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Article

Forest Policy and Law for Sustainability within the Korean Peninsula

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Abstract: Since the early 1990s, sustainable forest management (SFM) has emerged as a paradigm of forest management on global, regional and national levels. In developing countries, avoiding deforestation is a preliminary step towards SFM. The Korean peninsula experienced severe deforestation and forest degradation after the Korean War (1950–1953). In the 1970s and 1980s, South Korea achieved forest restoration through the National Greening Program. In contrast, North Korea failed to restore forests in spite of continuous trials with forest restoration plans. In North Korea, deforestation has accelerated since the mid-1980s. Deforestation and forest degradation in North Korea threatens stability throughout the Korean peninsula. This study focuses on comparing the forest policy and laws of South Korea and North Korea and suggesting forest policy that promotes sustainability in the Korean peninsula. The research findings can provide developing countries with significant information on forest policy and laws to avoid deforestation and forest degradation and move towards sustainability.

Keywords: sustainable forest management; Korea; policy; legal framework; unification

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1. Introduction

Since the early 1990s, global society has accepted sustainable development as a vision for global, regional, national and local communities. In the field of forestry, Forest Principles are a non-legally binding forestry agreement that many countries have signed at the United Nations Conference on Environment and Development in 1992. The signed agreement represents a non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests. The Forest Principles recommend sustainable forest management (SFM) to meet the social, economic, ecological, cultural and spiritual needs of present and future generations [1]. SFM emerged as a new concept in forest management. The concept of SFM that was built at the global level has been reflected at the national level. The states have established and implemented national policies and strategies to promote SFM, for example Germany [2] and Brazil [3]. Principles, criteria and indicators have been developed and applied to define and measure SFM at the national level [4]. Avoiding deforestation is a preliminary step toward SFM in developing countries. Developing countries have made efforts to avoid deforestation [5,6]. Numerous activities of REDD (Reducing Emissions from Deforestation and Forest Degradation) plus enhancing conservation, sustainable management of forests, and forest carbon stocks, which is a new mechanism to compensate for forest projects to mitigate emissions under the global climate regime, have recently been implemented in developing countries [7].

On the Korean peninsula, South Korea and North Korea had different experiences in forest management. South Korea achieved forest restoration through National Greening Program in the 1970s and 1980s [8]. In contrast, North Korea failed to restore forests despite continuous trials with forest restoration plans [9]. In North Korea, deforestation has accelerated since the 1980s [10]. The annual change rate of forest areas decreased from −1.67% (from 1990 to 2000) to −2.10% (from 2005 to 2010) in North Korea [11] (p. 230). Kang and Choi [12] examined changes of forest cover in North Korea between the 1980s and 2000s using the morphological spatial pattern analysis. The research results indicate that forest cover sharply decreased between the 1990s and 2000s, particularly in western provinces, and morphological classes indicating forest fragmentation consistently increased in their fraction to the total area between the 1980s and 2000s. Several studies have examined the conversion of forestlands into agricultural lands in North Korea using remote sensing images [13–15]. The political border between South Korea and North Korea cannot divide the ecosystem in the Korean peninsula. South Korea and North Korea share forest disasters (e.g., forest fires and diseases). Deforestation and forest degradation in North Korea threatens ecological stability throughout the Korean peninsula. Therefore, South Korea and North Korea must heed North Korea's forest denudation for a sustainable Korean peninsula. Assessing forest policy changes in South and North Korea is an invaluable exercise to move towards SFM within the Korean peninsula. In particular, South Korea's experience with avoiding deforestation and implementing SFM can be applied to create forest restoration policies in North Korea [16,17]. In this context, several scholars have examined forest policy and laws in South Korea and North Korea [9,18,19]. However, previous studies have focused on a descriptive analysis of the historical facts of forest policy and laws. These studies lack interpretations of policy changes and legal frameworks to draw insights and implications for policy design that promotes sustainability within the Korean peninsula. Most of these studies have only been published in

Korean. Therefore, this paper aims to compare South Korean and North Korean forest policies and laws and recommend basic principles of forest policy and laws to promote future sustainability in the Korean peninsula. This paper can contribute to a better understanding of Korean forest policies and laws on a global level. Furthermore, this study can offer significant insight into designing forest policy to avoiding deforestation and establish SFM in developing countries.

2. Deforestation and Reforestation in the Korean Peninsula

The Korean peninsula is located in East Asia. It shares oversea borders with China to west and Japan to the east. After the end of World War II, Korea was liberated from 35-years of Japanese colonization on 15 August 1945. The Korean peninsula was divided to two, the South and the North, by joint Soviet-American occupation of Korea from the emerging Cold War. The Korean War (from 1950 to 1953) ushered the Korean peninsula into a hostile and confrontational era. Since the end of the war, South Korea and North Korea have been in an armistice.

The territory of South Korea (the Republic of Korea) and North Korea (the Democratic People's Republic of Korea) are comprised of the southern and northern part of the Korean peninsula respectively. As the Table 1 shows, the land size of South Korea comes to 9873 thousand ha accounting for 45% of the entire peninsula, about 21,914 thousand ha. The land size of North Korea comes to 12,041 ha accounting for 55% of the entire peninsula [11] (p. 219). As of 2010, in South Korea forest area is about 6.2 million ha and it is almost 63% of total land area [11] (p. 225). After the Korean War, the South Korea followed the forest ownership structure from the Japanese colonial rule. As of 2010 South Korean forests consist of public (31%) and private forests (69%) [11] (p. 235). Almost half of total forests consists of primary forests [11] (p. 251). In North Korea forest area is about 5.7 million ha and it is almost 47% of total land area [11] (p. 225). After the Korean War, the North Korea nationalized all forest areas. All of North Korea's forests belong to the state up to the present [11] (p. 235). Nearly two thirds of total forests consists naturally regenerated forests in North Korea [11] (p. 251).

Table 1. Forest conditions of South Korea and North Korea in 2010 [11].

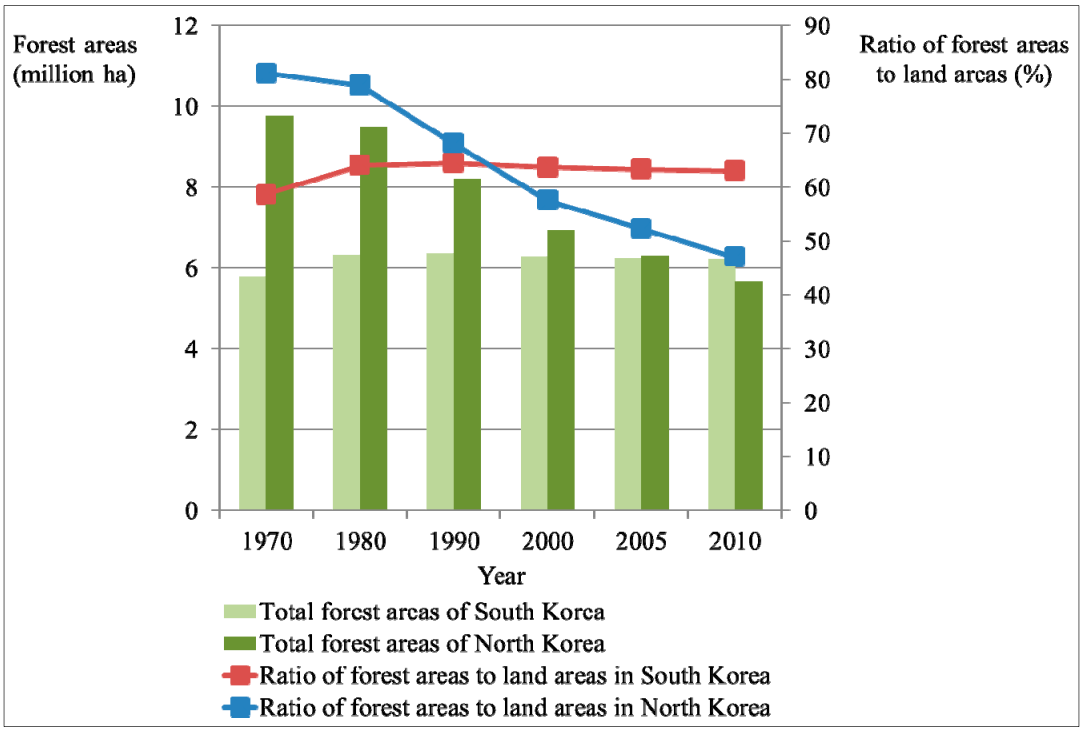
Condition		South Korea	North Korea
Land area (thousand ha)		9873	12,041
Forest area (thousand ha)		6222	5666
Forest ownership (% of forest area)	Public	31	100
	Private	69	0
Forest characteristics (thousand ha/ % of forest area)	Primary forest	2957/48	780/14
	Other naturally regenerated forest	1443/23	4104/72
	Planted forest	1823/29	781/14

The Korean peninsula experienced severe deforestation and forest degradation after the Korean War (1950–1953). Food and energy demands led to the conversion of forestlands into agricultural lands and the excessive exploitation of forest resources. South Korea and North Korea have established and implemented reforestation policies respectively. South Korea achieved forest recovery in the 1970s [8]. South Korea's successful reforestation experience is considered a good model for developing countries [20,21]. Its reforestation is regarded as a result of the South Korean government's policy

intervention [22,23]. In particular, the National Greening Program contributed to successful reforestation in South Korea for two decades [8,23,24].

In contrast, North Korea failed to restore forests despite continuous attempts with forest restoration plans. Deforestation has accelerated since the mid-1980s (Figure 1). In particular, North Korea was ranked 3rd in the 2012 deforestation index [25]. Immediately after the Korean War, North Korea had more forestlands than South Korea. However, the total forestlands in North Korea decreased, falling behind the total in South Korea in 2010 (Figure 1). Since the 1990s, energy and food shortages have caused increases in logging and accelerated deforestation [26]. In addition the area of planted forests has declined since 1990 (Table 2).

Figure 1. Changes of total forest areas and ratio of total forest areas to total land areas in the South and North Korea [11,27].



Note: Total land areas of South Korea: 9873 thousand ha; total land areas of North Korea: 12,041 thousand ha.

Table 2. Trends in extent of planted forests 1990–2010 in South Korea and North Korea [11] (p. 262).

Content	Year		South Korea	North Korea
Area of planted forest (1000 ha)	1990		-	1130
	2000		1738	955
	2005		1781	868
	2010		1823	781
Annual change rate	1990–2000	1000 ha/year	-	−18
		%	-	−1.67
	2000–2005	1000 ha/year	9	−17
		%	0.49	−1.89
	2005–2010	1000 ha/year	8	−17
		%	0.47	−2.09

Since 1953, the Korean peninsula has been politically divided into South Korea and North Korea. Over the past sixty years, the ceasefire line has limited visits and separated Korea into two societies. However, this political line cannot divide the Korean ecosystem. Deforestation and forest degradation in North Korea threaten ecological stability across the Korean peninsula. For example, forest damages by forest pests in North Korea can be diffused to South Korea, particularly border area. Therefore the Koreas need cooperative forest management for sustainability in the Korean peninsula. Since 1998, agreements have established and implemented forest cooperation projects between South Korea and North Korea. Forest cooperation activities (e.g., reforestation, tree nursery construction and insect pest control) have been conducted [22]. However, forest cooperation projects were designed without the agreed basic plan with the long term period. Most cooperation activities were limited to respond to the demands by North Korea such as tree nursery construction and insect pest control [28] (pp. 119–124). South Korea and North Korea need a systematic approach to forest management in the Korean peninsula. SFM would be enhanced if South Korea and North Korea establish a common policy for SFM across the Korean peninsula. This study focuses on Korean forest policy and laws that promote sustainability across the Korean peninsula. Therefore, this study aims to interpret changes in forest policies and laws in South Korea and North Korea and to recommend forest policy and laws that promote sustainability in the Korean peninsula.

3. Korean Forest Policies

In this research, forest policies in South Korea and North Korea were divided into three phases by forest policy innovations (Figure 2) and then were analyzed and compared. South Korean forest policies were partitioned according to National Forest Development Plans (NFDP): (1) post-war forestland recovery and wood supply (before the 1st NFDP: 1953–1972); (2) forest rehabilitation (1st, 2nd and 3rd NFDPs: 1973–1997); and (3) sustainable forest management (4th and 5th NFDPs: 1998–2013). North Korean forest policies were partitioned by two major forest-related policy events: the introduction of a nature-remaking program (e.g., terraced upland cultivation) in 1976 and the enactment of the Forest Act (Appendix) in 1992. The events divided North Korean forest policy into three general periods: (1) post-war forestland recovery and wood supply (1953–1975); (2) terraced upland cultivation (1976–1991); and (3) land protection and greening (1992–2013).

Figure 2. Changes of forest policy foci in South and North Korea.

South Korea	**Post-war forestland recovery and wood supply (1953–1972)**	**Forest rehabilitation (1973 – 1997)**	**Sustainable forest management (1998 – 2013)**
North Korea	**Post-war forestland recovery and wood supply (1953 – 1975)**	**Terraced upland cultivation (1976 – 1991)**	**Land protection and greening (1992 – 2013)**

3.1. Changes of South Korean Forest Policies

3.1.1. Phase I: Post-War Forestland Recovery and Wood Supply (1953–1972)

After the Korean War, an increasing population boosted food and energy demands, which in turn led to the conversion of forestlands into agricultural lands and the excessive exploitation of fuel wood for energy. The South Korean government implemented a forest protection policy to decrease deforestation. The Forest Product Control Act (Appendix) of 1961 regulated gathering and extracting products in the mountains. The Abolishment of Slash-and-Burn Fields Act (Appendix) of 1966 prohibited slash-and-burn cultivation. However, it was not completely abolished until 1970s.

In 1961, the Forest Law was enacted to promote forest protection and forest development and to enhance forest productivity and public functions. Among other things, the law prescribes utilization of forest resources, conservation of natural forests and management of national forests. In addition to the Forest Law, the Erosion Control Act (Appendix) was enacted in 1962 to restore denuded forestlands and effectively control erosion. Based on forestry legislation, the South Korean government designed and implemented reforestation and erosion control projects. These projects were linked in National Economic Development Plans (NEDPs). The 1st NEDP (1962–1966) sought to secure energy sources and overcome fuel shortages. Mining development projects based on the 1st NDEP influenced the substitution of coal briquettes for firewood in South Korea. The 2nd NEDP (1967–1971) set reforestation as a major target for economic development [29]. In the 1950s, deteriorated areas in South Korea climbed to more than 680,000 ha—approximately 10% of the total forestland in South Korea. Through strong government programs, deteriorated areas rapidly decreased to 120,000 ha in 1972 [30].

Despite the introduction of the forest protection policy, illegal logging was not controlled. From 1945 to 1961, the frequency of illegal logging was 24,085 cases, and the average volume of illegally logged timber was 92,853 m^3 per year [31]. Recognizing importance of forest rehabilitation and strengthening forest policies, the Forestry Bureau under the Ministry of Agriculture and Forestry (MAF) had to be expanded for effective and efficient forest policy. To strengthen forest administration power, the Korea Forest Service (KFS) was created as a national forest administration agency under the MAF in 1967.

3.1.2. Phase II: Forest Rehabilitation (1973–1997)

To restore these devastated forests that had caused serious social problems (e.g., lack of fuel, severe floods and droughts), the NFDPs were established. After legal and institutional preparations in the 1960s, the Forest Rehabilitation Projects were initiated in 1973. During the 1st NFDP, from 1973 to 1978, erosion control works were conducted in a total 41,932 ha [32] (p. 414). The government declared the Nationwide Tree Planting period (21 March–20 April) and Arbour Day to encourage active public participation. With public participation during the 1st NFDP, 1.08 million ha of denuded forest were eventually restored with fast-growing tree species [32] (p. 414). The 10-year project was completed 4 years in advance of its 1982 target. The 1st NFDP prohibited slash-and-burn (SAB) cultivation as a major driver of deforestation and forest degradation. KFS tried to secure the livelihood of poverty-stricken slash-and-burn farmers. KFS allocated 69.9% of the total budget for the abolishment of slash-and-burn fields from 1974 to 1979 to provide security for SAB cultivators—38.3% for

the reallocation of households and 31.6% for livelihood support [33] (p. 328). SAB households were compensated for relocating with 0.2 to 0.5 million Korean won (413 to 1033 USD) per household from 1974 to 1979 [33] (p. 335). 1.0 USD was approximately equal to 484.0 Korean won in 1974 [34]. According to the Abolishment of Slash-and-Burn Fields Act (Appendix), the government provided farmers who left their SAB fields with arable lands and housing [35] (p. 103). The economic compensation from the SAB field abolishment policy contrasted with the unsuccessful command and control regulation that was attempted until 1970s. The abolishment of SAB fields and the associated compensation for household relocation contributed to South Korea's successful forest restoration.

The 2nd 10-year NFDP (1979–1987) aimed to establish large-scale commercial forests that could be developed into sustainable timber resources for domestic timber demands. The government implemented various forest policies such as forest rehabilitation, forest protection enhancement, and the foundation of forest development funds to support private and national forests. Along with reforestation projects, erosion control was also actively undertaken to prevent natural disasters. Advanced biotechnology was also adopted to control forest diseases and pests. Under the 2nd NFDP, 1.06 million ha of forests were established.

South Korea achieved successful reforestation through the 1st and 2nd NFDPs. Based on forest resources, the 3rd NFDP (1988–1997) aimed to harmonize the economic functions and public benefits of forests. The plan focused on establishing forest management infrastructure (e.g., forest road construction, forest mechanization, and education for foresters and forestry workers). Shifting its focus towards the economic functions of forests, this plan embodied a transitional phase in South Korean forest policy [36] (p. 275).

3.1.3. Phase III: Sustainable Forest Management (1998–2013)

The third phase of South Korean forest policy was oriented toward SFM. At the global level, SFM emerged as a paradigm of forest management. South Korean forest policies reflected this global trend. The 4th NFDP (1998–2007) entered a transitional phase in forest policy, shifting its primary focus from economic functions to enhancing multiple benefits of forests (e.g., public and recreational benefits). The 5th NFDP (2008–2017) aims to realize a nation based on sustainable forests. Sustainable management of the forests covering 64% of total land area is crucial to realize a green nation. The plan includes five key strategies [24]: (1) integrated management and development of multi-functional forest resources; (2) forest industry promotion for the sustainable use of forest resources; (3) conservation and management of forests as national environmental resources; (4) increasing green areas and services for the public; and (5) international cooperation for global forest conservation and timber supply.

In accordance with the SFM paradigm to maximize multi-functional forest resources, urban forest policies have been introduced in South Korea since the late 1990s [36] (p. 273). In accordance with the Creation and Management of Forest Resources Act (Appendix) of 2005, the KFS established a basic plan for urban forests (2008–2017) in 2007. Following the plan, central and local governments are constructing and managing various types of urban forests (e.g., street trees, urban parks and school forests) [37] (p. 201). As of 2011, a total of 10.8 million seedlings have been planted, and 957 school forests have been created [38].

South Korea has voluntarily set a carbon emission target for 2020. In November 2009, the Presidential Committee on Green Growth (PCGG) announced that the target for greenhouse gases (GHG) reduction is 30% from the business-as-usual projection [39] (p. 19). Forests are recognized as one of carbon offset strategies for accomplishing national carbon emission target in South Korea, considering the high carbon sink potential of Korean forests, which cover 63.7% of the land. Since the late 2000s, the KFS has introduced forest policies to mitigate and adapt to climate change. In December 2008, the KFS established and implemented the Comprehensive Forest Plan Combating Climate Change. Since 2009, the KFS has carried out the project of AR-CDM (afforestation/reforestation clean development mechanism) and REDD plus (Reducing Emissions from Deforestation and Forest Degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks) in Lombok, Indonesia, to gain forest carbon credits from the global regime on climate change under the Kyoto Protocol [40]. Since 2011, three model projects to offset forest carbon through reforestation have been implemented in South Korea [41].

South Korea is keen to participate in international forest programs and negotiations. It has been actively participating in the United Nations Forum on Forests (UNFF) and has been closely involved in international conventions, such as the United Nations Conventions to Combat Desertification, the United Nations Convention on Biodiversity (UNCBD) and the United Nations Framework Convention on Climate Change (UNFCCC). As of 2013, South Korea has also built bilateral forest cooperation with twenty-eight countries, including Indonesia, Myanmar, Austria, New Zealand, Japan, and Tunisia. In 2011, South Korea signed a forest cooperation agreement with the Association of Southeast Asian Nations (ASEAN). Following the agreement, South Korea has been preparing to launch the Asian Forest Cooperation Organization (AFoCO) as the agency that implements forestry cooperation projects between South Korea and ASEAN member countries.

3.2. Changes in North Korean Forest Policies

3.2.1. Phase I: Post-War Forestland Recovery and Wood Supply (1953–1975)

Unlike South Korea, North Korea nationalized forests after the Korean War. North Korea focused on timber production policies for post-war recovery and economic development. In 1958, the Cabinet established the Forestry Administration to enforce forest policy [42]. North Korea has implemented reforestation policies based on national economic development policies. North Korea has designed national economic development plans to include reforestation plans. The 1st 7-year National Economic Development Plan (1961–1967) aimed for reforestation of 0.85 million ha [9] (pp. 42–43). Under the economic development policy, supplying timber and forest resources was emphasized to promote heavy industry. Fast-growing tree species (e.g., poplar) were preferred for pulpwood. In the 1960s, policy focused on establishing commercial forests that provided local people with raw materials for local industry. The 6-year National Economic Development Plan (1971–1976) included the establishment of oil trees (e.g., walnut trees and nut pine trees) [9] (p. 43).

3.2.2. Phase II: Terraced Upland Cultivation (1976–1991)

North Korea has implemented remaking programs since establishing its government in 1948. The programs consisted of three components: society, humans and nature. Until the selection of the socialist constitution in 1972, the nature-remaking program was less successful than the society- and human-remaking programs [43]. In October 1976, five nature-remaking projects were announced to build the foundation for agricultural production: (1) irrigation; (2) terraced upland cultivation; (3) land rearrangement and improvement, (4) forest and water conservation; and (5) tideland reclamation [43] (p. 111). Terraced upland cultivation occurs when mountain slopes (with more than a 16-degree slope to upland fields) are cultivated to improve food production [9] (p. 69). Due to the population increase in the 1970s, the demand for food also increased. Forestlands were converted into agricultural lands for food production. In particular, the Land Law of 1977 encouraged the cultivation of terraced uplands. Article 49 of the Land Law indicates that "cultivation of terraced uplands is an important means to increase the yield of agricultural products" [42] (p. 475). Terraced upland cultivation has driven severe deforestation and forest degradation in North Korea. North Korea sought to strengthen reforestation projects. However, there have been no reports of practices and outcomes beyond the suggestion of 2 million ha and 1.5 million ha for reforestation goals during the 2nd (1978–1984) and the 3rd 6-year plans (1987–1993), respectively [44].

3.2.3. Phase III: Land Protection and Greening (1992–2013)

In North Korea; forest management has focused on the production of forest resources for economic development. The Forestry Administration has a major responsibility to meet demands for forest resources (e.g., timber; fiber; paper; oil; and fruits) that are needed for economic development and self-reliance. However; reforestation results did not appropriate timber demand; and deforestation and forest degradation continued. To enforce the forest policy system; North Korea promulgated the Forest Act (Appendix) on 11 December 1992 and enacted detailed rules (1993) and regulations (2000) for its application.

North Korea has experienced severe energy and food crises since of the collapse of the Soviet Union in 1990 when its financial and technical support to North Korea decreased. Environmental disasters accelerated deforestation and forest degradation. In particular, the increase in terraced uplands caused soil erosion and landslides on a large scale [45]. These disasters caused extensive damages in terms of human lives and property. Since the late 1990s, North Korea has been emphasizing forest management for land protection. In 1998, the Ministry of Land and Environmental Protection was created for land protection and management. According to an analysis of North Korean newspaper *Rodong Shinmun* [46], the number of forest-related reports, including those on land protection and management issues, has increased since 1998.

Article 5 of the Forest Act (Appendix) specified "Surimwha—Wonrimwha (SW)" is a core policy in establishing forests. Surimwha aimed at planting trees for protecting national lands and Wonrimwha aimed at greening urban and rural areas including provision of recreational and cultural spaces. In particular, in 2000s, SW policy was emphasized in North Korean forest management. SW was presented as the core forest policy of the Party several times by *Rodong Shinmun* [47–51]. North Korea established a

10-year tree-planting plan (2001–2010) to implement their greening and gardening policy [42]. However, the plan's detailed contents and implementation results were never officially reported. North Korea recently made a 10-year plan for forest rehabilitation and development with an agroforestry approach (2013–2022) [52] (p. 98). In addition, North Korea emphasized reforestation and afforestation as one of priority activities for adapting to climate change through North Korea's first National Communication submitted to the United Nations Framework Convention on Climate Change (UNFCCC) [53].

North Korea has received financial and technological support for forest conservation and management from intergovernmental organizations such as the United Nations Development Program, the United Nations Food and Agriculture Organization, the European Union, international non-governmental organizations (e.g., Hans Seidel) and other countries (e.g., Switzerland and Germany) [52,54]. North Korea is a contracting party for a few intergovernmental agreements and conventions, such as the United Nations Convention on Biological Diversity (UNCBD), the UNFCCC and the United Nations Convention to Combat Desertification (UNCCD). North Korea submitted its initial national communication report to the UNFCCC on 7 May 2004; it also established a Designated National Authority (DNA) in November 2008 to approve the process for Clean Development Mechanism (CDM) projects in North Korea under the UNFCCC [55] (p. 100). As of 2013, North Korea has six verified CDM projects to develop hydropower installations under the Kyoto Protocol [56]. CDM projects include opportunities for foreign direct investment and technology transfer to upgrade the North Korean energy sector.

3.3. Comparison of South Korean and North Korean Forest Policies

Based on national economic development plans after the Korean War, South Korea and North Korea implemented forest policies that focused on forest restoration and timber production. However, their forest policies produced different results in terms of reforestation and forest protection. South Korea is regarded as a successful case of reforestation among developing countries [20,21]. In contrast, North Korea is ranked as one of the most severely deforested countries [25]. The differences in forest policies between South Korea and North Korea can be summarized with three features: (1) integrated policy design for reforestation; (2) forest protection policy; and (3) international forest cooperation.

First, policy integration is a major driver of South Korean reforestation. South Korea integrated sectoral policies, such as energy security, agricultural development, land management, economic development and reforestation [23]. The National Forest Development Plans (NFDPs) were systematically aligned with the Comprehensive National Territorial Development Plans (CNTDPs) and NEDPs in South Korea. The policies that substituted firewood with coal briquettes through the NEDP and abolished SAB fields through the CNTDP contributed to forest restoration. However, in North Korea energy and food policies were not appropriately integrated for reforestation policy. North Korea encouraged terraced upland cultivation as one of five nature-remaking projects in the 1970s and 1980s. Political encouragement to cultivate terraced uplands for food security accelerated deforestation and forest degradation.

Second, the forest protection policy approach was different in South Korea and North Korea. From the early stages of forest restoration policy following the Korean War, South Korea treated forest

protection as a part of land management. Erosion control projects were implemented on a large scale as a part of national greening programs. Topsoil loss caused by erosion affects soil fertility, ultimately degrading forestlands [30] (p. 40). Erosion control prevents forest disasters (e.g., landslides). The 1st CNTDP (1972–1981) encompassed environmental conservation, including forest protection. Slash-and-burn cultivation caused also soil erosion and increased flood and landslide risks. The 1st NFDP included prohibition of slash-and-burn cultivation as a major driver of deforestation and forest degradation in South Korea. The KFS allocated national finances to abolish slash-and-burn fields and compensated slash-and-burn cultivators for relocation and to stabilize their livelihood. This economic approach helped successfully abolish slash-and burn fields. In contrast with South Korea, North Korea started to emphasize forest management for land protection in the late 1990s.

Third, international forest cooperation strategies differed in South Korea and North Korea. South Korea received financial and technological support from international organizations and other developed countries in their process of forest restoration. In addition, South Korea has supported forest projects in developing countries, including forest cooperation projects between South Korea and North Korea, since the 1990s. However, as a beneficiary country, North Korea has participated in international forest projects supported by intergovernmental and international non-governmental organizations and other countries [54]. South Korea and North Korea acknowledge global forest protection and have signed several multilateral forestry agreements, as indicated in Table 3 below. South Korea has been more actively participating in the multilateral forest cooperation than North Korea. South Korea has also strengthened bilateral forestry cooperation with the ASEAN since 1987 [24] (p. 68). On the other hand, North Korea has essentially attempted to overcome the severe problem of deforestation and forest degradation itself. Since the 1990s, North Korea has participated in the process of international environmental negotiations and signed multilateral environmental agreements (Table 3). It has established bilateral environmental cooperation agreements with a few countries (e.g., China) [57] (pp. 151–153).

Table 3. Multilateral environmental agreements related to forests signed by South Korea and North Korea [58–62].

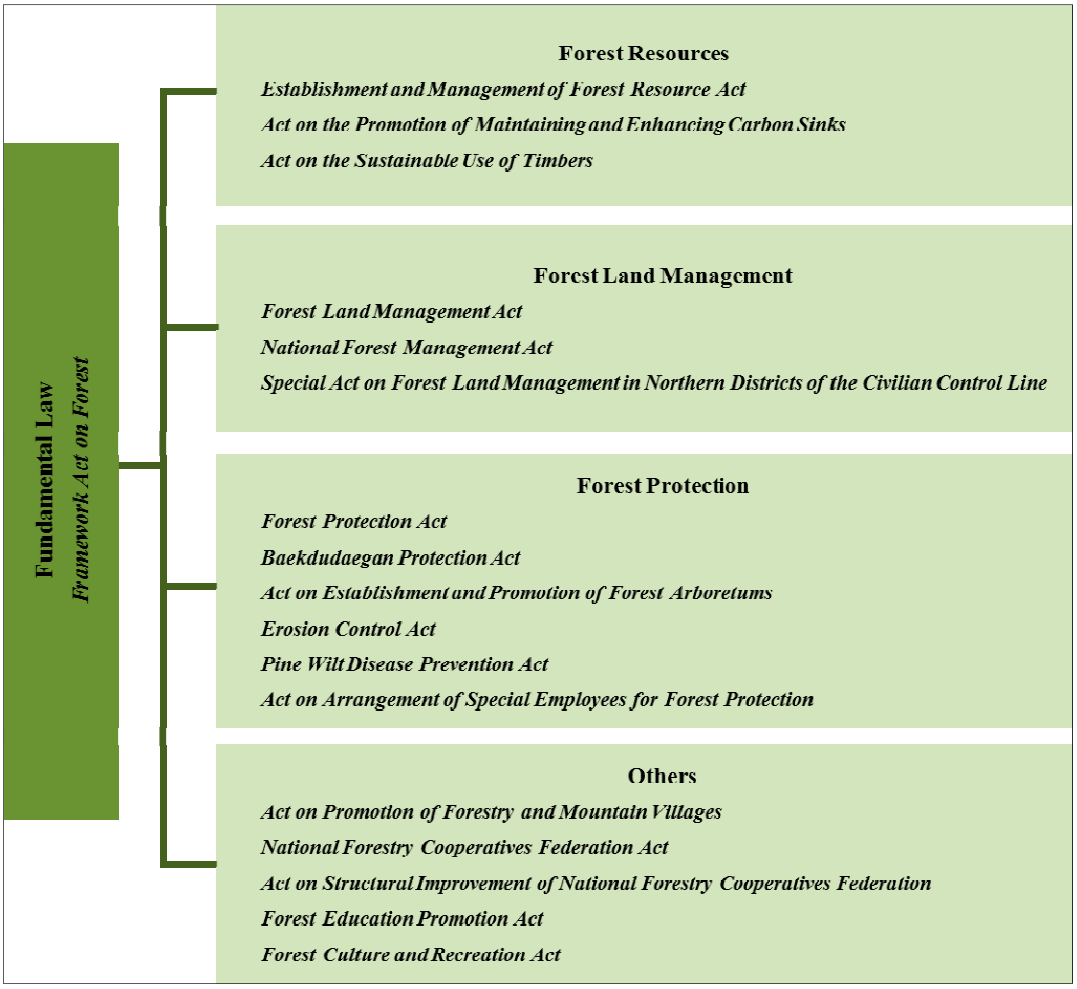
Title of International Forest-Related Treaties	Signature Date	
	South Korea	**North Korea**
Convention on Biodiversity (1992)	13 June 1992 (signed) 3 October 1994 (ratified)	11 June 1992 (signed) 26 October 1994 (approved)
United Nations Framework Convention on Climate Change (1992)	13 June 1992 (signed) 14 December 1993 (ratified)	11 June 1992 (signed) 5 December 1994 (ratified)
Kyoto Protocol (1997)	25 September 1998 (signed) 8 November 2002 (ratified)	27 April 2005 (ratified)
Convention to Combat Desertification (1992)	14 October 1994 (signed) 17 August 1999 (ratified)	29 December 2003 (ratified)
International Tropical Timber Agreement (1994)	12 September 1995 (signed and ratified)	None
Convention on the International Trade of Endangered Species (1979)	9 July 1993(accessioned)	None

4. Korean Laws

4.1. South Korean Forest Laws

In December 1996, South Korea enacted the Forest Act (Appendix) for the use and management of forestry resources. However, to regulate basic targets of forest policies and set policy directions, the state enacted the Framework Act on Forest (Appendix) in May 2001, which modified forest and forestry legislation and adopted the Establishment and Management of Forest Resources Act. Various acts (e.g., the Forest Culture and Recreation Act, the Forest Protection Act and the Baekdudaegan Protection Act (Appendix)) were established to regulate multiple fields under the Framework Act on Forest. The Framework Act on Forest stipulates basic objectives and structure of forest policies for development of various forest policies. It plays a significant role as a fundamental law which offers background and normative standards for enacting other forest laws in the system of forest legislation. As of March 2014, there are 18 acts, 18 executive orders and 17 ordinances under the Korea Forest Service's jurisdiction. Other environmental acts regulated forest use and management (e.g., the Natural Environment Conservation Act, the Wildlife Protection and Management Act and the Natural Parks Act (Appendix)) under the Ministry of Environment's jurisdiction. Figure 3 illustrates the structure of South Korean forest-related legislation under the Korea Forest Service's jurisdiction.

Figure 3. South Korean forestry legislation under the Korea Forest Service's jurisdiction.



The Framework Act on Forest (Appendix) relates to fundamental forest and forestry law in South Korea and has 7 chapters and 30 articles. This act provides basic directions for policies relating to forest resources, mountainous district management, forest protections and normative criteria that can be commonly applied to each forest stand.

The Framework Act seeks to not only to improve the nation's quality of life but also to develop the nation's economy. To accomplish these goals, the act designates basic forestry policy matters to promote various forest functions and forestry development (Article 1). Hence, state and local governments shall be responsible for establishing and implementing comprehensive policies about forest preservation and use (e.g., forest conservation, forest function enhancement for public interests, forestry development, and mountain village promotion) (Article 4 (1)). Moreover, these governments shall use legislative and financial measures to implement forest conservation and utilization policies. Article 9 states that "state and local governments shall conduct investigations and research regarding forest policies necessary to strengthen international cooperation toward conservation of the earth's forests and to prepare for Korean unification". This article provides the legal basis for forest cooperation with international organizations and the enforcement of mutual forest collaboration to prepare for unification in the Korean peninsula.

According to this act, the (South) Korea Forest Service shall establish and implement basic and regional forest plans to help systematically realize SFM (as presented in Chapter 3) based on the long-term prospects (Article 11). Basic and regional forest plans shall be established using district units. However, to instil forest management flexibility, certain areas are bound to an integrated management unit along with eco-systemic and economic characteristics. Basic and regional forest plans will be established every ten years. The government shall prepare an annual report on the forest status and policies; the government will then submit the report to the National Assembly to enhance the democratic justification for policies on forests and forestry (Article 12).

State and local governments shall establish and implement policies for reforestation and silviculture to promote SFM, considering regional specificity to promote the public functions of forests (e.g., forest protection and recreation) (Article 16). Moreover, state and local governments shall establish and implement necessary policies to provide citizens with recreational places (e.g., constructing various forest recreational facilities) and with knowledge and information on forests to promote forest culture (Article 20). For the purpose of improving forest functions to promote economic benefits, state and local governments shall establish and implement policies to improve forestry productivity and to enhance forest management capabilities in the administrative structure (Articles 21, 22 and 23). In particular, to secure the timber supply, the state shall establish and implement policies to develop overseas forest resources (e.g., assistance with overseas forest plantations) (Article 22(2)), which emphasizes international forest cooperation to improve the economic benefits of forests. In addition, this act includes policies to promote mountain villages (Articles 28 and 29).

4.2. North Korean Forest Laws

In March 1946, North Korea proclaimed the Act on Land Reform of North Korea (Appendix) to nationalize all lands, including forests, under land reformation by forfeiting and redistributing free of charge. North Korea also established the Decree on Forest Land Management in June 1946, aiming to

reorganize the forest administrative organization and restore devastated forests. The Land Law (Appendix) enacted in April 1977 included several articles to regulate forest construction and management. North Korea did not enact a specific forestry law.

North Korea established the Forest Act (Appendix) in December 1992, which had been amended eight times by March 2012, to enforce control over forestlands alongside the pressures to construct farmlands and secure energy resources since the 1970s [27,42]. The Forest Act is the fundamental law in North Korea's forest sector—complemented by the Land Law (1977), the Environmental Protection Law (1986), the Control Law on Land and Environmental Protection (1998) (Appendix) and others. North Korea enacted the Act on Green Spaces (Won-rim) on 25 November 2010 (Appendix). According to Article 2, green spaces are identified as green areas with diverse vegetation in accordance with the people's needs of recreation and environment protection. This act regulates the establishment and management of green spaces in urban and rural areas.

The Forest Act (Appendix) is composed of 5 chapters and 47 articles that suggest a basic direction for establishing, protecting and using forest resources. The chapters outline the basic provisions of the act (Chapter 1), the creation of forests (Chapter 2), forest protection (Chapter 3), forest resource utilization (Chapter 4) and rule and control of forest management (Chapter 5). This act seeks to implement national forest policies by strictly controlling the establishment, protection and utilization of forests (Article 1). Forests, including lands, plants, animals and materials, belong to the state (Article 2). Forests are classified as special reserved forests, general reserved forests, lumber forests, commercial forests and firewood forests (Article 3). The act also declares establishing forests as a consistent policy to be carried out by the people of North Korea and the Professional Forest Enterprise of Forest Composition (Article 5). The state will establish a forest protection system and an overall plan for forest construction to manage forest resources in a comprehensive and reasonable manner (Articles 4, 6, 7). Moreover, in adopting modern high technology, the state shall endeavor to make forestry management modern and sophisticated (Article 8). The state shall strengthen international cooperation and the exchange of scientific and technological skills and knowledge in the field of forest management (Article 9).

This act imposes upon the Land and Environment Protection Agency, institutions in charge of forestry, agencies in charge of specific forests, enterprises and organization, with the duty to expand forest areas and improve the state of forest scenery (Article 10). It also emphasizes the importance of reproducing new tree varieties that are rapidly growing with good shape and quality through the use of breeding and seed-gathering technologies (Article 14). As to forest protection, any person who wants to enter forests to use or collect forest products and to cut down trees and collect stones in forestlands has to obtain prior permission from the relevant organization (Articles 21 and 25). One would need permission from the Ministry of Land and Environmental Protection and the Cabinet for utilizing forest resources (Article 30), and cut trees cannot be carried out without log transportation certification from the Ministry of Land and Environmental Protection (Article 34). A person who intends to collect grass, herbs and wild fruits or hunt wild game must obtain permission from the relevant organization (Articles 35–37). In addition, forest resource exportation is prohibited, and the exportation of wood products requires approval from the relevant organization (Article 38).

The Forest Act in North Korea strictly regulates and controls forest management activities. Any person who fails to perform various forestry management duties will be charged a fine. Any person

who does not complete the plan for planting and tending trees and guarantee their survival rate will be suspended from utilizing forest resources (Article 45). Any person who cuts trees, cultivates forests and hunts animals without permission will be forced to perform the obligatory forest restoration and be charged fines or damage compensation (Article 46) On occasion, any person who disregards legislation and causes significant damages (e.g., forest fires or illegal logging) is subject to administrative or criminal liability according to the circumstances (Article 47).

4.3. Comparison of South and North Korean Forest Laws

Despite the different legal systems in these countries, North Korea and South Korea commonly emphasize the importance of forest resources and the establishment and protection of forests (Table 4). In particular, they enforce international cooperation and collaboration in forest management. The Framework Act on Forest in South Korea says that "State and local governments shall conduct investigations and research regarding forest policies necessary to strengthen international cooperation for the preservation of Earth's forests and to prepare for unification" (Article 9). The Forest Act in North Korea also concludes that "the state shall endeavor to build up international technological exchange and collaboration with other countries for forest management" (Article 9). The Environmental Protection Law adds that "the state shall endeavor to build up the international cooperation and collaboration with other countries and international organizations to protect the environment" (Article 8). Compared with South Korea, North Korea has legislations pertaining to forests and forestry with the following four characteristics.

Table 4. Comparison of basic laws on forests in South Korea and North Korea.

Framework Act on Forest in South Korea			**Forest Act in North Korea**		
Chapter	Content	Article number	Chapter	Content	Article number
General provisions	Basic principles and responsibilities of governments	1–4	Basic provisions	Forest ownership, national plan for forest construction, international cooperation, forest management principles	1–9
Basic directions	Conservation and use of forests, international cooperation and preparation of unification	5–9			
Basic forest policies	Basic and regional forest plans	10–12	Creation of forests	Expanding forest areas and producing seedlings	10–18
Conservation and use of forest	Policies concerning forest disasters and Sustainable forest management	13–16	Forest protection	Prevention of forest fires, forest pest control and protection of forest resources	19–27

Table 4. *Cont.*

Framework Act on Forest in South Korea			Forest Act in North Korea		
Chapter	Content	Article number	Chapter	Content	Article number
Promotion functions of public interests of forests	Urban forest management and forest recreation	17–20	Forest resource utilization	Forest land use and use of timber and non-timber products	28–38
Promotion of forestry	Forestry productivities and forestry technology	21–26			
National forest management and development of mountain villages	Policies for national forest management and mountain villages	27–30	Rule and control of forest management	Rule and control of forest project management	39–49

First, the state plays a leading role in performing forest policies. In particular, North Korea chose greening as the fundamental forest policy and allocated forests to organizations, businesses, and associations for managing forests, according to the national plan for forest construction.

Second, North Korea's possession of all forestlands influences forest policies and agendas. In South Korea, 70% of forests are privately owned. Meanwhile, in North Korea, the whole forest belongs to the State. Therefore, the State supervises all types of forest land use including timber production, conversion and forest protection. In the process of unilateral decision-making, the State has implemented forest policies with a focus on forest products for economic development.

Third, the Forest Act in North Korea includes many abstract and proclamation articles. It lacks performance-based forest management criteria and approval requirements for the establishment, protection and utilization of forests through forest plans. South Korea's Framework Act on Forest provides specific systems to achieve SFM policies, while North Korea does not provide concrete system contents for SFM. Moreover, the Forest Act in North Korea does not include articles regarding mountain village development, forest recreational spaces and sound forest culture. North Korea's Forest Act is thus limited in reflecting SFM as a major concept of forest management.

Fourth, North Korea pursues forest policies mainly through regulations and highlights control instead of providing support and education. North Korea mobilizes the public to establish and tend trees during the tree-planting periods set by the Cabinet and strictly controls forest fires, disease and insect pests. Any person who violates regulations will be punished criminally and administratively (e.g., forced to perform duties to restore forests to their original state, suspension of forest use, fines or confiscation). Along with the unified guidance of the Cabinet, a central organization on land and environmental protection controls and supervises all types of forest management activities.

5. Basic Principles for Sustainable Forest Policy and Law after Korean Unification

Since the early 1970s, when cold war tensions began to ease, South Korea and North Korea have negotiated national unification. Among 239 agreements between South Korea and North Korea until March 2014, four major agreements include significant articles about unification between South Korea and North Korea [63]. The July 4 South-North Joint Communique announced in 1972 marked the first

official joint statement made by the South and North Korean authorities with regard to the principles and methods for national unification[64]. South Korea and North Korea agreed to avoid aggression and hostilities, reduce tension and ensure peace [63] (p. 134). Second, South Korea and North Korea signed a South-North Basic Agreement on 13 December 1991. The basic agreement stipulates the pursuit of national unification and inter-Korean cooperation in the economic and social sectors [64]. Third, the June 15 South-North Joint Declaration in 2000 specifies cooperation to resolve Korean unification between the two Koreas and promotion of a balanced development of both economics through the expansion of bilateral economic cooperation. Fourth, South Korea and North Korea announced Declaration for Development in Inter-Korean Relations and Peace and Prosperity on 4 October 2007. Through the declaration, two Koreas reconfirmed that they shall resolve inter-Korean issues in the spirit of reconciliation, cooperation and unification [64].

Depending on the political negotiation on cooperation and unification between South Korea and North Korea, research on policies following Korean unification has recently increased in various fields, such as military [65], social security [66], and land ownership and systems [67–69]. The academic outcomes are a part of the efforts to prepare for Korean unification leading to the sustainability of Korean peninsula. Joining the research trend, this paper examined forest policy and laws in the coming unified Korea. Here, we propose basic principles for forest policy and laws to promote sustainability in a unified Korean peninsula.

5.1. Basic Principles of Korean Forest Policy

Following the directions of SFM, we suggest three principles for Korean forest policy under future unification. The first principle ensures the stability of the forest ecosystem and society across the Korean peninsula. North Korea is extremely vulnerable to floods and landslides. To prevent disasters, mapping risk levels with forest inventory data is necessary. South Korea has conducted a National Forest Inventory since 1972 [70]. South Korean forest inventory system can function as a model for unified Korean forest inventory system. A nationwide forest survey should be implemented to comprehend the definite state of forests in the Korean peninsula. In the process of the survey, local data and knowledge in North Korea should be respected. Using established forest inventory data, forestlands can be classified by their ecological values. Forestlands with high biodiversity should be designated as conservation zones. This management system can contribute to creating a foundation for SFM within the Korean peninsula.

The second principle seeks to secure a balance of forest development and conservation across the Korean peninsula, following the June 15 South-North Joint Declaration in 2000 which aims at promoting a balanced development of South Korea and North Korea. A comprehensive policy for forest utilization, conservation and management should be established. Referring to South Korean experiences, the forest restoration plan should be integrated into national plans for economic development, land management and energy and food supply. The forest landscape restoration approach can help create a forest landscape that improves biodiversity conservation, ecological functioning and the livelihoods of human communities [71]. South Korea and North Korea have different levels of development in forest society and in forest ecosystems. The difference should be reflected in the policy design for forest development and conservation.

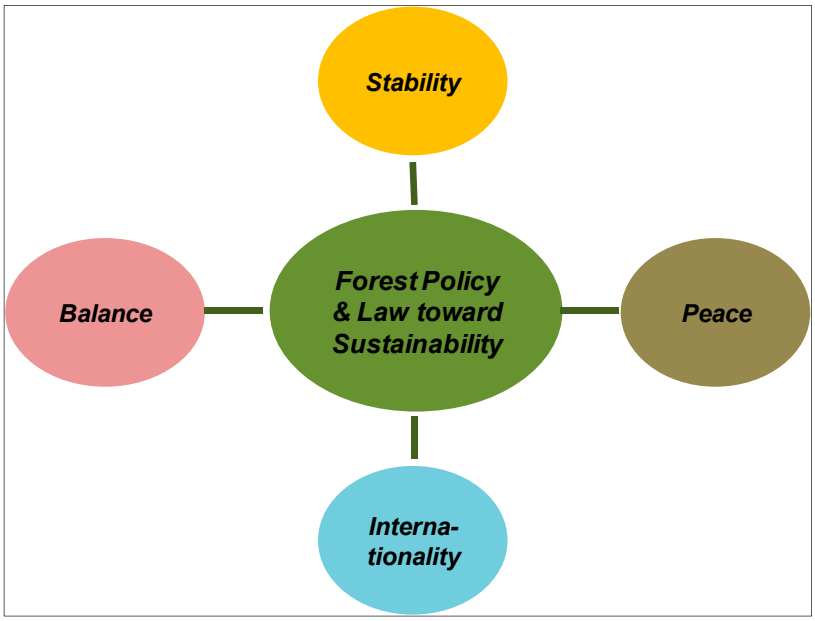
The third principle seeks to create a new niche for a unified Korea in the global forest community. With increased forest resources, a unified Korea can expand the scale of trades of timber and non-timber products in national and global markets. A unified Korea can participate in the international forest negotiation process with a new perspective and position. It should follow the multilateral and bilateral environmental agreements that South Korea has already signed and expand its collaborative activity for sustainable forest ecosystems and communities to the global level.

5.2. Basic Principles of Korean Forest Law

Current forestry legislation should be improved to implement forest policies in a unified Korea. The basic principles are necessary for designing forest legislation in a unified Korea. The principles can help enhance the relationship between North Korea and South Korea and consistently implement unification policies from the preparatory stage of Korean unification. These principles should agree with constitutional values and idea of liberal democracy. The basic principles to improve forest legislation in a unified Korea are suggested by the authors, as follows.

First, forest legislation should contribute to implementing SFM in the Korean peninsula. SFM has been recognized as a powerful paradigm of forest management in the global society since the early 1990s. We can follow the principles on SFM in forest cooperation between South Korea and North Korea step by step. As in South Korea and other countries such as Brazil [3] and Indonesia [72], SFM should be adopted as a principal of forest legislation in a unified Korea. Second, forest legislation in a unified Korea should contribute to expanding inter-Korean cooperation and pursue the principle of peaceful unification. Forest legislation should support the stable development of inter-Korean forest cooperation. In addition, it should seek peaceful unification based on liberal democratic basic order as a constitutional value. In the several inter-Korean dialogues, South Korea and North Korea have discussed peaceful unification [64]. Especially, in the July 4 South-North Joint Communique, South Korea and North Korea agreed peaceful unification based on principles of independence, peace and grand national unity [63] (p. 134). Pacifism, which is prescribed in South and North Korean constitutional laws, will be a basic principle of a unified Korea's constitution. Therefore, a unified Korea's forest legislation should be designed to contribute to international peace. Third, it should be consonant with international law. International community support might be needed to achieve peaceful unification and stabilize inter-Korean forest cooperation. Forest policy in a unified Korea should be established at the national and international level. SFM can be implemented through international collaboration. Finally, forest legislation in a unified Korea should help strengthen support for northern regions (currently North Korea). Severe forest degradation in North Korea should be dealt with as an overriding problem in a unified Korea. Forest legislation in a unified Korea should fundamentally acknowledge the importance of balanced forest development in northern and southern regions of the Korean peninsula. In conclusion, stability, balance, peace and internationality might play a significant role in designing forest policy and laws for SFM in the Korean peninsula (Figure 4).

Figure 4. Basic principles in designing forest policy and laws that promote sustainability in the Korean peninsula.



6. Conclusions

After the Korean War, South Korea and North Korea made efforts to overcome severe deforestation and forest degradation. South Korea achieved forest restoration completely, while North Korea has not yet solved the problem of deforestation and forest degradation. In particular, deforestation and forest degradation in North Korea is one of major challenges in the preparatory stage for Korea unification. This paper examined the features of forest policy and laws in South Korea and North Korea. South Korea and North Korea have different forest policy designs and forest law structures. South Korea and North Korea have different structures in their legal systems. The order of normative effects in South Korea is as follows: constitutional laws, laws, decrees and regulations. On the other hand, the North Korean order of normative effects allows Worker's Party regulations, constitutional laws, laws and Cabinet guidelines. However, it is clear that laws currently play a significant role in establishing and implementing forest policies in South Korea and North Korea. These laws will be the backbone of the forest policy-making process in a unified Korea.

The research results indicate meaningful lessons for policy design to avoid deforestation and forest degradation and promote SFM in North Korea and other developing countries. Furthermore, this paper recommends basic forest policy principles and a legal framework for a unified Korea. We expect our efforts to contribute to preparations for Korean unification.

This research has some limitations in terms of data collection and interpretation. To analyze North Korea forest policies, we depended primarily on secondary data due to the lack of primary data. Due to lack of data, we could not conduct an in-depth analysis of North Korean forest policy, although we used multiple data sources (e.g., research articles, reports, North Korean dailies, and books). It can be regarded that this research is South Korean centric due to imbalance of data sources between South Korea and North Korea. The authors suggest the basic principles to improve forest legislation in a unified Korea, depending on South Korean experiences on forest management. If we gather actual information

on implementation of laws and policies in North Korea, we are able to suggest more concrete and practical recommendations for designing the structure of forest-related legal and policy system in a unified Korea. In future study, various issues including forest ownership should be discussed and policy directions should be suggested through collaboration between South Korean and North Korean forest experts. Despite these data challenges, the research findings do contribute to a better understanding of North Korean forest policy and laws by comparing them with South Korea's successes in avoiding deforestation and forest degradation and moving towards sustainability. Based on these findings, further studies on North Korean policy and laws for SFM can be developed.

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Appendix

The list of the referred acts in the manuscript:

Table A1. South Korea [73].

Title of acts	Enactment date
Forest Product Control Act *	27 June 1961
Forest Law *	27 December 1961
Erosion Control Act	15 January 1962
Abolishment of Slash-and-Burn Fields Act *	23 April 1966
Act on Arrangement of Special Employees for Forest Protection	9 February 1963
National Forestry Cooperatives Federation Act	4 January 1980
Natural Parks Act	4 January 1980
Natural Environment Conservation Act	31 December 1991
Act on Promotion of Forestry and Mountain Villages	10 April 1997
Framework Act on Forest	24 March 2001
Act on Establishment and Promotion of Forest Arboretums	28 May 2001
Forest Land Management Act	30 December 2002
Baekdudaegan Protection Act	31 December 2003
Wildlife Protection and Management Act	9 February 2004
Pine Wilt Disease Prevention Act	31 May 2005
Forest Culture and Recreation Act	4 August 2005
National Forest Management Act	4 August 2005
Establishment and Management of Forest Resource Act	4 August 2005
Act on Structural Improvement of National Forestry Cooperatives Federation	3 August 2004
Forest Protection Act	9 June 2009
Act on the Promotion of Maintaining and Enhancing Carbon Sinks	22 February 2012
Act on the Sustainable Use of Timbers	24 May 2013
Special Act on Forest Land Management in Northern Districts of the Civilian Control Line	14 January 2014
Forest Education Promotion Act	18 March 2014

Note: * Abolished.

Table A2. North Korea [74].

Title of acts	Enactment date
Act on Land Reform *	5 March 1946
Land Law	29 April 1977
Environmental Protection Law	9 April 1986
Forest Act	11 December 1992
Control Law on Land and Environmental Protection	27 May 1998
Act on Green Spaces (Won-rim)	25 November 2010

Note: * Abolished.

Author Contributions

Mi Sun Park and Hyowon Lee contributed equally to all sections of this paper. Both authors read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

References

1. United Nations. Report of the United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3–14 June 1992. Available online: http://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm (accessed on 5 August 2014).
2. Häusler, A.; Scherer-Lorenzen, M. *Sustainable Forest Management in Germany: The Ecosystem Approach of the Biodiversity Convention Reconsidered*; Federal Ministry of Environment: Bonn, Germany, 2001.
3. Banerjee, O.; Macpherson, A.J.; Alavalapati, J. Toward a Policy of Sustainable Forest Management in Brazil: A Historical Analysis. *J. Environ. Dev.* **2009**, *18*, 130–153.
4. Rametsteiner, E.; Simula, M. Forest certification—An instrument to promote sustainable forest management? *J. Environ. Manag.* **2003**, *67*, 87–98.
5. Fearnside, P.M. Deforestation in Brazilian Amazonia: History, rates, and consequences. *Conserv. Biol.* **2005**, *19*, 680–688.
6. Meyfroidt, P.; Lambin, E.F. Forest transition in Vietnam and its environmental impacts. *Glob. Chang. Biol.* **2008**, *14*, 1319–1336.
7. Cerbu, G.A.; Swallow, B.M.; Thompson, D.Y. Locating REDD: A global survey and analysis of REDD readiness and demonstration activities. *Environ. Sci. Policy* **2010**, *14*, 168–180.
8. Bae, J.S.; Joo, R.W.; Kim, Y.-S. Forest transition in South Korea: Reality, path and drivers. *Land Use Policy* **2012**, *29*, 198–207.
9. Youn, Y.C.; Park, D.K. Comparative study on forest policy in South and North Koreas. In *Comparative Study on Environmental Policy in South and North Koreas*; Seoul National University Press: Seoul, South Korea, 2008; Volume 1, pp. 5–110. (In Korean)
10. Engler, R.; Teplyakov, V.; Adams, J.M. An Assessment of Forest Cover Trends in South and North Korea, from 1980 to 2010. *Environ. Manag.* **2014**, *53*, 194–201.

11. Food and Agriculture Organization of the United Nations. *Global Forest Resources Assessment 2010*; Food and Agriculture Organization of the United Nations: Rome, Italy, 2010. Available online: http://www.fao.org/docrep/013/i1757e/i1757e.pdf (accessed on 5 August 2014).
12. Kang, S.; Choi, W. Forest cover changes in North Korea since the 1980s. *Reg. Environ. Chang.* **2014**, *14*, 347–354.
13. Lee, M.B.; Kim, N.S.; Choe, H.S.; Shin, K.H.; Kang, C.S.; Han, U. Landscape fragmentation of forest of the cropland increase using landsat images of Manpo and Gangae, Jagang Cities, Northwest Korea. *J. Korean Assoc. Reg. Geogr.* **2003**, *9*, 481–492.
14. Lee, M.B. *Analysis on the Environmental Change and Natural Hazard in North Korea*; Hanul: Paju, South Korea, 2006. (In Korean)
15. Lee, M.B.; Jin. S.; A study on characteristics of the spatial distribution of the cropland and forest by the cultivation expansion in North Korea. *J. Korean Geomorphol. Assoc.* **2008**, *15*, 29–37.
16. Kim, Y.H. A study on ecological restoration measures for the degraded land in North Korea: focusing on South Korea's restoration policy. *North Korean Stud. Rev.* **2005**, *9*, 21–48.
17. Park, K.S.; Park, S.Y. The rehabilitation of North Korea's devastated forest with the focus on the case of South Korea. *North Korean Studies*. **2012**, *8*, 133–159. (In Korean)
18. Song, J.H.; Han, C.W. A study on the comparison of forest legal system of North and South Korea and the ways of integration. *Unification Law* **2012**, *10*, 147–175.
19. Teplyakov, V.K.; Kim, S.I. *North Korea Reforestation: International Regime and Domestic Opportunities*; Jungmin Publishing Co.: Seoul, South Korea, 2012.
20. Noronha, R. Why is it so difficult to grow fuelwood. *Unasylva* **1981**, *33*, 4–12.
21. Brown, L.R. *Plan B 3.0: Mobilizing to Save Civilization*; W. W. Norton: New York, NY, USA; London, UK, 2008.
22. Youn, Y.; Park, M. Factors affecting success in transition for sustainable forestry: Case of Korea. *Int. Forest. Rev.* **2010**, *15*, 247.
23. Park, M.; Youn, Y. Policy integration for reforestation in the Republic of Korea. In Proceeding of the International Symposium on Transition to Sustainable Forest Management and Rehabilitation: The Enabling Environment and Roadmap, Beijing, China, 21–23 October 2013; pp. 86–89.
24. Lee, D.K., Ed. *Korean Forests: Lessons Learned From Stories of Success and Failure*; Korea Forest Research Institute: Seoul, South Korea, 2010.
25. Maplecroft. *Climate Change and Environmental Risk Atlas 2012*; Maplecroft: London, UK, 2011.
26. Jo, J.H.; Koo, J.C.; Youn, Y.C. Economic feasibility of REDD project for preventing deforestation in North Korea. *J. Forest Soc.* **2011**, *100*, 630–638.
27. Youn, Y.C.; Park, D.K.; Park, C.H.; Chon, H.T.; Choe, J.; Heo, E.Y.; Yun, S.J. *Comparative Study on Environmental Policy in South and North Koreas*; Seoul National University Press: Seoul, South Korea, 2008; Volume 1. (In Korean)
28. Gangwon Province Inter-Korea Exchange and Cooperation. *The Ten Year-History of Gangwon Province's Inter-Korea Exchange and Cooperation*; Gangwon Province Inter-Korea Exchange and Cooperation: Chuncheon, South Korea, 2010. (In Korean)
29. Kang, G. *Five-Year Economic Development Plans*; Seoul National University Press: Seoul, South Korea, 2000. (In Korean)

30. Lee, D.K.; Shin, J.H.; Park, P.S.; Park, Y.D. Forest rehabilitation in Korea. In *Korean Forests: Lessons Learned from Stories of Success and Failure*; Lee, D.K., Ed.; Korea Forest Research Institute: Seoul, Korea, 2010; pp. 35–58.
31. Kim, B.; Kwon, G.; Park, G.; Park, M.; Park, H.; Bae, I.; Oh, S.; Youn, Y.; Lee, S. *Analysis of Korean Successful Case of Reforestation*; Korea Forest Service: Daejeon, South Korea, 2009. (In Korean)
32. Korea Forest Service. *The 50-year History of Korea Forest Policy*; Korea Forest Service: Seoul, South Korea, 1997.
33. Lee, K.B.; Bae, J.S. Factors of success of the clearance policy for slash-and-burn fields in the 1970. *J. Korean For. Soc.* **2007**, *96*, 325–337.
34. The US dollar to Korean won exchange rate. Available online: http://www.index.go.kr (accessed on 5 August 2014).
35. Bae, S.W. *Reforestation*; National Museum of Korean Contemporary History: Seoul, South Korea, 2013. (In Korean)
36. Park, M.; Youn, Y. Development of urban forest policy-making toward governance in the Republic of Korea. *Urban For. Urban Green.* **2013**, *12*, 273–281.
37. Koo, J.; Park, M.; Youn, Y. Preferences of urban dwellers on urban forest recreational services in South Korea. *Urban For. Urban Green.* **2013**, *12*, 200–210.
38. Korea Forest Service. *Statistical Yearbook of Forestry*; Korea Forest Service: Daejeon, South Korea, 2012. (In Korean)
39. Sukhdev, O. *Overview of the Republic of Korea's National Strategy for Green Growth*; United Nations Development Programme: Geneva, Switzerland, 2010. Available online: http://www.unep.org/PDF/PressReleases/201004_unep_national_strategy.pdf (accessed on 16 July 2014).
40. Park, M.; Youn, Y. Development of South Korean REDD+ strategies for forest carbon credits. *J. Environ. Policy Admin.* **2012**, *20*, 19–48. (In Korean)
41. Park, M.; Youn, Y. Legal institutions for enhancing and protecting forests as a carbon sink in Japan and the Republic of Korea. *For. Sci. Technol.* **2013**, *9*, 72–80.
42. Park, K.; Lee, S.; Park, S. A study on the North Korea's change of forest policy since the economic crisis in 1990s. *Korean J. Unification Aff.* **2009**, *21*, 459–492.
43. Seo, Y.S. An outcome of nature-reorganization policy in North Korea. *North Korean Stud.* **2008**, *4*, 103–128. (In Korean)
44. Yoo, B.I. *Chronological Changes in Forestry and Related Laws in North Korea*; Korea Forest Research Institute: Seoul, South Korea, 1994.
45. Lee, M.B.; Kim, N.S.; Kang, C.; Shin, K.H.; Choe, H.S.; Han, U. Estimation of soil loss due to cropland increase in Hoeryeung, Northeast Korea. *J. Korean Assoc. Reg. Geogr.* **2003**, *9*, 373–384.
46. Song, M.; Park, M.; Youn, Y. Forest policy of Democratic People's Republic of Korea represented in Rodong Shinmun. *J. Environ. Policy* **2012**, *11*, 123–148. (In Korean)
47. Han, W. More Trees for the Future of a Rich and Powerful Country. *Rodong Shinmun*, 10 March 2004.
48. Lee, Y.J. Establishing 65 Thousand of Forests in 2007. *Rodong Shinmun*, 15 November 2007.
49. Youn, Y.H. Establishing Forests Hardly. *Rodong Shinmun*, 2 March 2008.

50. Rodong Shinmun. Kim Jong IL Guided the Tree Nursery of Forest Management Office at Liwon County, Hamkyoungnamdo. *Rodong Shinmun*, 9 August 2008.
51. Kim, S.I. The pride of greening and gardening. *Rodong Shinmun*, 2 March 2011.
52. Yoon, Y.K. Sustainable reforestation in North Korea. In Proceeding of the 2014 International Symposium for Green Asia Organization Foundation, Seoul, South Korea, 19 March 2014; pp. 89–101.
53. Democratic People's Republic of Korea Ministry of Land and Environment Protection. DPRK's first national communication under the framework convention on climate change. Available online: http://unfccc.int/resource/docs/natc/prknc1.pdf (accessed on 5 August 2014).
54. Teplyakov, V.K. North Korea in the UN system and international projects. In *North Korea Reforestation: International Regime and Domestic Opportunities*; Teplyakov, V.K., Kim, S.I., Eds.; Jungmin Publishing Co.: Seoul, Korea, 2012; pp. 93–111.
55. Democratic People's Republic of Korea Ministry of Land and Environment Protection. *Democratic People's Republic of Korea Environment and Climate Change Outlook*; United Nations Environment Programme: Pyongyang, North Korea, 2012. http://www.unep.org/dewa/portals/67/pdf/ECCO_DPRK.pdf (accessed on 11 March 2014).
56. Habib, B. Why Is the DPRK Pursuing CDM Carbon Credits? *North Korean Economy Watch*, 9 November 2013.
57. Lee, H. Case study of environmental agreements between South and North Korea. *Unification Law* **2013**, *15*, 137–156. (In Korean)
58. Convention on Biological Diversity. Available online: http://www.cbd.int/information/parties.shtml (accessed on 5 August 2014).
59. International Tropical Timber Agreement from United Nations Treaty Collection. Available online: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XIX-39&chapter=19&lang=en (accessed on 5 August 2014).
60. Convention on International Trade in Endangered Species of Wild Fauna and Flora. Available online: http://www.cites.org/eng/disc/parties/alphabet.php (accessed on 5 August 2014).
61. United Nations Framework Convention on Climate Change. Available online: http://unfccc.int/parties_and_observers/parties/items/2352.php (accessed on 5 August 2014).
62. United Nations Convention to Combat Desertification. Available online: http://www.unccd.int/en/about-the-convention/Official-contacts/Pages/default.aspx (accessed on 5 August 2014).
63. Lee, H. *Understanding Korean Unification Law*; Parkyoungsa: Seoul, South Korea, 2014. (In Korean)
64. Ministry of Unification. History of Inter-Korean Relations, South Korea. Available online: http://eng.unikorea.go.kr/index.do?menuCd=DOM_000000202002001000 (accessed on 15 July 2014).
65. Lim, P.S.; Lee, J.H. Policy proposal for unification of the Korean military integration: Based on post-merger integration (PMI) with organization culture analysis. *Quart. J. Def. Policy Stud.* **2013**, *100*, 139–170. (In Korean)
66. Kim, S.Y. The directions of Social Security Acts after the reunification of Korea. *World Const. Law Rev.* **2013**, *19*, 117–146. (In Korean)
67. Park, Y.C. A study on the land policy for the North Korean region of the Unified Korean peninsula. *Korean Apprais. Rev.* **2012**, *22*, 129–158. (In Korean)

68. Yun, G. Land ownership system of North Korea and the use rights of the land in North Korea in terms of the reunification of the legal system of North and South Korea. *Law Rev.* **2012**, *47*, 123–149. (In Korean)
69. Kim, S.W. Reorganization direction of real estate ownership system in Unified Korea: Focusing on land and housing. *J. Law* **2013**, *21*, 81–99. (In Korean)
70. Kim, E.S.; Kim, K.M.; Kim, C.C.; Lee, S.H.; Kim, S.H. Estimating the spatial distribution of forest stand volume in Gyeonggi Province using National Forest Inventory data and forest type map. *J. Korean Forest Soc.* **2010**, *99*, 827–835. (In Korean)
71. Orsi, F.; Geneletti, D. Identifying priority areas for forest landscape restoration in Chiapas (Mexico): An operational approach combining ecological and socioeconomic criteria. *Landsc. Urban Plan.* **2010**, *94*, 20–30.
72. Law of the Republic of Indonesia Number 41 of 1999. Available online: http://theredddesk.org/sites/default/files/uu41_99_en.pdf (accessed on 5 August 2014).
73. National Legal Information Center, Korea Ministry of Governmental Legislation. Available online: http://www.law.go.kr/main.html (accessed on 8 August 2014).
74. North Korea Laws Information Center, Korea Ministry of Governmental Legislation. Available online: http://world.moleg.go.kr/KP (accessed on 8 August 2014).