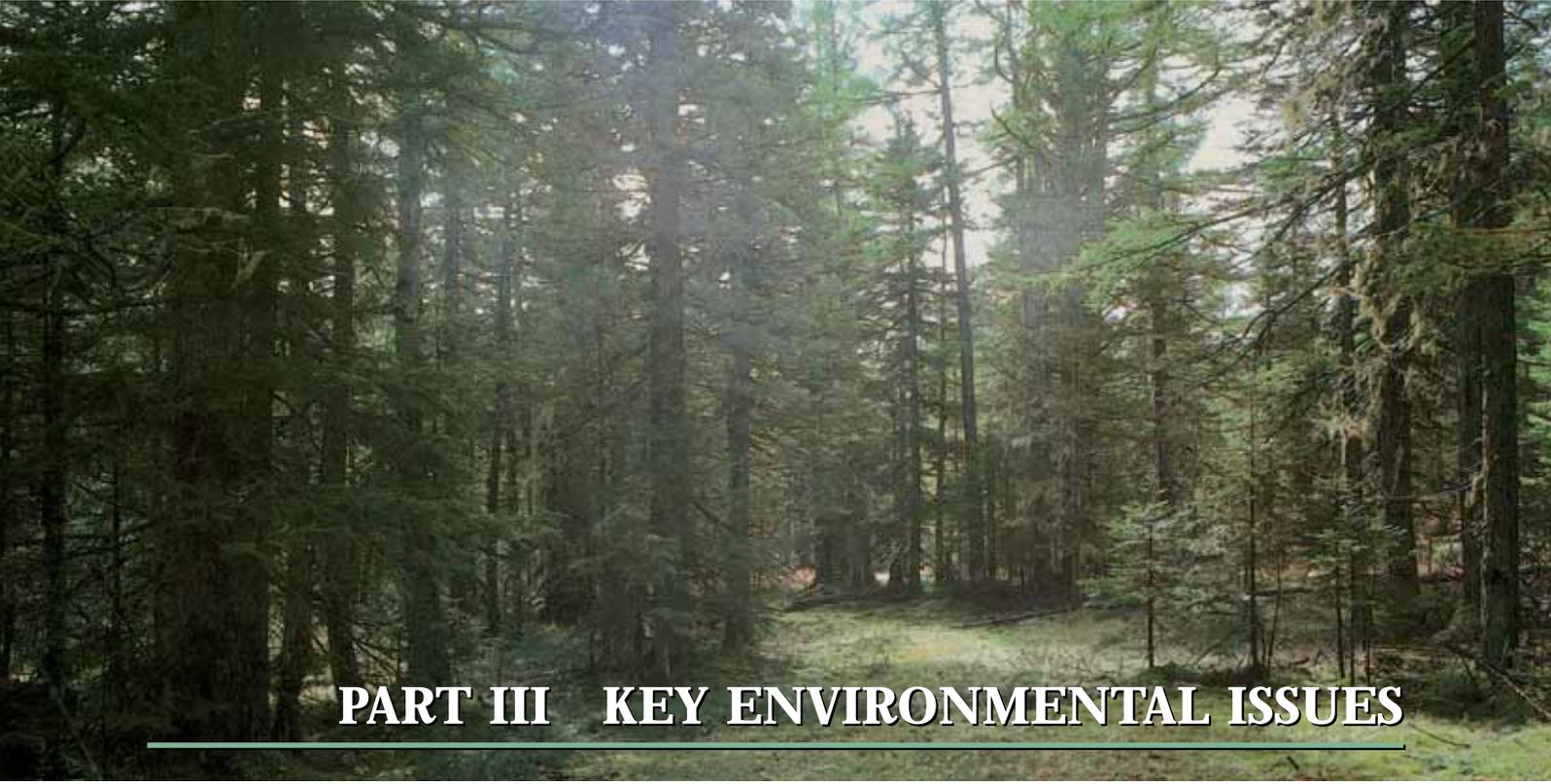


Part III

KEY ENVIRONMENTAL ISSUES



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3.1 FOREST DEPLETION

Forest plays an important role in the livelihood of the people of DPR Korea. Presence of forest in the mountainous terrain has significant positive impact in reducing landslide and flood disaster. It has also major role in contributing agriculture production and recharging of the ground water aquifer and perennial fresh water resources in the river system of DPR Korea. The forest ecosystem can be said to be the habitats for various animals, plants and microorganisms including trees as a major component.

Increase of population and the demand for food and firewood has exerted pressure on the forest ecosystem of the country resulting loss of habitats and frequent occurrence of natural disaster.

3.1.1 State

The area under forest in DPR Korea was estimated at around 9.7 million hectares. in 1945, with 1,308 million cu.m of total forest stocks and 14.2 cu.m of biomass stocks per hectares. Since the great leader Comrade Kim Il Sung planted trees on the Moonsu

Hill in Pyongyang City on 6 April 1947 in order to publicize the need for reforestation throughout the country, many efforts have been undertaken for afforestation/reforestation each year in DPR Korea.

Even during the war, from 1950 to 1953, mobilization of the entire people continued for reforestation and was executed under an order of the Military Commission. The government set out the policy for establishing the economic value of forests in December 1959 and has since been energetically carrying out afforestation throughout the country.



Photo 3.1 Degraded forest on the mountain slope

Table 3.1 Forest land composition and stocks

Classification	Area (000 hectares)	Biomass stock (tonnes/hectares)
Forested land	8,201	62.3
Forest of timber industry	5,440	74.55
Economic forest	1,436	48.3
Firewood forest	196	40.95
Protected forest	1,129	66.15
Non-timber forest land	436	3.15
Unforested area	383	-
Grass field	170	18

Source: CSB (1997)

Table 3.2 Typical compositions of forest species

Classification	Ratio (percent)
Compositions by species of forest land	100
Coniferous forest	41.9
Latifoliate forest	35.6
Mixed forest	22.5
Coniferous forest	
Pinus	37.8
Larch	33.8
Pinus koraiensis	11.9
Kind of Deodar	14.8
3 needle-leaf Pinus	1.7
Latifoliate forest	
Oak	52.4
Lime	6.4
White birch	6.3
Acacia	3.2

Source: DPR Korea (1998b)

As a result of the dramatic increase in forest, total stocks increased to 539.46 million cu.m, representing more than a fourfold increase over 1945 levels. In 1978, forest stocks per hectares. were 53.6 cu.m but increased to 55.9 cu.m in 1990. Over the same 12-year period, the afforested/reforested area expanded from 970,000 hectares. to 1.13 million hectares., a rise of 160,000 hectares.

However, socio-economic and industrial development led to a drop in the area under forest, with a loss of 144,012 hectares. in total forest between 1986-1996. At present, therefore, the government has a strong policy of reforestation and the area under forest is again being systematically expanded.

Table 3.1 shows forest land area and stocks by forest type.

The forest in DPR Korea can be divided into three main types; latifoliate forest, coniferous forest and mixed forest. The latifoliate forest occupies 38.1 percent of total forest area and consists of *Larix* forest, *Pinus koraiensis* forest and *Pinus densiflora* forest. *Abies nephrolepis-Picea jezoensis* forest, a typical sub-boreal latifoliate forest, is characterized by the major species of *Abies nephrolepis*, *Abies holophylla*, *Picea jezoensis*, *Picea koraiensis*, etc.

Table 3.3 Incidence of forest fires (1996 - 1997)

Province	Damaged area (hectares.)	Cases of forest fire
Pyongyang city	452	28
South Pyongan Province	327	60
North Pyongan Province	595	70
Zagang Province	281	25
South Hwanghae Province	5,705	197
North Hwanghae Province	4,652	136
Kangwon Province	583	75
South Hamgyong Province	10,435	77
North Hamgyong Province	21,619	130
Ryanggang Province	942	71
Kaesong city	178	9
Nampho city	248	34
Total	46,017	911

Source: CSB (1998)

The original location of *Pinus koraiensis* is in fact DPR Korea itself, so its distribution through out the country is extensive. It is now the main species for afforestation/reforestation. Table 3.2 indicates the typical composition of forest species in DPR Korea.

3.1.2 Pressure

Because of the substantial growth of firewood consumption to meet energy demand, forest fires and noxious insect damage (caused by sustained drought), forest area and stocks have decreased rapidly in recent years. This trend has been accentuated by conversion of forest into farm land.



Photo 3.2 Degraded pine forest



Photo 3.3 Timber rafting

Temporary economic difficulties created barriers to investment in the forest sector. Continuing pressures are reflected in the growth of firewood consumption between 1990-1996, which more than doubled from 3 million cu.m to 7.2 million cu.m.

Forest fire damage caused by high temperature/severe drought during the period 1996-1997 is shown in Table 3.3.

3.1.3 Impact

Forest resources play an important role in national socio-economic development. Combating

further possible degradation and achieving sustainable development of forests are therefore crucial issues to be addressed in DPR Korea as a matter of urgency.

Rapid decline of forested area and stocks exerts negative impact on overall socio-economic progress and sustainable management of environmental resources.

Exploitation and consumption of forest resources currently exceeds the replacement capacity and hundred of thousands of hectares have been lost because of irregular forest clearing and grazing.

Table 3.4 Damage by flooding in 1995 and 1996 in US \$

Indices	1995	1996
Total damaged cost (000)	15,000,000	2,270,862
Affected counties (number)	145	117
Inhabitants affected (000)	5,200	3,270
Inhabitants outdoor (000)	-	147
Victims (no. of individuals)	-	116
- Damage cost across sectors (US\$ in million)	-	2,271
Agricultural sector	-	782
Land managerial sector	-	203
Municipal managerial sector	-	391
Industrial sector	-	110
Railway sector	-	126
Communication sector	-	214
Educational sector	-	196
Public health sector	-	-
Loss of farming land	925	-
Loss of husbandry	111	-

Source: CSB (1998)

In addition, natural disasters such as the explosion of insect populations, fire and landslides bring about degradation of the remaining forests.

The decline in overall productivity and the weakening of the forest's environmental protection function lead to negative impacts on national socio-economic development, resulting in a failure to implement both the "Forest Principles" and environmental protection policy. Forest degradation in DPR Korea leads to decrease of timber resources and habitats, weakness in the control function of the biosphere on atmosphere and hydrology, loss of biological species, flooding and land erosion.

As shown in Table 3.4, unprecedented heavy rain in 1995 and 1996 created extensive damage and economic losses.

3.1.4 Response

The main policy for sustainable forest development in DPR Korea is to plant mixed forests, including fibre-bearing forest, oil-bearing forest and timber forest, with fast-growing and useful tree species. Public support and involvement can consolidate the successes attained in establishing a sound raw material basis and a forest of economic value.

The government has taken positive measures to restore forests damaged by recent flooding, drought, forest fire and illegal deforestation, with the aim of achieving sustainable forest development. DPR

Korea adopted Cabinet Decision No 57. "Protection and Control Regulations of the Forest" on 15 May 1972 and Cabinet Decision No 86. "Regulation on Forest Management" on 19 August 1972. On 11 December 1992, "Law on the Forest of DPR Korea" was adopted, with two subsequent revisions in 1999. Simultaneously, the government proclaimed "On Enactment of Tree Planting Day, DPR Korea" and now celebrates 2 March each year as Tree Planting Day.

The forestry policy of DPR Korea aims to enhance forest productivity and its function for environmental protection, together with land and water protection, through both the establishment and conservation of forests. The Ministry of Land and Environment Protection is responsible for afforestation/reforestation, forest protection and land management. A structured forest management system has been put in place covering provinces, counties and urban areas.

Civil society groups include the Forest Conservation Association (under Korean Nature Conservation Union), and a Forest Association (under the General Union of Science and Technology). Together with youth and children's organizations they take an interest in afforestation, forest protection and nurseries, aiming in particular at the fast recovery of degraded forest ecosystems. They also take part in activities for forest conservation and reforestation, building public awareness and disseminating information on science and technology relevant to forests.

Table 3.5 Change in forested area and biomass stocks by 2020

Classification	Forest area (000 hectares)		Forest biomass stock (t/ hectares)	
	1990	2020	1990	2020
Timber forest land	8,201	7,9028	-	-
Protected forest	1,129	1,000	66.15	142.33
None-timber forest land	436	200	3.15	9.6
None forest land	383	750	-	-
Grass field	170	513	18	18

Source: State Planning Commission (2000)

The agencies concerned with land and environmental protection, and the enterprises and communities in charge of forests, have set up nurseries with well-organized systems for breeding and seed selection in order to increase seedling production. MLEP has established central nurseries covering 100 hectares, and arranged seedling bases to produce fast-growing saplings with economic value. These are installed in every province and in counties to supply the billion saplings necessary for afforestation/reforestation. The government developed "Ten-Year Plan for Afforestation/Reforestation" to restore and rehabilitate 2 million hectares of degraded forests with good tree species and directed considerable efforts to its implementation. Projected changes in forest area and stocks under this Plan are shown in Table 3.5.

3.1.5 Conclusion

In order to rapidly increase the forest resource and ensure its effective use in socio-economic development, it is important to develop a rational long-term afforestation/reforestation plan and implement it in integrated and sustainable manner. "Forest Law, DPR Korea" should be strictly adhered to in the management of this process.

The law highlights specific principles and methods for afforestation/reforestation, forest protection, use of forest resources, and forest management. For sustainable increase, protection and management of forest resources, it is critical to increase investment in the forest sector.

In line with the demands of the 21st Century and a new millennium, the government of DPR Korea will contribute to the implementation of "Forest Principles" and "Agenda 21" adopted by the



Photo 3.4 Hills with forest cover

"1992 Earth Summit in Rio" by preparing and implementing strategies to prevent forest degradation and ensure sustainable forest development.

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