

# Ecological crisis of forests in Northeast China in the Late Qing and state response

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**Abstract:** In the late Qing, forests in Northeast China experienced a severe ecological crisis. Japan and Russia, via unequal treaties and forestry enterprises, secured extensive logging rights, accelerating resource depletion and sharply reducing forest cover. This led to soil erosion, ecological imbalance, and more frequent natural disasters. In response, the Qing government adjusted its exclusion policies, strengthened forestry regulation, and promoted afforestation and restoration to mitigate environmental degradation while defending sovereignty.

**Keywords:** Northeast China; forests; environmental history

## 1 Introduction

In the late Qing, Japan and Russia exploited Northeast China's forests via unequal treaties and enterprises, sharply reducing forest cover and causing erosion and frequent disasters. Without regulation, resources approached exhaustion, triggering interconnected crises of ecological decline and sovereignty loss. The Qing shifted from exclusion to more institutionalized governance. Scholarship has emphasized land tenure, migration, and imperial expansion, yet has devoted insufficient attention to the nexus of environmental change and state response. From an environmental history perspective, the consequences of resource overexploitation and Qing's forestry reforms under internal and external pressures merit further study.

## 2 Russian and Japanese seizure of forest resources and logging rights in Late Qing Northeast China

Russian exploitation centered in northern Northeast China along the Chinese Eastern Railway. Large-scale logging without reforestation rapidly depleted forests along the corridor. In 1896, Russia coerced the Qing government into signing the *Contract for the Chinese Eastern Railway Company*, stipulating that construction materials be supplied by China, thereby securing initial logging rights along the line [1]. The 1898 supplementary contract further allowed the company to harvest timber from state forests under fixed fee arrangements, formalizing these privileges [1](783-785). In August 1907, the *Jilin Timber Contract*, signed in Harbin under pressure, granted logging rights in areas such as Shitouhezi, Gaolingzi, and Yimianpo, with fixed annual quotas for matchwood, sleepers, and large timber [1](421-423). In 1908, another agreement extended Russian logging rights to additional areas in Heilongjiang [2]. Contemporary records indicate that contracts signed in 1907–1908 permitted the extraction of millions of cubic meters of timber, along with substantial quantities of sleepers and logs in Jilin and Heilongjiang [3].

Japanese exploitation was concentrated in southern Northeast China, especially the Yalu River basin. After the 1905 *Treaty of Portsmouth*, Japan inherited Russia's privileges and expanded control over forest resources [4]. In the same year,

it forced the Qing government to sign agreements allowing the establishment of a nominally joint Sino-Japanese timber company along the Yalu River, which functioned in practice as a Japanese monopoly [2](338-341). In 1908, Japan further compelled the creation of the Yalu River Timber Company, formally joint but effectively under Japanese control. Relying on its monopoly, the company carried out large-scale commercial logging along the Yalu and Hun rivers. Export data illustrate the scale: between 1909 and 1911, timber shipments via Andong port reached 4,859, 3,580, and 3,895 units respectively, equivalent to over 650,000 cubic meters of logs in total [5].

### **3 Ecological crisis of forests in Late Qing Northeast China**

Soil erosion and river siltation were the direct consequences of deforestation. Forests play a key role in water conservation and soil retention; once destroyed, their capacity to prevent runoff and sediment loss disappears [6]. In the late Qing, large-scale logging sharply reduced mountain vegetation in Northeast China. During heavy rains, sediment is washed downhill, damaging farmland and causing river channels to silt up. Contemporary accounts indicate that forests in upstream areas had once absorbed water, but extensive felling led to rapid downstream discharge. The Liao River illustrates this process: upstream deforestation intensified erosion and siltation, ending its former prosperity as a major waterway.

The increasing frequency of floods and droughts further signaled deepening ecological imbalance. Forest loss weakened the natural regulation of water systems. Areas such as the Songhua River basin, once characterized by dense forests and stable hydrological conditions, could previously absorb and release floodwaters effectively [7]. However, excessive upstream logging destroyed this natural buffer. Heavy rains now stripped fertile soil, exposed bedrock, and degraded land productivity, worsening livelihoods. Without forest cover, runoff flowed directly into farmland, causing recurrent crop losses. As observed by the Ministry of Agriculture, Industry, and Commerce, although the Three Northeastern Provinces had the richest forest resources, they also suffered most frequently from floods, droughts, and epidemics [8]. This paradox highlights the severe ecological imbalance in late Qing Northeast China.

### **4 Measures taken by the Qing government**

First, the Qing government conducted forest surveys. It recognized that only by "fully understanding local resources, roads, and tree species could one plan comprehensively and implement effective policies," emphasizing that forestry reform "must start with investigation". Faced with unregulated logging by Japanese and Russian actors as well as migrants from inland China, the government also realized the need to designate forest zones for "selective logging and conservation under a ten-year plan", which required accurate resource assessment [9]. Under external pressures and resource scarcity, field inspections were conducted in key forest areas: "Personnel were dispatched to conduct detailed surveys as a basis for future forestry revival and industrial expansion" [10]. By 1912, preliminary statistics had been compiled for portions of Jilin Province, noting, for example, twenty-four forest sites in Jilin Prefecture, eleven in Wuchang, seventy-five in Binzhou, fourteen in Yilan, ten in Mishan, seventeen in Ning'an, seven in Emu County, twelve in Shulan, and eighteen in Fangzheng [11].

Second, the Qing government gradually adjusted the previous prohibition policy. In 1907, Song Chun'ao, Director of the Jilin Negotiation Bureau, proposed establishing a dedicated forestry institution to regulate logging and counter foreign economic encroachment. In October of the same year, the Qing approved the Jilin Provincial Forestry Bureau [12]. Situated outside the West Gate of Jilin Prefecture on the former site of the Eight Banners Naval Camp, the bureau administered sub-offices in Tulongshan and Wuchang Ting Sihechuan, and operated a timber-processing facility in Jiaohe.

Finally, tree planting was promoted. Recognizing forestry's role in national prosperity, the government noted that "industry is the source of national wealth, and forests are the most important. The fertile land of the Three Northeastern

Provinces is ideal for planting, yet our people neglect this benefit, which is regrettable" [13]. Measures combined incentives with protection: survival-based rewards were granted for tree planting, e. g. , in Fengtian Province, individuals planting over 2,000 surviving trees received plaques; over 5,000, a sixth-rank official merit badge; over 10,000, a fifth-rank certificate [14]. This tiered system promoted participation while strengthening local officials' accountability. At the same time, penalties for illegal logging were tied to public benefit—for instance, those using counterfeit coins were required to plant trees for a day—thereby reinforcing norms of forest conservation.

## 5 Conclusion

In the late Qing, foreign exploitation and institutional weakness caused a severe forest crisis in Northeast China. The Qing government responded with surveys, regulatory reforms, and afforestation—an early effort to integrate environmental governance with sovereignty defense. This case highlights the historical interplay between ecological degradation and state adaptation.

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## Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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