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The Development of Japanese Forestry

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The Japanese have derived benefits from forests throughout history. For example, wood was the primary fuel in Japan until the 1950s. It has also been especially important as a traditional Japanese building material. The world's oldest currently existing wooden building is found in Japan. Built as a temple named Horyuji, it is a complex of large-scale timber-style construction using old-growth hinoki (Japanese cypress, *Chamaecyparis obtusa*) lumber and is over a thousand years old. The oldest buildings in the complex were constructed in the late seventh century.

For a long time, wood was the only feasible building material. Timber construction and wood processing technology were highly developed even in ancient Japan. Besides temples and shrines, ordinary houses were built of wood, which is well suited to Japan's humid summer climate, and wooden houses continue to be popular. Thus, forests have provided generations of Japanese with building material.

By the late 17th century, plantation forestry had begun in Japan; before this, abundant natural forests had provided timber. Timber plantations were started after clear-cutting or slash-and-burn cultivation. From then until now, artificial planting has involved mainly sugi (Japanese cedar, *Cryptomeria japonica*) and hinoki.

Artificial planting was actively practised in three periods of Japanese history during which rapid urbanization and economic expansion occurred. Because the construction of traditional Japanese-style buildings requires huge quantities of timber products, urbanization has been a main factor in the emergence of widely practised artificial planting. The first period began as early as the late 17th century. The second period, characterized primarily by rapid industrial growth, began at the start of the 20th century. The third period was the 1950s, during which the postwar Japanese economy made a quick recovery. Economic growth created high demand for timber, and high timber prices motivated people to plant trees for investment.

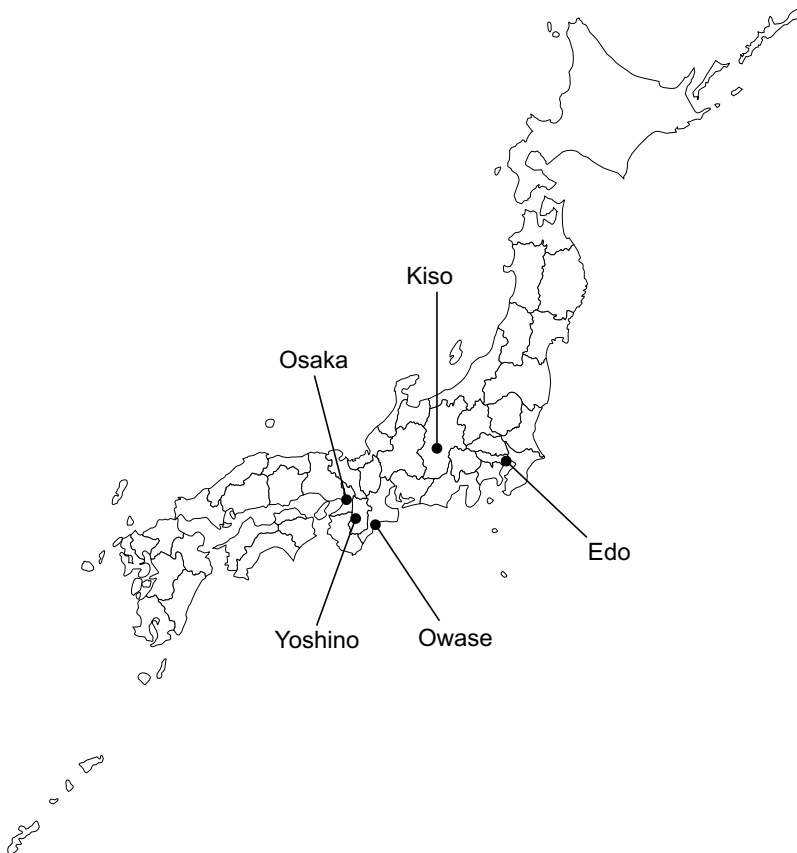
Forest Management by Feudal Lords

During the Tokugawa period (1603-1867), the three principal types of forest land tenure were the feudal lord's tenure, communal tenure, and individual tenure. Individual tenure failed to develop because individual land ownership was prohibited in principle by the Tokugawa Shogunate. Consequently, almost all Japanese forest land tenure was either the feudal lord's tenure or communal tenure.

Access to the forests owned by feudal lords was strictly limited, and those who stole timber from the feudal lords' forests were severely punished. A typical example of forest owned and managed by a feudal lord was the Kiso area (Figure 1.1), where the forest was owned and managed by a relative of

Figure 1.1

Two major cities (Edo and Osaka) and three main timber-producing districts (Kiso, Yoshino, and Owase) in 17th-century Japan.



the Tokugawa Shogun. Before the Tokugawa period, Kiso was covered with thick forest. After more than a hundred years of war among feudal lords, peace began at the start of the 17th century. Commerce and industry developed, creating a great need for wood. By the late 17th century, Kiso's forest resource had deteriorated. Its feudal lord therefore carried out the first reform of the forest management system in 1665, instituting seedling protection, strengthening of patrols, and selective cutting. The reform reduced Kiso's timber production by half and cut the feudal lord's income severely. Only a few years later, he ordered an increase in timber production for financial reasons.

Although the first reform failed, the second reform was planned in 1724. In this reform, timber production was reduced by more than 60%. This second reform succeeded, and reduced timber production continued for 30 years, allowing Kiso's forest resource to recover remarkably. It is notable that although forest resource deterioration began as early as the 17th century, forest conservation has also been practised since then. In Kiso, forest inventory and production planning began in 1779.

Forestry on the Common Lands

Japan is a mountainous country where extensive common lands existed during the Tokugawa period. At that time most Japanese made their living by agriculture, managing uncultivated mountainous common lands surrounding their villages. The common lands provided a wide variety of forest products, such as fuelwood or decayed plants for fertilizer.

In the late 17th century, intensive forestry with artificial planting was begun by members (farmers) of the commons in response to increasing demand for wood, and was practised from the 17th to the 18th century. People planted valuable conifers such as sugi or hinoki on the common lands. Each plantation was relatively small because farmers planted seedlings when they were free from agricultural work.

Thus, plantation forestry has a long history in Japan. During the feudal era it was not widely practised but was limited to areas that had good conditions for growing valuable conifers and for timber marketing. One of these, the Yoshino area, is located in the upper district of the Yoshino River, where plantation forestry commenced between the late 17th and early 18th centuries (Figure 1.1). Before then, people historically made a living using the abundant natural forest resources. Timber production from the natural forest increased rapidly in the early 17th century, with Yoshino timber being rafted down the Yoshino River and shipped to timber markets in Osaka, Japan's second largest city.

Because of deterioration of the natural forest resource, artificial planting was done. Although Yoshino was ruled directly by the Tokugawa Shogunate, most of its forests were managed by local villages whose custom approved

the private ownership of trees planted by individual villagers. This custom encouraged people in Yoshino to plant trees.

There were two other reasons for the establishment of plantation forestry in Yoshino. First, the timber distribution system, especially for young (20- to 30-year old) timber, had already been established. Second, timber sales were conducted in Yoshino, and timber younger than the cutting age could be sold for cash. Tree planting was done by individual farmers. Frequently, however, farmers sold timber to rich landowners or merchants who held the trees until they were old enough to be sold at a high price. Because these rich landowners and merchants lived outside the Yoshino area, silviculture was entrusted to the local people, who had a highly developed technique.

Another typical area where plantation forestry was carried out on communal forestland was the Owase area, near the seashore, where weather conditions are very suitable for forestry (Figure 1.1). Owase flourished as an important port located on the sea route between Edo and Osaka. It was a prosperous port town, home to many rich local merchants who invested in plantation forestry beginning in the 17th century.

Ruled by a feudal lord, Owase followed Yoshino's custom of approving the private ownership of trees planted by individual villagers. Behind this custom was the feudal lord's desire to promote forestry, raise forestry production, and tax the products. In Owase, artificial planting was widely practised from the early 17th century. Residents produced large quantities of charcoal from broad-leaved trees and planted valuable conifers. Tree planting was initially done by individual farmers. Later on, relatively large timber plantations were started by rich local merchants using local labour.

The Emergence of Plantation Forestry

The most important factor in the emergence of Yoshino and Owase plantation forestry, which began in the 17th century, was the process of urbanization occurring at the time. After the Ohnin War, which started in 1467, there were many battles between feudal lords. Lord Nobunaga Oda reunified Japan in 1568 but committed suicide in 1582, during a rebellion by one of his retainers. Japan was reunified by Ieyasu Tokugawa in 1603, establishing the Tokugawa Shogunate, which continued until 1867, a period referred to as the "Tokugawa period" or Edo era.

The Tokugawa Shogunate divided Japan into approximately 300 territories, each ruled by a feudal lord. The feudal lords built castles around which towns were constructed. The lords let merchants live around their castles, giving them favourable treatment to allow the towns to prosper.

Many cities were constructed throughout the country during the 17th century. Among them, Edo (later Tokyo) and Osaka were outstanding in size, even compared with the world's large cities. In 1801 London's population was 860,000 and that of Paris was 540,000; Edo's was 1,000,000. It is

notable that Edo was the world's largest city from the late 17th to the early 19th century.

Edo flourished as the political centre of the Tokugawa Shogunate. Half of its population were warriors (*bushi*), who were virtual bureaucrats, and half were engaged in commerce and industry. Osaka was Japan's most prosperous commercial city. Between Osaka and Edo was a regularly scheduled sea route across which moved large quantities of goods.

The development of these cities during the 17th century was accompanied by rapid growth in the demand for timber, the main material for construction. Since many wooden structures were built close to each other in the cities, there were frequent catastrophic fires, which further increased the demand for timber.

Natural forest resources deteriorated in the 17th century, setting the stage for Japanese plantation forestry to begin. The isolationist policy of the Tokugawa Shogunate also contributed to this development: although commerce within Japan was quite active, foreign trade was prohibited, thereby blocking timber imports during the Tokugawa period.

Forestry in the 20th Century

The Meiji restoration (1850s to 1871), one of Japan's most significant events, ended the Tokugawa Shogunate. Japan began to modernize and Western culture was introduced. One of the main reforms was the establishment of land ownership. Land "ownership" was not clearly distinguished in the feudal era, and people had only a vague awareness of land "tenure."

To stabilize revenue, the new government established the national forests, consisting chiefly of communal and former feudal lords' forests. The government recognized that many communal forests were not being utilized, and merged them with the national forests.

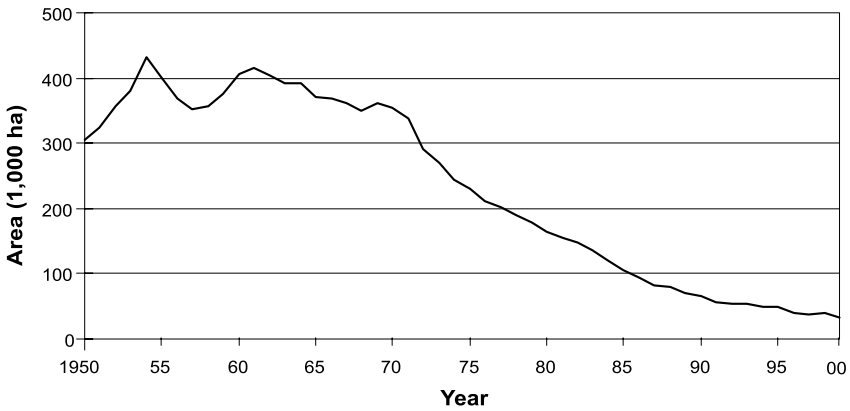
In 1899 the national forests initiated a large project to establish a forest management system. Initially they were divided into "necessary" and "unnecessary" forests. The "unnecessary" forests were sold for funds to establish the forest management system. Next, the "necessary" forests were surveyed and management plans were developed. Tree planting and forest road construction were done. This project lasted for 16 years and established the basis of the forest resources in today's national forests.

During this period, Japan was rapidly changing into an industrialized country and the increasing demand for wood in the expanding economy resulted in destructive cutting nationwide, leading to many disasters. The First Forest Law was therefore passed in 1897, the first modern law in Japan established for the purpose of forest regulation and control. In 1907, however, the Second Forest Law changed forest policy by shifting the emphasis from regulation to utilization, as economic growth during this period required efficient timber production.

The use of communal forests began to change early in the 20th century. Earlier, communal forests were used mainly for gathering fuelwood or manure. As part of the effort to increase national power, however, the government promoted tree planting in these forests from the beginning of the 20th century. Japan's victorious wars with China in 1894-95 and Russia in 1904-5 required substantial sacrifices from the Japanese people, chiefly from

Figure 1.2

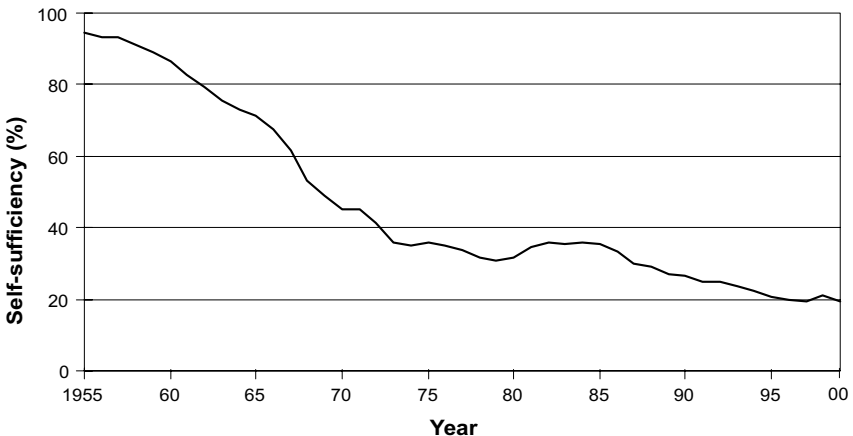
Area regenerated by artificial planting on an annual basis, 1950-2000.



Source: Forestry Agency, 1951-2000.

Figure 1.3

Japan's declining self-sufficiency in wood products, 1955-2000.



Source: Forestry Agency, 1956-2001.

rural residents because Japan was still basically an agricultural country. To enhance rural economic strength, therefore, the government promoted afforestation of communal lands.

Forest resources were overused during the Second World War, and immediately after Japan's defeat in 1945, the most important problem was food shortage. This crisis was overcome, and beginning in the 1950s, Japan rose as a democratic country. Its economy boomed as a result of US procurement demands during the Korean War (1950-53). During this time, artificial planting was resumed, stimulated by rapidly increasing demand for timber. Thus began the third boom of artificial planting in Japanese history.

The annual increase in artificial plantation area peaked in 1955 and remained high until 1970 (Figure 1.2). During the 1950s and 1960s, artificial planting was done mainly by small-scale family farmers. After the 1960s, forests regenerated by artificial planting began to decrease. In contrast, timber imports began increasing in the 1960s and timber produced in Japan lost its competitive advantage, mainly because of rising wages (Figure 1.3).

Because of many difficulties from the perspective of timber production (low profitability, shortage of forestry workers, etc.), the greater part of plantation forests have been left without proper care and management. On the other hand, there is growing realization of the environmental values of forests (prevention of erosion, clean water supply, preservation of biodiversity, etc.), and these values have been enhanced year by year. Compared with other industrialized countries, however, Japan has been slow to make the transition to environmentally oriented "new forestry."

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