

UPM Kaukas

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2022



UPM Kaukas

The mills of UPM Kaukas are located on the shore of Lake Saimaa in Lappeenranta. A pulp and paper mill, a biorefinery and a sawmill operate at the mill site. UPM's largest research and product development centre, UPM Forest's Eastern Finland wood-sourcing management and the Lappeenranta forest service office are also based at Kaukas.

The Kaukas mills form a unique integrated bioforestry industry unit where pulp, magazine paper, sawn timber, biofuels, biochemicals and energy are produced from renewable raw materials. In addition to UPM's mills, Kaukaan Voima Oy's biopower plant operates at the site, producing heat and electricity for Kaukas's mills and the inhabitants of the local area. Around 85% of the energy produced by Kaukaan Voima is made from renewable biomass.

Having several operations in the same area has many benefits. Integrated production can be controlled efficiently, from the point of view of environmental protection. The short distance between the mills improves cooperation, decreases the need for transport and enables the processing of effluents by a shared biological purification plant. Sustainably sourced raw wood material, the integrated mill's high level of energy self-sufficiency and the recycling of by-products into raw materials are the cornerstones of our operation.

This EMAS report covers the environmental aspects of the Kaukas pulp and paper mill. Social responsibility is addressed with regard to the entire integrated mill unit.



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|-----------------------------|---|
| Production capacity | 300,000 tonnes of coated magazine paper 700,000 tonnes of softwood and birch pulp 380,000 m ³ of pine timber 130,000 tonnes of renewable diesel and renewable naphtha |
| Personnel | Paper mill 245, pulp mill 264, sawmill 115, biorefinery 94, UPM Forest 28, NERC 172. In total, more than 1,000 persons work at UPM Kaukas in Lappeenranta. |
| Products | Magazine papers: (MWC, LWC): UPM Star, UPM Valor, UPM Ultra Pulp: UPM Betula, UPM Conifer and UPM Conifer Reinforcement Wood products: UPM Timber, UPM Plus Bio fuels: UPM BioVerno diesel, UPM BioVerno naphtha Biomedical products: GrowDex®, FibDex® |
| Residues | Pitch oil (biorefinery), turpentine and tall oil (pulp mill) |
| Bioenergy | Heat energy and electricity |
| Certificates | EMAS – EU Eco-Management and Audit Scheme (paper and pulp mill) ISO 14001 – Environmental Management System (paper and pulp mill, sawmill, biorefinery) ISO 50001 – Energy Management System (pulp mill) ISO 9001 – Quality Management System (paper and pulp mill, sawmill) ISO 45001 – Occupational Health and Safety System (paper and pulp mill, sawmill) ISO 22000 – Food Safety Management System (pulp mill) PEFC Chain of Custody – Programme for the Endorsement of Forest Certification (paper and pulp mill, sawmill) FSC® wood origin monitoring system – Forest Stewardship Council® (paper and pulp mill, sawmill) ETJ+ – Energy Efficiency System (paper mill) ISCC (International Sustainability and Carbon Certification) (biorefinery) RSB (Roundtable on Sustainable Biomaterials) (biorefinery) |
| | All certificates can be found from UPM's Certificate Finder www.upm.fi/vastuullisuus |
| Environmental labels | UPM pulp products have the approval for use in EU Ecolabel and Nordic Ecolabel paper. EU Ecolabel FI/11/001 for paper products More about PEFC products: www.pefc.fi More about FSC products: http://fi.fsc.org |



UPM Kaukas Environmental and Societal Responsibility 2022 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2022. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next Updated UPM Corporate Environmental Statement and also this supplement will be published in 2024.

UPM delivers renewable and responsible solutions and innovates for a future beyond fossils across six business areas: UPM Fibres, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. As the industry leader in responsibility, we are committed to the UN Business Ambition for 1.5 °C and the science-based targets to mitigate climate change. We employ 17,200 people worldwide and our annual sales are approximately EUR 11.7 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com



The mark of responsible forestry

For more information about FSC certification visit www.fsc.org



For more information about PEFC certification visit www.pefc.org



EU Ecolabel : FI/011/001

Review of the year 2022



2022 was exceptional in many ways. The strike, which started at the beginning of the year, lasted well into the spring. Immediately after the strike ended, the annual maintenance shutdowns of the paper and pulp mill began. Russia's offensive in Ukraine changed the operating environment and also affected the operations of the Kaukas mills. The pulp mill's birch pulp line was switched to softwood in August, and the availability of light fuel oil was used to prepare for the risk of natural gas availability.

Overall, the environmental impact of the UPM Kaukas integrated mill did not differ significantly from the levels in the 2000s, although pulp and paper production only started in May. Water emissions are partly proportional to production and its intensity. There were also emissions when there was no production. The wastewater treatment plant was kept running throughout the production standstill.

After production started in May, the operation continued to be material

efficient, raw materials were carefully utilised and all waste generated in the process was recovered, except for the green liquor dregs from pulp production.

The pulp mill's electricity generation capacity increased with the purchase of the recovery boiler turbine. The integrated mill provided other operators with more surplus electricity from pulp, increasing energy self-sufficiency.

Overall, the operations were in compliance with the environmental permit obtained in 2018. There were two exceptions to the environmental permit limit. The permit limit was exceeded in the annual measurements of particulate emissions from the recovery boiler. Nitrogen oxides per tonne of pulp produced in the orodous gas boiler were also above the annual limit. Measures to correct the anomalies are underway.

The environmental performance met the Best Available Techniques (BAT) obligations without affecting the pulp and paper mill's water consumption per tonne of product.

Of the 12 stakeholder feedback received during the year, five were related to various odor-related situations, while four of them were regarding noise issues. There was also one feedback regarding glare from lights, one regarding foam in the lake and one regarding lime deposition in a nearby area. Feedback were responded to quickly. The lights on the wooden gate were reoriented so as not to disturb the residents. The noise sources identified were also addressed.

Continuous improvement will be pursued to meet UPM's 2030 emission reduction targets. Improvement of energy efficiency and reduction of fossil carbon dioxide emissions, as well as water consumption, were the environmental objectives of Kaukas for 2022. In addition, the pulp mill aimed to reduce specific emissions and total phosphorus discharges to water. The paper mill aimed to improve material efficiency by reducing fibre emissions.

The energy efficiency targets were fully met. The amount of surplus electricity from pulp increased and the specific





► energy consumption of paper decreased. The emission targets were not met. Due to the exceptional year, the use of pitch oil in the blast furnaces was suspended, and heat was produced by natural gas during the strike, so there was no reduction in fossil carbon dioxide emissions. Specific discharges to water from pulp production also increased and water consumption was higher than in the previous year. However, measures were taken to reduce the total phosphorus discharge into the water body. Tree bundles installed in the outfall of the treatment plant kept the summertime outfall under control. The material efficiency improvement at the paper mill was successful and the fibre emission target was met.

A ten-year plan was drawn up to control invasive alien species in the integrated mill and the Tuosa landfill area. Giant hogweed has been controlled for years, but now the plan also covers other invasive species. The lupin and rugosa rose control measures started in the summer of 2022, with the 10-year programme to be rolled out more widely in 2023.

Towards 365 safe days

UPM strives for zero accidents. During the year, the Integrated mill suffered 11 accidents at work resulting in absence, 6 of which involved external operators. Of the five accidents resulting in absence of own personnel, three occurred at the sawmill, pulp mill and research centre each had one incident. There were no accidents at the paper mill and the biorefinery.

As precautionary safety measures, all UPM employees and contractors are required to report all near-miss situations and safety and environmental observations in the global One Safety reporting tool. These reports are reviewed daily, and any corrective measures are taken without delay. In addition, safety

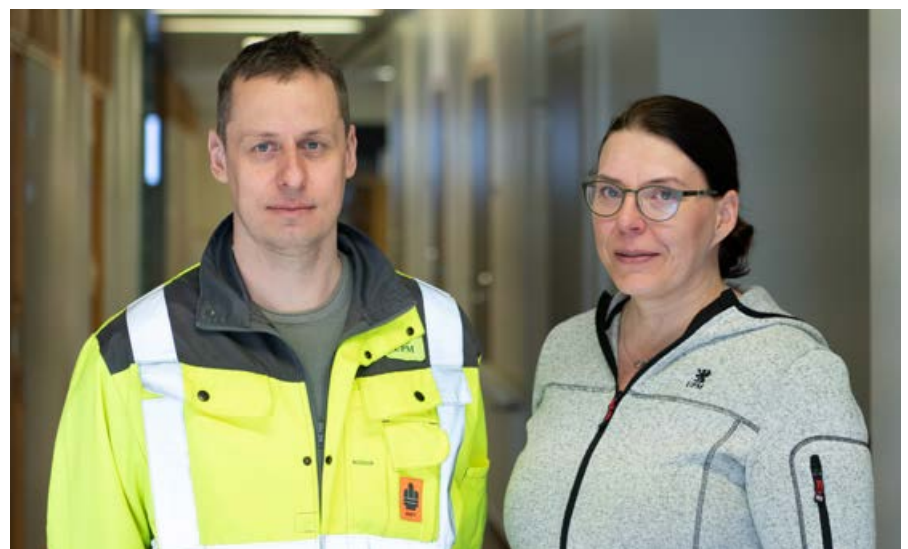
discussions are actively held at the workplaces, for example, between supervisors and subordinates, and safety tours are conducted throughout the mill.

Value from responsibility

Sustainability is at the heart of UPM Biofore strategy. The impact of our work extends from the local level to the wider society. We source our raw materials from responsibly managed forests and process them into products, changing the world of materials by providing sustainable alternatives to fossil-based products.

One of the largest employers in the city of Lappeenranta, UPM employs around 1,000 people and about 190 summer

interns. The tax revenue generated by UPM's operations has a significant social impact. UPM's local tax impact in the Lappeenranta area was approximately 45 million euros in 2022. UPM also contributes to the prosperity of local communities by sponsoring grassroots initiatives, with a particular emphasis in 2022 on supporting children and young people's education, literacy, and sports activities. Study visits, mill visits and participation in various events serve to educate young people about sustainable development, working life and society. In addition, schoolchildren, kindergarten-aged children and other interest group representatives are taken on forest trips.



Vesa Volmari
General Manager, UPM Kaukas

Minna Maunus-Tiihonen
Environmental Manager

Management of crises and exceptional situations

The following things are specified under the management of crises and exceptional situations, and communications at the mill properties and sites of Kaukas:

- Serious accidents and hazardous situations (major fires, explosions, chemical accidents)
- Environmental damage
- Serious work accidents (also on the way to or from work), traffic accidents on the mill site
- Serious production disruptions
- Other exceptional situations such as sabotage, demonstrations, work health and safety risks, risks that could harm UPM's reputation, cyber threats and network destruction, and threatening situations not within Kaukas e.g. at other industrial plants etc.

In cooperation with local operators

Rescue operations are always led by the rescue authorities. The mill's organisation is responsible for technical prevention and directs the fire extinguishing and rescue operations of its own personnel. The representatives of the production department are responsible for operational management, taking care of the controlled shutdown of production and

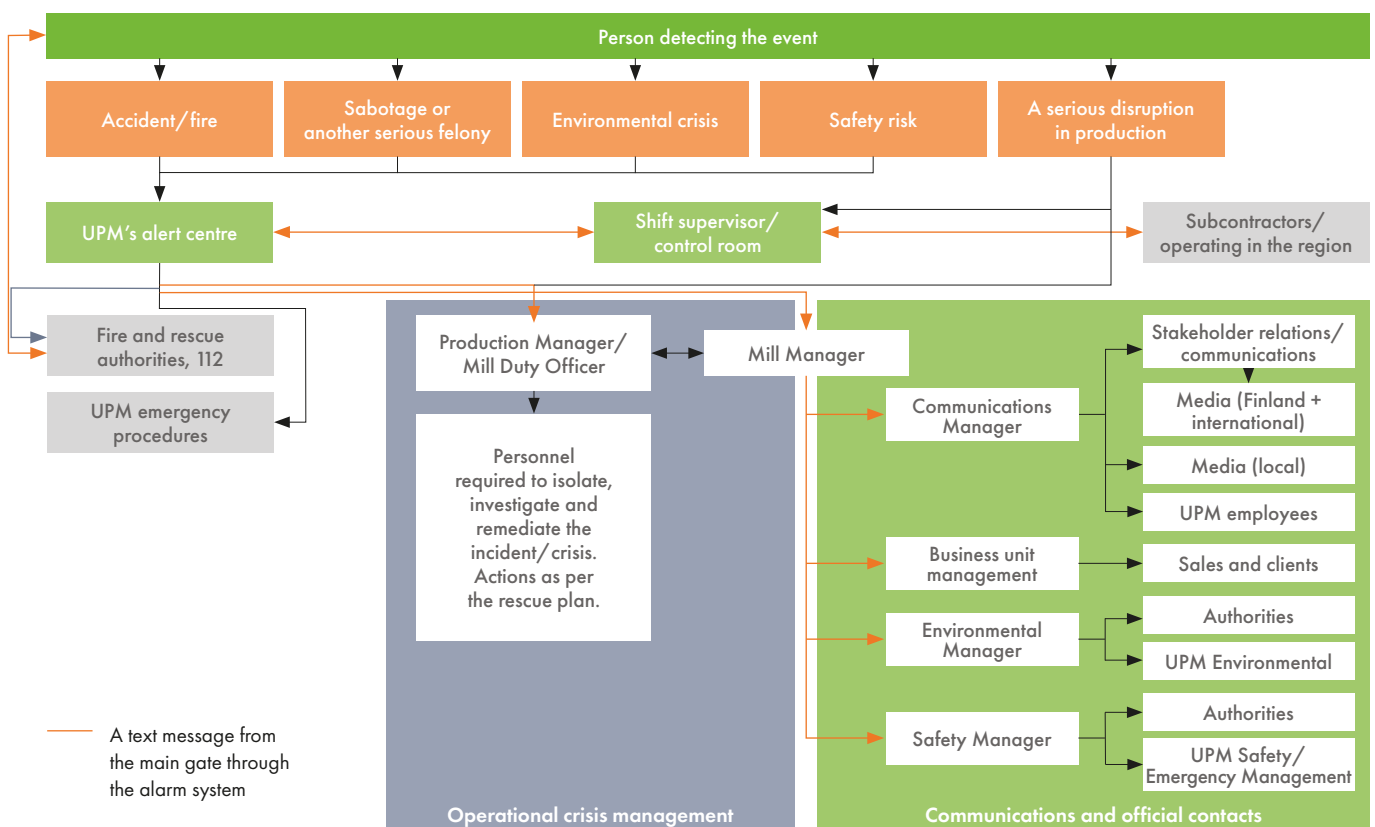
other measures to bring the exceptional situation under control. Investigation of the incident and the flow of information will proceed in accordance with the organisation's chain of command and agreed roles. The crisis communication group either consists of members of the mill's management group or is agreed on separately on case-by-case basis. Exceptional situations relating to Kaukaan Voima Oy and projects at the Kaukas mill site will be dealt with in accordance with the Kaukas integrated unit's guidelines and the organisation's actions. Other external companies located at the mill site will act according to their own guidelines, however, ensuring that all alerts will be made to the UPM Kaukas mills' emergency number as well as to the general emergency response number.

We actively cooperate with the rescue services. All possible major incident situations at the pulp mill were discussed with the South Karelia Rescue Department's shifts. Local contract firefighters were actively visiting and training at the mill site. Kaukas mill's own fire brigade trained almost weekly to maintain its operational readiness.



Despite the ongoing COVID-19 pandemic, which presented an exceptional situation, people adapted and learned to coexist with the virus. The situation was actively monitored and local COVID-19 guidelines were updated in accordance with the evolving circumstances. UPM extended its support in the battle against the pandemic by providing its personnel with COVID-19 home tests for personal use during their leisure time, in addition to the provision of face masks. During the annual maintenance visits to the Kaukas pulp mill, tests were also distributed to all contractors.

Crisis communication organisation chart



Contribution to UN Sustainable Development Goals in 2022



Air

Sulphur emissions were reduced by

60%

The waste water treatment did not cause any odour nuisance.



Taxes

The intergrate's tax impact approx.

EUR 45 million

Property taxes: EUR 0.74 million
Estimated municipal taxes on personnel salaries: EUR 7.5 million
Estimated corporate income tax: EUR 36.6 million based on the number of employees*

*Share for all the municipalities approx. 30%. Each municipality receives a share of this depending on the ratios calculated based on business and forest operations in the municipality.



Water

Phosphorus emissions to waters decreased

17%

Of the nutrients used at the purification plant

24%

were recycled nutrients.



Safety

1,448 days

without lost time accidents at the paper mill at the end of the year, an all-time record. Proactive safety work has been actively pursued. The pulp and paper mill has recorded 1,286 observations/incident reports. There have been 2,198 safety rounds and discussions.



Consumption impact*

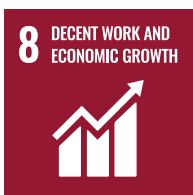
The mill's local consumption impact in 2021 was around

EUR 47 million

The consumption impact in the whole of Finland is approx.

EUR 96 million

*Private consumption of goods by 396 non-taxable persons outside the Kaukas mill area in 2022, generated by the net income of direct and indirect employees.



Health

The number of visitors to Kaukas sports club Kaukaan Lyly's training facilities increased by

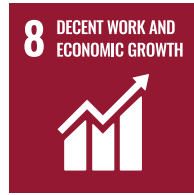
103 people



Certified Fibre

91%

of the fibre used in paper production was FSC® and/or PEFC-certified. UPM's goal is that all the fibre used is certified by 2030.



Community

In a work placement or apprenticeship

71 students

19 thesis workers

Cooperation was active between different schools and educational institutions.

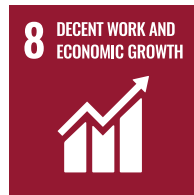


Energy

Of the energy used on the site,

96%

was produced by biofuels.



Employment

UPM Kaukas directly employed

932 people

and about

190 summer workers

The indirect local impact of employment was approximately 981 persons. Furthermore, an average of 396 workers from contractors worked at the site daily.



Waste

0 t

process waste was sent to a landfill from the paper mill. Green liquor dregs was the only waste fraction that needed to be disposed of in the landfill.



Supply Chain

approx.

81%

of raw material spend covered by UPM Supplier and Third Party Code (wood not included).



Biofuels such as bark and black liquor accounted for 96% of the energy used on the site. The bark removed from the wood at the pulp and paper mills and sawmills was used at the Kaukaan Voima power plant. The pulp mill's recovery boiler used black liquor, a by-product of the pulp production process, as fuel. The fossil fuels used were natural gas, peat and light fuel oil.

Fossil carbon dioxide emissions were higher than in the previous year. During the shutdown, water heated by natural gas burning in the soda boiler ensured the operation of the wastewater treatment plant. Due to possible challenges in the availability of natural gas, the mead furnace was adapted to run from natural gas into light fuel oil, which started in November. In the same context, the use of pitch oil as a fuel had to be suspended for the time being.

The pulp mill's specific emissions to air were at a good BAT level, except for nitrous oxide (NO_x) emissions from the odorous gas boiler. NO_x emissions have been measured once a year from the odorous gas boiler and in 2022 NO_x emissions exceeded both the BAT value and the limit value of the environmental permit. To remedy this situation, a continuous NO_x meter will be installed in the odorous gas boiler, which will provide real-time information to adjust the process as needed.

Particulate emissions from the recovery boiler remained high. An environmental permit was recorded for the result of a check measurement that exceeded the permit limits. This will be remedied by a major overhaul of the electrical filters in 2023.

The use of birch as a raw material for pulp production was discontinued in August. The birch fibre line was converted into a softwood fibre line, and the mill became a softwood pulp mill. The change affected the air emission limits in the environmental

permit for the recovery boiler. The NO_x specific emission limit was reduced from 1.7 to 1.6 kg/ADt. The fuel change for the blast furnace also affected the air emission permit limit. The NO_x emission limit for gas combustion is 0.3 kg/ADt. For liquid fuels, the limit is 0.2 kg/ADt.

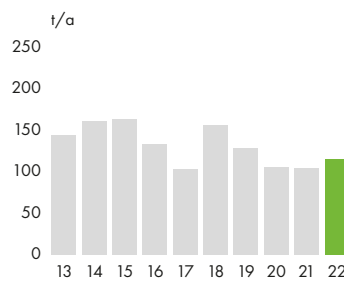
Sulphur dioxide emissions decreased compared to the previous year, although the use of a back-up burner in the odorous gas boiler to support odorous gas treatment was lower than in the previous year. In January, it burned almost exclusively natural gas, which does not produce sulphur emissions.

In air quality measurements in the city of Lappeenranta, emissions of sulphur dioxide

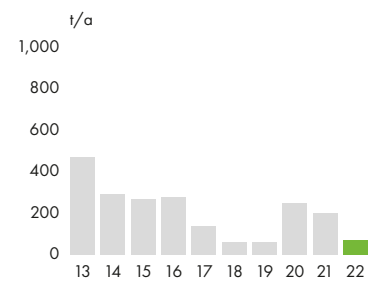
or reactive sulphur compounds (TRS) were below the daily limit values. TRS emissions consist of TRS compounds in the odorous gas from the recovery boiler, the odorous gas boiler and the lime kiln fugitive emissions and emissions during abnormal situations. Incidental emissions, where odorous gas cannot be treated, decreased from the previous year. The diffuse emissions of waste water treatment and sludge treatment are not included in the figures.

The total emissions into the air from the pulp and energy production of the mills of UPM Kaukas are presented in the following graphs describing annual emission amounts.

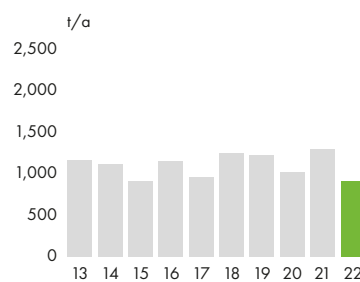
Carbon dioxide (fossil), CO₂



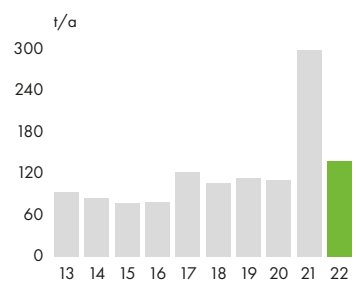
Sulphur dioxide, SO₂



Nitrogen oxides, NO_x



Particulates, TSP



In addition to the emissions of UPM Kaukas, the atmospheric emissions include the share of the energy used by the integrated unit from Kaukaan Voima.



Waste



In the past year, pulp and paper production generated around 22,600 tonnes of waste in dry material. The majority of this, 19,400 tonnes, was process waste and the rest separately collected waste. The figures include UPM's share of Kaukaan Voima's waste.

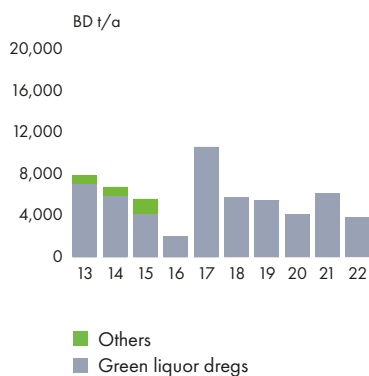
The amount of waste taken to the Tuosa landfill was 3,806 tonnes, which was about 38% less than the previous year. The remaining waste was diverted for beneficial use either directly or through intermediate storage. In 2022, 83% of the total waste generated was successfully reused. Green liquor dregs, along with fly ash and bottom ash from Kaukaan Voima, were used as raw material for earthworks. Bark sand and sewage treatment plant sludge were used as composting and raw materials. The disposal of waste at the Tuosa landfill was limited to only the green liquor dregs generated in the chemical cycle of pulp. However, even this waste was partially utilized by mixing it with ash for the construction of field structures used for wood and fuel storage.

Much of Kaukas' green liquor dregs have already been used in field construction. A new project between UPM's pulp mills and an external operator is exploring the use of green liquor in new products. The first mill test runs were postponed by one year from spring 2022.



One of UPM's global 2030 sustainability targets is to recycle or reuse all its process waste. One of the most difficult by-products to recycle is green liquor dregs, for which UPM has long sought resource-efficient circular economy solutions.

Waste to the Tuosa landfill



The tonnes in the graph are given as dry weights.

Noise



Noise into the surrounding area is caused by the operations of the Kaukas mills. According to the environmental permit, the noise level in outdoor areas of the residential area in the vicinity of the mill site may not exceed 55 dB in the daytime and 50 dB at night. A computational noise model has been developed for the area affected by the plant, and its accuracy is monitored by regular noise measurements. The model is updated in conjunction with investments and significant process changes.

The noise measurements carried out in 2022 showed that noise levels were below the limit values during the day and at night at monitoring points where measurements have been carried out for years. Measurements were taken for the first time at a site south of the mill site, where the limit values were exceeded. Noise at this site is mainly caused by road and rail traffic in the city. In the computational model, the noise level in this area is lower than the measurements, as the model takes into account the noise from the mill, not the passing traffic. Weather conditions, wind direction and other ambient noise, in addition to the noise from the plant, affected the noise levels at the different measurement points.



Water

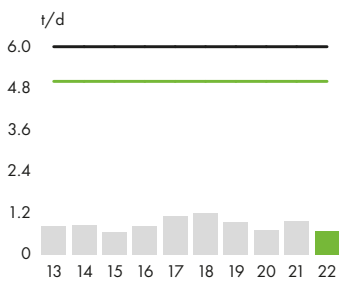


The Kaukas mill used a total of 74 million cubic metres of water in the manufacture of pulp and paper in 2022. 41% of this was process water that was purified at the biological purification plant. The rest of the water was, among other things, process cooling water.

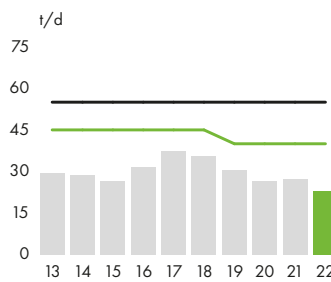
Water consumption per tonne of pulp produced increased compared to the previous year. The year 2022 cannot be considered comparable due to the prolonged industrial action and the raw material and fuel situation caused by the war in Ukraine. The conversion of the

birch line to a softwood line in August increased water consumption, as it took time to adjust the line to the new running pattern. Water consumption decreased towards the end of the year, but there was still room for optimisation for the coming year. During the strike at the beginning of

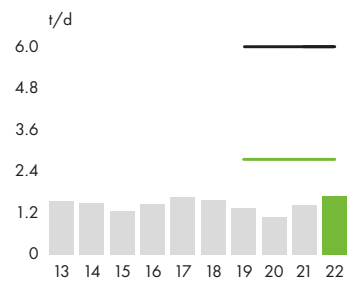
Biological oxygen demand, BOD,



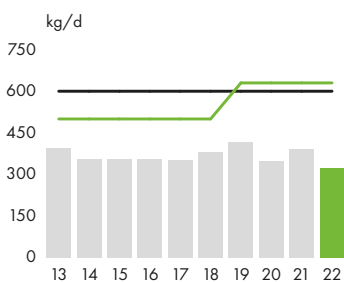
Chemical oxygen demand, COD



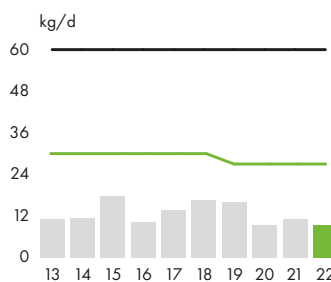
Total suspended solids, TSS



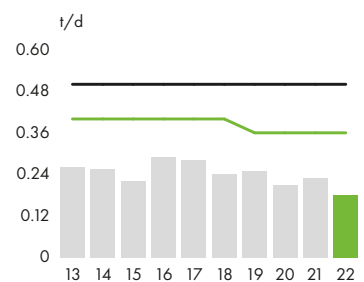
Nitrogen, N



Phosphorus, P



Halogenated organic compounds, AOX



— Monthly limit — Annual permit





the year, water was used at the mill, for example, to thaw the pipelines.

Wastewater treatment was in operation throughout the strike and the biomass feed was provided by the plant's filters and recycled feed. The temperature was maintained by heating water in the recovery boiler. During the strike, emissions of solids were higher than normal and other emissions were significantly lower. After production started in May, the plant quickly started to operate at a high capacity. The raw material change at the pulp mill in August also had an impact on waste water treatment. Wastewater from softwood production contains more persistent compounds and is less clean than wastewater from birch production. This was reflected in a decrease in the chemical oxygen demand (COD) separation efficiency.

The separating power of the wastewater treatment plant was good with regard to

all loading components. 99% of the BOD load directed to the wastewater treatment plant was removed, 78% of the COD load, 84% of phosphorus, 43% of nitrogen and 62% of organic halogen compounds. 24% of the nutrients required by the treatment plant were replaced by recycled nutrients.

There was no typical summertime increase in phosphorus emissions, partly due to the chemical used for proactive odour sequestration and partly due to the continued nutrient sequestration by trees in the Pappila pond. To prevent odours, chemicals were introduced into the wastewater treatment pond, which had previously presented challenges. The chemicals also precipitate phosphorus, reducing the amount of phosphorus that reaches the lake. The canopies of the trees placed in the Pappila pond in 2020 further reduced nutrient loads during the growing season. In addition to the tree tops, three nets filled with wood chips were placed into the Pappila pond to increase

the wood area in the summer of 2022. The vegetation that thrived on the surface of the wood material effectively utilized the nitrogen and phosphorus dissolved in the treatment plant's effluent water as a source of nutrients. By consuming these nutrients from the effluent water, the vegetation significantly reduced the nutrient load of the plant.

The load to Lake Saimaa decreased for almost all measured variables compared to the previous year, only the discharge of solids increased. The effluent load of the pulp mill was above the BAT level, except for water consumption, which was above the BAT level due to several anomalies in 2022, and phosphorus load, which improved to below the minimum BAT level. In paper production, waste water loads were at BAT levels, except for water consumption above BAT levels.

Societal responsibility

Occupational, process, and environmental safety are an integral part of our daily activities and nothing takes precedence over them. Our permanent target is zero accidents. We strive to reduce and eliminate accidents through continuous improvements and effective risk management. We require all of UPM's employees and contractors to report any environmental and safety observations.

We train our personnel continuously with regard to safety. When the COVID-19 situation improved training was also provided on a face-to-face basis. These included firefighter card training, occupational safety card training, emergency first aid course and defibrillator training. We also organised a course for civil defence shelter managers.

In autumn, Kaukas celebrated a week dedicated to promoting safety and well-being in the workplace. The varied programme offered the employees the opportunity to get on board a locomotive, listen to lectures on safety and health, participate in various safety challenges, learn about Kaukas sports club and measure their body composition, among other things.

Personnel mobility and physical activity

Kaukaan Lyly, the in-house sports club of Kaukas, provided a range of well-being services to its staff. Activity picked up after a long period of COVID-19 restrictions and during 2022 the number of visitors to the sports hall increased. Group exercise classes in particular grew in popularity. The Fascia workout session, which started in 2022, was the most popular.

In addition to the wide range of activities on offer at the gym, there was also orienteering, ice hockey and golf. Lyly had its own team in the Jukola relay. Lyly organised several family events such as sports competitions, a Christmas party for children and an activity day in Rauha.

In addition to the services provided by their dedicated sports club, Kaukas employees had the opportunity to utilize their ePassport balance, which amounted to 250 euros, for a wide range of sports, cultural, and wellness services.

All personnel also have access to online services, which offer break exercise, well-being challenges and personalised

programmes, as well as remote exercise for work and leisure.

Cooperation with local communities

Kaukas provides diverse employment opportunities for individuals with skills across various fields. Our goal is to enhance awareness about the possibilities within the sector and inspire young people to explore potential career paths within the industry. We participated in events organised by local educational institutions, such as the DuuniDay contact event of Lappeenranta University of Technology, which was held for the first time since the COVID-19 pandemic at the university's premises. Guest lectures in the region's schools and educational institutions were an integral part of our activities. The work of the forest ambassadors also continued, as in previous years.



DuuniDay, the largest recruitment event in South Karelia, brings together students and employers.

We are involved in many collaborative projects, mainly focused on the well-being of the local community. In 2022, most of our marketing cooperation was aimed at supporting learning, reading and sports activities for children and youths. We work together with many local associations and clubs. With our help, they organised, for example, sports activities for schoolchildren, summer holiday activities, after-school clubs and free sporting events for children.

We provided timber from our sawmill for the traditional Myllysaari Midsummer bonfire built by Lions Club Lappeenranta Saimaa. We also participated

in Lappeenranta's Enterprise Village, where we offered children engaging educational activities to introduce them to the forest industry and international forestry practices. Through these activities, they gained valuable insights into international operations as well as the manufacturing and marketing processes involved in various products.

In September, we organised a forest hike for around 300 sixth-grade pupils. The students joined us to learn about the forest and its products in cooperation with the Finnish Forestry Association. During the excursions, sixth-grade students accompanied by teachers had



the opportunity to explore expert-led activity trails, where they learned about topics such as tree growth, the carbon cycle, the significance of forests as a hobby, and forest regeneration. Moreover, each student had the chance to actively participate in planting a sapling, contributing to the cultivation of future forests, and relish a packed lunch by a campfire. The primary objective of the forest trips was to offer students a positive and enriching experience in nature while enhancing their understanding of the utilization of Finnish forests. Based on the feedback we received, it is evident that we achieved these goals.



One of Kaukas' partners, the Finnish Maritime Rescue association of southern Saimaa, collects loose wood that has escaped from drifting near the boat rivers. Photo by Toni Kolhonen



Kaukas in-house sports team Kaukaan Lyly participated in the Jukola relay.

Economic prosperity for the region

Although we operate in a global market, our impact is largely local. We bring significant wealth to the region of South Karelia, the positive effects of which manifest in many ways. We generate a significant amount of tax revenue. The property taxes paid and the municipal share of corporate income taxes support the local economy. In addition, the municipal taxes and social security contributions that the employees pay from their wages have a significant local impact. Our local tax impact in the local area was EUR 45 million in 2022 and the consumption impact of the integrated mill was around EUR 47 million in 2021.

As the largest private employers in Lappeenranta, UPM Kaukas employed nearly 1,000 skilled workers in 2022. We hired around 190 summer workers, mainly from local educational institutions. During the year, we offered internships to 71 students/trainees and carried out 19 thesis projects.

We use over five million cubic metres of wood at our mills, most of which is sourced from nearby areas. In addition to forest owners, this provides work and a livelihood to tree harvester and timber truck drivers, loggers and other forestry professionals.

Environmental parameters

The figures related to production as well as raw material and energy consumption are published as aggregated figures at the group level in the UPM Corporate Environmental and Societal Responsibility Statement.

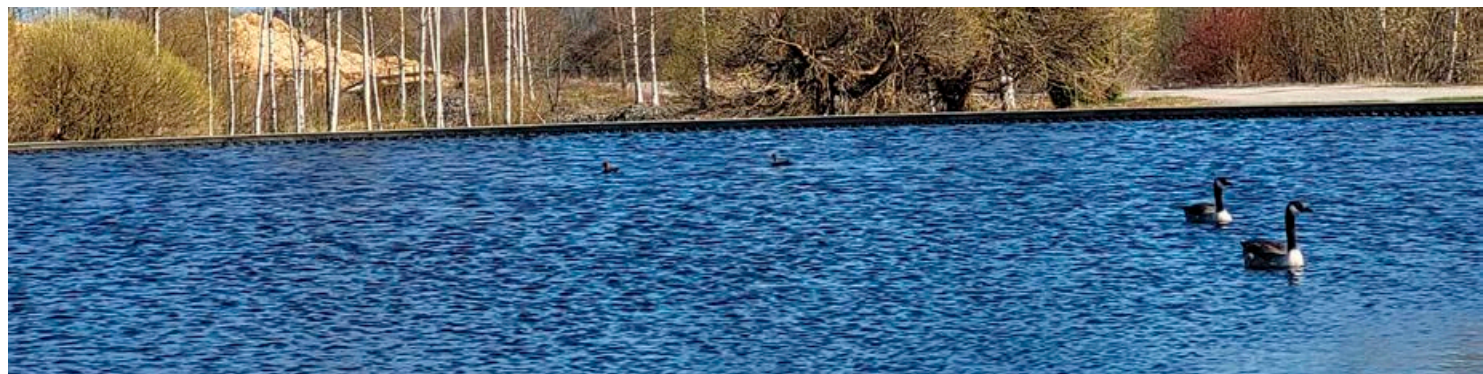
| | | 2020 | 2021 | 2022 |
|---|---|--|-----------------------------|-----------------------------|
| Production capacity | Magazine paper | 305,000 t | 300,000 t | 300,000 t |
| | pulp, | 770,000 t | 770,000 t | 700,000 t |
| | –softwood | 440,000 t | 440,000 t | 500,000 t |
| | –birch | 330,000 t | 330,000 t | 200,000 t |
| Raw materials | Wood, cooking chemicals, bleaching chemicals, filler and coating pigments, paper manufacturing pigments | See UPM Corporate Environmental and Societal Responsibility Statement for more information | | |
| Energy | Biomass-based fuels | 91% | 91% | 88% |
| | Fossil fuels | 9% | 9% | 12% |
| | Purchased electricity ¹⁾ | | | |
| Emissions to air include UPM's share of Kaukaan Voima's emissions | Carbon dioxide, CO ₂ (scope 1) ²⁾ | 114,780 t | 104,304 t | 114,780 t |
| | Carbon dioxide, CO ₂ (scope 2) ³⁾ | | | 49,461 t |
| | Nitrogen oxides, NO _x | 1,021 t | 1,294 t | 903 t |
| | Sulphur dioxide, SO ₂ | 248 t | 201 t | 72 t |
| | Dust particles | 127 t | 318 t | 147 t |
| | Odorous sulphur compounds, TRS | 42 t | 31 t | 16 t |
| Water intake | Process and cooling water | 85.4 million m ³ | 98.3 million m ³ | 73.5 million m ³ |
| Discharges to water | Wastewater | 36.2 million m ³ | 38.3 million m ³ | 30.3 million m ³ |
| | BOD ₇ | 266 t | 303 t | 253 t |
| | COD | 9,434 t | 9,962 t | 8,390 t |
| | Total suspended solids, TSS | 384 t | 519 t | 619 t |
| | Phosphorus, P | 3.3 t | 4.1 t | 3.4 t |
| | Nitrogen, N | 123 t | 140 t | 118 t |
| | Organic halogen compounds, AOX | 75 t | 84 t | 66 t |
| | | | | |
| Waste⁴⁾ | Taken to landfill for disposal | 4,134 t | 6,127 t | 3,806 t |
| | – green liquor dregs | 4,134 t | 6,127 t | 3,806 t |
| | For utilisation | 21,677 t | 19,251 t | 16,694 t |
| | – bark sand and stones | 986 t | 1,189 t | 638 t |
| | – green liquor dregs | 5,368 t | 4,207 t | 4,531 t |
| | – lime sludge and limestone calcines | 4,654 t | 1,057 t | 1,672 t |
| | – ash from the power plant | 5,720 t | 7,191 t | 6,947 t |
| | – recycled cardboard and paper | 447 t | 752 t | 336 t |
| | – metals | 515 t | 516 t | 501 t |
| | – construction waste | | 1,016 t | 17 t |
| | – other separately collected waste | 0 t | 368 t | 212 t |
| | – waste water treatment sludge | 2,698 t | 2,955 t | 1,840 t |
| | To interim storage | 405 t | 3,160 t | 2,102 t |
| | – lime fertiliser | 405 t | 727 t | 0 t |
| | – soil | 0 t | 2,433 t | 1,006 t |
| | – asphalt and concrete | | | 1,096 t |
| | Hazardous waste | 265 t | 265 t | 53 t |
| Land use | Total land use | 232 ha | 232 ha | 232 ha |
| | Area impermeable to water | 203 ha | 203 ha | 203 ha |
| | Area directed towards nature conservation | 29 ha | 29 ha | 29 ha |
| | Area directed towards nature conservation outside the place of business | 68 ha | 68 ha | 68 ha |
| | | | | |

¹⁾ See the Group's Environmental and Social Responsibility Statement for more information (e.g. energy indicators).

²⁾ Fossil emissions from own energy production, scope 1.

³⁾ Fossil emissions from purchased energy, scope 2.

⁴⁾ Waste quantities are given in dry weight, excl. hazardous waste.



Performance against targets in 2022

| TARGET | ACHIEVEMENT | COMMENT |
|--|-------------|--|
| Zero accidents | Partly | The pulp mill suffered one accident resulting in absence of its own personnel. At the paper mill, there were no incidents involving our own personnel. LTAF pulp 2.81 and paper 0. |
| Active precautionary safety activity | Yes | Precautionary safety measures were carried out well. There were 588 observations and incident reports at the paper mill and 698 at the pulp mill. There were 287 safety rounds and discussions at the paper mill and 1,911 at the pulp mill. |
| Paper mill material efficiency | Yes | Fibre emissions decreased and were on target. |
| Reducing specific emissions from the pulp mill compared to the previous year | No | Specific emissions increased for both COD and AOX due to the change in raw material. |
| Reducing the amount of waste water | No | The waste water reduction target was not met and specific water consumption at the pulp mill increased. |
| Reducing phosphorus emissions | Yes | Phosphorus emissions to the lake decreased during the year. |
| Reducing fossil carbon dioxide emissions | No | The use of fossil fuels increased due to the exceptional year. |
| Improving energy efficiency | Yes | The amount of surplus electricity from pulp increased, the specific energy consumption of paper decreased. |
| Solving the odour challenge of a wastewater treatment plant | Yes | In the summer of 2022, there were no odour problems. |

Targets for 2023

| TARGETS | SCHEDULE | INDICATORS AND KEY MEASURES |
|--|----------|--|
| Zero accidents or serious incidents | 2023 | Pulp: TRIF < 5.5 (including contractors) Paper: TRIF < 4 Maintaining a safety culture and implementing the planned programme |
| Active precautionary safety activity | 2023 | Safety observations; pulp 600 pieces, paper 1,000 pieces Safety rounds and discussions; pulp 1,440; paper 500 |
| Paper mill material efficiency | 2023 | Fibre emissions < 6.0 t/d Improving paper machine operability. |
| Reducing specific emissions at the pulp mill compared to the previous year | 2023 | COD and AOX kg/Adt < 2022, process optimisation after species change, introduction of an oxidised white liquor plant |
| Reducing the amount of waste water | 2023 | Pulp: < the 2022 level Paper: < 15 m ³ /t |
| Phosphorus emission control | 2023 | Phosphorus discharges to the lake < 10 kg/d, continuation of the wood chip experiment and, if necessary, use of a chemical in summer |
| Reducing fossil carbon dioxide emissions | 2023 | Investing in electric boilers to replace natural gas |
| Improving energy efficiency | 2023 | Pulp: ensuring energy self-sufficiency Paper: reducing specific consumption of energy |
| Raising environmental awareness | 2023 | Environmental permit review with pulp mill personnel by department |



Validation Statement

As an accredited environmental verifier (FI-V-0001), Inspecta Sertifiointi Oy has examined the environmental management system and UPM Kaukas Environmental and Societal Responsibility 2022 statement as well as the information concerning UPM Kaukas in the Updated UPM Corporate Environmental and Societal Responsibility Statement 2022.

On the basis of this examination, the environmental verifier has herewith confirmed on 2023-04-04 that the environmental management system, the Finnish UPM Kaukas Environmental and Societal Responsibility 2022 statement and the information concerning UPM Kaukas in the Finnish Updated UPM Corporate Environmental and Societal Responsibility Statement 2022 are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.



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