

The functions of Korean national forests in the Japanese colonial period (1910~1945)

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ABSTRACT: The purpose of this study is to examine what imperialist Japan tried to take from the national forests in Colonial Korea. This paper reveals that Imperialist Japan manipulated Colonial Korea as a catalyst and revenue resource for both colonization reasons and settling of Japanese residents in Korea. At first, the Japanese Government-General planned to manage the indispensable national forests having a great economic value, and then dispose of the disposable national forests to encourage the settling of Japanese residents, without any consideration for Korean stakeholders. As a result, the primary disposable national forests without stakeholders were mostly transferred to Japanese residents in Korea by economic incentives such as the forestation loan system. Secondly, timber resources of the indispensable national forests in Korea were exploited for the Japanese Government-General's financial purposes. The Japanese Government-General made a profit of 101,179 thousand Yen from Korean national forests during the period of 1910-1942. An annual 39.3% of the net profit made from the national forests was a great help to compensate for the poor finance of the Japanese Government-General. However, the growing stock in the northern national forests decreased by 35-45% in its capacity to provide timber materials, with stock being used for Manchurian development and the sequential wars. To conclude, the great decrease in the natural forest as well as the loss of growing stock was environmentally harmful to Korean forests.

1 INTRODUCTION

The aim of this paper is to explain what imperialist Japan intended to take from the national forests in Colonial Joseon and how Japan finally achieved this. 'Joseon' was the name for Korea, and it was used for both the Joseon Dynasty (1392-1910) and the Japanese Colonial Period (1910-1945). In this study, it refers to the latter. After King Gojong was forced to abdicate his throne, the Joseon Dynasty was annexed by Japan in 1910 as a colony.

In general, imperialist powers built colonies to get a supply of raw materials at a low price, and sell the finished goods. In particular, timber provided from colonies was sold at a low price and supplied to the imperialist countries. If so, we could infer that Japan must have viewed Joseon, Colonial Korea, as a potential source of cheap timber for Imperialist Japan. However, this paper questions the general application of this thesis. The present study builds on statistical findings of the period and addresses new points of investigation. It appears that in the colonial period, Joseon's forests produced little timber for Japan. Why did Imperialist Japan want forests in Joseon? The following hypotheses are addressed:

First, national forests in Joseon were used as a catalyst to encourage colonization. As considered in Section 2, a great number of the disposable national forests (DNF), generated to establish modernized forest ownership, were transferred to Japanese residents in Korea through special transfer systems or loan programs.

Second, National Forests timber resources in Joseon were exploited for the Japanese Government-General's financial purposes. To illustrate this, I will examine changes in timber production and growing stock in the national forests in section 3 and 4. Accordingly, a balance sheet of national management forests will help to address the function of the Korean national forests as a revenue source of Joseon's Japanese Government-General.

2 THE PROCESS OF GENERATING THE NATIONAL FORESTS

2.1 *The forest register according to the Forest Act (1908) and the national forests formation*

Forest ownership in the Joseon Dynasty (1392-1910), before Japan's general control, was not firmly established by law. Gyung-guk-dae-jeon was a code enacted in 1485. It had absolute authority in the Joseon Dynasty, and did not recognize private forest ownership. Also, no definite boundary lines were drawn for each parcel. The reason why Joseon's government denied private forest ownership originated from Confucian ideology. Timber was a necessity for both living people and the dead, because the timber was used for building and coffin making. Therefore, a sustainable timber supply for people was the starting point of the kingcraft (governorship) at that time. However, the Pine Policy for national uses created an exception which stipulated specific forest uses. It provided a stable supply of pine timber for shipbuilding, construction and coffin making. In the forests for these uses, people were strictly prohibited from cultivation, illegal cutting, burning for cultivation, making fires and quarrying (Bae 2002).

As Japan intensified its exclusive forest ownership after 1910, the traditional Joseon right to forest utilization was not acknowledged in private forest ownership. In 1908, the first modernized forest act was enacted with Japan's influence and article 19 of the act identified forest ownership (Government of the Great Han Empire 1908). This provision required real estate owners to report acreage and map their land within three years. This empowered Japanese officers to endorse their specific ownership of forest. Unless owners registered their forest ownership within three years, Japanese Government-General seized their land and the parcels were added to national forests.

According to Bae (2001), only 674 people registered their forestland during the year following the Forest Act implement action and by the second year an estimated 100,000 people had complied. By the 1911 due date, the number of registered landowners increased to 520,000 cases. There were many complaints and demands to extend the due date, but the Government-General ended the program. As a result, of the total 16.5 million jeong-bo (1 jeong-bo=0.9917 ha) of forest, Only 2.2 million jeong-bo were retained by local people. The rest, 14.3 million jeong-bo, were seized by the Japanese Government-General. Most of the Korean national forests were thus under the General-Governor's rule, so they could be manipulated, used and disposed of with no regard to Joseon need. Great amounts of forests were nationalized by this simple administrative act. Even Saitou (1933), who led forest policy enactment in early colonial Korea, mentioned this measure was unfair, as it did not comply with Article 19 of the Forest Act (1908). Nevertheless, the Japanese Government-General refused to extend the prescribed land registration time and they confiscated Korea's national forests. Furthermore, even forest owners who registered risked losing their land. Once an owner completed the forest report, the next step was official government endorsement. This involved setting each parcel's boundary and certifying the owners. However, to make matters worse, Forestry of Joseon (Government-General of Joseon, 1929) revealed that the Government-General ignored this process and implemented "National Forest Survey for classification" in 1911. This survey was designed to reclassify the national forests as either "indispensable" national forests to be managed by the government directly or "disposable" (DNF) to be transferred to local residents. The prerequisites for indispensable national forests (INF) were as follows;

- 1) forest which is critical for military and academic purposes;
- 2) forest which is necessary for the enhancement of public welfare;
- 3) forest which is large enough to become a management unit with the area of more than 2,000 jeong-bo.

In the case of DNF, it was divided into two types, which were primary disposable forest with stakeholders and the secondary disposable forest without any stakeholders.

2.2 *The Forestland Survey and transfer of the secondary disposable national forests*

The National Forest Survey (1911-1924) for classification was not conducted as the Japanese Government-General intended, transferring property to the Japanese Government-General. Most Korean village-owned property was transferred to the Government-General of Joseon. Unclaimed national forests were transferred to Japanese residents. As a result, a number of disputes concerning land ownership arose between existing indigenous residents and new owners. According to Kang (2000), Korean residents complained about this policy legally, using petitions or lawsuits. If these means were not effective, they protested to the Japanese Government-General by demonstrating and attacking public offices. With continuous protests from Koreans, the Government-General conducted the Forestland Survey during the period of 1917-1924. The survey established the boundary of each parcel and identified the owners. The results of the Forestland Survey are as below.

Table 1. Classification results of forest ownership.

	Type of land	Number of parcels	Areas (jeong-bo)	
			Areas	%
National	Forest with ownership	30,332	6,182,060	37.9
	Forest without ownership	1,025,175	3,375,663	20.7
	Land other than forest	4,520	2,175	-
Private	Forest	2,121,233	6,610,683	40.6
	Land other than forest	298,655	131,982	0.8
Total		3,479,915	16,302,563	100.0

Source: The Forestry of Joseon (Government-General of Joseon, 1929).

Government-General of Joseon (1938) revealed that "forest without ownership" constituted 20.7 percent, which amounted to about 3.38 million jeong-bo. Oka (1945) revealed that about 2.78 million jeong-bo of this kind of forest was transferred to applicants by the "Special preemptive forest transfer program (1926-1934)". This program dealt with 93.9 percent of applications, which encompassed 81.4 percent of this type of forests, transferring them to applicants without cost. This area was equal to 52.9 percent of DNF that was transferred until 1941, as shown in Table 2. As a result, most of the secondary DNF were transferred to individual owners and local governments.

The Forestland Survey discovered that there were a lot of quality national forests in the northern area. In the northern area, national forests without any preemptive rights occupied about 6.18 million jeong-bo, which was 37.9 percent of the total forest area. The number of parcels was 30,332, which made up less than 1 percent of the total number of parcels. The average area of these national forests without any preemptive rights by parcel was 203.8 jeong-bo, and this area was 40 times the average area of the total parcels, and 65 times the average area of the total private parcels. In particular, about 91% of the national forests without any preemptive rights of the total were distributed in the northern area.

Considering that the forestry industry is apt to be influenced by land scale, it stands to reason that the center of Korean forestry was the northern area. The Northern area also had the best forest resources. The Statistical Yearbook of Forestland issued by the Government-General of Joseon

(1927) shows that the total national forests constituted 64 percent of the total growing stock of forest in Korea but 60 percent of that in the northern area. In turn, the INF constituted 58 percent of the total national forests, and the growing stock was 90 percent of the total growing stock of the national forests. Thus the INF centering on the Amnok River and the Dooman River area in the north were absolutely superior to other national forests in terms of forest's quality.

In conclusion, Korea's forests in the colonial period were concentrated in the northern area. Those located on the Amnok River and the Dooman River area had more quality forest than other national forests or private forests. They were also in the geopolitically significant area: that which delineated the national border with China.

2.3 Forestation loan system and transfer of the primary disposable national forests

The Japanese Government-General established the forestation loan system in Article 7 of the Forest Regulations, which was enacted in 1911. This system was aimed at both colonization and investment by transferring the forest ownership to debtors successful in forestry. This economic incentive was successful, as shown in Table 2. Until 1941, an estimated 1.76 million jeong-bo of the primary INF was transferred, and of this amount, about 0.95 million jeong-bo was transferred to debtors without cost. The forestation loan system reorganized the type of Korean forest-owning structure with a detailed focus on private forests. As a result, 11 percent of the total forests (that equates to 33 percent of the DNF) were transferred.

Then how did the forestation loan system function as an economical incentive for colonization? Bae (2002) examined the statistical data from that period and revealed that the forestation loan system was very powerful disposal policy regarding primary DNF between 1908 and 1934. There were 2448 cases transferred to Japanese residents that were only 3 percent of the total cases. However, the area transferred to Japanese residents in Korea was 642,118 jeong-bo, or 47.1 percent of the total loaned. Considering the average areas transferred by the forestation loan system, the average area per Japanese resident in Korea was 262.3 jeong-bo and that per Korean resident was 9 jeong-bo. In short, a Japanese resident in Korea acquired about 30 times more forest than a Korean did.

Table 2. Results of disposing of DNF, as of the end of 1941.

Type of disposal	Disposal			Successful transfer		Restitution / Etc.		(Unit: Jeong-bo) Present	
	No. of cases	Area	%	No. of cases	Area	No. of cases	Area	No. of Cases	Area
Forestation loan	83,086	1,756,606	33.5	57,201	952,331	21,870	155,813	4,015	648,462
Other loans	2,713	85,106	1.6	-	-	126	3,539	2,587	81,567
Sale	13,215	346,402	6.6	-	-	-	-	13,215	346,402
Forestation transfer	42,138	266,639	5.1	-	-	-	-	42,138	266,639
Preemptive forest transfer	(1,044,771)	2,779,798	52.9	-	-	-	-	(1,044,771)	2,779,798
Exchange	7	17,530	0.3	-	-	-	-	7	17,530
Total	(1,044,771)							(1,044,771)	
	141,159	5,252,081	100.0	57,201	952,331	21,996	159,352	61,962	4,140,398

NOTE: () is the number of forest parcels.

Source: The Journal of Joseon Forest (Joseon Forest Association, vol. 212).

Why did Japanese residents actively participate in the forestation loan system? The economic advantage from a forestation loan must be the answer. For instance, if one was loaned one jeong-bo of prolific golden bell tree area and received a free transfer after eight years successful, the actual cost was between 3.2 Yen and 6.4 Yen per one jeong-bo of forest. In contrast, from 1910-1942, the

average price of DNF per jeongbo was 19.9 Yen. It meant that the forestation loan system was 3.1-6.2 times more advantageous than directly purchasing DNF. For this reason Japanese capitalists chose a free transfer by forestation loan rather than direct purchase, and the Japanese investment-attracting policy by the government-General made it a great success. As a result of this system by 1934, Japanese police companies and enterprises became prominent landowners.

In conclusion, the Korean national forests were used as an economic incentive for the settling of Japanese residents in Korea. As a result of these policies, the national forests declined from an estimated 14.3 million jeong-bo in 1911 to 5.3 million jeong-bo in 1942.

3 THE JAPANESE NATIONAL FORESTS TIMBER PRODUCTION POLICY

3.1 Korean trends in domestic timber production and consumption

Timber production during Korea's Colonial period can be explained by four periods designated by historic turning points. These include a tariff change (Period 1), a financial panic (Period 2), the Manchurian Incident (Period 3), and the Chinese-Japanese War (Period 4). Period 1 (1910-1919) had more domestic production than imports and more imports than exports with the independent tariff policy. Period 2 (1920-1928) ranged from 1920, when the national border tariff with China was abolished, to 1929 when the protective tariff was adopted and the Great Depression began. In Period 3 (1929-1932), there was a dramatic decline in timber demand due to the Great Depression. Period 4 (1933-1945) was characterized by the increase in domestic timber production and export quantities to Manchuria, which was the result of the Japanese Invasion of Manchuria in 1931. The invasion artificially caused an increased timber demand. In particular, after the Chinese-Japanese War in 1937, Joseon served as a supply store during wartime. Until the end of the war in 1945, Korean exports of war supplies and timber to Japan increased significantly.

Table 3. The trend in production and consumption of the industrial logs from Joseon (1910~1945).

Period	Production	From Japan	Import quantity			To Japan	Export quantity			Domestic use
			Total	China	Etc.		Total	China	Etc.	
1910~1919	7,359	331	119	93	26	2	78	78	-	7,729
Average	818	37	13	10	3	0	9	9	-	859
1920~1928	14,083	683	1,809	1,672	136	641	475	475	0	15,459
Average	1,408	68	181	167	14	64	47	47	0	1,546
1929~1932	6,024	280	663	484	179	128	394	394	0	6,444
Average	1,506	70	166	121	45	32	99	99	0	1,611
1933~1945	37,863	4,176	707	526	218	467	1,759	1,587	89	40,507
Average	2,913	321	54	40	17	36	135	122	7	3,116
Total	65,333	5,470	3,297	2,775	559	1,238	2,707	2,618	89	70,139
Average	1,815	152	92	77	16	34	75	73	2	1,948

NOTE: Except production amounts, the other numerical values of 1910-1922, 1940-1945 are estimated.

Source: The Statistical Yearbook of Government-General of Joseon (various volumes).

As can be seen in Table 3, total timber production during Korea's Colonial period was about 65 million square meters (m³), 93 percent of which was for domestic use during this period. From 1910 to 1922, the trend in domestic timber production showed a gradual increase to 0.75-1 million m³. Between 1923 and 1925, the annual average timber production jumped by 1.36 million m³, because timber was required for repair work after the Great Kanto Earthquake in 1923. The sharpest jump in timber output came from the "Joseon Forest Policy Plan" in 1926. The objective of this plan was to expand the national revenue by increasing the harvest volume. This caused a

sharp rise in average timber production by 2.07 million m³ between 1926 and 1928. This trend took a downward turn due to the Great Depression, which caused a fall in timber demand. Between 1929 and 1931, the annual average production decreased by 1.48 million m³. After that, the 1931 Japanese invasion of Manchuria, the 1937 Chinese-Japanese War, and the 1942 Timber Control Order put Korea under the full-scale wartime economy. Timber production increased by 4.9 million m³ in 1944, to meet the munitions needs since Japan controlled Korean timber. Imperial Assembly Documents of 1944 predicted that 15 percent of the timber would be used for the military, 12 percent for the government, 35 percent for production ability, and 38 percent for the private sector. During this period, timber was used for military and government uses.

3.2 The timber production capacity of Korean national forests

Timber production peak capacities were met between 1930 and 1941, especially in the INF. In this period, 55 percent of the total timber was produced from the national forests, and of this amount, 98.4 percent was provided in the INF. Only in 1930 was the timber production from private forests more than that from the national forests. After that, timber production focused on the national forests.

In 1933, there was an increase in timber production by 54 percent, compared to the previous year. It was prompted by Manchuria's recent development by the Japanese. Hagino (1965) wrote, "the increased timber production in the Korean national forests was the sacrifice for Japan's ambition to set up a business line in Manchuria".

Besides, as seen in Figure 2, the area of the INF decreased by around 610 thousand jeong-bo, from 4,790,823 jeong-bo to 4,181,107 jeong-bo, whereas the timber production increased from 1.23 million m³ to 2.13 million m³ during the same period. In short, the INF decreased consistently but the timber production steadily increased, so there was a forest decline of 73 million m³ in the INF during the same period.



Figure 1. Map by administrative districts in 1910.

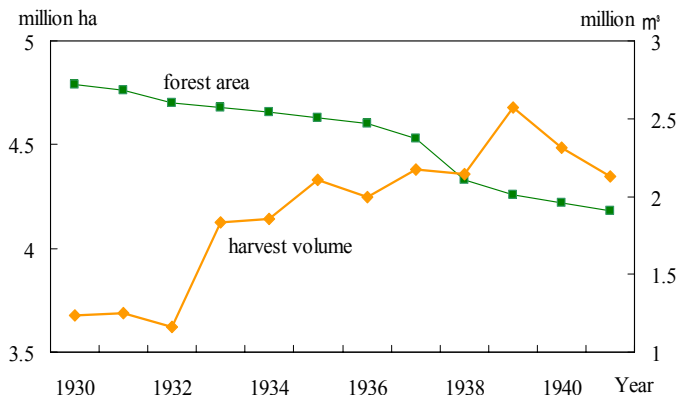


Figure 2. The trend of areas and harvest volumes of the INF. Source: The Statistical Yearbook of Forestland (Various Volumes).

With regard to timber, there was a difference in quality as well as in quantity. Most timber materials from private forests were used for fuel, due to their low quality; but timber materials from the national forests were used for building. The Survey of the forests in Manchuria (Wood News Agency, 1938) recorded that timber produced from the national forests was 4.8 times more expensive than that from private forests in 1938. High quality timber was produced in the national forests at that time, and the Japanese Government-General used the Korean national forests to provide timber.

The quantity of timber material produced varied by region. Most of the timber material was produced in the northern national forests. The northern area (Pyungan province, and Hamgyung province) produced 68 percent in 1930 and 78.6 percent in 1941. The southern area (Gyungsang province, Jeolla province, Chungcheong province) showed a decline in production, from 21.2 percent to 13.3 percent during the same period. The percentage of the central region production (Gangwon province, Gyunggi province, Hwanghae province) decreased slightly from 10.4 percent to 8.2 percent. From these numerical values, it can be seen that the forests in Ham-gyung province and Pyungan province in the Annok River and Dooman River area produced the most timber materials, and their function for timber production extended during the wartime.

Table 4. The harvest volume of standing timber by region.

Region	Harvest Volume (thousand m ³)		Percentage (%)	
	1930	1941	1930	1941
Southern	446,916	538,467	21.2	13.3
Middle	218,232	330,901	10.4	8.2
Northern	1,442,278	3,183,909	68.4	78.6
Total	2,107,426	4,053,278	100.0	100.0

Source: The Statistical Yearbook of forestland (various volumes).

3.3 What did Korean national forests mean to Japan?

Previous studies have mentioned that Colonial Korea was used to provide cheap timber. Ji (1964) said, "... in Joseon, half-finished timber products were manufactured and they were conveyed to the Japanese mainland. Then they were manufactured into finished products and returned to Joseon at high prices. This was the reality of Joseon's forestry at that time". He insisted that Joseon was exploited to supply the timber materials. However, that doesn't seem to be true.

As shown in Table 5, during the colonial period the import quantity from Japan was about 4.2 times the export quantity from Korea. Only four years, 1921-1922, 1924, 1926 had more exports than imports in the entire colonial period.

Table 5. The trend of inflow and outflow of timber between Joseon and Japan.

Classification	Total	(Unit: thousand m ³ , thousand Yen)				
		1910~1919	1920~1928	1929~1932	1910~1932	1932~1945
Import quantity (A)	5,470.0	364.6	650.0	279.7	1,294.3	4,175.6
Export quantity (B)	1,238.2	11.1	632.3	128.1	771.5	466.7
A/B (%)	442	3,285	103	218	168	895
Import amount (C)	294,002	13,039	24,530	9,765	47,334	246,667
Export amount (D)	49,584	133	26,867	3,854	30,854	18,730
D/C (%)	593	9,804	91	253	153	1,317

Source: The Statistical Yearbook of Joseon Government-General (various volumes).

The Period 1-3 (1910-1932) had about 1.7 times more timber imports than timber exports, but in Period 4 (1933-1945), imports increased by about nine times. Therefore, during eight years from 1937-1944, the imports were 72 percent of the total imports from 1910 to 1944. This increase was important, because it shows that Joseon was included in the wartime system and was used for the Japanese munitions industry.

Then how did the percentage of the Korean timber affect supply and demand in the Japanese forest economy? As displayed in Table 6, the average quantity of Korean timber exported to Japan was just 3.1 percent of the total quantity of imported timber, including that of all the other colonies.

Conversely, the average quantity of timber imported to Korea was 39.4%. From these statistics, it could be concluded that colonial Korea was not the timber supply source for Japan.

Table 6. Quantity of Korean timber in inflow and outflow of Japan during 1910-1945. (Unit: thousand m³)

Total inflow from whole colonies (A)	Inflow from Joseon (B)	B/A (%)	Total outflow to whole colonies (C)	Outflow to Joseon (D)	D/C (%)
39,510	1,238	3.1	13,867.4	5,470	39.4

NOTE: (B) and (D) are estimated values.

Source: Umemura et al. (Long-term Estimation of Japanese Economics, 1988).

4 THE EFFECTS OF JAPANESE NATIONAL FORESTS MANAGEMENT POLICY

4.1 The expansion of Government-General's financial Expansion

What did the Japanese Government-General of Joseon want to take from the Korean national forests in the colonial period? The practical data from this period supports the idea that the Japanese Government-General exploited Korean national forests to expand its financial resources.

The financial system in the Colonial period in Korea could be divided into the revenue sector and the expenditure sector. The revenue sector was composed primarily of operating income. Operating income was made up taxes, stamp revenue and revenue from government enterprises. Revenue from government enterprises in terms of the postal service, telegraph and telephone line, (all state monopolies) and forest business were included in the revenue sector.

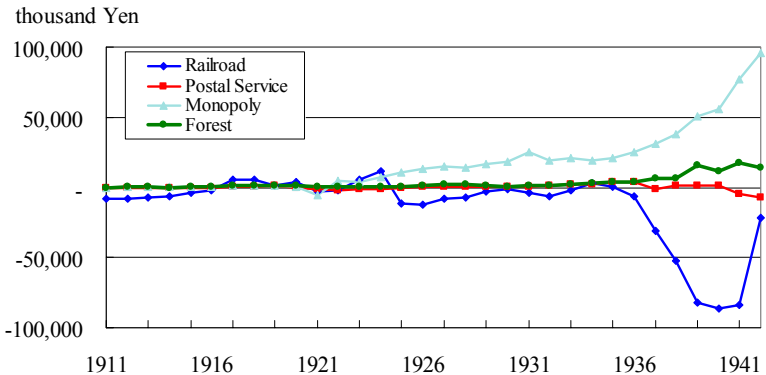


Figure 3. The balance of revenue and expenditure in governmental business during 1911-1942.

Source: Statistical Yearbook of Joseon Government-General (various volumes).

A look at the balance sheets of the railroad, postal service and forest businesses in Fig. 3 shows that the railroad business was in the red by 422,919 thousand Yen from 1911 to 1942. The postal service showed a loss of 4,164 thousand Yen. In total, the monopoly firms made a combined profit of 582,444 thousand Yen and forest business made 101,179 thousand Yen. Monopolies and Government-General forest businesses were important revenue sources for the Japanese Government-General. Specifically the, 39.3 percent net profit made by the national forests business helped compensate for the Japanese Government-General's depleted finances. The Japanese Government-General cut down the natural forests near the Amnok River and the Dooman River

without any forestation costs. They managed the national forests for economic profits rather than sustained forest management.

4.2 *The rapid decrease of the national forests resources in the northern area*

Until now, I have examined the trend of timber supply in the colonial period in Korea and the timber production quantity by ownership. Lastly, I am going to look at changes in forest resources that Korea experienced.

After 1910, when Japan occupied Korea by force, Japanese-styled national forests management was implemented and the changes to Korean forests were great. According to forest resources statistics, which were calculated in 1927, the growing stock diminished by 50 million m³ between 1927 and 1941. In particular, forests near the Amnok River and the Dooman River were the main focus. twenty-nine percent of the northern area's total growing stock was lost in just 14 years.

Also affected was the forest growing stock in South Hamgyoung Province, in the northeast area of Korea. It was reduced from 64 million m³ to 35 million m³, showing a 45.5 percent drop. North Pyoung-ahn Province, the northwest area of Korea, experienced a 34.5 percent drop in growing stock. Forests in North Hahmgyoung Province, including the Dooman River area, were decreased by 31.3 percent.

5 CONCLUSION

The study reveals that Imperialist Japan used the forests of Colonial Korea as a catalyst and financial resource to promote colonization and Japanese settlement in Korea. The Japanese Government-General planned to manage INF or forests with the greatest economic value, and dispose of the DNF without any consideration for Korean stakeholders. This was done to encourage the Japanese settlement. As we saw in section 2, the primary DNF were mostly transferred to Japanese residents in by economic incentives such as the forestation loan system.

Generally, imperialist powers received primary materials, such as timber, from colonies. However, contrary to popular belief, this did not occur within Joseon, because the Korean forests of the colonial period were depleted. The one exception was the INF in the northern area. The average growing stock of the private forests was only about 10 m³ per ha, so timber production was not feasible. Even the timber produced in northern INF was much less competitive than that of America, or Japan's other colonies such as Hokkaido and Sakhalin. As a result, Korean timber exported to Japan was less than 3.1 percent of the Japanese imports from other colonial countries. Therefore, Joseon's forests could not supply timber materials properly, and this made Japan focus on expanding national revenue using the forests. The Government-General of Joseon planned to expand the production quantity in the INF in the northern area, both to solve the loss in the timber trade with China and to secure the financial resources of the Government-General. However, the northern area's INF growing stock noticeably decreased. From 1927 to 1941, and particularly after 1933, the growing stock in the Amnok River and the Dooman River area decreased by 35-45 percent. This exported timber provided timber materials for Manchurian development and the wars.

What happened to the national forests near the Amnok and the Dooman Rivers went beyond simply the quantitative loss of forest resources. Timber produced in this area was obviously superior to that of other areas. In short, decreased amounts of natural forests, as well as the loss of growing stock, were harmful to the long-term sustainability of Korean national forests.

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