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ALARM OVER THE FOREST

Gifts of a green friend.

—Anatoliy Averbukh and Kseniya Bogushevskaya, *Chto delaet khimiya iz drevesiny* (1970)

INDUSTRIALISM, ALARMISM, AND FOREST GEOGRAPHY

“Our Motherland has a rich nature,” proudly declared *Master lesa* (Forestry expert), a leading journal of the Soviet forestry industry.¹ This text, published on the front page of the summer issue of 1963, made passing mention of the need for reforestation. Yet it tapped into an entrenched and widespread national imagination that saw forests as endless riches that belonged to the whole society—“our forests.” It stressed that forests were being put to the service of the country, and were, as ideologically proclaimed, the cornerstone of national material prosperity under state socialism. In fact, in this noncapitalist economy, *the state* was the main consumer of wood, using it for industrialization while *ideologically* framing it as the forest riches of the people.

Many Soviet commentators compared national forest stocks with the physical size of other countries, measuring

them through a geopolitical lens. Thus a forestry engineer wrote in 1961 that the size of taiga forests was equal to that of the whole of England.² In 1964, another commentator argued that “there are so many forests on the territory of the Irkutsk region [in Siberia] the size of which is equal to the territory of Norway, Sweden, Finland, and Yugoslavia taken all together.”³ Quite often, publications replicated ritual images and referred to the size of capitalist countries to demonstrate the richness of Soviet nature in contrast to the scarcity of nature under capitalism. Publications particularly described the eastern regions of the USSR as a national treasure (*kladovaya*) and proclaimed that the “all-Union wellhead of wood” would be necessary to explore in the nearest future.⁴ Geographic size therefore mattered a great deal in the framing of forests, and produced a strong belief in endless green covers and the vast economic possibilities they could open up. It triggered the image of forest abundance and inexhaustible industrial resources, kindling national pride in the extractive economy.

Specialists expected this resource abundance to offer numerous opportunities for industrial production, the material foundation of the modern society. From the beginning of the Soviet state socialist project established in Russia in 1917, forests were viewed through an industrial lens: they were to be used to their utmost potential in the aims of intensive industrialization.⁵ In 1931, the government divided forests into industrial and nonindustrial or protected categories, prioritizing the economic function of forests, as the former category of forests was much more numerous than the latter. In 1943, a government decree further divided the state forests into three groups: group I forests were protected zones

in which cutting was prohibited; group II denoted the sparse forest stocks of some parts of the southern and European regions of the country where partial cutting was allowed; and group III forests were the largest group of industrial forests and were to provide resources for economic needs.⁶ In the decade after the Second World War, Soviet publications contended that the purpose of the forestry industry in using these resources was to satisfy the consumer needs of the country because, as one specialist put it, “forests must necessarily give the country an economic effect.”⁷ From his perspective, one shared by many industrialists, forests were troves of potentially valuable materials that had crucial economic meaning for the state and society, supplying both with the fuel for industrialization.⁸

The planned system tried to harvest as many natural resources as possible according to the logic of five-year economic plans. Wood harvesting was declared an urgent economic task. “Comrades, Give More Timber to the Country!” was a common slogan at that time.⁹ This approach was rooted in conceptions of forests as offering important materials for facilitating production and revealed that industrial discourse in resource consumption was predominant. This view originated in earlier decades, revealing continuity between pre- and postwar periods in how the interplay between nature and industry was understood. For example, a 1930 poem by the children’s writer Samuel Marshak titled “The Holiday of the Forest” (*Prazdnik lesa*) began with a question: “What do we plant when planting forests?” Answering this, Marshak listed a number of items of industrial construction: by planting a tree, we in fact plant masts and yards for ships in order to travel across the sea, wings to fly (airplane

wings were largely made from plywood at that time), a table, and pencils; only later does Marshak emphasize the role of the forest as a home for animals and source of “morning freshness.” This poem prioritized a consumerist perspective of the forest and conceptualized it as a source of industrial wood, implying that forests should be respected not primarily because they were living organisms of the earth, central to the ecosystem, but rather because they provided a great economic service.

This attitude persisted after the Second World War; in 1953, the professional journal on wood processing wrote that Soviet people “take all their pains to use enormous reserves of the soils of our regime as most intensively as possible.”¹⁰ And later, another professional journal wrote, “The country does need timber! Tomorrow it will be turned into furniture for new house dwellers, sawmill materials for builders, standard houses for countryside workers. Everyone must make most efforts and creativity, [and] high labor consciousness to complete the plan on wood harvesting.”¹¹ Engineers attributed to the state a power and right to exploit forests; to take one example, Yakutia, a huge region in Siberia, “is proud of its diamond excavating industry created by the Soviet power. Its main riches include also forest resources.”¹² For industrialists, this statement revealed a desire to be the first in economic achievement—aspirational rhetoric typical of the socialist project in general. In the context of the Cold War and East versus West competition for modernity that underpinned it, the regime saw wood as an important factor in beating the West. Both the state and specialists made frequent comparisons with the West (and the United States in particular), explaining how important it was to overcome the relative



Figure 1.1 Soviet matchbox label, “forest is our treasure,” 1971.
Source: Match Museum, <http://match-museum.ru/catalog/320/2597>.

backwardness of the Soviet forestry industry in order to provide a source of modern consumer production. Industrialists pointed to the availability of unexploited forests, especially in poorly investigated eastern parts of the country, and insisted on the significance of industrial advancement there. Modern technology was held to be the means of advancement, and played a crucial role in mediating between rising consumerist demand and the state’s wood stocks.

Yet while the image of green abundance remained widespread, the economic expectation and evaluation of current *industrially* available wood stocks had a polarizing effect. Some specialists working in the forestry industry thought not only about industrial possibilities but also calculated the economic risks of intensive resource use. From the mid- to late 1950s, a new strand developed within industrial forest

discourse that gave the green light to much more critical and less utopian thinking about the forest as an endless economic resource. At that stage, some time before specialists had seen the results of industrial advancement in Siberia and the Far Eastern regions (discussed in chapter 2), this alarmism mainly concerned the northwestern forests, which had traditionally been intensively exploited. Some specialists looked back to the prewar past of forestry in Russia and critically reappraised long-held ideas about forest abundance. They argued that the image of forests had to be reconsidered: the green covers of the Soviet Union could not so simply be understood as an industrial abundance since many forests were overexploited and cut down; others remained difficult to reach and exploit industrially. Noting the contradiction between imagination and rationality, they stressed that the image of forest abundance in the Soviet Union was a cultural myth devoid of rational industrial calculation. Hence as a 1962 book on forests insisted, "*Unwittingly*, we get an impression about the inexhaustibility of our forests. The attitude towards them is . . . a sort of something eternal, forever given, and abundant . . . but this is not really true."¹³ They underscored that the northwest of the country had been overexploited while the green eastern regions had been underexploited and required further exploration. They estimated that eastern Siberian forests, for instance, made up three-fifths of all wood stocks. The growing consideration given to exploiting eastern forests triggered the recollection of recent experiences of rapid deforestation in the northwest, however. And, they asserted, it was crucial to turn to a new page in resource exploitation by developing new practices to stop ineffective harvesting. This stemmed not simply from

their own desire, they maintained, but from objective necessity too, “dictated by the high cost of wood and depletion of fir raw wood” in particular.¹⁴ Some complained that industrialists had previously cut the most valuable fir trees along highways, and that this practice must be stopped because it was backward and literally devastating.¹⁵ The argument about preventing the wastage of wood became important for specialists who claimed that forestry politics had to change and the exploitation of forests had to become more effective.

This specific view was expressed by specialists from various institutions alarmed about the coming resource scarcity in the rapidly industrializing economy. In fact, the major problem that arose in dealing with Soviet forests as industrial resources lay in their uneven geographic spread and the historical background of wood harvesting. As in other countries (such as Sweden), the geographic distribution of Soviet forests differed significantly from region to region for both natural reasons and because of long-term historical cutting practices. Professional concern over the future of the industrial wood supply referred to three large regions in relation to their forestation and consumer demands. First, there were the northwestern forests that rose to the Urals (what I call “old forests”), which were historically used for intensive economic development. This part of the country was traditionally more economically developed and populated than the Far Eastern or Asian regions to the east of the Urals. By the 1950s, the share of the Russian Republic in wood harvesting was most crucial, making up to 90 percent of all the wood harvested in the USSR, with the northwestern region providing the largest share (about 25 percent). Second, there were the huge forest stocks of Siberia and the

Far East, which became the subject of large-scale intensive exploitation (what I call the “new forests”). These were not easily accessible, requiring, as one article put it, “[strong] will and desperate work effort” to start exploiting them.¹⁶ These forests were often used as the primary evidence in arguments that described “the unexplored abundance” of Soviet natural resources. These, many believed, could be the savior of the rapidly disappearing northwestern forests.

The third broad geographic zone of professional concern was made up of the southern regions of the country, which were mainly unforested, but as in the northwestern region, fairly densely populated and required supplies of consumer products, including paper and cardboard. These three regions defined Soviet forest geographies: the northwest, characterized by technological overexploitation; the untapped green east, with its lack of harvesting infrastructures; and the sparse south, lacking in wood. Among these, the Ural region was also important as a traditional industrial region, but specialists did not refer to it frequently in their proposals presumably because its forests had lost most of their industrial potential by midcentury. This prompted many specialists to think about a coming crisis in the harvesting and supply of industrial wood, a material important for the building of modern society. The situation was complicated by the historical location of the Soviet Union’s main forestry capacities: due to intensive construction in the age of industrialization, its main forestry enterprises were built in the northwestern parts; there were no large-scale industries in Siberia and the Far East before the Soviet leadership turned its attention to these lands.

The technological changes that opened up possibilities for specialists to manufacture diverse products from wood and

spurred growing consumer demand for numerous products, such as food packages and “sanitary” (toilet) paper, changed specialists’ view of these three economic regions after the war. This change was supported by rapid postwar economic growth in the Soviet economy, which only began slowing down in the mid-1960s. Great technological achievements created strong enthusiasm among specialists around the potential of exploiting natural resources more successfully. Forest alarmism implied that Soviet space was not as green as initially believed from an industrial perspective; against the backdrop of growing consumer demand for wood-based products, the amount of industrially appropriate forests was rapidly shrinking while the rest remained inaccessible. Fir trees were the main targets for exploitation and export, while larch trees were most prevalent in the country yet least utilized in Soviet industry. Typical of the Soviet habit of making prognoses and planning, all specialists expected large-scale growth in the consumption of paper- and pulp-based goods and even more rapid decreases in available wood, connecting the demand for wood with technological progress and the influence of evolving forms of knowledge on industrial manufacturing. For example, some expected that the production of chemical fibers would increase fourfold while the manufacture of plastic masses and synthetic materials would increase sixfold.¹⁷ They envisaged a wood crisis stemming from this growth—a threat to sustainable forestry production that could lead to wood scarcity.

Alarmism triggered a search for solutions and alternative sources of raw materials for increasing wood consumption instead of intensive cutting in the northwest. As one specialist said in 1962, “The need for enlarging the production

of paper makes us reconsider the possibility of using other sources of raw materials, in particular, in the regions where the lack of wood is evident but where other reserves are available too."¹⁸ Alarmism over the lack of industrially useful wood was described variously in different regions of the country: in the northwest due to recognized overexploitation, in the east due to the inaccessibility of forests, and in the south because of the natural lack of forests.

Importantly, alarmism was born within industrialism. In other words, anxiety about the scarcity of the future resource base was triggered by an expectation of massive production growth. At the same time, this alarmist view was not a purely industrial phenomenon but also entangled with public criticism of the industrial exploitation of nature. Alarmism among employees of the forestry industry resonated with a more general (yet still nascent) public concern about the destiny of forests and their future. The 1953 book by writer Leonid Leonov titled *The Russian Forest* in particular, and its 1964 film adaptation, emphasized the environmental problems stemming from intensive woodcutting.¹⁹ By contrast, the industrial forest alarmism along with the search for alternative methods to replace devastating harvest and wood-processing practices were connected explicitly to the need for sustainable yields of the resource, thereby still directed by the drive for economic profit. Specialists insisted that forest loss and the low productivity of wood were caused by technological backwardness and a lack of investment. In addition, uncleaned logging spots and the general wasting of forests was held to pose "a danger for the wide spreading of vermin in the forests" and "increase[d] the probability of forest fires."²⁰ Alarmism convinced many specialists that

a future wood crisis was inevitable unless changes in wood harvesting and consumption were made.

EXPLAINING THE “WOOD CRISIS”

Alarmism among industrial experts suggested that demand was growing against the backdrop of low forest productivity in the USSR. Comparing Soviet forestry with the industries of other countries, some specialists admitted a gap between the availability of natural resources and technological possibilities. They recognized that the Soviet Union was lagging behind Western forested countries technologically and compared the Soviet performance with the Western world in terms of inequality. They measured their own backwardness through the lens of a crisis in wood supply because of wasting practices associated with harvesting, transporting, and storing wood. Specialists described wasting as the biggest evil in Soviet wood harvesting. Harvesters indeed left huge amounts of wood waste, like bark, branches, and roots, in forests. As such, some Soviet specialists portrayed old industrial forests as “a cemetery of the forest,” referring to the fact that logging spots were not cleaned after wood harvesting and became forest waste.²¹ They connected this practice to the “wrong culture” that had developed around forestry, and associated it with economic loss and low productivity. If the commentator Donald Bowles is to be believed, the daily productivity of Soviet wood-harvesting enterprises in 1956 was equivalent to just one-third of the productivity of similar US enterprises because of the low level of Soviet mechanization. Indeed, the 1950s was the era in which the United States leaped into the age of automation, and industrial processes

in forests and enterprises became mechanized and automated.²² According to Bowles, the mechanization of wood harvesting in the United States had been developing for a few decades while the Soviets expected to achieve advanced levels in just ten years.²³ While biased by the Cold War binaries, Bowles was right to emphasize a typical feature of Soviet industrial policy: the regime always tried to make a leap in a short time by means of intensive technological modernization. As one front-page article stated, “Any capitalist country will require decades to go through the same path that the Soviet forestry industry has gone in terms of technical re-equipment and introducing new techniques and technologies of wood harvesting.”²⁴

Despite claims about the ability to make rapid progress, the alarmist view insisted that these short official time frames were simply not sufficient to produce a competitive industry with numerous operations. The lack of mechanization was a constant problem facing Soviet wood harvesting, not only due to a lack of funding, but because of rapid technological transformations in wood-harvesting machinery in Western countries. Thus in the late 1940s and 1950s, the chain saw, including the famous “Druzhba,” was the main instrument used for felling trees, while the use of modern tractors and giant scissors was spreading in other countries.²⁵ This and later models of saws were excessively loud, and due to the high level of vibration, forest workers became afflicted with so-called vibration disease, which impacted workers’ hearing abilities.²⁶ Technological transfer and the importation of machinery that, as with forms of Stalinist industrialization, were taken as the main strategy beginning in the 1930s, were important for the industry. Many wood-harvesting and

especially pulp and papermaking enterprises were equipped with foreign machinery and mechanisms. For example, the Soviet-Finnish border enterprises were originally equipped and later modernized mainly with Finnish machinery, with Finland serving as the bridge between domestic and Western technologies across the Iron Curtain.²⁷ In the 1930s, Finland itself experienced rapid industrialization in its forestry industry, and maintained a leading position in the world in terms of wood harvesting as well as pulp and paper manufacturing. If the United States and Germany served as sources of new technologies for heavy industry during the enforced industrialization of the Stalinist era before the Second World War, small Finland fulfilled a similar function for the Soviet forestry industry during the Cold War. Many Soviet forestry specialists strongly believed in the role of Finnish assistance, despite the conditions of the Cold War, referring to the similar geographic and natural conditions of Finnish and Soviet forests. From the late 1960s, it was Japan that took the lead in supplying the USSR with forestry equipment. In July 1968, the USSR and Japan signed an agreement for the development of the forestry industry, according to which Japan was to supply machinery, materials, and goods while the USSR supplied raw timber as the means of payments.²⁸ Japanese companies supplied, among other things, diesel bulldozers, cranes, trucks, electric cables, and other machinery for Soviet logging enterprises, and received huge amounts of timber in return.²⁹ This technological dependence revealed the Soviet ability at adapting foreign technologies and lead industrial processes to a large extent with imported machinery.

Despite the imports, some specialists remained critical of the technological level of wood harvesting and processing in

the USSR, arguing that the industry was too extensive and diverse to be fully equipped with machinery purchased only from abroad. Many referred to the technological factor and specifically the Soviet Union's weak level of mechanization as reasons for comparative backwardness with the West. For instance, a specialist wrote in 1979 that wood-harvesting enterprises "had been equipped with machinery slowly," and according to his calculations, mechanized tree felling made up a small share of the total harvest in 1977, insisting that "a serious obstacle for technical progress in the [forestry] branch was the absence of modern basic automobiles."³⁰ The lack of technical infrastructure was therefore a condition of falling behind modern levels, which specialists measured according to the West—the benchmark of standards of forestry development. In addition, due to the lack of qualified forest workers, foresters called for local dwellers to help reforest cut territories, indicative of a typical Soviet practice of using citizens as an additional standing workforce.³¹ Soviet forests were the main work sphere for prisoners at the infamous concentration camps (Gulags). Prison labor was still practiced, while significantly reduced, in the three decades after de-Stalinization was launched in the mid-1950s. Wood harvesting remained a difficult job, mainly done by seasonal workers, which included female laborers due to the postwar lack of male laborers. A Finnish engineer, who was intensively engaged with the cooperation with Soviet engineers and once visited the Soviet Union in the 1960s, was surprised to see how Soviet women cut trees in the winter wind, standing in deep snow.³² In some regions of intensive forest exploitation, over 35 percent of the total

workforce was made up of women, who usually worked with harder and less sophisticated operations.³³

From the 1950s onward, however, there were some attempts to improve the condition of work in forests to increase the productivity of wood harvesting. The government and specialists increasingly emphasized the importance of making the conditions of wood harvesters more comfortable—in particular, by introducing better workers' clothes, shoes, and safety gear. Existing shoes and clothes were not reliable as most forest workers wore artificial leather (*kirza*) boots, which quickly became wet and torn, while in winter they wore felt boots (*valenki*), which easily became wet and shrunken. At that time, workers in some other countries wore heat-retaining rubber shoes and safer warm hard hats.³⁴ In the USSR, the problem of workers' clothing was not completely solved until at least the late 1970s. This prevented new and young workers from entering the industry, which remained hard seasonal work.³⁵

Beginning in the 1950s, some industrial factory specialists discussed the quality of supplied wood to enterprises more frequently, addressing wood harvesting as a critical problem. Industrial enterprises regularly complained about the low quality and shortage of raw materials when explaining the work stoppages typical of state socialist enterprises. According to the experts' assessments, the quality of wood posed a serious problem for industrial enterprises as it was often in a state of decay and thus inappropriate for processing.³⁶ If archival sources are to be believed, this problem was also recognized at the highest political level. The Council of Ministers, the executive center of the country, growing concerned with the lack

of improvement in forestry practices in the Russian Republic, decreed that approaches to forestry had not been effective, especially in the European part of the country, where “intensive cuttings led to the depletion of forest.”³⁷ Despite numerous problems related to technological infrastructures and the workforce of forest work, the Soviet wood-harvesting industry was one of the most voluminous in terms of production numbers.³⁸ As one specialist calculated, measuring harvests with final consumer products, the USSR harvested enough wood per minute to fully furnish 210 two-room apartments.³⁹ Yet at the same time, in 1962, the USSR produced five times less paper than the United States, while the gap in making cardboard was even bigger.⁴⁰ Between the 1950s and 1980s, the tempo of papermaking in the USSR was one and a half times quicker than that in the rest of the world, yet there remained a large gap in production when compared with the main Western producers, such as the United States.⁴¹

Harvesting enormous quantities of wood yet manufacturing relatively few consumer products, Soviet industry exported a great deal of timber abroad; in 1964, timber was sold to fifty-two countries.⁴² A significant proportion went to neighboring Finland, which had a well-developed wood-processing industry; from 1965 to 1966, Soviet timber exports to Finland doubled. At that time, Finnish companies were allowed to transport timber to Finland directly from logging spots. One Soviet propaganda film proudly claimed that this change “enlarge[d] our trade connection with friendly Finland.”⁴³ It presented increasing exports of raw materials as a positive sign of developing bilateral economic relations. Yet in fact, it signaled large-scale losses of valuable raw materials for Soviet industry.

The lack of wood for supplying enterprises originated not only from wasting harvesting and imports. Timber was also lost in the process of floating and drifting logs down waterways and rivers—the cheapest way of transporting wood in the USSR until the mid-1980s. In the 1930s, up to 3 percent of timber was lost from floating—a number specialists regarded as significant.⁴⁴ Roughly the same levels of loss persisted in the late 1970s, despite specialists having long concluded that timber drifting was a wasteful and environmentally dangerous practice.⁴⁵

Overall, the gap between the volumes of wood harvesting and processing led some specialists to express disappointment about the performance of the Soviet forestry industry, describing it as being at a critical stage. While forestry had been wasteful before, the strong demand for wood-based consumer goods and rapid deforestation all intensified the image of a coming crisis. Specialists saw this crisis stemming from technological and infrastructural backwardness, and warned that it would lead to wood shortages. If industrialists blamed wood harvesters for supplying enterprises with wood of poor quality, harvesters in turn pointed to the low capacities of the wood-processing industry due to the technological factor. As some wrote in the last years of the Soviet epoch, the output of Soviet forestry, pulp, papermaking, and wood-processing industries still did not allow for the effective use of the Soviet Union's numerous forest riches. It could not "satisfy the needs of the national economy in most types of paper products. Possessing the biggest forest resources, our country significantly lags behind a few developed countries."⁴⁶ For specialists, crisis implied the impossibility of meeting economic demands, and this posed a danger to

forests because of the low productivity associated with their long-term, extensive, and inefficient exploitation.

Some stated that the problem of wood harvesting lay in the fact that planning was based on the existing infrastructure rather than on the availability of forests. This is why, they said, the northwest, where historically technical infrastructures had been longer developed, were heavily devastated while the greener covers of Siberia and the Far East largely were terra incognita for harvesters because they remained inaccessible. They also complained that in the postwar decade, the industry had adopted “the principles of the long distant 1930s when sustainable forest use was anathematized as something not corresponding to the program of enforced industrialization of the country.”⁴⁷ The postwar period revived many approaches and ideas of the 1930s, most of which were seen as positive and fruitful. At the same time, however, many criticized these old practices, claiming that the new age required new methods and instruments. As ministry specialists argued, the rapid industrial development of the country in the prewar period and restructuring of the Soviet economy after the war led to a situation in which the forestry industry was supplied only with round wood, with little invested in sophisticated projects for transforming raw wood into modern goods.⁴⁸ The focus on industrialization and the rapid use of forests that had been emphasized from the 1930s on and remained widespread thus attracted criticism from forestry specialists. As one professional report on the development of forestry in the 1960s insisted, there was a “careless attitude toward our forests. . . . Logging companies have neither [production] stimulus nor material motivation to rationally use . . . even available wood stocks, they also

do not have any stimulus for introducing scientific achievements in the forestry production."⁴⁹ Forestry specialists held some power to complain publicly about the low levels of investment in industrial forestry and criticize the state of things in the industry.

Overall, the period from the mid- to late 1950s became an important era for acknowledging the critical state of wood harvesting, both by wood harvesters and producers at industrial enterprises. This critical juncture in thinking about wood availability and practices of harvesting made many seriously rethink the interplay between the geographic distribution of forests and their industrial exploitation. Wasteful wood harvesting, backward wood processing, and the insufficient manufacture of modern goods together constituted the components of the critical language of the professionals. Importantly, specialists did not use the word *crisis* themselves until the end of the Soviet regime, but nevertheless used the language of crisis and explicitly expressed an expectation of the critical state of Soviet forests. By the 1960s, specialists recognized that the wood-harvesting industry was at a key point of inefficiency, careening toward wood depletion.

In most alarmist responses to the expected wood crisis, backward technology was given a crucial role in explaining the low levels of harvesting and consumption of wood. By the 1980s, however, more specialists connected the danger of rapidly disappearing forests with a human factor, insisting that forests were an important natural *actor* rather than merely a natural resource. As engineer V. Shiryaev wrote, "Today many think about foresters as barbaric people who deplete a national treasure—forests. We indeed have evidence of that: wasted forest sites, decayed wood on the

roadsides and river banks, drying lakes. After decades we have to admit a crisis in the forestry complex. Forests are depleted, and machinery equipment is used in a very ineffective way.” He found the reasons for this critical state not in technology as such, as specialists had previously argued, but instead in human activities—when workers in forests and specialists did not want to do their work carefully because most capital expenditure went to the upgrading of machinery and production processes as opposed to people and their living standards. This was why, he said, we developed “a barbaric attitude” toward forests, rivers, and land.⁵⁰ The human factor became central from the 1980s on, in tune with broader state appeals to the human face of socialism in the course of perestroika. It was also connected to a growing environmentalism in which more voices spoke loudly against pollution and environmental degradation in the country. This exemplified the transformation of concern over the destiny of forests, from the hidden reference to humans as a destroying force through criticism of the overexploitation of European forests to the explicit criticism of human activities, showing the strands of environmentalism found in the industry.

By the end of the 1980s, sustainable forest use was evoked as the counterforce to resource scarcity in wide discussions among Soviet specialists. They particularly criticized the Soviet forms of managing resources when enterprises were to control the availability of their resource base themselves in most parts of the Soviet Union (except at forest-industrial complexes [LPKs]). As calculated by some, of twelve logging spots (*lespromkhoz*) in Karelia, one of the most intensively exploited forested regions in the Russian northwest, eight would no longer be capable of working in the near future

because of the depletion of wood stocks in the region—the result of which would “lead to the destruction of enterprises and serious social consequences.” By the year 1990, a “condition of serious deficit of wood resources” was described in this region.⁵¹ If in earlier decades specialists warned about the *envisaged* wood crisis because of some wasting practices, in the last decade of state socialism they emphasized *real* failures in wood exploitation. Where at first the imagined crisis emerged from various industrial processes that attracted criticism from specialists as ill-suited to the modern time, it later turned on the recognition of humans as a destructive force.

PERPETUUM MOBILE OF ADMINISTRATIVE CHANGE

The Soviet forestry management system of the central state and its regional echelons were the subject of constant reorganization. Reform and structural change were held out as the administrative solution to the wasteful development of the forestry economy. The ministerial enterprises (i.e., sawmills and factories subordinated to the Ministry of Forestry) were the main consumers of wood in industrial operations. The ministry had, however, changed its names and subordinations many times and suffered from these continual organizational transformations, which emerged from the recognition of crisis in managing forests and wood resources. In 1957, after the administrative reform initiated by Nikita Khrushchev, the ministries were dissolved—yet the forms of territorial administration introduced in their place did not make the system of wood harvesting and processing more effective. *Sovnarkhozy* or new territorial administrations were

made fully responsible for fulfilling the plans on production, supply of wood, and developing new technologies. Because of that, the localization of new logging companies—*lespromkhoz*y—often led to the rapid depletion of forests and prompted foresters to move to new zones, constructing expensive infrastructures and production units there. To some extent, this led the Soviet type of harvesting to follow a destiny similar to that of earlier and contemporary histories of many other places in the world where forests were cleared entirely, ranging from the eastern parts of North America to the Amazon River basin.

From the 1960s on, after the failure of the *sovnarkhoz* reform that aimed to organize the territorial administration of economic development, the government invested in so-called large enterprises as a new form of governance that was frequently called progressive and efficient. The gigantomania of Stalinist industrialization, when large-scale enterprises were built as a sign of rapid industrial construction, was now supplanted by the gigantomania of *management*, when enlarged administrative bodies were considered to offer the most efficiency compared to small enterprises directly subordinated to the ministry. By the 1970s, the state constituted industrial self-supporting associations (*khozraschetnye ob'edineniya*), including furniture making, sawmill and wood processing, and match-making associations. These were large industrial complexes subordinated to the ministry. For example, seventeen sawmill and wood-processing associations were comprised of more than four hundred enterprises and organizations, altogether employing more than four hundred thousand people. Some specialists looked on these changes positively, insisting that they helped solve

the problem of the management of separate branches of the forestry industry.⁵²

In practice, this constant reorganization and administrative gigantomania led to numerous changes that complicated the activities of the enterprises. The Lyaskelya papermaking factory, a former Finnish enterprise that had moved to the USSR after the Soviet-Finnish War in 1944, serves as a good example of this dynamic. In 1958, it was united with the cellulose and papermaking plant in Harlu, a settlement located nearby. Between 1944 and 1951, both were subordinated to the industrial association of the papermaking industry and then moved to another until 1953, only to be subordinated to the previous association once again until 1955. It then moved to the cellulose-making association until 1957, and later to the Karelian sovnarkhoz as part of the sovnarkhoz reform. In 1961, the enterprises were reformed into the Lyaskelya cellulose and papermaking plant, which changed its subordination seven times. Multiple reorganizations prevented this factory, previously a prosperous Finnish enterprise, from playing a role of any real importance in Soviet forestry production. Instead, the factory was repeatedly described as outdated, nonmechanized, and quite literally bankrupt. Indeed, by the late 1980s and early 1990s, it was closed and finally abolished along with the socialist regime in Russia.

As with wood processing, various operations of wood harvesting were distributed between many organizations. A small sector belonged to hunting companies and nature reserves, the Ministry of Transport, and other ministries and economic institutions. Quite a significant proportion of forest belonged to kolkhozy and sovkhozy, the Soviet type

of collective farms. This division was fairly conventional, though, as quite often there were several similar organizations that “possessed” forests in the same region. Moreover, the Ministry of Forestry counted about two thousand geographically scattered enterprises. As a result, “logging companies were distant from central production spots [by] thousands [of] kilometers, while large structural institutions supervised territories of hundreds and sometimes thousand [of] kilometers.”⁵³ Obviously, extreme distances and rapid cuttings led to wood-processing enterprises being located further and further away from logging spots. This created complicated infrastructure that exacted huge expenses on logistics to deliver appropriate types of wood from logging spots to the industrial wood-processing enterprises. Specialists typically complained about the gap between wood-harvesting and wood-processing operations when two processes of the same industrial chain became separated from each other. They described how in the course of doing their job, harvesters did not really think about how to use the wood, while specialists working at wood-processing enterprises often blamed harvesters for industrial problems, such as low volumes and the poor quality of ready products. Another serious problem from the industrial perspective rested with the fact that some forests were declared protected territories. As industrialists complained, these forests became old and could not be used industrially, so they did not produce economic benefits.⁵⁴ Due to this, many recognized that intensive cuttings in the European part of the country led to the “depletion of forests.” They also stressed that poor management and an insufficient safety system led to numerous forest fires and the spreading of pests that damaged trees.⁵⁵ In turn, logging

companies complained about the absence of funding for reforestation. If these complaints are to be believed, by the 1970s in the northwest, the volumes of wood harvesting were disastrously high and led many to think about decreasing rather than increasing the rate of cutting, thereby breaking the logic of Soviet industrial planning that aimed for ceaseless increases in production. Most important, this gave added impulse to alarmist views and expectations about the future of forests, which saw them as a space where industrial demand and nature competed.

Warning about the prospect of wood scarcity, specialists frequently complained about interagency obstacles, the lack of expertise, and the absence of working plans as reasons for numerous problems in the industry, such as the clear-cutting of industrial forests. Some logging companies and enterprises often did not fulfill the plan. Forest species that had been demanded just perished in forests and were thrown away due to deficiencies in planning and transportation problems.⁵⁶ Sometimes, forestry harvesters did not complete the clean-cuttings needed for reforestation, and the task of keeping forests clean and healthy was obstructed by the territorial dispersion of trees along with the absence of forest roads to them. In Karelia in the late 1950s, cuttings were most intensive in the southern and western areas due to the availability of railroad transport, yet were no less intensive in other parts of the country.⁵⁷ One forestry inspection noted that “because of the lack of clean-cuttings in the forests of Karelian Peninsula . . . we observe the large-scale *dying* of trees. . . . [F]orests are wasted, and forest fire danger increases.”⁵⁸ Professional observations often anthropomorphized forests with metaphors such as living and dying (and

sometimes dead) species. Dead forests in their language usually implied perished forests, but wood was associated with the technology-enabled continuation of the life of the forest. Official documents and specialists' reports ritually blamed local forestry officials for their "careless" attitude toward forests, frequently describing the forests as perishing organisms because of the lack of proper care. Particularly by the end of the Soviet epoch, the lack of care and overexploitation, in their view, had led to the destruction and damaging of economically useful species. This depiction revealed how specialists related the living cycle of nature to industrial purposes along with its economic service for the society and regime. Care and attention in this sense implied the proper economic use of forests—strands that would come together and develop as a discourse of industrially embedded ecology within the industry.

Specialists recognized that the forestry industry as a whole was in crisis, wracked by practices they described as low in productivity, wasteful, and weak. This, they believed, would lead to wood scarcity and the depletion of industrially appropriate forests in the future. Technology played a peculiar role in these explanations, casting the impending wood crisis as a matter of poor technology: technology had performed badly in the northwestern region, where it enabled intensive clear-cuttings; the absence of technologies and infrastructures to exploit the heavily forested eastern lands also contributed to this expectation of crisis. An alarmist expectation of the coming shortage of wood supply recast nature as a finite resource, contradicting the long-held image of green abundance and triggering further thinking about how to keep it from depletion beyond just administrative

reforms. The constant reorganization of forestry management demonstrated the government's recognition of the crisis of wood harvesting and other forestry industry branches from the economic and technological perspectives too, as specialists did.

Apart from institutional changes, which obviously had little real effect on the development of the forestry industry, there were other solutions suggested by specialists as significant alternatives to state-led institutional reorganization. Among these was the imperial initiative of expanding wood harvesting into the eastern parts of the country as part of large-scale advancement to Siberia and the Far East, which many saw as a possible solution for numerous critical problems. As specialists believed, extensive advancement would have to be combined with rational and intensive methods, finding the necessary instruments to overcome the wood crisis and forest depletion. This would simultaneously promise more efficient industrial use and a safer future for the Soviet Union's green stocks. And at the intersection of economic interest and finite resource availability, industrial ecology would emerge as a form of care about the future of natural resources.

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By: Elena Kochetkova

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