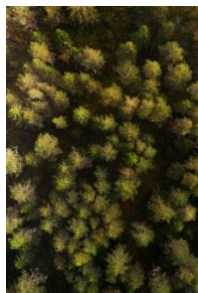


PULPING THE FUTURE

The controversial impact of Estonia's new pulp mill
on forests, climate and biodiversity

July 2025





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Cover: © Photo Karl Adami

EKO is the [Council of Estonian Environmental Nongovernmental Organizations](#). Its members are:

Estonian Fund for Nature, Baltic Environmental Forum Estonia, BirdLife Estonia (Estonian Ornithological Society), Estonian Green Movement-FoE, Estonian Environmental Law Center, Läänerannik - West Coast, Nõmme Tee Selts - Nõmme Tee Association, Estonian Seminatural Community Conservation Association, Tartu Üliõpilaste Looduskaitsering - Tartu Student Nature Conservation Society, Save Estonias' Forests

The Environmental Paper Network (EPN) is a global coalition of more than [350 civil society organisations](#), all of which have endorsed the [Global Paper Vision](#) for transforming the paper industry and/or the [Biomass Delusion Statement](#), for halting the expansion of the bioenergy industry.

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Summary

Not very long ago a huge new pulp mill was to be built in the area of Tartu, Estonia.¹ In 2018, however, the project was scrapped after extensive protests by local citizens and for good reason: the project would not only have polluted the Emajõgi River but also have significantly increased logging pressure on Estonia's already threatened forests.

Now, to our big concern, a very similar project (in size and with just as significant an impact) is being promoted in a different ecologically valuable location in Ida-Viru County, on the coast of the Gulf of Finland. The pulp mill would be developed by Viru Keemia Grupp (VKG), a major industrial group in Estonia known for oil shale mining and processing. The mill, proposed to be the largest private sector investment in Estonian history (1 billion euros), would be situated in the village of Aa, an area surrounded by forests. The developers claim the project will create new jobs. However, these are very few (250 direct jobs), while the ecological impacts of the project on Estonia's forests, greenhouse gas (GHG) emissions through unsustainable timber sourcing, and pollution would be considerable. These aspects make the new VKG mill a highly risky project.

Impacts on forests and biodiversity

- For the plant itself, the proposed mill would require deforestation of 174 hectares of forested land. However, the impacts of wood supply would be much wider.
- The VKG pulp mill would require 2.25 million cubic metres of timber annually, further increasing or at least maintaining the currently unsustainable logging practices in Estonia, dominated by clear-cutting.
- This demand growth would exacerbate the decline of Estonia's forest ecosystems and biodiversity. Scientists have warned about the fall in species diversity and populations in the country, and most of the habitats outside the cores of nature protection areas have been assessed to be in average or poor condition by the Estonian Environment Agency.² A further intensification of logging would lead to dramatic biodiversity loss.
- There is a lack of thorough assessment of the impact of sourcing timber from the Estonian forests, with the claims in the Strategic Environmental Assessment (SEA) being unsubstantiated. Additionally, the SEA report claims that the mill can use wood which is currently being exported looks falsely naive, as it doesn't consider basic economic dynamics in the regional wood markets and the likely shrinkage of the amounts of timber available.

Climate

- The increased logging to supply the mill will worsen Estonia's carbon sequestration gap. Estonian forests, which have become carbon emitters due to excessive logging, will be further strained. The mill's operations would contribute to higher greenhouse gas emissions through timber sourcing instead of reducing them, as claimed without taking the climate impact of timber sourcing into account in the SEA.
- The mill claims to produce "green" energy that relies on burning biomass (wood), a practice increasingly viewed as unsustainable. Energy from woody biomass is increasingly recognized as a

¹ EPN, Bio-refinery: new name, dirty old story, May 2008, <https://environmentalpaper.org/wp-content/uploads/2018/05/180517-EstFor-briefing-final.pdf>

² The map of the generalized status of terrestrial ecosystems, created by Estonian Environment Agency in November 2024 https://drive.google.com/file/d/1g7wNkb1hiMONIFtkuGR_hVOqw9AJBIS/view?usp=share_link

high-carbon source of energy; it emits more CO₂ than coal per unit of energy, and the increased logging rate would further exacerbate forest depletion and generate emissions, undermining Estonia's climate targets.

Water and Pollution

- Despite not relying on elemental chlorine for the bleaching, the pulp production process will still use chlorine-based bleaching. The Elementary Chlorine Free technology (ECF) may reduce the output of dioxins, but it still results in the release of harmful organic halides (AOX) that can pollute water and bioaccumulate in the food chain. The ecological status of most of Estonia's coastal seas is moderate (63%), and another 19% is in poor or very poor condition, according to the Estonian Environment Agency data³, so no further pollution should be added. The area of the mill residual water outlet is no different from the average, marine ecosystems have been assessed to be in a poor state. The mill effluents may make it even more difficult to meet the targets set by the Baltic Marine Environment Protection Commission, some of which are already being missed.

Social and Economic Considerations

- The projected 250 direct jobs are relatively few considering the scale of the project. The local labor market is currently heavily dependent on the oil shale industry, VKG itself providing jobs for 1600 people, and would need much greater input into transition for such an investment.

Public Consultation and Governance

- The local inhabitants have been consulted during and as part of the planning process, but local opposition has not been taken into account. The inhabitants of the chosen site, Aa village, do not approve of the project, according to national media⁴.

Conclusion

Despite the promised economic benefits, the VKG project of building a new pulp mill raises significant environmental, ecological, and social challenges. The project risks further exacerbating Estonia's forest degradation, increasing carbon emissions, and impacting local biodiversity. The lack of a clear, sustainable timber sourcing strategy and unsubstantiated claims about replacing pulpwood exports add to the concerns. The project's environmental footprint, especially in the context of Estonia's climate and forest management challenges, casts serious doubts on its sustainability.

³ <https://loodusveeb.ee/et/themes/meri/laanemere-seisund>

⁴ <https://www.err.ee/1609010717/tselluloositehast-rajada-sooviv-vkg-tegi-sobiva-asukoha-eelvaliku>

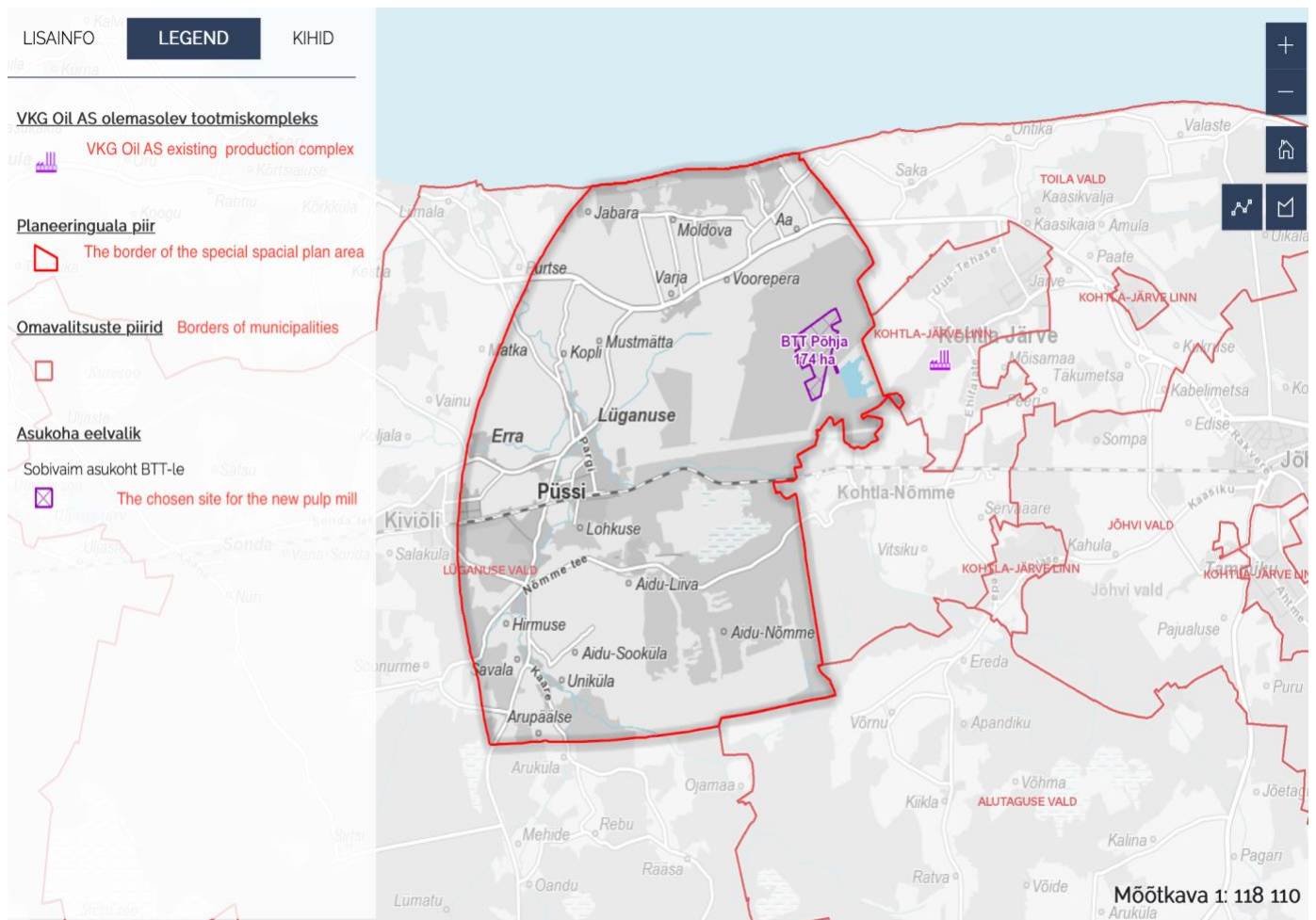


Introduction

Viru Keemia Grupp, an industrial group with interests in oil shale mining (it produces around 600,000 tons of shale oil a year), announced the project to build a new pulp mill in Estonia.

The mill will be located in Ida-Viru County, an industrial area with functioning infrastructure, e.g. large roads, water supply mainlines and power lines. VKG submitted an application for the initiation of a local special spatial plan to the Lügänu rural municipality government, and the local special spatial plan was initiated on 25.08.2021. On 29.06.2023, the Lügänu rural municipality government adopted phase I of the plan and SEA, confirming the location of the mill in Aa village, in the middle of a forested area. The public consultation of phase II - a detailed solution in the chosen area - was organised in October-November 2024. Currently, in January 2025, the local special spatial plan is about to be adopted. VKG states on their web page that the complex will be launched in 2027 at the earliest⁵.

⁵ <https://www.vkg.ee/en/planning-and-timescale/>



The chosen site for the mill (BTT Põhja 174 ha). Source: OÜ Hendrikson & Ko⁶

The company claims that the project “will be the largest investment made by the private sector throughout history.”⁷ It will require an investment of one billion euros.

VKG says the project will secure 250 direct jobs and at least 1,000 jobs in the value chain that serves the production complex. 250 jobs is not much for such a huge project, while the thousand indirect jobs are difficult to assess. Currently, the core oil shale sector employs 5800 people in Ida-Viru County, out of them, VKG employs around 1600. The new plant will, therefore, make only a small contribution (250 direct jobs) to the transition of the local labour market from oil shale-based jobs to other sectors.

The main problem is, though, that the 250 new jobs created would still contribute to environmental damage by adding logging pressure in the situation where lowering logging volumes is desperately needed and by contributing to further increase of the carbon sequestration gap of the forest land in Estonia. The forest land that should be a carbon sink has turned into a source due to too intensive logging⁸.

⁶ Lüganuse Vallavalitsus and OÜ Hendrikson & Ko, Map, 2024, <https://hendrikson.ee/maps/BTT-EP/kaadirakendus.html>

⁷ Viru Keemia Grupp, Wooden bioproducts, 2024, <https://www.vkg.ee/en/bioproducts/>

⁸ Overview of the LULUCF sector in the Estonian National Greenhouse Gas Inventory 2023 (in Estonian, “metsamaa” is forest land) <https://keskkonnaagentuur.ee/node/1093>

Sufficient assessment of the environmental impacts is unfortunately missing, especially concerning the ecological and climate impacts. The detailed report of the SEA II phase was published on 17.10.2024, together with the II phase of the special spatial plan proposal. Among others, the Council of Estonian Environmental Nongovernmental Organisations has sent their input⁹, but the proposals have been rejected¹⁰.

What is completely missing is an assessment of the impact on Estonian forests (and possibly forests in neighboring countries) of providing the 2.25 million cubic meters of wood needed to feed the mill. In the SEA report, it is claimed that the mill will consume the current paperwood export volumes, which are around 2.2 million cubic meters. The data from Statistics Estonia for 2022-2024 shows pulpwood export of 1-1.6 million cubic meters, two times less than shown in the SEA report. Also, the claim of consuming the export volumes does not take into account the need for lowering the logging volumes nor the existing and predictable competition for the same resources.



Global Forest Watch, Tree cover in Estonia <https://www.globalforestwatch.org/map/>

⁹ https://media.voog.com/0000/0042/0647/files/6416_EKO_PEM_seisukohad_VKG_BTT_%20EP_detailse_lahenduse_ja_KSH_kohta.pdf

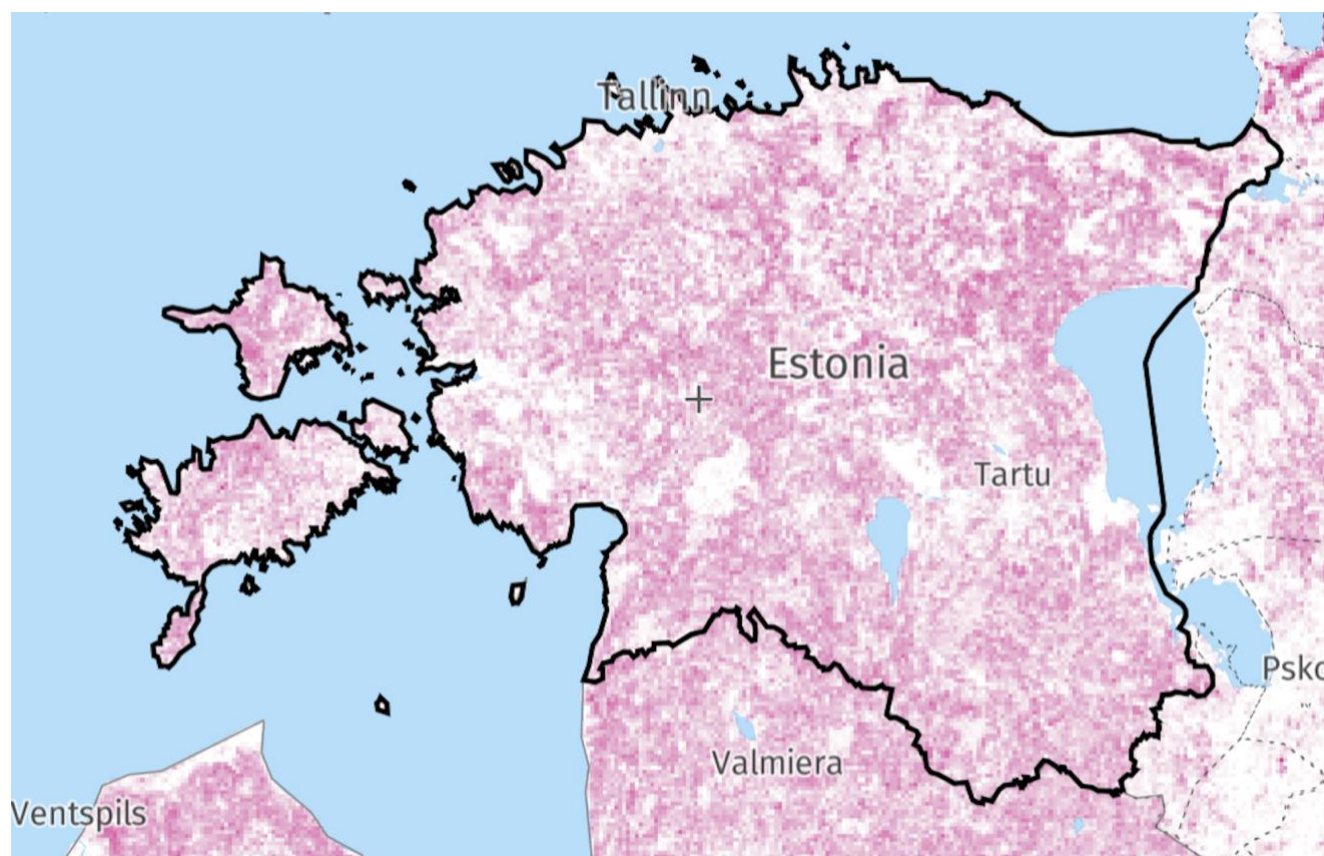
¹⁰ Letter from Lügänu Parish on 28.11.2024 (in Estonian)

https://media.voog.com/0000/0042/0647/files/28112024_Eesti%20Keskkonna%20C3%BChenduste%20Koda_L%20C3%BCganuse%20valla%20VKG%20AS%20biotoodete%20tootmiskompleksi%20EP%20avalikustamise%20k%C3%A4igus%20esitatud%20ettepanekute%20vastused%20.pdf

And additional clarifications from the consulting company Hendrikson & Ko OÜ on 25.11.2024 (in Estonian)

https://media.voog.com/0000/0042/0647/files/VKG-BTT_EKO-EMK_LISA.pdf

The estimated annual raw material need of the complex will be 2.25 million cubic metres of wood, both coniferous and non-coniferous¹³ (mostly pine, spruce and birch, but also undefined ‘woodchips’ produced elsewhere¹⁴). This is equivalent to 100,000 trucks loaded with timber every year¹⁵ and almost three-quarters of sawlogs production in Estonia.¹⁶ The SEA report (II phase, page 75) suggests that 20% of the raw material will be imported, but the source is not specified. It has to be noted that import from Russia and Belarus is restricted due to war in Ukraine, and the neighboring countries Finland, Sweden, Latvia and Lithuania have similar problems of wood supply and of forests and biodiversity erosion. Finland especially has an acute problem of steeply declining carbon sinks and, therefore, missing LULUCF targets¹⁷ that may result in a drastic cut in logging volumes and a severe lack of timber supply for their extensive pulp industry.



Global Forest Watch, Tree cover loss in Estonia 2001-2023, <https://www.globalforestwatch.org/dashboards/country/EST/>

The claim of replacing the export of paper wood in the SEA report does not take into account the long-term need for lowering the logging volumes, as stated by the State Forest Management Centre in their prognosis

¹³ <https://www.vkg.ee/en/wooden-bioproducts/>

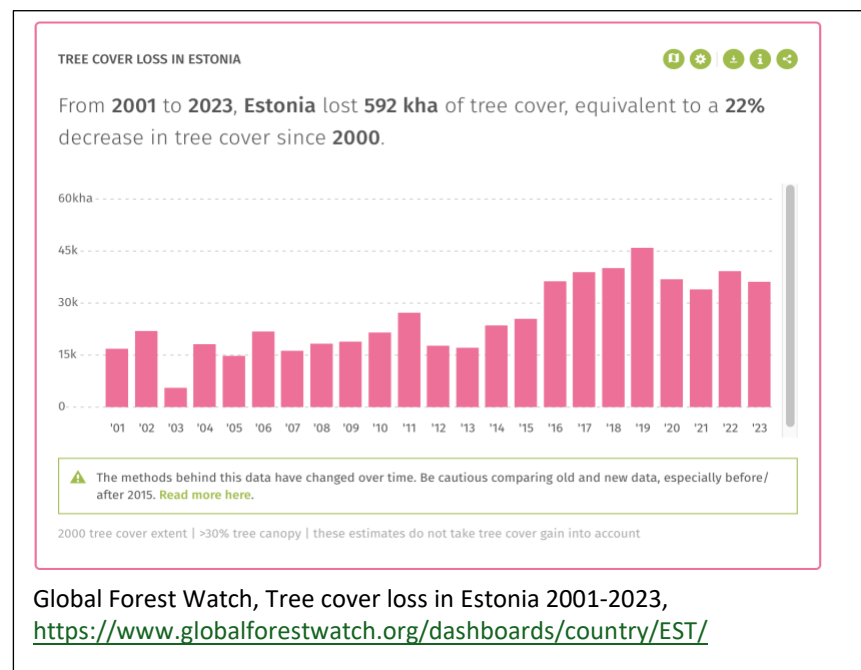
¹⁴ OÜ Hendrikson & Ko, 2024, Viru Keemia Grupp AS biotoodete tootmiskompleksi Lügause valla eriplaneering ja KSH. Detailne lahendus ehk II etapi KSH aruanne, 2024, <https://www.lyganuse.ee/documents/18275789/32253362/VKG+BTT+detailse+lahenduse+etapi+KSH+aruanne+vastuv%C3%B5tmiseks.pdf/2a1430b8-4a97-4c00-bb75-d0c8d7261b57>

¹⁵ Erametsakeskus, Mitu puud on mets?, 2015, https://www.eramets.ee/metsandusuudised/mitu_puud_on_mets/

¹⁶ Faostat, <https://www.fao.org/faostawat/en/#data/FQ>

¹⁷ <https://www.theguardian.com/environment/2024/oct/15/finland-emissions-target-forests-peatlands-sinks-absorbing-carbon-aoo>

for the next 200 years¹⁸. According to the long-term prognosis, also the available volumes of pulpwood would need to decrease. In this context, VKG has announced in national media that building the mill will only be possible if the logging volumes in Estonia stay at the level of at least 10 million m³ a year¹⁹, which is more or less the current level²⁰. This indicates clearly, that in case of lowering the annual logging volumes, there will not be enough timber for the mill.



The State Forest Management Centre (RMK) has been the main continuous source of wood, providing long-term contracts for large-scale production. In June 2025, VKG Fiber won the competition for pulpwood coming from state forests, securing the entire amount on offer - 0,7 million m³ of pulpwood a year for ten years.²¹ At the same time, the total needs of all five competitors were 5.26 million m³ a year²². This indicates that competition over available resources is high, and the claim of VKG to replace the export of pulpwood does not take into account national and regional competition over the same resource. The claim of replacing export is furthermore

speculative, as there is no certainty that companies will breach existing supply contracts to give priority to the VKG mill or that foreign-owned subsidiaries would route their wood to the mill instead of mother companies abroad. On the contrary, the dynamics of international trade for timber would suggest that the increased demand would raise wood prices and propel logging intensification. The head of industrial policy in the Ministry of Economic Affairs and Communications, Kaspar Peek, has commented in public media that the idea of replacing the export of pulpwood from private forests is “an illustrative example” and not a realistic scenario²³. What is more likely to happen is that a further increase in wood demand will cause impacts on the already overexploited forest resources in Estonia and near-by countries. On top of this, the mill will be built on a forested area, causing permanent land use change, i.e. deforestation on most of the production area of 174 ha.

¹⁸ Published on 12.09.2023, text is in Estonian: <https://www.rm.ee/organisatsioon/pressiruum/uudised/uudised-2023/rmk-on-riigimetsa-alati-raiunud-kestlikult>

¹⁹ <https://www.err.ee/1609010717/telluloositehast-rajada-sooviv-vkg-tegi-sobiva-asukoha-eelvaliku>

²⁰ The logging volumes have been between 10-12 million solid cubic meters a year in 2013-2023.

²¹ <https://rm.ee/uudised/uudis/rmk-solmis-vkg-ga-puidumuugi-lepingu-biotoodete-tehase-rajamise-eesmargil/>

²² <https://www.err.ee/1609572490/rmk-korraldab-kestvuslepingu-solmimiseks-taiendava-enampakkumise>

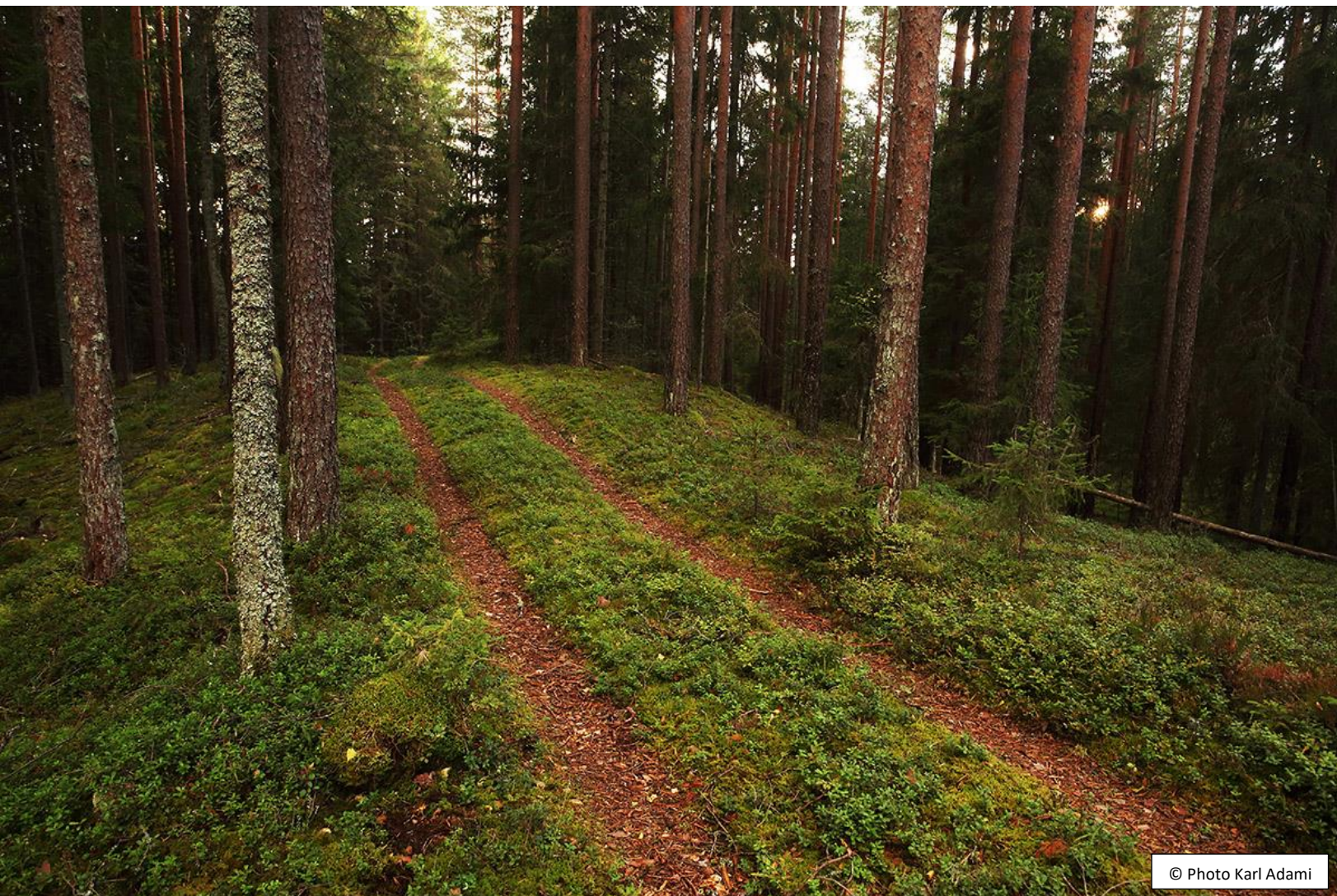
²³ <https://arvamus.postimees.ee/8148797/erkki-keldo-riigil-on-ajaloo-suurim-toostuse-kasvuplaan-ka-ettevotlus-saab-leevendust>



Decades of logging intensification

During the last ten years, Estonian forests have faced a dramatic intensification of logging as a consequence of the progressive weakening of the regulatory framework:

- In 2004, forests outside protected areas lost special status and protection.
- In 2008, the government turned the forest management plan from a mandatory requirement for landowners into a mere recommendation.
- In 2013, requirements for clear-cutting and forest notification were further relaxed.
- In 2014, a new Forestry Act increased the permissible first-year clearance from 55 % of total timber volume on plots to 65 %. A 2017 amendment increased this to 80-85 % of the forest.[1]
- In 2017, the Estonian ministry planned to lower the rotation period in fertile areas from 80 years to 60, along with relaxing other conditions. The shorter rotation period for spruce (the industry's favourite tree) has been motivated by a perceived fibre shortage. Having access to middle-aged spruce forests would increase production.
- In 2020, the forest management regulations for Natura 2000 sites were relaxed.
- In June 2021, the European Commission initiated infringement proceedings against Estonia concerning logging in Natura 2000 habitats.
- Currently, the Ministry of Climate has proposed further loosening of the Forest and Nature Conservation Acts, including setting a maximum share for nature conservation areas.
- In 2007, clear-cutting took place on 20,800 hectares (producing 6.2 million cubic metres (m³) of timber), in 2014, 36,700 hectares were cleared (producing 10.4 million m³ of timber), a growth rate of 76 %. Between 2011 and 2020, about 30 800 hectares of Estonian forest a year, altogether more than 308 000 hectares, was clear-cut.
- Between 2011 and 2021, 33,000 hectares of forests were logged in protected areas. This is equal to the amount of logging in commercial forests between 1996 and 2005 in total.



Biodiversity

Estonian forests are a habitat for tens of thousands of species.²⁴ In 2020, Estonia had 1.93 Mha of natural forest, extending over 42% of its land area. In 2023, it lost 31.3 thousand ha of natural forest, equivalent to 12.9 Mt of CO₂ emissions.²⁵

74.4% of Estonian forests are primarily managed for timber production²⁶ and are managed mostly by clear-cutting, which means logging down the whole area of forest (unlike selective logging, where only specific trees are taken.) Clear-cutting wipes away the whole ecosystem within a certain area, and the new forest

²⁴ Lõhmus, A.; Soon, M., Katusliigid bioloogilist mitmekesisust säästvas metsanduses: kriitiline ülevaade ja perspektiivid Eestis. Metsanduslikud uurimused, 2004, <https://www.etis.ee/Portal/Publications/Display/bd227281-410b-428b-ae32-f998f2c7ef46>

²⁵ Global Forest Watch, Estonia, <https://www.globalforestwatch.org/dashboards/country/EST/>

²⁶ Estonian Environment Agency Yearbook Forest 2018, <https://keskkonnaportaal.ee/sites/default/files/2021-12/Aastaraamat%20Mets%202018.pdf>

will take decades or centuries to regain the lost complexity and richness in biodiversity. According to the OECD environmental performance review, loggings make up 91% of forests' productive capacity.²⁷

The impact of logging is not only reflected in the volume of trees felled but also in the age of those trees, the disruption of habitat structure, and the harm caused by regeneration cuts and logging roads.²⁸ A growing problem is the lack of age diversity, with most trees being of similar age and few large, older specimens, particularly deciduous trees nearing the end of their growth stage. The average age of Estonian forests, scientists say, is decreasing, with harvests surpassing the capacity of the forests to regenerate. As forest ecosystems grow younger, their natural character diminishes.²⁹ The decline of old-growth forests negatively impacts biodiversity—dead wood, essential for invertebrates, fungi, and lichens, becomes scarce, and the disruption to the food chain threatens ecosystem services.³⁰ According to a scientific study, intensive management of Estonian forests, especially spruce-dominated forests, poses a threat to rare forest fungi.³¹ The loss of these ancient forests has led to a decline in species that rely on such habitats, including the tree lungwort, black stork, western capercaillie, and Siberian flying squirrel.

As a result, Estonian forest habitats are rapidly declining. The population of the rare flying squirrel (*Pteromys volans* L.), still living in the old-growth forests in the Alutaguse forest district in the north-east of Estonia, is struggling because of habitat shrinkage - from 3180 square kilometres to just 550 in the last decades, while protection measures have been further relaxed.³² Birds populations and species diversity are also declining. The Estonian Ornithological Society warned that between 1984 and 2016, the abundance of forest-related species has decreased by an average of 60,000 bird pairs per year due to changes to forestry legislation and intensified forest management, leading to significant negative impacts on Estonian forests.³³

The Nature Conservation Commission of the Estonian Academy of Sciences noted that the country's forest management is unsustainable, and its practices do not guarantee biodiversity conservation, take little account of ecosystem services and therefore need to be changed.³⁴

Asko Lõhmus, lead research fellow of conservation biology at the University of Tartu, stressed in an interview with Mongabay that according to his research, Estonia is actually losing forest.³⁵ This conclusion seems to be

²⁷ OECD, Environmental Performance Reviews: Estonia, Highlights 2017, http://www.oecd.org/environment/country-reviews/OECD_EPR_Estonia_Highlights.pdf

²⁸ Lõhmus, A; Kraut, A. (2010). Stand structure of hemiboreal old-growth forests: Characteristic features, variation among site types, and a comparison with FSC-certified mature stands in Estonia. *Forest Ecology and Management*

²⁹ V National Report to the Convention of Biological Diversity, May 2022, <https://www.cbd.int/doc/world/ee/ee-nr-05-en.pdf>

³⁰ Lõhmus, A. & Lõhmus, P. (2011). Old-forest species: the importance of specific substrata vs. Stand continuity in the case of calicioid fungi. *Silva Fennica* 45(5): 1015-1039.

³¹ Kadri Runnel and Asko Lõhmus, Deadwood-rich managed forests provide insights into the old-forest association of wood-inhabiting fungi, June 2017, <http://www.sciencedirect.com/science/article/pii/S1754504816301179>

³² The RMK understands the importance of these forests and protective measures for preserving nature and variety, but we consider it important to highlight the cost and economic effect of these measures," Koidu Simson, in "Topeltmoraal Eesti metsanduspoliitikas: räägitakse sөөstlikkusest, juhindutakse tööstuslikkusest" in journal "U" <https://www.urban.ee/issue/ee/19>

³³ Estonian Ornithological Society, Eesti metsadest on kadunud 60 000 linnupaari aastas, Eesti Ornitoloogiaühing, 18 January 2017.

³⁴ Heureka, Teaduste Akadeemia looduskaitse komisjon: jätkusuutmatu metsandus vajab muutmist, 24 January 2018, <https://heureka.postimees.ee/4386435/teaduste-akadeemia-looduskaitse-komisjon-jatkusuutmatu-metsandus-vajab-muutmist>

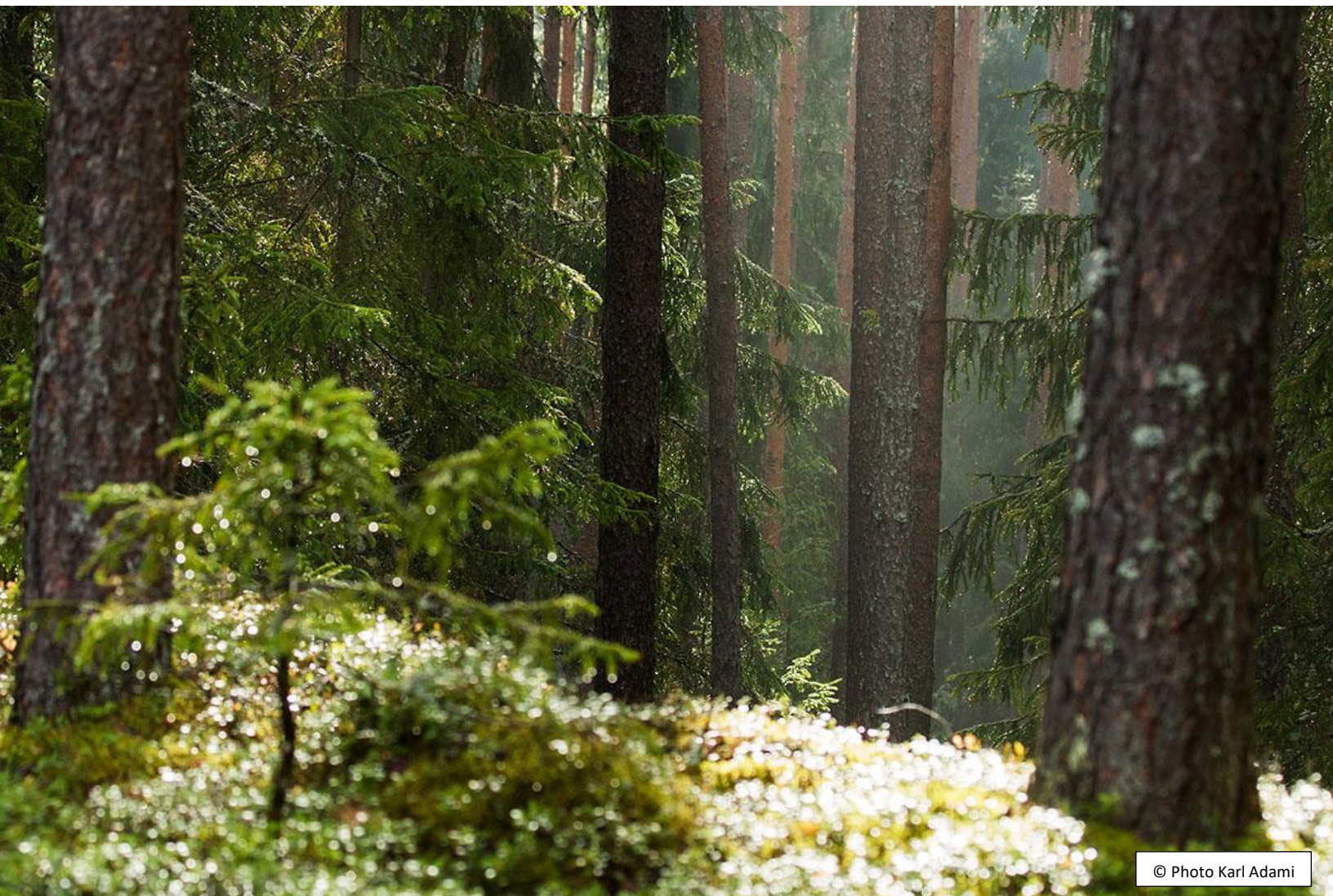
³⁵ Mongabay, Estonia's trees: Valued resource or squandered second chance? December 2017, <https://news.mongabay.com/2017/10/estonias-trees-valued-resource-or-squandered-second-chance/>

The fact is that forest management regulations have become more lax in Estonia in recent years, even in Natura 2000 sites³⁷ and in June 2021, the European Commission has launched infringement proceedings against Estonia, arguing that the country insufficiently assessed impacts on habitats when permitting logging.³⁸ A tentative measure was issued in February 2022 by the Estonian Environmental Board to suspend logging in forest habitat types of Natura 2000 sites for up to 28 months (the deadline is being extended monthly after June 2024). This highlights the environmental crisis faced by Estonian forests: ***there is no room for increasing logging*** to obtain a further 2.25 million cubic meters of wood per year.

According to a public opinion poll, only 3% of Estonians support the idea of more logging, while 63% think there should be less logging in state-owned forests, and 23% think the logging rate is optimal. 6% are against the spring nesting peace, and 93% support following nesting peace in both state and private forests.⁴¹



⁴¹ Estonian Fund for Nature, Uuring: Enamik eestimaalasi toetab raiemahu vähendamist riigimetsas ning üldist kevadist pesitsusrahu, May 2022, <https://www.eov.ee/ET/enamik-eestimaalasi-toetab-raiemahu-vahendamist-riigimetsas-ning-yldist-kevadist-pesitsusrahu/>



Biomass and GHG emissions

As described above, the impact assessment does not take into account timber sourcing, and that includes GHG emissions calculations. As a result, the overall climate impact of the mill is reported to be positive, relying mainly on the methodological nuances of LULUCF calculations. The positive effect the calculations show is only illusional since it decreases over time, and by 2040, the emissions of the mill would be equal to the sequestration. Significantly higher positive climate impacts could be achieved by not harvesting the same amount of wood, as one mln m³ of harvested wood is equivalent to about 1.1-1.2 mln t CO₂ eq emissions in the LULUCF sector.⁴²

The draft of the Estonian Climate Resilient Economy Act is only being discussed by the Government and the law is not in force yet, but it relies strongly on the principles of increasing the share of long-life products in

⁴² "Madis Raudsaar, a leading specialist at the Environmental Agency, said that one million cubic meters of logging is equivalent to approximately 1.2 million tons of greenhouse gas emissions." in: ERR.ee, Kliimaeesmärgi täitmiseks peaks peatama metsaraie ja Nursipalu arendamise, April 2024, <https://www.err.ee/1609327653/kliimaeesmargi-taitmiseks-peaks-peatama-metsaraie-ja-nursipalu-arendamise>

the timber sector and the need to give priority to measures that support biodiversity in the choice of measures to meet the objectives of climate legislation. The mill does not meet these criteria due to the short life span of the products and increasing logging pressure in the context of existing overlogging.

In addition to pulp production, the mill will generate “810 GWh renewable energy a year” and a respective amount of heat. Part of the electricity and heat, about 300 GWh, will be used for own consumption, and the rest, about 510 GWh, will be sold and fed into the electric grid and to the local heating network.

The renewable energy produced in the plant would cover about 10% of current electricity consumption in Estonia, and VKG is claiming it to support meeting the national renewable energy targets⁴³. This is not credible for two reasons:

1. Energy from woody biomass is increasingly recognized as a high-carbon source of energy, and it emits more CO₂ than coal per unit of energy.⁴⁴ Over 500 scientists appealed to the global decision-makers to end subsidies and other incentives for the burning of wood.⁴⁵
2. In the case of the VKG mill, the unsustainability of biomass-generated energy is self-evident: the increased demand for timber (2.25 million solid cubic meters) will increase the logging intensity, leading to a respective amount of net emissions. Based on the data published by the Estonian Environment Agency in January 2023,⁴⁶ Estonian forests became emitters for the first time in 2018 since records began, which means that the amount of carbon bound was lower than the amount emitted. The only sector capable of removing carbon has become a source of emissions due to excessive logging. A paper from the Environmental Ministry confirmed that “the effect of forestry on the net sequestration of GHG in the long term is close to zero” and suggests a “significant decrease in the volume of total felling” as a measure to increase it.⁴⁷ The proposed mill will only increase the demand for timber. VKG claims it will use the timber that is currently being exported, but without an export ban, it is not clear how the company will secure all this volume, furthermore, in the context of increasing competition. The risk that added demand will lead to added logging is substantial.

Also, the mill’s boiler will likely use gas as an alternative energy source, since the mill should be located in the proximity of the gas network. It seems not to be a good idea to support investing into a gas-dependent solution in times of limited gas availability.

⁴³ OÜ Hendrikson & Ko, 2024, Viru Keemia Grupp AS biotoodete tootmiskompleksi Lüganuse valla eriplaneering ja KSH. Detailse lahenduse KSH aruanne., 2024, <https://dge.ee/maps/BTT-EP/dokumendid/Vastuvotmine/okt-2024/VKG%20BTT%20detailse%20lahenduse%20etapi%20KSH%20aruanne%20vastuv%C3%B5tmiseks.pdf>

⁴⁴ Chatam House, Woody Biomass for Power and Heat, Impacts on the Global Climate, <https://www.chathamhouse.org/2017/02/woody-biomass-power-and-heat>

⁴⁵ Steven Berry + 500, Letter Regarding Use of Forests for Bioenergy, February 2021, <https://www.dropbox.com/s/hdmmcnd0d1d2lq5/Scientist%20Letter%20to%20Biden%2C%20von%20der%20Leyen%2C%20Michel%2C%20Sug%20%26%20Moon%20%20Re.%20Forest%20Biomass%20%28February%2011%2C%202021%29.pdf?dl=0>

⁴⁶ <https://keskkonnaagentuur.ee/node/1093>

⁴⁷ Ministry of Environment of Estonia, Maakasutus, maakasutuse muutus ja metsandus ehk LULUCF – Land Use, Land Use Change and Forestry, 2022, <https://envir.ee/elusloodus-looduskaitse/metsandus/lulucf>



Water

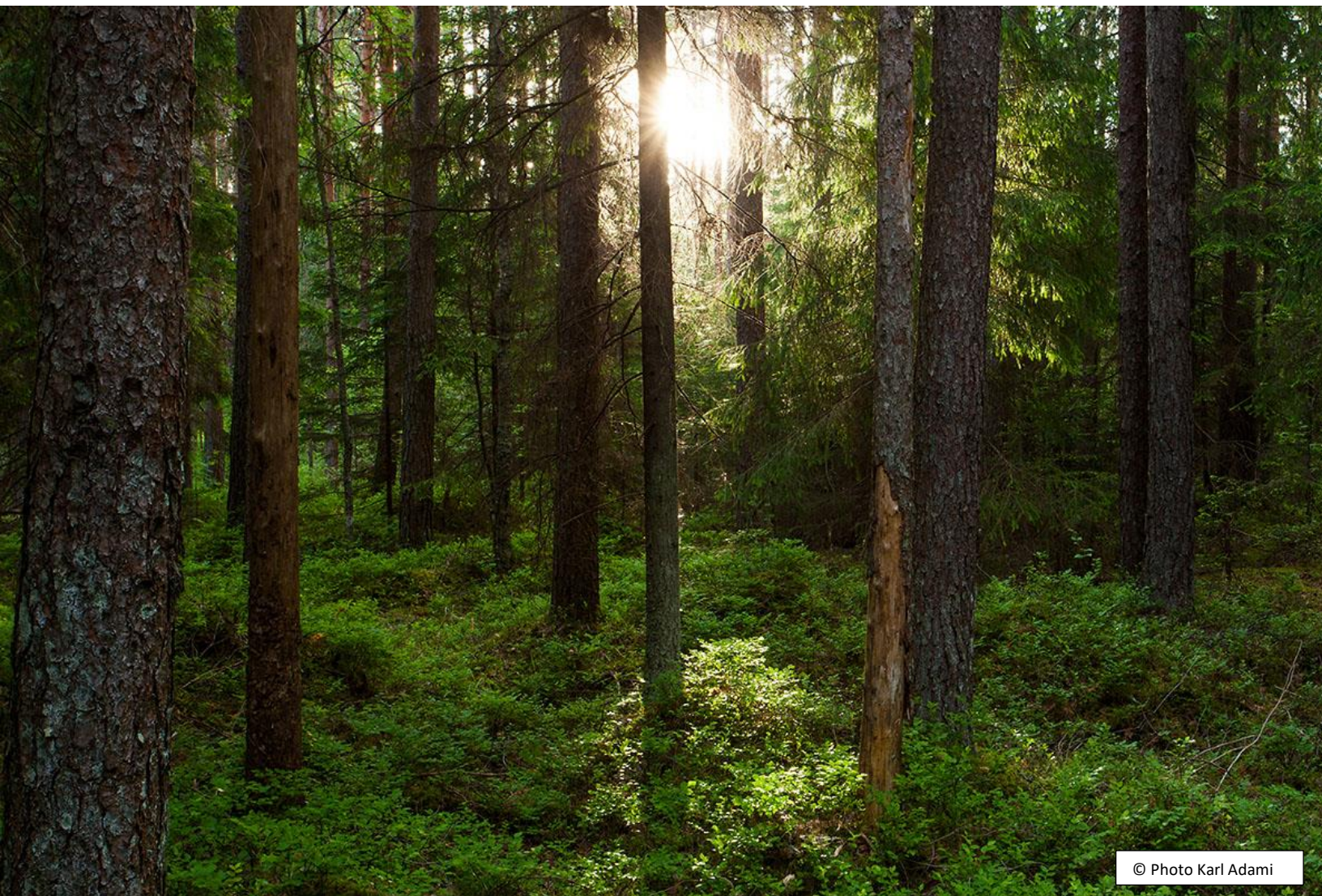
The most critical of the water related issues concerning the environment is bleaching. Although the technologies have improved, the EU regulation for best technology still allows the use of chlorine compounds for bleaching, that is, elementary chlorine-free (ECF) bleaching. The production process in the VKG mill will use this option⁴⁸. While the use of chlorine dioxide does significantly reduce the potential to form dioxins, it does not completely eliminate this risk. The use of ECF still generates AOX emissions (Adsorbable Organic Halides). Once released into the environment, these bioaccumulative substances may enter the food chain, where they can cause a number of adverse health effects⁴⁹. The HELCOM (Baltic Marine Environment Protection Commission) Action Plan⁵⁰ sets targets for nutrient loads in the Baltic Sea. At present, the loads of both nitrogen and phosphorus exceed these targets, and should therefore be reduced rather than increased, as is the case with the addition of the pulp mill, whether or not the quantities added are below the permitted environmental standards.

⁴⁸ The detailed SEA report of the 2nd phase of Lügänuuse special spatial plan:

<https://www.lyganuse.ee/documents/18275789/39345028/VKG+BTT+detaile+lahenduse+KSH+aruanne+aruteluks.pdf/ed0147ea-09c0-4807-b28c-111b558a7c49>

⁴⁹ Environmental Paper Network, 2017 <https://environmentalpaper.org/wp-content/uploads/2017/09/170112-Detox-paper-EPN-discussion-document-2-1.pdf>

⁵⁰ Helcom, Pollution load on the Baltic Sea, November 2022, <https://helcom.fi/wp-content/uploads/2023/01/Summary-of-the-HELCOM-seventh-pollution-load-compilation-PLC-7.pdf>



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Do we really need more pulp?

Why to further expand pulp & paper production at all? Production volume of paper and paperboard worldwide constantly kept growing for the last half century,⁵¹ and it is poised to keep growing in the coming decade.⁵² The fact is, this increase in the production of pulp and paper is not driven by a growing book production or an increasing demand for culture.⁵³ Paper ends up more and more in single-use applications, such as throw-it-away packaging.⁵⁴ Forests that took hundreds of years to grow and several centuries to reach their biological richness are cleared to produce unnecessary packaging: the vast majority of the virgin

⁵¹ Statista, Global paper and cardboard production, <https://www.statista.com/statistics/270314/global-paper-and-cardboard-production/>

⁵² Fortune Business Insight, Pulp and Paper Market Size, Share & Industry Analysis, By Category (Wrapping & Packaging, Printing & Writing, Sanitary, News Print, and Others), and Regional Forecast, 2025-2032, January 2025, <https://www.fortunebusinessinsights.com/pulp-and-paper-market-103447>

⁵³ Print Industry News, The European paper industry in 2023: decline in demand, production and impacts, August 2024, <https://www.printindustry.news/story/46767/the-european-paper-industry-in-2023-decline-in-demand-production-and-impacts>

⁵⁴ Towards Packaging, Paper Packaging Materials Market Size & CAGR | 4.45%, December 2024, <https://www.towardspackaging.com/insights/paper-packaging-materials-market-sizing>

wood used for pulp and paper production - over 70 per cent - comes from roundwood. 40% of the timber industrially logged goes into pulp & paper production.⁵⁵ And we consume far too much of it. Paper is light, flexible and, more importantly, it is cheap, as its true cost is not accounted for. Its cost is passed on to the environment, to the climate, and ultimately to future generations.

Roughly three billion trees are cut down annually around the world to meet the demand for paper packaging.⁵⁶ The global use of wood resources required to produce paper packaging destined to become soon waste, exceeds the capacity of world forests to produce it sustainably.⁵⁷ One thing must be clear: cutting down Estonia's forests to increase paper production means sacrificing them forever to useless products that will end up in the waste on the same day they reach the end consumer.

Paper is often regarded as a key element in the transition to a bioeconomy and is thus considered inherently sustainable and safe. However, not everything that is bio-based is necessarily sustainable or safe. Paper production, for example, may involve deforestation or forest degradation, extensive use of chemical compounds, and significant energy consumption.

The planetary boundary for global wood consumption: comparing the sustainable¹ supply capacity and the risk corridor to consumption levels

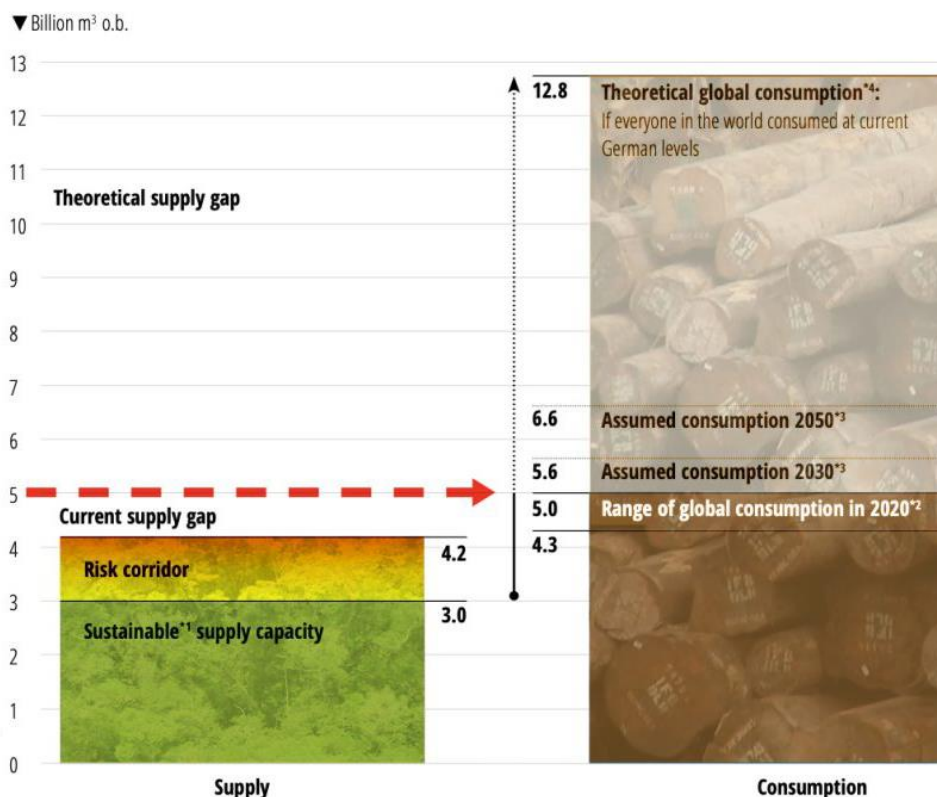
Notes:

¹ Sustainability here refers to quantity considerations, which is only one consideration when aiming for holistic forest management.

² Global consumption in 2020 is depicted as a range to depict uncertainty in conversion values (e.g. adjustments for bark and harvest losses), share of global consumption that stems from the sources outside the forest (e.g. roadsides), illegally sourced timber and statistical data uncertainty.

³ The global consumption values in 2030 and 2050 depict the highest boundaries respectively and are based on an extrapolation of historical trends over the decade 2010–2020.

⁴ The average annual German consumption level between 2015 and 2020 was taken as a reference for calculating “current consumption” because calamities (including massive beetle outbreaks) caused a spike in German harvests in 2020.



Center for Environmental Systems Research, University of Kassel, Beck-O’Brien, M., Egenolf, V., Winter, S., Zahnen, J., Griesshammer, N. (2022). Everything from wood, WWF Germany.

⁵⁵ Environmental Paper Network, The State of the Global Paper Industry, April 2018, https://environmentalpaper.org/wp-content/uploads/2018/04/StateOfTheGlobalPaperIndustry2018_FullReport-Final-1.pdf

⁵⁶ Environmental Paper Network, Pandemics, pets & packaging: Why paper reduction needs to be at the forefront of forest campaigners’ minds, June 2021, <https://environmentalpaper.org/2021/06/pandemics-pets-packaging-why-paper-reduction-needs-to-be-at-the-forefront-of-forest-campaigners-minds/>

⁵⁷ WWF, Everything from Wood, July 2022, <https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Wald/WWF-Study-Everything-from-wood.pdf>



Recommendations to the Estonian government

Shift the approach from forestry intensification to effective preservation and restoration efforts. Nature friendly forestry practices offer an opportunity for lower, but stable timber outcome, helping to preserve habitats and possibilities for non-timber usage, like recreation and nature tourism.

Prioritise long-life wood products, like furniture production and log building, and ensure forestry practices that focus on producing suitable timber. It has to be noted that pulp production does not fall into this category, since the average lifetime of pulp products - paper and cardboard packaging - is around two years, not more, and the products are mostly single-use.

Ensure a more comprehensive environmental impact assessment, including the full lifecycle and sourcing of timber required for the mill. Special focus must be placed on the long-term ecological consequences, particularly the effects on Estonia's forests, biodiversity, and carbon sequestration capabilities.

Strengthen forest management practices by enacting stricter regulations on logging volumes and banning intensive forest management methods in high-value biodiversity areas. Decision makers must ensure that the supply of timber is not prioritized over forest health and long-term sustainability.

Commit to preserving biodiversity by preventing further habitat loss, particularly in critical habitats for endangered species such as the flying squirrel, black stork, capercallie and others.

Take decisive action in reducing carbon emissions by lowering overall logging rates, supporting nature based carbon storage initiatives, and rethink the categorization of biomass energy as renewable energy sources.

Ensure transparent decision making, including a more robust public consultation process, taking into account the mill's carbon footprint, ecological damage, and the risk of overexploitation of forest resources.

Recommendations to investors

Financial institutions and investors can play a strong role in a global push towards a more sustainable pulp and paper future. You as an investor can make a difference and start investing only in business that include good protection and regeneration of natural forests (not wood plantations) as well as reducing harm to the people that might be directly or indirectly reliant on these forests and forested landscapes.

We urge you not to provide support to this or any other pulp capacity development projects that:

- cause deforestation, forest degradation, add unsustainable pressure to forest and other key natural habitats or cause loss or degradation of high carbon stock forests;
- increase the production and consumption of pulp paper to be used for wasteful single-use products;
- use of chlorine (either elemental chlorine or ECF bleaching);
- use and/or produce bioenergy from woody biomass

Please note: a more comprehensive set of 'no go' criteria concerning investment into pulp and paper production in general can be found in the document ***Do Not Cross: Red Lines In Pulp And Paper - Social and environmental criteria for financial institutions active in the pulp and paper industry*** .

By adhering to these Red Lines social and environmental do-no-harm-criteria financial institutions and other investors can stop financing harmful practices and start leading the charge toward a more sustainable, equitable, and resilient future.

The choices that you make today will not only influence the industry's practices but can also contribute to the broader global effort to protect our global biosphere and its resources for generations to come.

