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Consolidating the Pulping Economy in Finland

In Finland, the post-WWII establishment of a strong paper and pulp industry is the pivotal cause for clearcutting and decreasing the forest biodiversity (Mönkkönen, 2022). This sector relies on transforming forests into resource reserves primarily for the pulp and paper industry and energywood. The production of fiber mass and the accompanying energy it produces are the key in delineating how forests are used, what kind of trees are grown, where, for how long, and based on what logic. In the fast-growth forests trees compete to reach heights faster, which means they are not producing as good material for wood construction as is found in natural forest trees. Undergrowth is also periodically removed, which harms biodiversity. As this process is very extensive and touches most Finnish forests, it is apt to speak of a regionally dominant sector that changes land areas to mirror its own long-term interests. The fiber and pulpwood interests lock in the use of lands for short-rotation pulp and energywood production by extending tree plantations over natural forests. This happens at the expense of bigger logs and lumber, such as floor and round timber and sawlogs, resulting in less old-growth timber forests. This type of technological lock-in that affects the land use is a very deep kind of power in politics and economy.

It is a different thing to transform the physical environment, the field of matter, than it is to make changes in the social or symbolic space, where in many cases transformations can be reversed or returned to closer to their original state. If an old forest is destroyed and a tree plantation extended over the space where the old forest once stood, it is not foreseeable that that place would eventually be turned back into a similar forest as it will now most likely be retained as an economic forest. Once the physical space has been spoiled this becomes a key industry argument for not protecting it, as the industry will say it is no longer a natural forest. The longevity of this transformation – forest removal through clearcutting – is also due to the fast-advancing climate catastrophe, which has not been considered in forest use planning and future horizons. This kind of lack of vision, which could be called recklessness, is also reigning in many other parts of the world and tropical

forests, but it is astounding to note that this is also the case in Finland, which is widely considered to be a rational welfare state. Most trees planted are spruce and pine, although it is already clear now, and especially in the coming decades, that climate warming and diseases, pests, and other changes will transform the growth conditions in Finland to such a degree that deciduous trees will gain space from coniferous trees. Spruce monocultures will suffer especially in Southern Finland due to the expectation of longer and hotter dry seasons, which increases bark beetle outbreaks and other problems that lead to tree loss. It is expected in some future forecasts that the share of pine and birch will grow dramatically, while the share of spruce will decrease to only 8 percent, by the end of the twenty-first century (Tallinen, 2019). It would therefore be wiser to already begin planting trees that can withstand the hotter and more varied climate expected in the future.

The irrationality reflects how destructive things can get when the destiny of a forest is decided by a mostly invisibly acting force like the market, but which on closer inspection is a specific bound economic grouping that is using political power to support its interests. In Finland, this is a limited group of corporate and landowners whose way of treating forests and driving their interests are shadowed by varying discourses and framings. Next, I will depict the history of how this sector was formed in Finland.

History of the Finnish Pulpwood System

In Chapter 8, I briefly mentioned the birth of modern forestry, which was premised on a clearcutting strategy; however, I will now delve into more detail about the historical roots and growth of modern Finnish forestry. As mentioned, clearcutting has a very short history in Finland, becoming the dominant method at the end of the 1940s (being used in some cases already by the First World War), but the impacts have been tremendous. In practice, clearcutting has resulted in the removal of old forest in most areas of Finland and especially in Southern Finland. The forests were then replaced by short-aged, single, or only few-species plantation-style sapling or seeding stands. Currently, approximately two-thirds of the forest land cover of Southern and Central Finland are young forests or sapling stands, while forests with a high timber volume are found only as small islands (Pukkala, 2017b). Industrial forest use started already in the sixteenth century in Finland, and expanded immensely with the start of wood-based paper production in the late nineteenth century (Kuisma, 2006; Metsäalan Ammattilehti, 2012). The current type of intensive forest economy, the RDPE of pulping, started to coalesce in the 1940s and was an important sector for paying the war indemnity to Soviet Union, thereby rebuilding and "developing" Finland. This development and modernization in Finland pushed structural social change, essentially changing Finland from an agrarian to an industrial society (Kekkonen, 2011). In

the 1948 Statement on Selection Felling, the state made clearcutting the only available way of practicing forestry, forcing a forestry style of growing one generation of trees at a time, sequentially. In the 1950s, logging volumes tripled in many parts of Finland in comparison to the 1920s (Enbuske, 2010: 261; Jokiranta et al., 2019). The impetus for this came especially from the "needs of the forest industry," although the official explanation was the "bad condition of forests," with clearcutting promoted as the cheapest and fastest way for the industry to get large amounts of cheap wood to their mills (Jokiranta et al., 2019: 37). This change in strategy was not optimal for forest owners, but the power of the paper and pulp industry managed to establish an understanding among the forest owners and their lobby groups that their interests would also be the interests of forest owners, thus enforcing clearcutting.

However, as the forest industry grew, and the budding Finnish welfare state became evermore tied into its success, a wood shortage was experienced in the 1960s. As a result, national programs aimed at forest growth were designed and implemented. Until 1975, the tree plantation model and the usage of heavy machinery spread to essentially all forest owner groups, which resulted in pine plantations being expanded over natural forests all around the country on both state and private lands (Jokiranta et al., 2019). Lähde (2015: 8), who made perhaps the most well-known long-term critique of the Finnish forest industry's clearcutting model, considers the prime motor in this violent reduction of natural forests to be that "the industry did not want to pay logwood price" for its radically expanded demand for raw material for making pulp and paper. The 1948 Statement against selective logging was thus drafted and, according to Lähde, forest owners were obliged to do low thinning and clearcutting, which consistently produced lots of cheap, small-sized wood. This system of periodical forest growing; that is, one forest after another, ensures that clearcutting happens sooner rather than later. Lähde (2015) describes how this clearcutting model was not received enthusiastically but required extensive lobbying wherein the industrial, intensive periodical growing was turned into a patriotic issue. Under this framing, all "forest men" who supported the national interests needed to adopt the new forestry practice in all forests. In fact, retaining set-aside forests for nonclearcutting practices was – and largely still is – framed as action that goes against the overall public, national, patriotic interest – meaning the interests of those within the pulping RDPE. This has made it difficult to change the forestry model into one where fragmentation, biodiversity loss, and degradation, loss of old-growth and natural forests, and loss of forest species due to excessive clearcutting would be transformed into a model where selective logging, ecological corridors, and conservation areas would also be allowed to exist to a greater extent. The reasons for not moving away from clearcutting, according to Lähde (2015: 14), have been "different kinds of laws, guidelines and regulations, fixed attitudes, poor forest knowledge, poor professional skills, and the power and money interests of organizations." This

shows how, once it is established, a dominant and hegemonic RDPE can make it very hard to change the direction of how nature is used and the ensuing relations, even when change and the results of change would be rational.

While the 2014 Finnish Forest Act did reallow growing different age trees and forests, not enough resources, support, or guidance have been given for the shift by the key forest industry actors (Lähde, 2015; Kröger & Raitio, 2017). According to Lähde (2015: 14), this is because the forestry specialists have not been trained well enough on the selective logging practices and "do everything they can to impede continuous cover silviculture, not advising properly the interested forest owners." It is common to hear in Finland that private forest owners are not being told about continuous cover forestry, which often is not even laid out as an option. Yet, knowledge does exist and there are test sites and training on different types of forestry, including CCF, which were also present in the twentieth century. The key explanation may thus not be the lack of knowledge, but the prioritization of the profit-making interests of the pulp and paper industry, along with active choices by leading governmental and corporate actors. The pulping RDPE still holds hegemony, although forest researchers, progressive state administrators, specialists, and environmentalists have become more aligned in their views since 2014, as they have been sidelined by the industry and government hard-liners supporting the productivist "bioeconomy" agenda (Kröger & Raitio, 2017).

In addition, many forest owners have become increasingly critical of clearcutting since the 1970s, as the bad sides of clearcutting have surfaced (Lähde, 2015: 144). There were trials in the 1970s–1980s against so-called *harsintahakkuu* (selection felling), for "destroying" forests (Juntti & Ruohonen, 2023). In peak years over 100,000 hectares of private landholders' forests were "pacified" from their owners (in a quite Orwellian use of words, pacification in this case does not mean conservation, but the opposite). At times state officials forcibly clearcut these private forests (Juntti & Ruohonen, 2023). Since the 1940s, the state needed to control the forests to serve the continued development and growth strategy that it pursued, thus ensuring cheap prime resources. According to Kekkonen (2011: 78), "intensive forestry thinking penetrated the whole forest industry" and state programs subsidized mechanization, building a vast network of logging roads to private forests and plantations, draining especially wet areas and bogs, clearcutting, and aerial sprayings. In essence, an extractivist forest industry was created without proper research or consideration of what the most productive and sustainable form of forestry would be.

Finnish Forestry Extractivism and Political Power

This forestry extractivism can be considered as hyper-extractivist in the context of northernmost Lapland, in the Sápmi territories, where clearcutting ancient forests

that are required for the natural feeding of the freely roaming reindeer of the Sámi removes that forest land from use for an inordinately long time due to very slow Arctic growth rates and the fragile environments (Last, 2023). Clearcutting in Northern Finland and Sápmi is more akin to "mining of forest capital" than forestry (see Tahvonen in Jokiranta et al., 2019: 193). It is for these reasons that hyper-extractivism really is the most apt term to define this logic, practice, and its results.

The twentieth century and current extractivisms in Northern Finland are based on the colonization and taking of Sámi land rights by the Finnish state and settler colonialists in a violent and forced manner (Ranta & Kanninen, 2019). When the first forest laws were passed in 1886, all forests that were considered as not having a clear owner were moved under state ownership. Until this time, Sámi forests had been commonly owned by the Sámi communities and they had even paid taxes on them to the state, sometimes for centuries, but with the passage of the Forest Law of 1886 these forests were suddenly seen as wilderness areas without owners. There are no documents of transfer of these lands to the state, which is a reason many Sámi activists consider that these lands should still belong to the local Sámi families. There were also several cases where Sámi reindeer herders were murdered by Finnish settlers to gain access to their grazing grounds, as detailed by Ranta and Kanninen (2019).

Since the 1960s there has been a major shift in power in the political economy of forestry, from forest owners to the paper and pulp industry. In the early 1960s the common practice where private forest sellers felled the logs themselves and delivered them to factory gates waned. The power of "industry forest departments that took care of timber harvesting mostly as stumpage sales" increased (Kekkonen, 2011: 79), although the option of selling wood from roadsides continued to be exercised until the 2000s, when the industry stopped paying enough extra for this kind of "sale at delivered price," according to Jyri Mikkola. The expansion of this model of stumpage sales is now dominant and has given the upper hand in wood procurement to the industry (Kekkonen, 2011). Horses and manpower were replaced "fast and dramatically" by mechanization of forest work, which took place due to the economic interests of the forest industry, not for some other reason, like the low availability of rural labor (Kekkonen, 2011: 82). This trend of clearcut-driving mechanization has intensified since the 1970s, harvesters becoming ever more heavy, expensive, and specialized, requiring their maximum usage to be able to pay back the loans needed to get the machine in the first place. This meant heavy pressure on forests and difficulties surrounding changing the model, as there were so many sunk costs. It has become practically impossible to use harvesters other than the heavy and expensive machines made by Ponsse, John Deere, and other leading companies (Vaara, 2013). A leading reason for this is because

the paradigm of heavy harvesters is based on cost-effectiveness and not on volume productivity, which means it is efficiently protected from competition.

The clearcutting model has been supported in politics, especially by the Agrarian Party (later Centre Party), which was "heavily funded in the 1960s by the forest industry," causing the industry and party to become closely intertwinedand offering a "direct connection to the government" for companies (Kekkonen, 2011: 88). The aim was economic growth, rather than offering enough raw material to supply the demand, and the forest industry was seen as the prime tool for this crucial national economic growth aim, which meant going beyond answering existing economic, social, and cultural needs (Viitala, 2004: 41). In the crucial consolidation period of 1960–1990, the forestry-planning network gradually developed into a "self-sufficient and inward-warming closed group of experts," which got accustomed to being the strong, leading authority and using its power in forest-related decision-making and planning (Eriksson, 1995: 142–148). The forest economy and policymaking were centralized and hierarchized, forming what was essentially a closed network (Kekkonen, 2011: 98).

In the preparation for the 2014 Forest Act, separate stakeholders and experts were also included in the policymaking process (Kröger & Raitio, 2017). However, they were sidelined in the subsequent era of bioeconomy, where experts have not been listened to and forestry has intensified again in a kind of revenge of the extractivist RDPE. After the 2014 law change, the government drafted the "bioeconomy" policies mostly just with industry participation, which led to sidelining ecological and other forest researchers independent of the industry, as the former had to ensure some ways to continue the hegemony and dominance once it became legal for CCF to advance. This has taken place amid the neoliberal corporate globalization of the post-1990 period, where first there was a strong national consolidation of state and private forestry capital, followed by mergers and acquisitions that created global forest industry behemoths. The current corporate activities "are not driven by national interests," and technical and organizational change have disconnected logging once and for all from the interests of the countryside (Kekkonen, 2011: 56). Decisions are now mostly made by large corporations, which were formed in the 1990s as Finland's EU membership made it illegal to continue the pre-1990s practice of a sales cartel. In this sales cartel, smaller and bigger companies worked together to define prices and sales terms of international forest produce (Kauppi & Kettunen, 2022).

This consolidation of power with a small elite can be seen as a key reason when explaining the continuation of clearcutting and forest loss, as the forest sector has become a sort of private venture with a relatively small group of decision-makers. However, this group enjoys considerable support among forest owners and others in society and manages to retain an atmosphere of fear, which leads people to not

talk about any feelings related to forest loss, values, and valuations of the forest that fall outside of economics. Ultimately, clearcutting spreads because forests are not valued. It seems that money and the things you can buy with it are more valuable to key decision-makers. Yet, there is more at play here and economic gain cannot be the main reason, as objectively even more money could be made by less intensive forestry practices that minimize the need for clearcutting.

Consolidating the Logic of Pulp Capitalism

The political economic system has its own internal logic and hierarchy, which guides land use more than any pressure from society or the rational maximization of national gain. Kortelainen (1996: 85–94) unpacks how the nature relation of the forest industry has been governed by a particular economic logic. This type of anthropocentrism seems common among those involved in the forest industry job market. One hears qualms from forest owners and users, for example, from hunters who would like to have more game in the forest. There is a significant conflict of interest between those who would like to expand pine plantations and moose hunters, as the latter would want to retain a high number of moose in the forests and the former wants to diminish the number of moose to avoid seedlings being eaten. In both cases, there is anthropocentrism, but in the case of the forest industry the rational is to maximize pulp, paper, and other forest product revenue for the quartile economy and shareholders.

The period of forced clearcutting has been called by Kunttu (2017) a dark episode in Finnish forest history. Until 1975 the main (only) objective of the forest economy was maintaining maximum fiber wood production (Kuuluvainen et al., 2004). Kellokumpu and Säynäjäkangas (2022: 40) see this emphasis on increasing the fiber wood growth volume as creating the basis for the pulp sector to become the dominant form of the forest industry in Finland, which they label as fiber wood or pulp capitalism. This was very detrimental to the forest-dependent species and webs of life present in the forest ecology, as the aim to reduce the capital costs of expensive harvesters led to also harvesting in the summer and springtime, which is in radical contradiction with the principles of biological forestry, argues Vaara (2013). It is not necessary to harvest in the summer, as wood can be stored from winter harvests, but the capital costs of harvesters create a kind of technological push mandating the usage of machinery year-round. Lumberjack-driven logging was replaced by harvester-based forestry between the mid-1970s and 1990s. Modern forestry extractivism could thus be seen in its visible terms as a form of violence by machines against the web of life present and dependent on the forest. However, CCF is also done by heavy machines, which enable precision logging. Thus, the key issue in this sense is not necessarily the harvesters themselves, but

the underlying logic and practices of clearcutting and pulping, and the focus on wasteful energywood.

After clearcutting an area, one must engage in an expensive and mechanized process for tree planting, which is economically draining and time-consuming for forest owners (Kunttu, 2017). To capture this new market, there was a surge in specialist tree-planting institutions; for example, MHY, Forest Centers, and forestry research institutes like Tapio. These entities turned the plantation forestry model and the accompanying sapling trade into a lucrative business for themselves; for example, by the 1980s Tapio provided over 80 percent of the saplings used in private forests (Kunttu, 2017). This move toward specialist tree planting was criticized by MTK in 1978 (Kunttu, 2017), but to no avail. The inability of MTK to counter these changes suggests that in Finland the RDPE of pulping (including Tapio) had already become dominant, if not yet hegemonic. Later, the hegemony was further consolidated as MTK shifted to become a vehement defender of clearcutting, thus becoming part of the RDPE. Lauri Vaara, who worked as an expert for Tapio, describes this as a system where there were almost no constraints on how the centralized institutions used their power to direct forest owners via legal mandates. In short, the organizational and prerogative measures meant that political control "has been eliminated from the steering of [the] forest economy" (Vaara, 2013: 216). Vaara (2013: 216) argued that "advocacy for forest owners' rights and interests, surveillance by the justice system and media, critical forest research, and labor services market management" have been eliminated, which suggests a very deep dominance and hegemony. In 1983, when Vaara was working for Tapio, he wrote about the alternative forest economy and the problems of governance and harvesting practices by companies. After that publication, a forest company representative in a leading position suggested that Vaara needed to be fired from Tapio (Vaara, 2013). Similarly, in 1989, the state-run Finnish Forest Research Institute (Metla), removed Erkki Lähde, another key critic of clearcutting, from directing the research on CCF and banned other Metla researchers from going to the Lähde-established test sites for continuous cover forestry. According to Jokiranta et al. (2019), through these actions Metla tried to silence the critical voices within forest research and halt the search for alternatives. Due to this elimination of counterpower and space for dissent, Vaara (2013) asserts that forest sector governance has become lopsided, requiring clearcutting and tree plantations to ensure the sales of saplings. Major moves are taken to retain this hegemony, "The distortion is hidden by the massive advertising of the forest economy efficiency by all the groups" (Vaara, 2013: 216). The RDPE dominance was particularly visible before the 2014 Forest Act, when the "services of forest economy" were "captured as the monopoly of the key actors" in the forest sector, argued Vaara (2013: 211). These moves turned the processes that molded the forest into being driven by producers, rather than being driven by demand.

I see that there is a general misunderstanding about the function of market economies, as there is often the claim that demand is the driving force in steering production. However, when observing RDPEs, one notices how huge chunks of the world economy are driven by the RDPEs interests, which are firmly on the producer side. In pre-2014 Finland the forest owners' lobby group (MTK) "sold as a monopoly the services of timber growing and guidance," while the forest companies sold as a near-monopoly the "services of harvesting and transport" and the Forest Centers sold "the planning, government-subsidized works, and saplings" (Vaara, 2013: 211). Due to this situation, Vaara (2013: 17) observed that the costs of tree growing, harvesting, and retaining the organizations that assist in these processes are borne by the forest owners, while the companies and centralized organizations reap the profits and retain the power. Forest owners were forced to adopt the clearcut–plantation model, as since the 1950s the state forest administrators started to demand, in collusion with forest companies, that wood sold needs to be prestamped and companies "would not buy un-stamped forest. After that one could refrain from stamping, if a forest owner did not agree to clearcutting and plantation" (Vaara, 2013: 25).

Meanwhile, forest and swamp trenching were heavily subsidized by the state. In the 1960s, a subsidy for drainage paid 10 percent of the value of a trenching contract to Forestry Boards, which therefore tried to maximize the size and cost of drainage extension (Vaara, 2013: 148). This led to over 800,000 hectares of futile trenching of swamps, alongside the destruction of huge numbers of lakes and rivers by muddying and overfertilizing them (*Turun Sanomat*, 2013). By 2019, only five per milles of the drained swamps had been restored ecologically, while the problem of trenches persists in creating damage environmentally and climatically.

In the 1960s–1970s, the private forest industry sidelined the state in steering and defining forest policy and economics. In 1964, MTK and the Finnish forest industry lobby group (Suomen puunjalostusteollisuuden keskusliitto [Finnish Confederation of Wood Processing Industries]), created a funding committee for forest economy, which "in practice led the forest sector between 1965–1972" (Vaara, 2013: 160). These private groups wanted to make forestry even more intensive than the state, creating a series of new funding programs for the forest economy, called MERA I, II, and III, funded by the state, bonds, and the World Bank, for example (Nöjd et al., 2021). This period marks the critical juncture when clearcutting and plantation expansion rose rapidly, as did forest leases and the introduction of harvesters. This was possible as the key forestry decision-makers, such as Forestry Boards, had been given independence. The state and the Ministry of Agriculture had withdrawn themselves from both steering and inspection functions. These changes essentially gave the corporations the right to govern, argues Vaara (2013). The World Bank even funded MERA, which shows how the RDPE

links to the deepening neoliberal, globalized world-ecology. Even though one of the three major multinational paper and pulp corporations in Finland, Metsä Group, is owned by the Metsäliitto, which is a cooperative of 90,000 Finnish forest owners (see Metsä Group, n.d.), the major organizations, including MTK, have strayed far from their original purpose of safeguarding forest owner interests, according to Vaara (2013).

The many lawsuits against the buying cartel in the past decades support the claims mentioned. There were suits brought by hundreds of forest owners against the three biggest paper companies, UPM, Stora Enso, and Metsä Group, which charged that the companies had created a cartel to pay lower, agreed prices, instead of allowing for market-based competition. The cartel resembled a monopoly situation. The companies were found guilty of forming a cartel between 1997 and 2004 and engaging in illegal price cooperation, which was to the detriment of forest owners who sued for the losses in wood sales (Varho, 2016). The court ordered Metsäliitto and Stora Enso to pay tens of millions of euros in 2009, while UPM revealed the cartel to competition authorities and thus avoided the fines. Over 400,000 forest owners had sold wood during the period to these companies, thus the losses and potential payout could amount to billions of euros. Those on the losing side also included the state-owned Metsähallitus, churches, municipalities, and others. Metsähallitus also sued the companies, but ultimately lost in court in 2016 due to a lack of evidence. They were then ordered to pay the legal costs of the forest companies, which totaled over 8 million euros. After this the companies demanded the 600 private forest owners drop their charges and pay the legal costs of the companies (Varho, 2016). This move baffled the sense of justice of many and was seen as intimidation tactic that sent the message to not meddle with the practices of the forestry sector. These are all signs of a dominant industrial sector. In 2021, the EU Commission carried out surprise inspections in the headquarters of UPM, Stora Enso, and Metsä Fibre, suspecting they had a pulp cartel in violation of the EU competition laws (Hiilamo & Pantzar, 2021). In June 2023, the EU Commission ended the investigation, claiming it did not have enough grounds to continue with the investigation; however, the Commission emphasized that this was not proof that the activities in the pulp sector were aligned with the EU laws (Demokraatti, 2023).

Current Politics of Forests: Carbon, Logging Volumes, and Bioeconomy Policies

In the overall setting, the large paper companies and energywood burners can avoid taking responsibility and paying for the costs of ecological-climatic transition, which are now being paid by the state, forest owners, other sectors, and other

forest users. The dominance of the pulp corporations has meant that harvesting is done too early and too extensively, which, as of 2021, has caused Finnish land use to turn from a net carbon sink into a source of emissions. Meanwhile the emissions in Finland in non-LULUCF sectors have decreased from about 80 million tons of CO_2 in 2003 to less than 50 million tons of CO_2 after 2021. Those sectors that fall under the LULUCF exemptions increased their emissions from approximately negative 25 million tons of CO_2 in 2003 to over zero by 2021 (thus turning from a sink to a source of carbon) (Statistics Finland, 2022). This was principally due to increased logging under the guise of "bioeconomy," which has eaten away the benefits attained by lowering emissions in society at large. Pulp mills emit about double the carbon dioxide for each ton of pulp produced – remember these producers do not need to compensate or buy emission rights for these activities, as the sector is considered "green" in the current carbon regulation and trading schemes, and claims to be "carbon-free" in many of its mills (see Metsä Group, 2024). Thus, these "bioeconomy" mills have used the possibility of lowered overall Finnish emissions to increase their private wealth and revenue making, while simultaneously they are not participating in the common cause of combating climate change. The emissions are calculated at the LULUCF phase, when wood is harvested, but then the forest industry claims that it would store the carbon. This is not the case, as the processes required for paper pulping result in massive carbon emissions and is a direct cause of global warming. This is unjust to other sectors, which do have to pay compensation for their emissions, such as the metal industry, and to the taxpayers who need to pay for buying emission rights from other EU states.

To somewhat remedy the situation, Lauri Mehtätalo, a professor of forest planning, has suggested that the rotation cycle should be extended by 10–20 years, which postpones the harvesting and allows increased growth by shifting the harvesting age from the current 60–100 years to 70–120 years, which would be ecologically beneficial (Puttonen, 2023). The Chair of the Finnish Climate Change Panel, Professor Markku Ollikainen, argues that to meet the requirement of compensating the 49–81 million tons of extra emissions between 2021 and 2025, the forest industry should also participate, so that the high costs of buying emissions rights from abroad – which needs to be done if harvesting is not curtailed – are not passed on to the taxpayers (Ollikainen, 2023). Mehtätalo sees no other option to attain the EU carbon sink goals than to delimit harvesting levels. This is because Finland has reached the upper limit of forest growth of 110 MCM per year and the lack of growth is not expected to curtail the emissions.

Most wood harvested now quickly returns to the atmosphere as carbon, as only 4 percent of wood products constitute a long-term carbon sink (most go to pulp, paper, cardboard, burning, and even sawn wood is burned after used for a short time). In 2021, forest removal in Finland was 91.6 MCM, of which 9.7 MCM were

wasted in harvests and 6.8 MCM was used by households, mostly for heating. The industry used 69.5 MCM, of which 36.7 MCM went directly for pulp, 29 MCM for timber, and 3.8 MCM to wood chips for energywood. As the share of pulping is so high, and the amount of wood carbon stored in longer-term products such as housing, furniture, and infrastructure is low, Mehtätalo sees that postponing the harvesting age would help in the transition from pulp to lumber and long-term wood products. Yet, the figures given hide the fact that in processes of pulping and making sawn timber most of the wood parts are used directly or indirectly for wood energy. Thus, when the usage of dry wood is measured in tons, about 15 million tons were used for forest products in 2022, while about 22 million tons were used for wood energy. Until 2007, these figures followed each other closely, with both between 15 and 19 million tons, but since then wood energy usage has grown substantially (Luke, 2023b). Meanwhile, the added value of the pulp and paper sector per 10 cubic meters of wood has decreased dramatically, from 1.5 to 2.3 billion euros per year during 1995–2005 to about 0.7 billion euros in 2018. Thus, Professor Ollikainen thinks that curtailing harvests would guide the forest industry to use wood in less wasteful ways and to compete for wood with the energywood sector, which now uses 60 percent of dry wood (Vadén & Majava, 2023).[1]

As the average added value in the forest industry in 2024 was just half of what it was approximately 20 years ago, this drives the trend of "trying to all the time increase volumes" of logging, according to Jyri Mikkola. "When paper does not sell then pulp is sold," this meaning that a cubic meter of wood "brings just half of the profit" as pulp in comparison to being processed into wood products. This trend has led to increasing logging volume to retain quartile profits; without this lowering of added value of wood "the forest nature would on average be doing quite well," but instead, now, "all growth is foreclosed."

Nevertheless, in 2022, forest industry exports still represented about 18 percent of the value of goods exports of Finland (Luke, 2023a), which totaled 14.6 billion euros and helps to explain the continued political support for the sector. Wood product industries (sawn goods and plywood) represented €4.1, while pulp and paper industries €10.5. The large export share of the fiber industry partly explains why the state has continued to actively promote the clearcutting–pulping model, instead of the wood product sector that could be maintained and grown by the continuous cover model. The usage of sawn wood in Finland has decreased dramatically, from over 5 MCM in 2005 to less than 2 MCM in 2024, with practically all

[1] According to Vadén and Majava (2023), using forests as sources of energywood is the most wasteful form of (forest) land use. For example, in Finland an estimated 1,300–1,500 km^2 is required to produce a terawatt hour of energy. Other forms of producing energy are much more energy efficient and require fewer land areas to be removed of forests.

Figure 9.1 Logs and sawdust at the frontlines of clearcut logging in Finland. In this location, which is next to houses, an old spruce forest with tall trees once existed. South Karelia, November 2022. Photo by author.

the sawn wood produced in Finland going to construction (Aalto, 2024). The government has discontinued programs that support wood construction and watered down the demands for considering climatic impacts in laws, as asserted in 2024 by Tino Aalto, the chief operating officer (CEO) of Sahateollisuus RY, the industry association of the sawmill sector in Finland (Aalto, 2024). This was lamented by the sawn wood and construction industry, showing how the pulp and energywood sectors are supported by heavy subsidies, while more climate-friendly sectors, using trunks, are not. The sawn wood industry can be seen as subjected to the paper and pulp corporations, which also own sawmills. Currently a smaller part of a single log brought to a sawmill will end up as sawn timber, as a larger part than before of the log is purportedly taken as pulp chip wood (interview with Jyri Mikkola, March 2024). That pulp chip cannot contain bark, so "now all logs are debarked," while earlier bark was not removed so there was more board wood. Previously before being sawn into lath, the other log parts such as stump edges were used in construction, "but now this also goes to pulp chip at the sawmill as this has a better profit margin than lath" (see Figure 9.1).

The government has actively tried to increase production volumes of pulp- and energywood, and create new and added-value product segments through several forest policies, such as the Forest Cluster Research Strategy (passed in 2006 and

updated in 2010 to shift attention back to pulp from other bioproducts, as it was noticed then that pulping was not ending in Finland as expected, Jyri Mikkola explained), the 2014 National Bioeconomy Strategy (updated 2020–2021), the 2020 Low Carbon Roadmap of the Forest Sector, and the 2019 National Forest Strategy (see Vadén et al., 2021). The last one of these aims to turn private forest owners' forestry into a more corporate form to make them more "active," "growth-centered," and "profitable" (Ministry of Agriculture and Forestry, 2019: 44, 59). However, these measures have mostly just increased production volumes and have not led to new product lines or added value, as Jakob Donner-Amnell has documented extensively (Puukila, 2023).

A key rupture took place in the 2000s, when paper demand collapsed; yet, due to the power and inertia of the RDPE, the sector clung too long and too intensely to paper production. The only new sector the paper sector betted heavily on was wood-based biofuels, with UPM opening a large biodiesel plant in Lappeenranta. However, these ventures flopped as the price of oil did not skyrocket and electrification became the key driver in car markets, which the forest industry did not manage to foresee (Puukila, 2024). Since 2013, cardboard, wood products, and especially pulp have been the key products, not paper. According to Donner-Amnell, with whom I have spoken several times at length throughout the past several years, the forest sector is in a crisis, but this is not yet recognized by the companies, which makes it harder to remedy the situation. He sees that it is difficult to try to increase the economic value-adding by the forest sector without a considerable increase in state and EU investments. Even with additional investment the economic future of the sector depends on the global market and technology developments, as well as other sectors such as the petrochemical sector, which are more powerful globally than the forest sector when it comes to designing the key policy and subsidy lines for raw material usage. China has also become the core of the global paper and pulp sector in many senses, as it is actively trying to establish its own pulp sector, which could lead to a lesser demand for pulp from Finland (Donner-Amnell, personal communication, 2023).

New Contentious Forest Politics and Debates

Since 2016, the clearcutting focus of Finnish forestry has received increased criticism and outright resistance by more vocal activist groups. This is due in part to the rise of pulping, the increase in harvesting, and the overall rise in environmental and climate consciousness and movements, especially among young people. This has resulted in the development of Metsäliike, which is an active and more radical forest movement. This forest activism is aligned with the views of many experts, researchers, and environmentalists who have been largely sidelined in the forest

policy decision-making, which is mostly revolving around productivism under the guise of "bioeconomy." This dominant pathway "is based less on science, (self-) criticism, or autonomous state bureaucracies, and more on governmental decision-making that is strongly aligned with the wishes of industry, landholders, and the Ministry of Agriculture and Forestry" (Kröger & Raitio, 2017: 12).[2] In 2017, over 60 worried researchers made a public statement calling for the government to follow science and not increase logging levels through its bioeconomy strategy, which would cause major negative impacts to the climate and biodiversity (BIOS, 2017). In 2022, the country's leading conservative newspaper, *Helsingin Sanomat*, published an article based on the Finnish Climate Change Panel's report on the state of forestry, titled, "Finnish Forests are being Logged for Reasons that Have No Scientific Basis" (Saavalainen, 2022). The report assesses the claims made about the supposed climate benefits of the current forestry practices, showing how the increase of harvesting is not an act combating climate change, nor is it increasing wood construction or the use of wood products (Seppälä et al., 2022). The loss of carbon sinks in forests is due to harvesting practices that outweigh the benefits gained from carbon storage in wood construction. Seppälä et al. (2022) recommend 72 MCM per year as the upper limit of harvesting, which should then be decreased year on year. Between 2000 and 2014 an average of 60 MCM were logged yearly (Landström et al., 2021: 116), the jump after that represents too drastic an increase.

For years I have observed the public debates and discussions around forests in media, social media, and different events and places in Finland. Based on these observations, it seems that it has been very hard for the industry, pro-industry decision-makers, forestry professionals, and quite a few forest owners "inside the system" to give space to recognize or accept the findings of latest scientific research on forestry and forest situation. This is because clearcutting has been established based on private interests rather than interdisciplinary research and debate (Jalonen et al., 2006; Parkatti, 2021). This means the proponents of clearcutting find it very hard to accept other viewpoints. Forestry research in Finland focused for a long

[2] However, Jyri Mikkola from SLL told me that he and other experienced forestry and conservation professionals have had some influence on decision-making since 2015 as both experts on the use of state forests and within the FSC, which is a global timber certification scheme. In his opinion, there is still space for environmental experts to influence decision-making. Yet, other critics told me that if researchers and environmental organizations would have been actually listened to, FSC would function as more than just a "greenwashing stamp," clearcutting would have been banned or radically curbed, and more forests would have been protected. Mikkola defended FSC and argued that in practice "only FSC retained (also then) a large group of forests valuable in terms of conservation that would have been logged otherwise." Nevertheless, the FSC practices have been under very heavy criticism globally and in Finland due to lack of due diligence, the inability to verify the ethicality of wood sources, the practices used to certify tree plantations, and the feeling that it is driving further logging (Kröger, 2018; Moog et al., 2015). Greenpeace, one of the founders of FSC, ended up leaving FSC in 2018, citing a lack of transparency and monitoring, and not guaranteeing protection well enough (Greenpeace International, 2018).

time on only "advanc[ing] the clearcutting model" (Pihlajaniemi, 2018). For this reason, a forest professional and owner, Heikki Ala-Aho, argues that:

> If the forest sector wants to make a real sustainability transformation, the science of nature conservation biology should be considered in forest decision-making and steering recommendations, that is a requirement of life. The surface extent of actions by forest economy is manifested not only in the endangering of forest habitats and the species needing them but also for example in the weakened state of springs, streams, and larger bodies of water. (Siikajokilaakso, 2023a)

Ala-Aho shows a growing standpoint among forest owners by counterarguing in his newspaper opinion piece against the claim that "nothing is enough" for nature conservationists (Siikajokilaakso, 2023a). For example, he mentions that of the Northern Ostrobothnia land surface 79 percent is covered by forests, of which only 4 percent are protected. He argues that it is a reasonable aim to try and adhere to scientific finding that at least 10 percent of all nature types should be protected (Siikajokilaakso, 2023a).

In real-world politics, the rising demand and need for retaining forest cover and increasing carbon sinks has meant that the industry proponents in Finland have promulgated a view that it is better to log now rather than wait for your forests to be conserved by force. This has led to fear-based preventive logging by many forest owners in the last few years to avoid having their forest areas turned into conservation areas (Sirviö et al., 2023). *Maaseudun Tulevaisuus* (*The Future of the Countryside*), the leading newspaper of farmers in Finland, surveyed the population in remote areas in rural Finland about their feelings toward conservation: 44 percent resisted the increase in conservation and 37 percent asked for more conservation (Koivula, 2022). Of all respondents to the survey, 58 percent had a positive opinion on the Finnish and EU plans to increase conservation in 2022 (Koivula, 2022). The high level of conservation criticism coming from the countryside is important, as farmholders are in a key position to decide whether to cut their trees or not. There is a deep-seated fear among Finnish forest-owning farmers of losing control of their lands, especially to top-down forest conservation and green measures coming from the capital and the EU. They experienced this situation in the early 1990s when Natura was established in a top-down process, where forestholders' viewpoints were not considered and they were not asked if they wanted to protect their forests. In my view, this emphasis on the control of one's own lands is a key feature that helps to explain why people clearcut and why they would side with the pulping impetus on the clearcut–plantation replacement of natural forests. This way they can feel they retain control and can maintain the possibility in the future to sell wood. Many are also fearful of losing control over their forests when they die, which is a reason they demand that their forests are clearcut before they die or they mandate it in their will. The basis of this moral economy is grounded

in the concept of having private ownership of the tree biomass, which, in the ideal setting of these landholder imaginations, should be passed on in the family as an inheritance.

A further obstacle in steering away from the pulping RDPE is that clearcutting has become quite consolidated as part of the identity of forest owners and forestry professionals (Halla et al., 2020). They feel that the propositions of decreasing clearcutting and offering other methods are not respecting their knowhow and expertise and, thus, they need to resist all other suggestions. Other studies on the extractivism–identity linkage worldwide have shown how it is connected to populist politics and the rise of authoritarianism and (re)enforcement of traditional gender roles, where, for example, men working in the coal mine feel threatened by the climate change mitigation pressures and subsequently started voting for Trump in the US presidential elections (Kojola, 2019). Similar tendencies toward polarization and taking more extreme positions related to environmentalism and activists have been visible in Finland in social media and in the articles in forestry professionals' newspapers, which are more often becoming part of the post-truth media phenomenon with their nonfactual positions, science denying, and hostile claims. The issue is framed and understood, in the deep cores of identity, as defending one's job and way of life. According to Jokiranta et al. (2019: 55), a large part of forestry professionals cannot fathom that there could be alternatives to clearcutting, since that means that they would need to question the validity of the 70 years of clearcutting experimentation in Finland. It is psychologically almost impossible for these forestry practitioners to accept or voice this. Such psychological impediments to moving away from clearcuttings dominance are also linked to patriarchal structures and tight gender roles regarding masculinity and a lack of the emotional skills to allow oneself to be wrong.[3] This confluence of circumstances and attitudes

[3] According to Jyri Mikkola, there are also many women in the forestry sector and as farm heads, and many men working as key environmentalists. This is a reason he saw that attitudes learned at home and in professional education are more important in perpetuating the current situation. However, Ida Korhonen saw that "although women are active in the forest sector," there are still strong patriarchal structures in the sector (and among older environmentalist organizations). This impression is formed by her experience of having to be "always a bit tougher, more insensitive, and masculine than elsewhere to be taken seriously." For Korhonen, a student of forest sciences at the time, "The valuation of this insensitiveness and toughness is present also in forest research and communication (who has the right to have an opinion on forests)." To me this kind of view resembles ecofeminist and world-ecology and Amerindian political ontology views. These criticize structural problems, such as the patriarchy and capitalist seeking of profit on top of profit without considering the externalization of costs and the creation of negative value by causing emissions and extinctions. These strands of thought and feeling also guide research attention to the web of life with its existences (Kröger, 2022). These issues cannot be addressed simply by increasing the number of women in an industry without changing its fundamental practices. This kind of understanding of the patriarchal roots of capitalism is aligned with ecofeminism, wherein deep modern nature dualisms are seen as violently structuring many aspects of life still (see Mies, 2014). As Korhonen saw it, "the problems of forest economy are not diminished by hiring women to the sector who have to replicate the same ways of acting and working as men before them to be taken seriously." Thus, Ariel Salleh (2017) has called for an ecofeminist politics that simultaneously struggles for ecology, gender/class equality, and postcolonialism, broadly understood, including Indigenous ways of knowing and being with the land. This ecofeminism must then challenge the

does not help when trying to solve the polarization, which is spurred on by a culture hostile to discussion in social media and society.

In the current public debate events around forests, such as at the 2021 Environmental Dialogue event on forest certifications (Ympäristötieto, 2021), clearcutting is taken as the norm and CCF is seldom mentioned. The certification schemes such as the FSC and especially Programme for the Endorsement of Forest Certification (PEFC) have been heavily criticized for greenwashing and not providing real solutions to the problems at hand.[4] The "alternatives" that are presented include leaving a few retention areas or seed tree stands within the clearcut. This kind of logging has increased as a tactic to avoid calling the areas clearcut, but such areas are in practice still mostly clearcut. The critics of clearcutting are framed as pursuing the complete and strict protection of all forests, which is not the case. Forest owners are being manipulated so that they make "premonition loggings," fearing the EU will protect their forests against their will. This happens also when someone marks their forest as having high nature value (HNV) or a high conservation value (HCV), which leads to them to log these forests before they are protected, as for example Samuel Uusitalo, a rural entrepreneur, shared in the 2021 event where he was talking with researchers and industry representatives.

In May 2024, an activist and scholar battling for over two decades to promote forest conservation gave me insight into the kind of responses in the debates around clearcutting in Finland. Clearcutting is such a "central part of forestry" that "if you want to do something else," "immediately" someone starts to "talk for example about the storage of forests in a museum, as if just a few percent protection would lead right away to 100 percent, if wanting for example more conservation areas." These kinds of arguments are typical.

An anonymous politician who is a member of one Regional Council in Finland (Finland is administratively divided into these regional, provincial boards) said to me that "no one except me talks about nature there." It should be noted that these councils are highly important in establishing landscape planning, possible ecological corridors, and other planning actions that affect forests:

root cause of patriarchal capitalist nature relations. Patriarchy in relation to Finnish forests, land use, and nature have, for example, been addressed by the Skolt Sámi activist and artist Pauliina Feodoroff in the Matriarchy performance part of the 2022 Venice Biennial (Tanssin Talo, 2024). In the critique of bioeconomy visions, especially in Europe, researchers have called these out as having roots in patriarchy and extractivist attitudes and thus sharing their onto-epistemic violence and injustices, not tackling, for example, patriarchy as another root cause of clearcutting besides economic growth fixation (Ramcilovic-Suominen et al., 2022). A key way to tackle these issues is to increase care, reciprocity, respect, and recognition of varying existences.

[4] The two largest certificates in Finland are FSC and PEFC. The PEFC is not really a certificate, a forest carbon researcher described to me in a May 2024 interview, saying that in practice PEFC means just that "the law should be abided." However, PEFC is still referred to by logging decision-makers as "securing biodiversity, as if following PEFC would secure this." This certificate "does not secure biodiversity" in forests, but "means that they are in economic use," with economic forests covering over 90 percent for Finland's forests.

It is difficult to try to get even green connectivity markings to the regional plan, even those are resisted. There is a strong lobbying in the nature group of the county, many forest sector representatives.… If trying to advance these things in any position of trust, no one knows anything, no one wants to familiarize oneself with [forest protection] … and then they refer in the committee for example to not understanding themselves [about forest issues], so they follow what the chief forester says, as he is the expert.

This politician saw that the forest sector has been able to somehow fully root into Finnish spoken language that the forest expert is now the forester and that some biologist who knows about forests from a scientific perspective is not an expert. He explained further, "That they do not understand about tree growth and economic viewpoint apparently anything, so they are not listened to, but the forestry expert is listened to. So, in a way that conversation has already been cordoned off, so that we cannot enter into the area of another expert to say something."

This kind of system-internal power hierarchy and inability to even voice dissent resembles a doxa situation, in terms of Pierre Bourdieu (1991, 1977), where the debate has not even been divided into one between orthodoxy and heterodoxy, with doxa referring to the unquestioned truths in a society, not open to differing opinions which are openly discussed (Bourdieu, 1977). One grows into, socializes into a society, learning in this environment the "truths," which are, however, created by argumentation by certain entities. The maintenance of doxa is related to creation of expert habituses by practices and language, where it is taken as granted. In the case of Finnish forests, according to the regional council politician, this is expressed through the sentiment "They know best.…We have it so that regarding forests, the expert is like a god." This stance does not allow the decision-makers to use their voices fully in relation to regional planning (as so much of Finland is forest land). Rather, the chief foresters can sideline the actual, trained land use planning experts "who are more deeply trained experts." It was hard to get any land changed in the regional plan according to them to anything other than forest land, "as this is seen as [an] possible impediment to forest economy. That is really a holy cow, in this province." There were not tools to their knowledge in Finnish legislation to allow for the creation of green corridors and increased connectivity of the very fragmented remaining natural forests, although the industry claims that Finland is one of the world's most forested countries.

Especially problematic are the directed mass-scale campaigns that serve to perpetuate false claims. Kajander (2020) lists campaigns funded by forest industry actors and the state that spread erroneous information. Started in 2020, the Forests of Finland campaign (Metsien Suomi, n.d.), spread false information about forest protection through major television, radio, and outdoor advertising. A key message in this campaign is that half of the protected forests in the EU are in Finland, which is not true. The aim is to garner an image of Finnish forest policy

as sustainable and ecologically responsible. This campaign also claims that 13 percent of Finnish forests are protected, but arriving at such a high figure requires counting swamps, fells, and other practically nonwooded areas as forests. It should be noted that it would not even be possible to do clearcutting on many of these areas (such as swamps, meadows, open fells, barren lands, and so on). The 13 percent figure also includes areas that have been conserved only partially, not wholly, and where logging, even clearcutting, are allowed (such as ridge protection areas). That figure would also have to include areas that companies have voluntarily – for the time being – left outside of logging (until the company decides to log them in the future). In addition, temporary protection areas (protected for certain number of years only) are also counted in the figure. This includes the many forests that are important to reindeer herding in Sápmi, which will soon be losing their protection status because Metsähallitus protected them for only 20 years in early 2000s. Therefore, the legally binding share of actual wood-based forest land protection on a national scale is only about 6 percent (Kajander, 2020). Most of these wood-based forests are in Northern Finland, as approximately 97 percent of the Southern Finland forests are on nonprotected lands. The Forests of Finland campaign is being funded by the Finnish Forest Foundation (Suomen Metsäsäätiö), the Industrial Forestry Association (Metsäteollisuus ry), Metsähallitus, MTK, the MMM (Maa- ja metsätalousministeriö), the Bioenergy Association (Bioenergia ry), the Finnish Forest Center (Suomen metsäkeskus), the Wood Processing Engineers Association (Puunjalostusinsinöörit ry), the Forest Workers' Foundation (Metsämiesten Säätiö), and by 380,000 euros of taxpayer money. This is just one example of the widespread distortion of facts and information that legitimizes the continuation of current forestry practices. This has been especially visible in the decades-long dismissal and misrepresentation of CCF, which continues unabated in the current bioeconomy and carbon-capture debates.

There are also many other myths that are repeated by forestry practitioners although science has proven them wrong. Ala-Aho lists three such myths, starting with the claim that clearcutting would mimic natural forest disturbances such as fire, which is myth because after a fire the dead wood stays in the forest, unlike in logging (Siikajokilaakso, 2023b). Second, another detrimental and continuing practice is the drainage that is needed in lowlands after clearcutting, as the trenches are dug to compensate for the lower evaporation caused by removing the trees. These trenches have ravaged lakes and rivers, yet the practice of renewing old trenches continues, even though the RDPE proponents claim that the trenching had stopped. I have personally witnessed these differences when I have walked in forests before and after clearcuts. After clearcutting, the shallow and walkable old, moss-covered trenches have been dug very deep, much deeper than ever before. Third, there is an understanding that taking dead wood out of forests would be

a virtue as this practice makes forests "hygienic" and there continues to be buyers for the dead wood. However, retaining this wood in the forest would also be economically beneficial as dead wood is the home of thousands of forest species, including the natural enemies of the tree-eating pests and parasites that have recently turned into an epidemic that significantly impacts the health of forests and paradoxically drives the further expansion of the clearcutting–plantation nexus, especially in old spruce forests. Ala-Aho sees that "we have become estranged from the natural cycle of forest," and because of this estrangement "insane decisions on forest health and biodiversity" are taken, such as removing the dead wood (Siikajokilaakso, 2023b).

Myths are often spread from current forestry professionals to forest owners. For example, these forestry professionals claim that CCF would be suitable only in certain places and times, or it would weaken the quality of trees and forest wood; however, these claims mostly do not apply if the method is used correctly. These claims are perpetuated by different actors in Finnish forestry, for example the MHY. The director of South Karelia's MHY, Markku Vaario, argued in 2019 that adopting continuous cover forestry "is not advisable" as "it is not an economic solution to the forest owner" (Tolpo & Hakkarainen, 2019). However, the forestry specialist Aapo Latvajärvi from the Pirkanmaa MHY argued that there are some exceptions; for example, he asserted that the economic returns can be the same or better in CCF, in an optimal situation (Tolpo & Hakkarainen, 2019). Currently there is a growing body of rigorous academic research in forestry analyzing the best forestry methods (e.g. Lundmark et al., 2016; Pukkala et al., 2011; Rämö & Tahvonen, 2014). The growth of this kind of academic research was especially important in pushing for the 2014 repeal of the CCF ban in the new laws (Forest Act 1085/2013 and Forest Decree 1308/2013). Even with increased popularity of the research field, CCF literature remains scarce in comparison to RFM literature (Parkatti, 2021).

In sum, there is a very deep-seated narrative where Finnish forestry has been framed as a sustainable, world-class system that can be and has been exported abroad. The so-called successful Finnish forestry model is used abroad to market mega pulp mill projects to the Global South, where people wish to develop as Finland did. However, this cannot and will not happen in these areas of the Global South as the Finnish corporations own or control the bulk of the lands, not the local small forest owners as is the case in Finland (Kröger, 2013a). Challenging forestry in Finland means stepping on the many vested interests that form the core of the Finnish node of global forestry capitalism. Finland is a frontrunner and core proponent of global forestry in terms of selling pulping plans, machinery, knowhow, and worldviews. This generates huge revenues for those working in the broader forest consulting and technology sectors. Thus, what happens in Finland and its moral

economy does not stay in Finland. There have been truly global repercussions due to how the key players in Finland understand forests. In this overarching climate and moral economy, resistance means challenging a development narrative where the stench from pulping processes is called the "smell of money" in Finnish pulp mill towns.

Who Would Lose with Diminished Clearcutting?

In trying to understand who has the interest and motivation to try to retain the clearcutting–plantation RDPE, it is useful to look at who stands to lose their established business revenues if clearcutting is reduced and/or the pulping model is challenged. To begin, Finland's largest forest management consulting company, Tapio, which is owned by the state and whose tree seeds account for about half of the currently planted Finnish forests (Tapio, n.d.), would lose massive revenue streams if clearcutting is curtailed as there would be less demand for tree seeds and saplings since they are not required in the same way under CCF practices. Thus, in their advising there is strong interest to give preference to clearcutting methods. In addition to the one-on-one work they do with forest owners, they also publish *Metsälehti* (*Forest Magazine*), which has approximately 200,000 subscribers and is the major opinion forum among private and other forest owners. Given their reach and dominance in the market, they are a key professional organization for forest management, but they also own the companies that produce the saplings.

In the 1980s, Tapio and the regional forest boards (also called Forest Centers) produced over 80 percent of the saplings used in reforestation, which were "sold by force to reforesters" according to Lähde (2015: 77). One had to clearcut, one had to replant, and there was an almost monopoly by the state company in providing the saplings and seeds. Due to this conflict of interest, during the 2000s the MMM recommended that Tapio and the Forest Centers would give up their own sapling and tree seed production (Halkonen, 2013). In 2013, Tapio, the Finnish Forest Center, and Tornator sold their Taimi-Tapio firm to its two acting directors. Taimi-Tapio was the second largest sapling company in Finland, producing approximately 25 million saplings annually (Vaara, 2013). This example shows how benefits are shared in a closed-in group of company directors within the Finnish natural resource sectors. I say sectors here because the measures taken in forestry are also typical in the mining sector (Kröger & Lalander, 2016).

In addition to the conflict of interest outlined, MHY, which are regionally based, profit-making companies whose membership was obligatory until 2014, have sales targets for saplings, fertilization, tillage, and other measures that cost and are sold with the clearcutting–plantation package. Due to the need to meet specific sales

targets, these regional forestry experts have an incentive to recommend as many maneuvers as possible in the forests. This is at odds with what the professional role of MHY is supposed to be as they should be offering objective advice about different methods. In 2021, in one MHY team the sales targets were as follows: 275,000 saplings, 137,000 plantings, 125 hectares of land modification, 200 hectares of young forest thinning, 125 hectares of fertilization, 42,500 m^3 of wood sales by warrant, 5,750 MCM of harvesting services (including energywood), 1,250 hectares of forest planning and evaluation services, and 25,000 meters of trenching. In the tweet that shared this internal document, the commentator Jussi Alanko (a writer who has published books, including one on the massive negative impacts of forestry-driven bog drainage on lakes and emissions), argues that "A forestry professional must sell all kinds of nature-destroying services to forest owners. They generate profit for MHY. Recommending continuous tree-growing is unprofitable for MHY, so it is dissuaded in every way" (Alanko, 2021). Yrjö Haverinen (interview, April 24, 2024) put this bluntly: CCF would allow "amassing the paycheck every twenty years," which would be "much more nature friendly forestry in comparison to the current rotational [RFM], where all are logged at once and even the natural seedlings are crushed, and then saplings are bought expensively, and the ground is broken and thus soil organisms are destroyed." He said that new teaching material about CCF should be created, forestry schools should adapt this, and MHY should adopt these teachings in their advising repertoire. "As a simple answer has been, that there is no information. And who would like to bring forth their ignorance," Haverinen said in his interview, referring to MHY and other forest professionals on advising about CCF.

CCF does not require so many salable forestry services. In 2019, the WWF found in a survey among forest owners on their experiences with the MHY, that about half of the owners were not asked by MHY what their aims and wishes are in relation to their forests. Only one-third of the forest owners had been offered the option of CCF or were even told about the possibility of joining the forest conservation Metso program (Fritze, 2019). The situation is now problematic as the MHY should be the organization advancing the interests of forest owners, who are MHY members, and thinking of their best interests. Yet, there is a conflict of interest as MHY sell forestry services, with forest owners and taxpayers (in the form of industry subsidies) paying the costs of this cheap wood strategy. According to surveys, in 2011 a quarter of forest owners were ready to change to CCF, which was not allowed until 2014, and half were interested in knowing more about the method (Jokiranta et al., 2019). Haverinen saw that if the MHY, MTK, "and others that should defend the side of the forest owner" would give good advice, it would start a "total" distribution of information about CCF to the "field," "then there would be hope that this would start to change a bit more nature friendly, this

concept of forest." The forest industry would "still get a good amount of wood" by CCF, but "should invest much more in research, new products with less wood."

Solution Suggestions

In the current uncertain world situation with rapid, unexpected changes in climatic-ecological conditions and a growing danger of crises and problems, the CCF system is a much more reliable way to manage forestry. This is because it allows and relies on making logging interventions much more often (every 15–20 years), whereas the RFM system, with its end clearcutting happening only after 50 years or more, produces mostly just cheap pulp and energywood. Under the CCF model one can adjust the growth and at the same time pursue other-than-wood growth aims. This system also allows for new tree species to take over, which is important as the climate rapidly warms. In addition, when the species are more varied one can more easily avoid the danger of pests and diseases that could strike and devastate an even-aged monoculture. That said, while CCF is a more beneficial form of logging than RFM when considering forest nature and human needs according to current knowledge, there should still be areas conserved and left outside of forestry altogether. There are also many types of CCF definitions and practices, some that are not great for forest ecosystems – the misappropriation of the term is also a problem. Furthermore, some critics of CCF have argued that in some cases CCF could be used to justify the extension of forestry to natural or old-growth forests, which have been left aside thus far, arguing that this milder forestry could be used in these places. I experienced this personally when the old, beautiful forest I had been walking through in our family lands in Eastern Finland was logged by CCF. Even this method completely transformed the forest to such a point where one could not walk there anymore. After that logging, done badly by a heavy machine, the rest of the trees next to the clearcut area have fallen in storms, which has meant that now the whole forest has turned into a clearcut, as the fallen trees have been taken out (see Figure 9.2). The best in that situation would have been to not to touch the forest at all, or treat it as my grandfather did, taking out just a few trees each year by chainsaw and pulling the trunk out with a winch behind a small tractor from the roadside in the winter, taking care even in the details of the forest landscape, so that it remained beautiful and walkable.

In general, there seems to be a tendency and a real danger that the pulping–plantation RDPE adherents may tarnish the reputation of CCF as a concept, by making harvests that they call CCF, but which are very badly done or should not be considered CCF. They can use the term as an excuse to enter new areas. For example, Metsähallitus had an earlier rule to not log above a certain altitude, this applying mostly to areas in Northern Finland. Now they have started to say those

Figure 9.2 An example of an old, natural forest, which was first logged by CCF, but then clearcut as the remaining trees fell due to the clearcutting of an adjacent forest, usage of heavy machinery damaging roots, and winds. Since this photo was taken even the remaining trees have fallen or been felled, the clearcut expanding itself in this way naturally. The image also shows the heavy footprint of the harvester's muddy tracks. Northern Savo, June 4, 2021. Photo by author.

areas can be logged by CCF methods, which is against the tenets of CCF as coined by its key proponents, for example Erkki Lähde, Timo Pukkala, and others. Forest activists managed to discontinue the loggings in Karttimonjoki, Suomussalmi, by Metsähallitus, which in 2020–2021 started to cut down an over 120-year-old forest with over 350-year-old trees under the guise of doing "research" on CCF methods.

Greenpeace wrote that this 129 hectare forest had several endangered species living in it and forests like this should be protected by the EU biodiversity strategy and by the guidelines of Metsähallitus (Greenpeace Suomi, n.d.b). Jyri Mikkola from SLL was the first among the environmentalists to make a survey on Karttimonjoki, which was then continued by Luonnonmetsätyöryhmä (a natural forest work group). He explained to me that the CCF researchers of Luke rigged this logging, which was unintelligent, which is the reason he and others participated in a resistance action and managed to postpone the start of the loggings.

Once the loggings started, Greenpeace took over and managed to stop them. I will return to the Karttimonjoki case in more in detail in Chapter 10, on resistance.

Another issue is cities that are purporting to be "green," such as Lappeenranta, which has a dominant and hegemonic paper and pulp industry (the UPM Kaukas mill and Metsä Group pulp mill). According to local experts I interviewed, Lappeenranta actively and savagely logged inside the city and within people's beloved neighborhood forests to guarantee cheap wood flow to the city pulp mills. For example, the city ravaged a beautiful forest that originated in the 1890s in Voisalmi, which caused the local people shed tears when they saw the forest was gone (Värtö, 2022). A local politician shared with me that the problem is the overarching power given to the city chief forester, who responded to calls for turning to CCF by claiming this would "cause carbon sinks to become clogged up and other similar stuff," myths that researchers had showed were wrong. However, currently the chief forester claims that CCF "would be applied," for example in this Voisalmi loggings "where he had done these with his own so-called expertise … taking out for example all the underwood and turned the ground upside down." An expert shared with me the following, "I have a bit of a fear that this continuous cover forestry is quite a wild jungle, that you can claim to be doing it in many ways, and that kind of expertise single people do not necessarily even have." The expert continued to share that the bulk of loggings still focus on plain clearcutting with no talk of CCF. According to a city councilor I interviewed, even the paper companies would be more careful not to log inside the city perimeter in such a way, but the chief forester – and the city decision-makers in general – have an old-school understanding where they support heavy forestry and want to ensure enough wood from city forests to the companies. "No biologists work for the city … and [the] biodiversity program was created only a year or two ago," "and forests have been left out of the biodiversity program although about 70 percent of city land area are forests," commented the councilor (interview May 2, 2024). Yet, all this did not bar the city from being granted the European Green Leaf 2021 title by the European Commission and boasting that "nature and green values are centerpiece to our actions" (VisitLappenranta, n.d.). It is in these moral economic struggles and power hierarchies that CCF has entered as a potential tool to be wielded to support not only milder harvests, but also to frame whatever actions under the guise of CCF, to garner support for logging expansion.

A key bottleneck for the more nature-considering and milder version of CCF (there are many variants of CCF, some focusing more on profit and thus having more negative impacts) is also the availability of suitable harvesters, as most are currently too heavy and big. Heavy harvesters do, however, also have an advantage of having the mass and power to make the needed precision fallings (that do not damage the other trees remaining in the forest), Jyri Mikkola shared with me.

While some CCF experts are developing suitable machinery, there would need to be a more general change in the forestry model so that large machinery companies would start to make their machines suitable for CCF. Now the lack of harvester drivers who know how to do CCF loggings, or the absence of harvesters with modified parts for CCF (the crane and harvester heads), are used as excuses to not do CCF. Additionally, much more general expertise is needed. Although there are now some companies offering advice on CCF, this information should be streamlined across the MHY of the country, updating their business packages and knowhow of their personnel. Currently, new forestry consulting companies have been created by the experts on CCF, these competing with the MHY, including the Yhteismetsä Tuohi, a jointly owned forest, pooling private forest lands, treating them with CCF based on their expertise, generating "yield without clearcutting" to their shareholders (Yhteismetsä Tuohi, 2023). A forestry expert, who is also a part-owner of the company, said to me in a May 2024 interview that, based on her experience, they have a CCF forester, Jussi Saarinen, "who goes to look at each tree locally." They also have expertise in planning and use of forestry machines, which has generated "good results" for forests "and money to the account quite often, so it works." The situation is more worrying when a forester who is used to clearcutting "just looks through the Tapio [general CCF] recommendations and then goes on and blindly follows"[5] just a part of them, possibly not even watching over the logging or advising the harvester driver. "Then saying this is CCF can turn the public opinion against it." She could see this scenario play out in Finland in areas under the weight of the forest industry if this is the way CCF is starting to be applied.

Therefore, while the book *Muuttuva Metsä* (Juntti & Ruohonen, 2023), a guide to CCF, details the pros and pitfalls of CCF, it struck me while reading how the key systemic power of the pulping RDPE was left practically unmentioned. While I understand the reasoning of not wanting to create enemies in the polarized atmosphere, reading the book made me realize there is much more need to speak out about the actual power relations and structures, which are likely to make the advance of CCF much harder than now described in *Muuttuva Metsä*. There, it is shown how CCF has grown slowly but steadily since 2014, so that now over a sixth of all forest owners say they have turned their forests completely under CCF and a much higher proportion say they have turned a part of their forests to CCF. However, this drive of CCF expansion needs to face and overcome the vested interests of the pulping–plantation industry, as this is pretty much a question of whether to produce cheap wood pulp or sturdy trunks. There are many different

[5] One informant argued that one "needs to have goodwill" to find the good CCF recommendations from the Tapio list; however, the list itself "is good."

bottlenecks for transformation to CCF – principally, the role of MHY, "their level of knowledge and expertise," and "then these chief foresters and similar" figures taking care of the implementation of forestry, as an expert explained to me in May 2024. Other, emerging bottlenecks are the generational transition of forest ownership to younger generations who often live far from the forests and do not know about forestry. It was explained to me that they "treat their forests then through the local MHYs, these just telling [them] what to do." In these situations, forest stewardship and "all expertise" have been "kind of outsourced."

Forestry for the Future

The climatic-ecologic disruptions and collapses expected in the coming decades might help in fostering a change in attitudes. However, it is hard to know what will happen in the future, as in the worst case, it will first become warmer and then the Atlantic meridional overturning circulation (AMOC) will be disrupted and average temperatures will drop about 20 degrees in winter and 5 degrees in summer in Finland, making the weather very cold (Finnish Meteorological Institute, 2024). Volatility like this is too much and too rapid for trees to adapt. Due to the possibility and likelihood of such extreme climatic events, existing models of forest growth, based on long-term data and test sites, are becoming less useful. "They are of no use, as they are so long," argued Jyri Mikkola in our interview, "those conditions in that past 50-year period" are so different from current conditions that "part of that information is unusable." Change should therefore be fast in forestry practices, toward adaptability and biodiversity of trees and other life, but this change is "being hindered by the people in the forestry field still clinging onto" clearcutting.

The current situation with high clearcutting rates and the negative effects on the climate, ecology, as well as the forest economy, could be eased through government decisions. The Finnish government has retained high yearly demands for Metsähallitus to sell wood because these sales count as income for the state's yearly budget. This demand could be lowered and Metsähallitus' freedom to log on its own initiative even above the actual demanded amount should be curtailed by capping the income level. In addition to these more direct means of decreasing overlogging, the state could make a strong indirect impact by not building or financing the required infrastructure to continue forestry extractivism and by putting in place stricter permit requirements for large investments. It is important to implement these changes sooner rather than later, as the window of opportunity to avoid catastrophic, cascading climate disruptions might be closing.

It is estimated that there will be a dip in the availability of wood from Finnish forests around 2040–2050, due to the bulk of clearcuts and plantations done after the WWII coming to an end-harvesting age around the same time. The current,

expensive machinery and pulp and paper lines will also be needing renewal by 2040 and it is likely that many mills will not be directly replaced, but rather just a few large mills (one to three) will replace the many medium-size mills (Kauppi & Kettunen, 2022). These tendencies suggest that around 2040 there is likely to be a major decrease in the volume of wood industry, as mills are not replaced and raw material is diminished. Some analysts estimate that there could be major downsizing of paper mills already in the 2030s, which would lower the price of wood and increase the amount used for pulping, and thus possibly further drive the pulping tendency (Donner-Amnell, 2024b). In this, there is also a slight difference in the focus on pulp or papermaking between companies. Stora Enso and Metsä Group have focused more on the pulping side, while UPM on paper mills.

However, this is the scenario if there are no major climatic-ecological disruptions, which are highly likely to take place. It is expected that especially expansion of beetle infestations will cause havoc to spruce forests, even younger ones, which will be cut even at 40 years of age for pulp and energywood. When wood is cut before it is log-size the losses are borne by those who have paid for the planting. In addition to pests, other events are likely to decrease the amount of reliable, good harvests available, for example, extreme weather, snow, drought, fires, diseases, and other yet unknown events. While these scenarios are known by climate science, they are seldom considered in the forest forecasts, which operate and see the world as if we are still be living in a stable Holocene. Next, I will delve into the new generation of forest resistance that frames the forest industry actions as driving the climatic-ecological crisis.