

Chapter 5

The Sun and the Forests

Japanese rice farming was inseparable from the surrounding nature. In other words, it was a combined output of neighboring forests, rich soil produced by the forests, and abundant water that contains natural fertilizing elements and micronutrients gradually discharged from the soil.

Farmers knew that Japanese rice fields could yield crops of about 70 percent of its full capacity even if the fields had not been manured. The secret of this harvest was the inflow of natural fertilizers from the mountains and forests. Rice is a more efficient crop than wheat, potatoes, and others as it needs less manure. The reason why Japan could maintain a large population of 30 million in a mountainous small country was that the staple diet of the Japanese was rice.

Wet rice cultivation could be continued for a thousand years in the same place, because irrigated paddies constantly took in organic fertilizing elements and micronutrients, while the water flow washed away toxic substances.

In cities where all excrements were used as manure, the inflow of wastewater to rivers was very limited, so that river water running through large cities across Japan was relatively clean. It is said that until around 1872, the water of the Sumida River (*1) was clean enough to be used for making tea on pleasure boats.

*1 a river flowing through the old part of Tokyo, which is now very polluted

Since Edo was a large, hilly city, water from the Sumida River in the lower part of the city could not be used for drinking water however clean it was. Therefore, in 1590, Shogun Ieyasu Tokugawa created the Koishikawa canal which was sourced from the springwater in Inokashira, located higher in altitude than the central part of Edo. This had developed into the Kanda canal.

As Edo grew rapidly in scale, the increasing demand for water outstripped the capacity of the Kanda canal. Then, the Shogunate started to construct the Tamagawa canal, drawing water from the Tama River with rich water resource. The new 43 kilometers canal was dug only in seven months, and completed in 1653. Japan's constructing and engineering techniques were surprisingly sophisticated. The total length of the underground water pipes in Edo reached over 150 kilometers at the peak period, which made it one of the world's largest water network of the time in terms of service area and the number of beneficiaries.

The Tamagawa canal, with a stable supply of water throughout the year, contributed Edo to be a big city with a population of 1.2 million. More precisely, the reason why the canal could satisfy the water needs was the constant flow of water from the Tama River with fertile forests along with its upper reaches.

Forests have a function of controlling temperature, and in Japan, especially when it is hot, they play an important role in cooling down the temperature.

The population of Edo City in the Edo Period exceeded one million in the early 1700s, and became one of the world's biggest cities of the time in terms of population and area. Unlike today's Tokyo, Edo was a city of forest. Half of the city was forest or wooded land, since tree-covered gardens occupied half or more of the estates of samurais, temples and shrines. Edo was once called "City of Mosaic Garden," which depicts the image that the people of Edo had lived in spaces among man-made forests.

Heat emissions from densely populated cities were cooled down by those forests, or the natural air conditioner.

Another indispensable function of forests was to supply firewood and charcoal. When old inert trees gradually become unable to absorb carbon dioxide (CO₂) properly, they are cut down and used as firewood and charcoal for fuel. Both cutting down and planting trees helps young trees to grow vigorously again absorbing CO₂. Renovating man-made forests by logging is not the destruction of nature, but necessary forest management.

The forests in Japan from the Age of Provincial Wars to the early Edo Period (*2) were not in good condition, since the cultivation of new paddies were promoted and people cut up their neighboring natural forests for clearing.

*2 from the late 13th century to the early 17th century

In the late 1600's, the shogunate realized the danger of further forest clearing and issued a regulation called "Yamakawa Okite" to stop the deforestation. Furthermore, the feudal domains started investing labor and capital in the existing paddies and fields, and began planting trees on the mountains. This was the beginning of "the Era of Man-Made Forests".

In the Edo Period Japan, next to the big cities were always the regions of thriving forest industry. The more big cities developed, the more fuel they needed, which boosted forestry in the neighboring areas. Even the fields of pampas grass were made into man-made forests to satisfy the increasing demand for fuelwood.

The importance of mountain trees was taught at temple schools (*3) in the Edo Period. When children started reading elementary Chinese classics, they first learned the phrases on the importance of forests: "A mountain without trees is of little worth however high it is, so is a big man without wisdom." Thus they were taught that trees to a mountain are no less valuable than wisdom to men.

*3 a place where children in the Edo Period study reading, writing, and arithmetic

People in the Edo Period were far more aware of the importance of forests than us, or their descendants who have become ignorant of the natural environment. Our ancestors were well aware that they could neither drink water, grow rice and other crops, nor obtain fuel without forests.