms of improving Seoul's relationship with Pyongyang. South Korea began to exercise strong leadership in the field of climate change diplomacy since the late-2000s,

and now, when confidence-building between the two Koreas has become important, South Korea's *Green Détente Initiative* can provide a new momentum for improving inter-Korean relations through climate change cooperation.

Academic interest in North Korea has long been concentrated on *high politics*, or North Korea's political and military issues, due to the country's rogue state behaviors. In recent years, the *low politics* aspects of North Korea, such as the rise of markets or the North Korean people's human rights have garnered much interest. Although climate change is not yet considered a *high politics* issue in North Korea or anywhere else, many scientific studies indicate that climate change has become a global threat that can change the fate of mankind, and that its threat is unprecedentedly serious.

This report examined North Korea's response to climate change on the Korean Peninsula under the Kyoto Protocol system. Climate change on the Korean Peninsula seems to have had more important implications than anywhere else in the world. For the two Koreas, which share the Korean Peninsula, climate change is both a threat and an opportunity. As long as North and South Korea both respond to climate change and remain firmly committed to guaranteeing the sustainability of the Korean nation and the ecosystem of the Korean Peninsula, they may reduce the threat of climate change and at the same time establish peace on the Korean Peninsula. Furthermore, inter-Korean cooperation on climate change, a *low politics* issue, may help to defuse tensions from North Korea's nuclear threats and bring actual progress in the trust-building process of the Korean Peninsula. If that is the case, it would have great implications for not only research on the Korean Peninsula's peace but also for non-traditional security studies in general, which have looked for the changing circumstances of state actors' survival and emphasized the role that *low politics* among nations plays in international relations.

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