



Environmental Cooperation with the Distribution of Urbanization between South and North Korea *

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Abstract

Purpose – This study aims to lay the foundation for a desirable direction to solve future environmental problems through framework research on environmental cooperation according to distribution of urbanization between South and North Korea. The article also attempts to explore solution to two Koreas' environmental problems from the cooperative perspective between South and North Korea and draw future policy tasks.

Research design, data, and methodology – For methodology, North Korea's legal system to cope with disasters is taken into consideration in terms of literature review. This study also analyzes a series of processes related to North Korea's disaster management through case study, and draws policy measures for North and South Korea's cooperation scope and methods.

Result – The results support that North Korea is very vulnerable to environmental disasters due to food shortages, economic sanctions, and enormous natural disaster damages including flood damages occurring each year, because of the lack of disaster prevention infrastructure such as river maintenance.

Conclusion – At the current time when North and South Korean exchange and cooperation increase, a disaster management cooperative system is needed for the areas where South and North Korea manage through division. It also suggests that there is a need to establish regulations and procedures for support items in advance for a quick response to disasters in North Korean region.

Keywords: Environmental Cooperation, North Korea, Distribution of Urbanization, Disaster Management

JEL Classification Code: K32, F64, F63, I15, O18

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1. Introduction

Difficulties in solving international environmental problems are basically derived from each country's environmental policy interaction. The reason is because a country's environmental pollution policy in the boundary area affects the environmental policies of other adjacent countries. South and North Korea, adjacent along the 38th parallel, environmentally affect and are affected at land and seas. Although there should be strict scientific verification, an infectious disease such as COVID-19 is known to have a risk of infection due to airborne transmission between South and North Korea where there is no mutual visit. In the situation where one country's environmental policy is mutually dependent, solution to environmental problems may be carried out like a game (Barett, 1997). South and North Korea bordering at land, seas, and on air can be exposed to various environmental problems. As communication is limited due to Korean Peninsula's division into South and North Korea, a process different from general international environmental problem solving procedure is necessary. Economic and political gap between the two countries can be a huge obstacle to the solution to environmental problems. This study seeks how to approach North Korea that firmly stands against denuclearization demand from a cooperative perspective in terms of the environmental problems.

Although there are many previous studies related to North Korea, studies focusing on the invigoration of South and North Korean exchange lack in view of the Korean political situation in which a new phase of denuclearization has been placed since the new government was launched in South Korea. Accordingly, there have been few researches to tackle cooperative relationship between two Koreas regarding environmental management. Even though disaster management cooperative projects were promoted in the past, its sustainability and effectiveness were limited due to political and military confrontation situation between South and North Korea. Joint cooperative response between the two Koreas is truly required in the environmental field due to recent Imjin River flood damages and forest fire at DMZ. Fine dust coming from overseas including China and Mongolia is an environmental problem that South and North Korea that are geographically adjacent can simultaneously suffer, and so coping with fine dust by devising joint measures and cooperation is more effective. Rumination of response to fine dust gradually extending to the entire Korean Peninsula is demanded in terms of plans and projects under the basis of the current government's South and North Korean development policy. In these respects, this study aims to examine solutions to overcome two Koreas' environmental problems and disaster management from the cooperative perspective between South and North Korea.

2. Urban Development of South and North Korea

2.1. South Korea's Urban Development and Environment

South Korea has implemented modern national land development and plans since the 1960s, and established national comprehensive plans from 1970 and has improved the circumstances necessary for national development. The national comprehensive plan reflecting temporal characteristics has been implemented four times so far. The first plan (1972-1981) aimed at high economic growth, the second plan (1982-1991) aimed at controlling population concentration to Seoul Metropolitan Area and developing regional spheres. The third plan (1992-2001) aimed at decentralized national land development for development, health, and welfare, and the fourth plan (2001-2020) aimed at easing imbalance of national land development.

The national comprehensive plan was planned in every 10 years since 1972 for social infrastructure shaping and it was carried out up to the third plan. From the fourth plan, the plan presents a long-term vision, namely national territory's sustainable development, and the plan is implemented by changing the period to every 20 years.

Since the 2000s when it is called the national land use management system's settlement period, South Korea has sought a direction for more efficient national land plan and management. In 2002, South Korea enacted and proclaimed the National Land Planning and Utilization Act. Starting with the Framework Act on the National Land that revised the Comprehensive Plans for Construction in the National Territory, South Korea systematized national land development system ranging from national comprehensive plan to urban management plan. Especially the urban management plan integrated urban areas and non-urban areas, although national land was divided into urban and non-urban areas in the past.

The urban framework plan is a comprehensive plan and also a long-term plan² with 20 years as plan period enabling sustainable urban development using limited resources of national land. The plan presents a direction for urban development for the long-term, and sets development indicators in each sector according to diverse city functions.

The urban plan system was operated for three periods in South Korea so far. The first period was for active promotion of urbanization according to South Korean economy's rapid growth. The second period implemented the overall plan on urban development by adopting the framework urban plan system. With the advent of my own car era and city's widening in the 1990s, the development pressure on the suburban area in the urban planning area increased, and existing system was difficult to accept it, and so the thoughtless development of national land in such a process was caused. Therefore since the 2000s, systematic response measures to improve urban quality environment including the enactment of the relevant laws has emerged as a hot topic. Although various relevant laws on national land use management were enacted, organic relationship lacked, and so systematic operation of the urban planning system is necessary. As interest in wellbeing has increased since the 2000s, humanism was emphasized in urban environment and urban restoration is gradually gaining attention.

2.2. North Korea's Top-down City Management System

The North Korean development system is similar to that of South Korea, and has the following structure: Comprehensive Plans for National Construction³ consists of comprehensive plan for national land construction, comprehensive plan for major area land construction, comprehensive plan for provincial (city under direct control of the central government) national land construction, and comprehensive plan for municipal (area) and gun (county) land construction.

Table 1: North Korean Development Plan System

Classification	Type	Drawn up by	Approved by
National Land Plan	<ul style="list-style-type: none"> Comprehensive plan for national construction Comprehensive plan for major area construction 	National Environmental Conservation and Control Agency	Cabinet
	<ul style="list-style-type: none"> Comprehensive plan for provincial (city under direct control of central government) construction Comprehensive plan for city (area) and gun (county) construction 	Metropolitan Land & Environmental Conservation and Control Agency	Cabinet
Urban Plan	<ul style="list-style-type: none"> Comprehensive plan for city/village construction 	Local Planning and Design Agency	Cabinet
	<ul style="list-style-type: none"> Comprehensive plan for Eups construction Detailed plan and zoning plan of cities Detailed and zoning plan of Eups 	Metropolitan Planning and Design Agency	National Construction Agency
	<ul style="list-style-type: none"> Comprehensive plan for labor areas and villages (detailed plan, zoning plan) 	Metropolitan Planning and Design Agency	National (City under direct control of central government) People's Congress

Source: National Land Plans for the Democratic People's Republic of Korea, KRIHS (2016), recited.

The details to be included in the comprehensive plans for national construction are specified in Article 17 of the North Korean "Land Act", and they are as follows:

² This is to consistently develop and maintain cities having diverse functions.

³ Definition under Article 14 of the Land Act is as follows: "Comprehensive Plans for National Construction are the unified and comprehensive plans for national construction, and are the plans for national land development and use for economic development and people's welfare improvement."

Table 2: Contents of Comprehensive Plans for National Construction in North Korea

- Measures to manage and protect revolution battlefields and historic revolution sites
- Direction and measures to reorganize, improve, and protect land, obtain new land, and reclaim and use reclaimed land Measures for forestation direction, protection and use, and also for protection of beneficial animals and plants
- Direction for construction and maintenance of rivers, lakes, and reservoirs, and deployment of facilities to prevent floods and comprehensive use measures of water
- Rational deployment of transportation, electricity, and post networks and facilities
- Locations and sizes to deploy individual underground resources areas, and industrial and agricultural enterprises
- Locations and sizes of cities and villages, resorts, and resorts of invalids, and protection measures for scenic spots, natural monuments, and cultural remains and relics
- Direction to comprehensively use individual coasts and coastal waters and measures to beautifully reorganize coasts and protect fishery resources
- Measures to prevent pollution

Source: KRIHS (2016).

Kim Jong Un urges to strictly implement the comprehensive plans for national construction according to instructions. “Comprehensive plans for national construction are the national laws that nobody can violate. For the national land management sector, strict regulations should be enacted to carry out national land construction management under the Comprehensive Plans for National Construction. Provincial, municipal, and county construction, development, and resources management should be performed with responsibility. No construction and resources development violating the regulations or destroying ecological environment should not be carried out.” (Rodong Sinmun, May 9, 2012⁴).

Table 3: Principle to Draw up Urban Plans of the North Korean Urban Planning Act

- The revolution battlefields, historic revolution sites, monumental buildings, historic remains, and natural monuments should be preserved in the original state.
- Consider national economic and cultural development outlook.
- Realize identity, ethnicity, and modernity.
- Consider physical geographical conditions and climate.
- Do not make a city too big, but reduce population density and building density, and rationally deploy satellite cities around the big cities.
- Use slopes and underground maximally and enhance land use rate.
- Basic roads and railways should not pass through city centers.
- Make housing have low floors for people’s convenience, and construct streets centered on households.
- Perform afforestation and natural forestation for cities, and prevent natural disasters and pollution.
- Consider defense requirements.
- The following six are presented as the details to be reflected in the comprehensive plans for municipal and village construction:
 - No. of expected population
 - Sizes and boundaries of urban planning area, construction area, and protection area
 - Sizes and boundaries of revolution battlefields, revolution sites, household areas, public building areas, industrial areas, railway, port, and airport areas, warehouse areas, special areas, important institutions, and enterprise zones
 - Locations of city centers
 - Roads and squares, city transportation network, technology facility network, and the resulting facilities placement, green zone placement, and area shaping
 - Placement of disaster and pollution prevention facilities and urban planning measures

Source: KRIHS (2016).

⁴ KRIHS (2016), recited.

Although North Korea's urban development seems to be implemented under the institutional procedures, it is not carried out in that way, when looking at the situation. Many urban development systems are by Kim Jong Un's instructions, and they are implemented with higher priority than other urban development projects. Namely North Korean urban development is not implemented through the pursuit of rationality under the laws and procedures, but through instructions and control from authorities ranging from Kim Jong Un to sub-organizations.

The feature of North Korean urban plans is that North Korea's unique principle is maintained well⁵. It is described as urbanization based on self-reliance ideology by the Guidance Department including installation of symbolic facilities such as Kim Il Sung Square and shaping parks. Table 3 shows the drawing up principle specified in the Urban Planning Act.

North Korean urban planning administrative system has top-down system: National Construction Agency of Cabinet, City Management of National People's Congress, and City Management Department of Municipal People's Congress. Major roles of each agency/department are shown in Table 3.

2.3. Characteristics and Comparison of South and North Korean Urban Development

South Korea has undergone urbanization process in line with income increase due to rapid industrialization, since liberation from Japanese colonial rule and then the Korean War. In this process, the need for planned responses to wide area development including demand of adjustment for development thoughtless for the environment gradually emerged. Therefore a task of harmony between the environment and development for efficient national land management remains. Although North Korean national land development seems to follow the planned system, it is determined by control according to the instructions of the central authorities. As North Korea seeks development vested with self-reliance ideology and socialist ideology, there are cases in which limitations in urban development including 'urbanization based on self-reliance ideology' exist. That is, Kim Jong Un's instructions and command can be understood to be handled preferentially. Common characteristics of North Korean urban development can be summarized as follows: first, shaping North Korean self-reliance ideology spaces in city centers; second, concentration of authority buildings; third, distribution of large scale industrial spaces in city centers; fourth, underdevelopment of commercial and service functions.

3. Comparison of South and North Korean Environment Policies

3.1. South Korean Segmented Environmental Law System

South Korean environmental law started from the Act on the Prevention of Pollution in 1963. This Act was limited to the prevention of pollution, and so general concept of environment conservation was not included. Therefore the Environment Conservation Act was enacted for environment conservation from rapid industrialization in the 1970s. In the 1980s, the environmental rights were adopted as people's basic right. In the 1990s, the Framework Act on Environmental Policy and individual acts to cope were devised, and systematic response to environmental problems was attempted. Since the 2000s, the Framework Act on Low Carbon, Green Growth was enacted in 2010 and has been executed for sustainable development and to fulfill international society's responsibilities.

The South Korean environmental laws consist of the Constitution, Framework Act on Environment Policy, and acts to cope with environmental problems in each field. Among the current environment-related laws, the Ministry of Environment manages 57 various laws, regulations, and policies. Table 4 has arranged the trend of enactment of South Korean environment laws.

Table 4: Trend of Enactment of South Korean Environment Laws

Period	Enactment of Major Laws	Details
1960s	Act on the Prevention of Pollution	<ul style="list-style-type: none"> • Initial environment law • Limited to inactive prevention of pollution

⁵ In some cases, North Korea's urban structure is interpreted as having a history of compromising between urbanization based on self-reliance ideology and realistic situation (KRIHS, 2016).

1970s	Environment Conservation Act	<ul style="list-style-type: none"> • Adoption of a single legal system encompassing regulations on environment
1980s	Environmental rights	<ul style="list-style-type: none"> • Environment was adopted as people's basic right in the Constitution.
1990s	Framework Act on Environment Policy and individual acts	<ul style="list-style-type: none"> • To systematically cope with environmental problems, shifted from a single legal system to the individual law system
After the 2000s	Framework Act on Low Carbon, Green Growth	<ul style="list-style-type: none"> • Seeking sustainable development and responsibility of international society

South Korea's environment laws can be classified into overall environment, natural environment, atmospheric environment, water environment, waste management, soil and other fields. Table 5 shows the summarized South Korea's environment laws in each field.

Table 5: South Korea/s Environment Laws in Each Field

Classification	Major Laws
Overall environment	Framework Act on Environment Policy, Environment Impact Assessment Act, Environment Improvement Cost Liability Act, Environment Technology and Industry Support Act, Act on Special Measures for the Control of Environment Offenses, Environment Dispute Adjustment Act, Korea Environment Corporation Act
Natural environment	Natural Environment Conservation Act, Wetlands Conservation Act, Special Act on the Preservation of the Ecosystem in Island Areas Including Dokdo, Natural Parks Act, Wild life Protection and Management Act, Baekdu-daegan Protection Act
Atmospheric environment	Clean Air Conservation Act, Special Act on the Improvement of Air Quality in Seoul Metropolitan Area, Indoor Air Quality Control in Public-Use Facilities, Etc. Act, Malodor Prevention Act
Water environment	Water Quality and Aquatic Ecosystem Conservation Act, Sewerage Act, Water Supply and Waterworks Installation Act, Drinking Water Management Act
Waste management	Wastes Control Act, Act on the Transboundary Movement of Hazardous Wastes and Their Disposal, Promotion of Installation of Waste Disposal Facilities and Assistance, Etc. to Adjacent Areas Act, Act on the Promotion of Saving and Recycling of Resources, Construction Waste Recycling Promotion Act, Act on the Establishment and Operation of Sudokwon Landfill Site Management Corporation
Soil and others	Soil Environment Conservation Act, Noise and Vibration Control Act

Source: Ministry of Environment, <http://www.me.go.kr/home/web/main.do>

3.2. Linkage of Environmental Pollution Prevention with Labor Conditions of North Korea

Article 57 of the North Korean Constitution specifies the norms of environment conservation as follows:

“The nation shall establish environmental conservation measures in preference of production, and shall devise cultural and hygienic living environment and labor conditions for people by conserving and shaping natural environment and preventing environmental pollution.”

The Environment Conservation Act⁶, the framework Act of the Framework on Environmental Policy to realize Article 57 of the Constitution was enacted in 1986. The Environment Conservation Act comprehensively and systematically prescribed the details of environmental policies that were negligent in the past. Through the enactment of the Act, the basis of environmental conservation was evaluated to be different from the past. North Korea handled environmental problems in the concept of natural protection before the enactment of the Environment Conservation Act, but North Korea is evaluated to handle environmental problems at environmental pollution prevention level. North Korean environmental policy focused on reforestation of devastated forests and restoration of damages after the Koran War, as it had focused on industry and construction before the enactment of the Environment Conservation Act.

Table 6: Current Status of North Korean Environment Laws

Year	Enacted Law	Details
1986	Environment Conservation Act	Consolidation of legal framework and vehicles for environmental conversation
1992	Forest Act	Newly enacting the plans and regulations for forest protection
1997	Water Resources Act	Presentation of strategies and plans for nationwide survey and efficient use of water resources
1998	National Environment Protection Act	Consolidation of national land protection
2005	Act on Assessment of Impacts of Works on Environment	Adding a process of presenting and screening environment effect evaluation in constructing new buildings
	Water Pollution Prevention Act for Daedonggang River	Fortification of the efficient use of rivers and streams and environment conservation
2006	Enforcement Decree of Toxic Chemicals Control Act	Presentation of strict regulations on the storage, transportation, and disposal of toxic chemical substances
2007	Wastes Control Act	Execution of safe processing and management procedures by adopting a permission system of waste processing

Source: Revised from Kim (2015)

The reason why the Environment Conservation Act was enacted was because environmental pollution emerged due to a policy to develop the heavy chemical industry in the 1960s and the 1970s. There is an evaluation that North Korea has a strategic aspect to escape political and economic isolation through exchanges and cooperation with international environmental organizations (Kim, 2015b). There were three partial revisions since the enactment of the Act. In 2011, renewable energy use⁷ was emphasized, which can be an attempt to solve North Korean energy problems using the renewable energy production.

⁶ The Environment Conservation Act consists of 5 chapters and 52 articles, and main details are framework principles of environment protection, conservation and shaping of natural environment, environmental pollution prevention, guidance management on environmental protection, compensation for environmental damages and sanctions. After its enactment in 1986, the Act was partially revised in 2000, 2005, and 2011.

⁷ Concrete details are as follows: In Chapter 3, Development and Use of Renewable Energy for Environmental Pollution Prevention (Article 38), Execution of the Environmental Certification System (Article 39), and Adoption of Renewable Energy Technology (Article 40) were added. In Chapter 4, Planning of Environmental Economic Indicators was added to Guidance and Control on Environment Conservation, (Article 44) and

According to the Environment Conservation Act, the natural environment conservation areas and special conservation areas were designated. Also environment conservation infrastructure including environment observatories and sewage treatment plants was built. As for related administrative organizations, National Environment Conservation Congress affiliated with the Cabinet was established in 1993, and it became the current Ministry of Land and Environment Conservation through reorganization. As individual environment laws were enacted, and the relevant organizations were organized, and so Environment Engineering Research Institute affiliated with State Academy of Science was established (Kim, 2015b).

In North Korea, the relevant environment laws and clauses have been individually devised in addition to the Environment Conservation Act. The enactment period and details of North Korean environment-related individual laws are shown in Table 6.

3.3. Comparison of South and North Korean Environmental Legal Systems

Both South and North Korean Constitutions handle environmental issues. South Korea stipulates environment conservation as a basic right in Article 35 of the Constitution. North Korea stipulates environment conservation as a national aim in Article 57 of the Constitution. Although the environmental administrative law development systems are different, environment conservation developed from the hygienic law to pollution law and to environment law in South Korea, while it directly developed from the hygienic law to the environment law in North Korea (Kim, 2015a).

Table 7: Comparison of Environment-related Constitution Articles of South and North Korea

Country	Article	Details
South Korea	Article 35	All people have a right to live in the healthy and pleasant environment, and the state and people shall make efforts for environment conservation.
North Korea	Article 57	The state shall establish environment conservation measures in preference of production, and devise the cultural and hygienic living environment and labor conditions by conserving and shaping the natural environment and preventing environmental pollution.

Source: Revised from Kim(2015a)

When looking at the history of constitution enactment, the Constitutions in South and North Korea were enacted without the clauses on environment, and then they were added later. South Korea added Article 35.2 (Pleasant Living on National Housing Development Policy) and Article 3 (concrete details on Environmental Rights) in 1987. South Korea's legal system is a phased system: prime norm, Constitution, followed by laws, orders, regulations, and ordinances. The South Korean Framework Act on Environment Policy mainly contains prescriptions having declaration and program nature rather than stipulations having restrictive and enforcement law nature (Han, 2014).

In North Korea, Article 57 was newly enacted upon the revision of the Constitution in 1992, and the basis of the Environment Conservation Act was devised in the Constitution in 1986. Although the obligation of environment conservation is prescribed as people's obligation in the South Korean Constitution, there is no such an article in North Korea⁸, which is different, and environmental pollution prevention and labor conditions have been linked in view of Socialist Constitution characteristics. South Korea abolished the Environment Conservation Act, and enacted segmented laws in each environment field, and so the legal system on environmental pollution and pollution can be seen as being completed. However, the system has an advantage that effective coping can be carried out in each field, but there is a disadvantage that receiving practical help may be difficult, as even administrative officials in charge has difficulty in understanding, because the interests of the relevant laws are complicated (Kim, 2015a).

Identification of Environment Situations (Article 48) was also added.

⁸ Although all people's environment conservation obligations are prescribed in the Environment Conservation Act, environmental rights are not acknowledged as a right.

According to Article 11⁹ of the North Korean Constitution, Kim Jong Eu's instructions or commands have regulatory power, rather than the environment laws, and so environment conservation can be performed by orders.

4. Conclusion: Cooperative Approach to Solve Environmental Problems Between two Koreas

North Korean Environment Conservation Act stipulates basic principles for environmental conservation and concrete principles for its realization through socialist ideology. North Korea's legislative power belongs to Supreme People's Assembly, and the environment policies of the Korean Workers' Party have precedence over the Constitution and Environment Conservation Act. Namely all activities are carried out under the rules and commands of Korean Workers' Party in terms of environment conservation domain, and socialist construction ideology¹⁰ is sought. The legislation type, size, details, and system of the environment laws in North Korea seem to lag behind those of South Korea (Kim, 2015a).

In North Korea, outdated facilities in the 1960s still remain, and eco-facilities to prevent environmental pollution lack, and also economic power to install those is very inferior. Although tree planting projects are performed at state level, logging for energy source supply continues. North Korea's capabilities to solve environmental problems independently are really insufficient, and the environmental policy performance of North Korea is rated as very lacking. Through recent revision of the Environment Conservation Act in North Korea, environment awareness is enhanced, and North Korea gradually acknowledges the need for international cooperation by reflecting international norms in the Environment Conservation Act (Han, 2014).

In North Korea's environment law field, its urgent situation including the ease of ideological position and reflection of international society's norms can be guessed. However, it is difficult for North Korea alone to solve environmental problems. The reason is because North Korea's capabilities have limitations. Especially international society seeks global problem solutions to environmental problems as in the Paris Agreement.

If South and North Korea share and cope with environmental problems together, there is a high possibility to be beneficial work for unification in the future. For environment problems, exchanges between two Koreas are essential in advance to save cost burdens after the unification, and it is important to support through cooperation (Han, et al., 2007).

North Korea is not likely to voluntarily request assistance from South Korea without economic benefits. Also, the lack of a systematic approach for sustainable inter-Korean environmental cooperation is one of the major limitations. In these regards, environmental management collaborative governance is very important in terms of the administrative system, but North Korea's special system may limit the acceptance of such a new device (Choi, et al., 2020).

The study results can be used as effective and positive data for reliability construction of South and North Korea by stressing cooperation at humanitarian level, rather than conflicts between South and North Korea for solution to environmental problems and coping with environmental disasters. In addition, the study results can be used as base data for a pilot cooperation project for joint coping with South and North Korean environmental problems and for environmental cooperation.

As previously pointed out by this study, future inter-Korean environment cooperation should be established as a system to support mutual understanding and sharing of environmental problems, improving resilience, and establishing regional action plans based on consensus building between two Koreas. Besides, the provision of ongoing support through environmental cooperation with the international community would be a priority for a successful relationship. To this end, environment cooperation between two Koreas should be promoted in such an amicable way for mutual benefits of the two Koreas.

⁹ "All activities are carried out under the rules and commands of Korean Workers' Party (KWP) in DPRK. ""

¹⁰ North Korea is rated to ease ideological position in environment conservation projects through the Constitution. In the revision of the Constitution, "in building socialism and communism permanently" was deleted in Article 2 of the previous Constitution, "Environment conservation projects are key projects in building socialism and communism permanently".

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