UPM BIOFORE
BEYOND FOSSILS

UPM Kaukas

# ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2020

# 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 Metsä'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 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 90% 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 unit'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 has been addressed with regard to the entire integrated unit.

| | |
|---|---|
| **Production capacity** | 305,000 tonnes of coated magazine paper<br>770,000 tonnes of softwood and birch pulp<br>510,000 cubic metres of pine and spruce timber<br>130,000 tonnes of renewable diesel and naphtha |
| **Personnel** | Paper mill 240, pulp mill 295, sawmill 126, biorefinery 90, UPM Metsä 27, NERC 164. In total more than 1,000 persons work at UPM Kaukas in Lappeenranta. |
| **Products** | Magazine papers: (MWC/LWC): UPM Star, UPM Valor, UPM Ultra<br>Pulp: UPM Betula, UPM Conifer, UPM Conifer Reinforcement<br>Wood products: UPM Timber, UPM Plus<br>Biofuels: UPM BioVerno diesel, UPM BioVerno naphtha<br>Biomedical products: GrowDex®, FibDex®<br>Residues: pitch oil, turpentine, tall oil |
| **Bioenergy** | Heat energy and electricity |
| **Certificates** | EMAS – EU Eco-Management and Audit Scheme<br>ISO 14001 – Environmental Management System<br>ISO 50001 – Energy Management System<br>ISO 9001 – Quality Management System<br>ISO 45001 – Occupational Health and Safety Management System<br>ISO 50001 Energy Management System<br>ISO 22000 – Food Safety Management System<br>PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification<br>FSC® Chain of Custody – Forest Stewardship Council<br>ETJ+ – Energy Efficiency System<br>ISCC EU – International Sustainability and Carbon Certification<br>ISCC PLUS – International Sustainability and Carbon Certification<br>RSB EU RED – Roundtable on Sustainable Biomaterials<br>RSB low ILUC risk – Roundtable on Sustainable Biomaterials<br>RSB Standard for Advanced Products – Roundtable on Sustainable Biomaterials,<br>Finland's national sustainability scheme<br><br>All certificates can be found from UPM's Certificate Finder<br>(available at www.upm.com/responsibility) |
| **Environmental labels** | UPM's pulps have been approved for use in paper products that bear the EU Ecolabel and Nordic Ecolabel.<br>EU Ecolabel FI/11/001 for paper products<br>More about PEFC products: www.pefc.fi<br>More about FSC products: http://fi.fsc.org |


UPM Kaukas Environmental and Societal Responsibility 2020 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 2020. 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 2022.

UPM delivers renewable and responsible solutions and innovates for a future beyond fossils across six business areas: UPM Biorefining, 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 18,000 people worldwide and our annual sales are approximately EUR 8.6 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

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EU Ecolabel www.ecolabel.eu
EU Ecolabel : FI/011/001

# Review of the year 2020

Environmental performance improved in many ways. Discharges into the water system decreased by more than 10% and less waste was produced than before.

**Operations in compliance with the environmental permit**

In 2020, the environmental impact of the UPM Kaukas integrated mill unit remained mostly at the same level as it has been since the turn of the millennium. Discharges into the water system decreased in comparison with the previous year by more than 10% with regard to all regularly monitored load factors. Operations in the integrated unit continued material-efficiently, raw materials were utilised carefully and less process waste was produced than the year before.

2020 was exceptional in many ways. The first part of the year was coloured by the additional production stoppages of the pulp and paper mill, related to collective bargaining talks. The maintenance downtime planned for the spring was moved to the autumn due to the COVID 19 pandemic. The production quantities were lower than the previous year at both mills. The electricity production of the pulp mill was reduced by the stoppage in production caused by the overhaul and investment work on the soda boiler of the pulp mill.

Operations throughout the whole year and in all aspects were in accordance with the environmental permit obtained in 2018. There were two borderline environmental permit deviations, one of which was caused by a treatment problem to do with odorous gases and the other by the particle emission of the soda boiler exceeding concentration levels. The other conditions of the environmental permit were met. Environmental performance also fulfilled the obligations of the BAT (Best Available Techniques) document for the most part, except for the water consumption of the paper mill. In December, the regional administrative agency supplemented the permit regulations of the interim storage area of the Tuosa dump by, amongst other things, adding monitoring obligations. The monitoring plan shall be updated to be in line with the new regulations during the spring of 2021.

During the year, 16 pieces of stakeholder group feedback were received, most of which concerned adverse odours associated with waste water treatment. In order to rectify the matter, the dredging that reduced odours a few years ago shall be redone during the spring of 2021 and regularly thereafter. One odour situation that led to feedback was caused in conjunction with ramping up after the stoppage of the mill when, due to problems that arose in the process, methanol vapour caused adverse odours, both in the proximity of the mill site and, exceptionally, also further away. There was also feedback in the summer regarding dust during the field construction at the Tuosa dump site, on the basis of which dust prevention measures were intensified.

Improvement of energy efficiency and reduction of fossil carbon dioxide emissions, as well as water consumption, were the environmental objectives of Kaukas for 2020. In addition to these, the objective of the pulp mill was to

- reduce specific discharges going into the water system, and at the paper mill, the objective was an improvement in material efficiency by reducing fibre discharges. Energy efficiency targets were not reached in all aspects, which was partly due to a longer break in the mills' electricity production and the paper mill's increased number of downtimes. A reduction in fossil carbon dioxide emissions was successful. The specific discharges from pulp production also decreased significantly and water consumption was also lower than during the previous year. The fibre discharge target of the paper mill was not reached due to the intermittent operation of the mill.

**The target is zero accidents**

UPM's ongoing target is zero accidents. The total number of work accidents of the Kaukas mills was half that of the previous year. In 2020, there were no workplace accidents at the paper mill and biorefinery that led to an absence. There were two cases of each of these at the pulp mill, sawmill and research centre. 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 conducted actively in the workplaces between, amongst others, foremen and workers, and safety rounds are also done in different parts of the mill. The targets set for proactive safety reports were clearly exceeded. The significant work done at Kaukas to improve safety has also been noticed elsewhere.

In 2020, the Kaukas pulp mill got the UPM concern's Best Improver work safety award for continuous improvement. There were no lost-time accidents at the paper mill during 2020. It has been nearly two years since the last accident and the ongoing accident-free period is the longest in the history of the mill.

**Value from responsibility**

Responsibility is an essential part of UPM's operations. UPM, as the city's largest private employer, employs around 1,000 persons and 180 summer trainees. The tax revenue generated by UPM's operations has a significant social impact. UPM's local tax impact in the Lappeenranta area is approximately 20 million euros, and the consumption impact resulting from the integrated mill unit is approximately 49 million euros.

UPM also supports local vitality through sponsoring local projects which, in 2020, were focused on learning, reading and sports activities for children and youths. Study visits, mill visits and participation in various events are used 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 of
the Kaukas integrated unit

Minna Maunus-Tiihonen
Environmental Manager

# Management of crises and exceptional situations

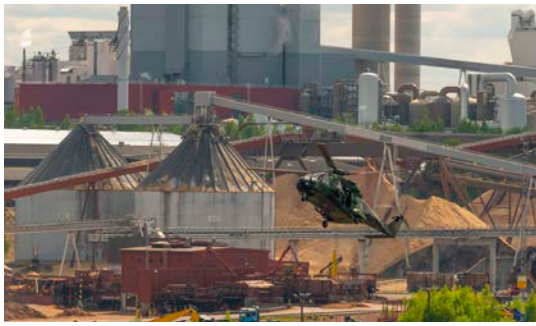
The following things are specified under the management of crises and exceptional situations, and communications at the mill properties and sites of Kaukas:
- Serious accidents and hazardous situations (major fires, explosions, chemical accidents)
- Environmental damage
- Serious work accidents (also on the way to or from work), traffic accidents on the mill site
- Serious production disruptions
- Other exceptional situations such as sabotage, demonstrations, occupational health and safety risks, risks related to UPM's reputation, cyber threats and the destruction of the data network, threatening situations coming from outside Kaukas, e.g. from another factory etc.

**Management of crises and exceptional situations**

Rescue operations are always led by the rescue authorities. The mill's organisation is responsible for technical prevention and directs the 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 happens in accordance with the organisation's chain of command and agreed roles. The crisis communication group consists of members of the mill's management group, or is formed separately on a case-by-case basis.

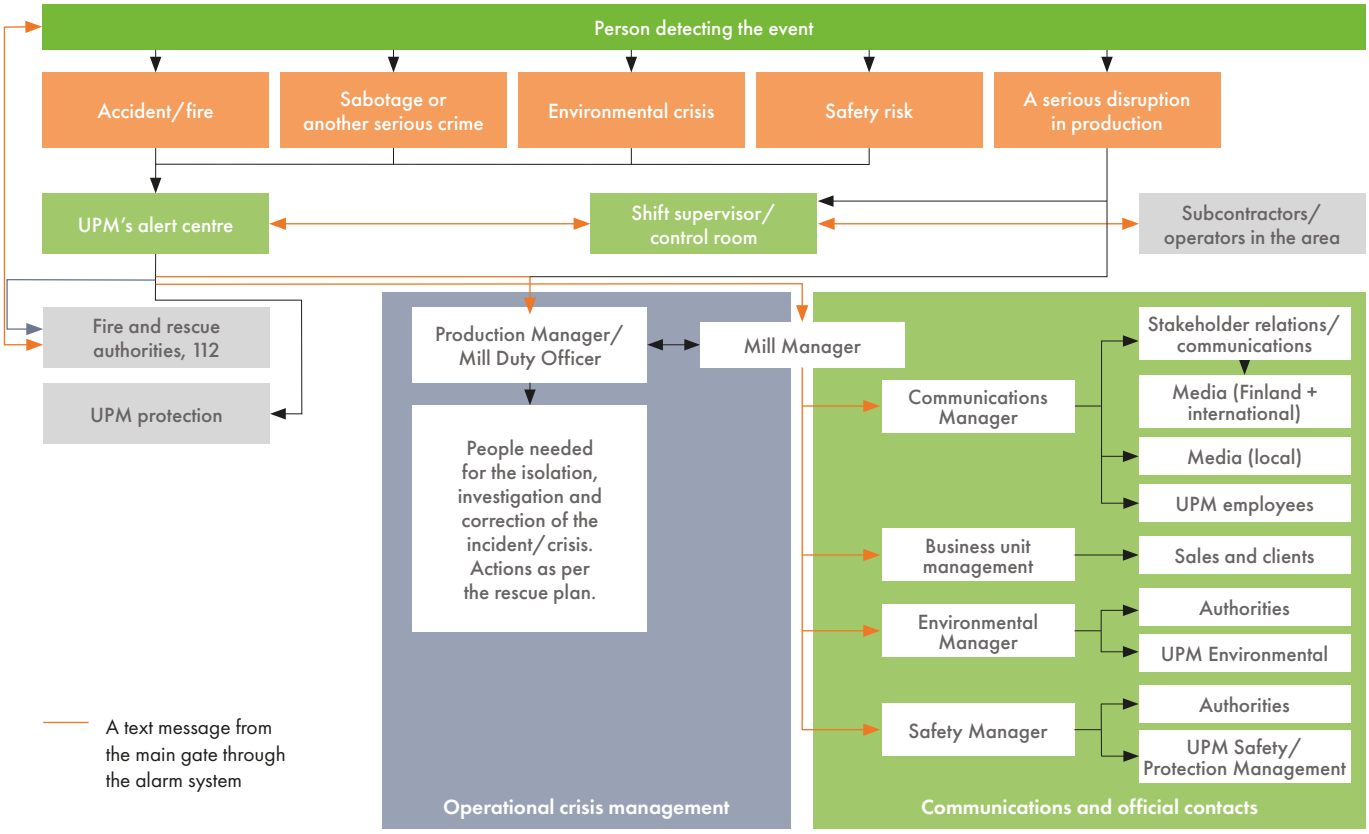
Exceptional situations relating to Kaukaan Voima Oy and projects at the Kaukas mill site will be dealt with in accordance with the Kaukas integrated unit's guidelines and the organisation's actions. Other external companies located at the mill site will act according to their own guidelines, however so that all alerts will be made to the UPM Kaukas mills' emergency number as well as to the general emergency number.

Several drills relating to rescue operations are conducted annually. The most significant drill in 2020 was a major accident drill at the sawmill, carried out in cooperation with the rescue authorities. The drill also included a separate map exercise involving an imaginary chlorine dioxide accident at the pulp mill site and separate drills for different shifts of the rescue department of South Karelia at the mill site. In addition to this, eight hot work card and ten occupational safety card training sessions were held, as well as separate evacuation drills for the sawmill workers. Operational training for fire incidents was held for those working at the Tuosa site, and those who worked with electrical jobs took part in pneumatic equipment training. Basic resuscitation drills and defibrillator training continued at the paper mill.



The helicopter crews of the defence forces regularly practise in changeable and demanding operating environments.
A picture of the shore by the Kaukas sawmill.

**Crisis communication organisation chart**



UPM Kaukas

# Key responsibility figures 2020

## Water

COD emissions into Lake Saimaa decreased by

**12%**

Of the nutrients used at the purification plant

**36%**

were recycled nutrients.

## Energy

The share of biomass-based fuels

**91%**

of the fuels used.

## Waste

**24%**

less waste was taken to landfill compared to the previous year. The only waste fraction taken finally to landfill was green liquor sludge.

## Air

Fossil carbon dioxide emissions into the air decreased by

**18%**

In order to reduce the odour effects of the purification plant, it was decided to dredge the basins in the spring of 2021.

## Taxes

Integrate's local tax impact approx.

**EUR 20 million**

Real estate tax EUR 0.7 million.

Estimate of tax on salaries EUR 7.7 million.

Estimate of corporate income tax EUR 12 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.

## Consumption impact*

Integrate consumption impact in region approx.

**EUR 49 million**

Expenditure impact in the whole of Finland around 99 million euros.

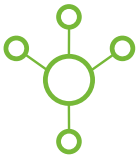
*Private expenditure on goods generated through internal and indirect employees' net wages

## Safety

**718 days**

without accidents at the paper mill by the end of the year. More precautionary safety work was done than before. At the pulp and paper mill, a total of 2,414 observations/ hazardous situation reports were filed. A total of 2,871 safety rounds and discussions were recorded.

## Supply chain



**99%**

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

## Community

Doing internships

**49**

students in upper-secondary vocational training and

**15**

students writing their theses. Collaboration was active with various schools and educational institutions.

## Training

At the paper and pulp mill, there were personnel training sessions, a total of

**3,500 hours**

100% of personnel have completed UPM Code of Conduct training.

## Certified fibre

**80%**

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.

## Employment

Mill employed

**963 people and**

**180 summer employees**

Indirect employment effect in region approx.

**1,010 persons**

Furthermore, an average of 420 workers from contractors worked at the site daily.

# Air

91% of the energy used at the mill site was produced with biomass-based fuels, such as bark and black liquor. The bark removed from wood at the debarking plants of the pulp and paper mills and the sawmill was utilised by burning at the Kaukaan Voima power plant. The black liquor created along with the pulp production process was used as fuel in the soda boiler. Natural gas and peat were used as fossil fuels. Fossil carbon dioxide emissions decreased by 18% from the previous year.

Measured by their specific emission factors, the emissions of the pulp mill into the air were at a good BAT level. Sulphur dioxide emissions increased in comparison with the previous year because the reserve burner of the odorous gas boiler was used to support the treatment of odorous gases more than in previous years. The reserve burner does not have a sulphur recovery system, but instead sulphur is released into the air as sulphur dioxide. However, in the air quality measurements of the City of Lappeenranta, the emissions of sulphur compounds did not exceed the daily guideline value with regard to sulphur dioxide or odorous sulphur compounds (TRS). The TRS emissions consist of the TRS compounds contained in the flue gases of the soda boiler, odorous gas boiler and lime sludge kiln, diffuse emissions and emissions during disruptive situations, when odorous gases disperse into the air without having been treated. The diffuse emissions of waste water treatment and sludge treatment are not included in the figures.

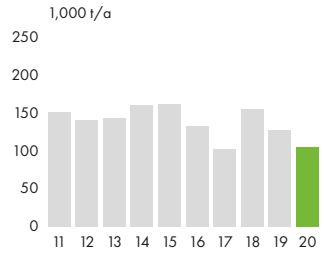
There were fewer disruptive situations than before and the TRS emissions of the lime sludge kiln were smaller than previously, as a result of which emissions of odorous sulphur compounds decreased by nearly 37 tonnes from the year before. Particle emissions remained at the same level as the year before, although there were technical challenges at times with the particle measurement equipment of the soda boiler. An instance of exceeding the environmental permit limit was logged when particle emissions were found to have exceeded the limit in conjunction with emission measurements, but in a repeat measurement the concentration was again below the permitted level.

99.7% of weak odorous gases and 99.5% of strong odorous gases were recovered and burned in 2020. In November, the rate of treatment of strong odorous gases was below the permitted level when two out of the three odorous gas treatment sites suffered a fault at the same time. Improvement in the reliability of the treatment of odorous gases is one of the objectives set for 2021.

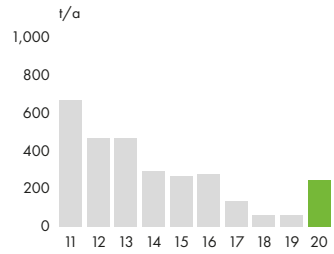
Odour spreads temporarily into the environment from the biological waste water purification plant in isolated situations when chemicals have to be used to regulate pH. Odours were measured at the purification plant and the nearby residential area throughout the year. According to the results, the recommended limits set for air quality were not exceeded within the residential area. However, values that exceeded the odour threshold were measured during the summer. In order to reduce odours, the two basins of the purification plant shall be dredged during the spring of 2021. A corresponding dredging to improve the odour situation was done in 2018.

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. These figures also include UPM's share of the total emissions of Kaukaan Voima.

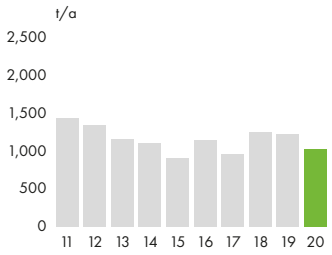
**Fossil carbon dioxide, $CO_2$**



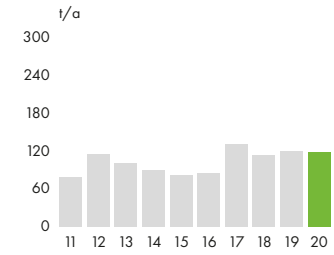

**Sulphur dioxide, $SO_2$**




**Nitrogen oxides, $NO_x$**




**Particulates, TSP**



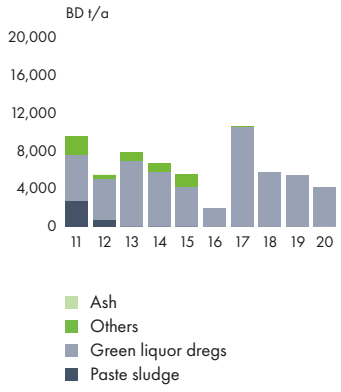

In addition to UPM Kaukas emissions, the atmospheric emissions include the share of the energy used by the integrated mill from Kaukaan Voima.

# Waste

In pulp and paper production, approximately 26,500 tonnes of waste was created as dry material in 2020. Most of this, i.e. around 24,000 tonnes, was process waste, and the share of other waste created during operations was around 2,500 tonnes. The figures include UPM's share of Kaukaan Voima's waste.

The amount of waste taken to the Tuosa landfill was 4,134 tonnes, which was about 24% less than the previous year. The remaining 19,400 tonnes was taken into reuse. In 2020, the share of reuse was 82% of the total amount of waste. Green liquor dregs and the fly and bottom ash of Kaukaan Voima was used as a raw material in earthmoving, and bark sand and the sludge of the waste water purification plant were utilised as aeration and raw materials for compost. Only the green liquor dregs created in the chemical cycle of pulp were disposed of at the Tuosa dump, a part of which was utilised, mixed with ash, in the field structures used for the storage of wood and fuels.

**Waste taken to Tuosa**




The tonnes in the graph are given as dry weights.

The amount of green liquor dregs was successfully reduced by optimising the production process. Research work on the possible new usage applications of green liquor dregs was continued in cooperation with UPM's own research centre and external operators.

# Noise

Noise into the surrounding area is caused by the operations of the mills of Kaukas. According to the environmental permit, the noise level in the 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 drawn up for the mill site's sphere of influence, the veracity of which is monitored regularly. The noise model is updated in conjunction with investments and significant process changes.

In the daytime, noise was under the limits at all monitoring locations. At night, the limits were exceeded at some measurement locations. This was due to the continuous operation of the plants and the geographical location of the mill. The protection monitors of Kaukas measured noise around the mill site regularly. Weather conditions, the direction of the wind and other noise from the surroundings significantly affected the results.

During 2020, two different things were invested in to reduce the noise level. Noise mufflers were added to one of the sawmill's dryers and to the turbo pump of the soda boiler. The impact of the improvement investments on the noise of the mill site shall be measured by an external party during the spring of 2021.

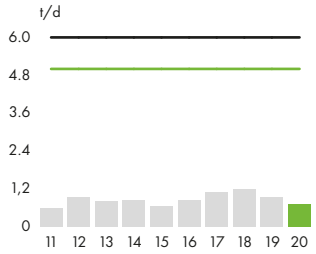
# Water

The Kaukas mill used a total of 85 million cubic metres of water in the manufacture of pulp and paper in 2020. 42% of this was process water that was purified at the biological purification plant. Water consumption decreased in comparison to the previous year. In accordance with the requirement of the environmental permit that came into effect in 2018, collection of the water from the wood storage areas for the treatment of waste water was completed in 2020. There are many wood storage areas with drains and carrying out the large project took two years.

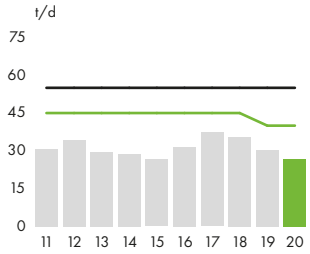
A small amount of water containing sulphur has trickled from the mill site to the land of the City of Lappeenranta, to the Pappilanniemi side of the mill site, over the decades. There have been attempts to fix this through various measures. In the summer of 2020, a large project was carried out by constructing a 200-metre absorption ditch, where the water from the soil percolates and travels onwards into an underdrain, and from there, through pumping into water treatment to be purified. The system works well.

Waste water treatment worked effectively all year long. The load into Saimaa decreased in terms of biological oxygen demand (BOD) by 20%, chemical oxygen demand by 12%, phosphorus

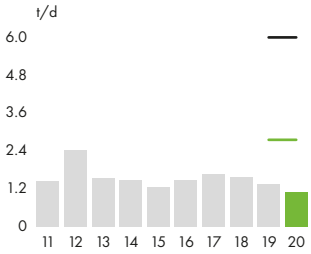
**Biological oxygen demand, $BOD_7$**



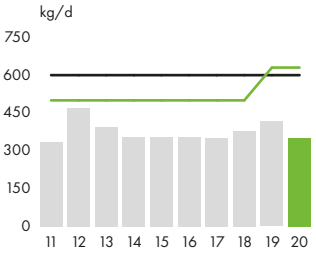

**Chemical oxygen demand, COD**



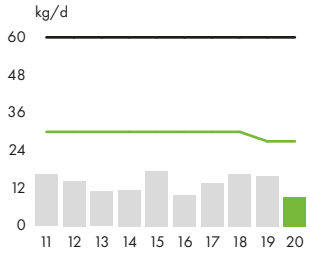

**Total suspended solids, TSS**



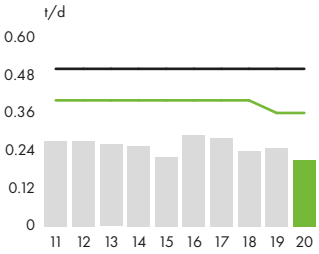

**Nitrogen, N**



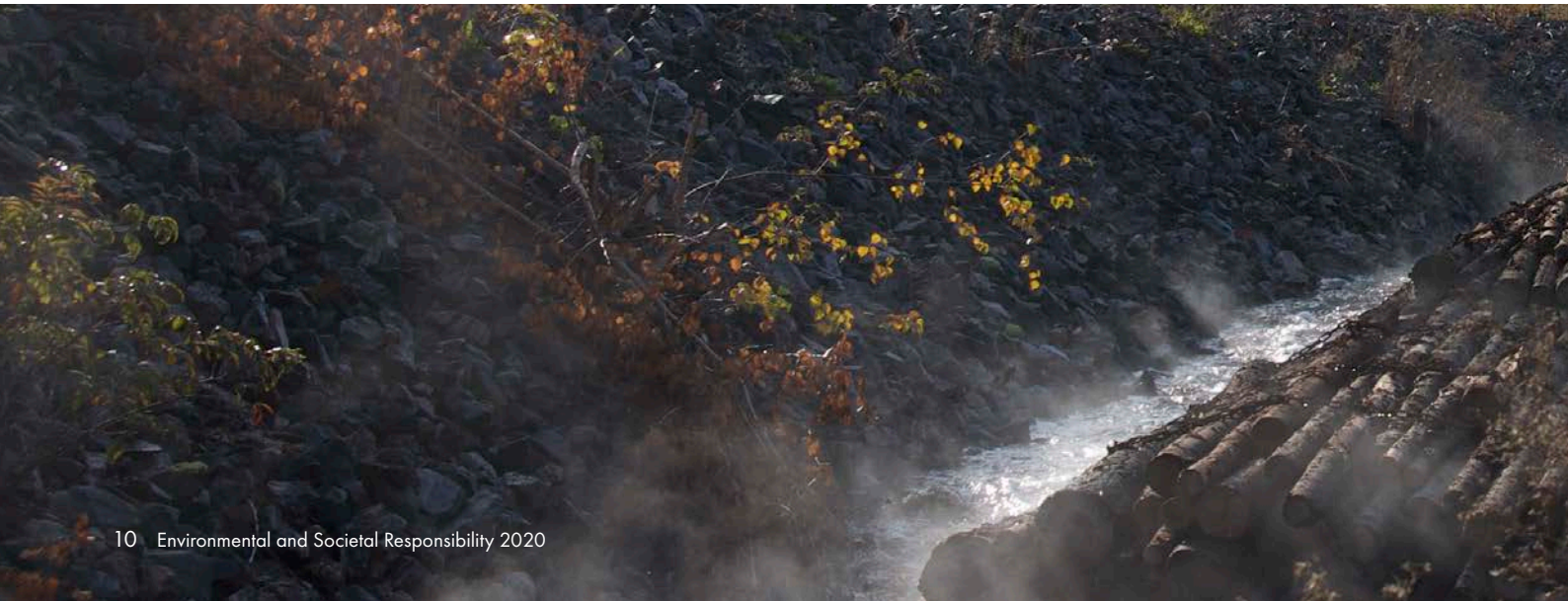

**Phosphorus, P**




**Adsorbable organic halogen compounds, AOX**




— Monthly limit — Annual permit




Voluntary taking of samples of the water of Saimaa for visual monitoring was continued during the period of ice-free water. The colour of the water was visually estimated to be brighter than the year before. The same result can be seen in the regular observations carried out at different times of year in southern Saimaa by the Saimaan vesiensuojeluyhdistys (the Saimaa water conservation association).

(P) by 42%, nitrogen (N) by 16% and organic halogen compounds by 17%. The greatest effect on the reduction in the load was the reduced emissions of the process of the pulp mill and the undisrupted running of the waste water purification plant. The waste water loads for pulp were at BAT level, except for the phosphorus load, which was even clearly better, i.e. below the BAT minimum level. The waste water loads in the production of paper were at BAT level, except for water consumption, which was over the BAT level. An investment project related to reducing water consumption was completed at the paper mill. Due to the challenging production situation, it was not possible to see the full potential of the investment yet; it will only be realised when the operating situation has normalised.

The separating power of the purification plant was good with regard to all loading components. 99% of the BOD load directed to the purification plant was removed, 82% of the COD load, 89% of phosphorus, 67% of nitrogen and 67% of organic halogen compounds. A greater share of the nutrient needed by the purification plant was replaced with recycled nutrient than in the previous year. The share realised was now 36%, while the target for 2030 is to use only recycled nutrient. At the end of 2020, a decision was made on the introduction of a second local recycled nutrient. It is hoped that the share of recycled nutrient will continue to grow in 2021.

A report was made in 2020, in accordance with the environmental permit, of the effect of Kaukas on the condition of the water of eastern Pien-Saimaa. According to the report, the effect of the load of the mill on the nutrient concentrations of the water area is around 10%, which affects eutrophication and the ecological condition. However, nutrient concentrations and amounts of algae only have a slight correlation. In the report, the effect of the mill on the chlorophyll concentration, i.e. the profusion of chlorophyll-containing plankton algae in the water, is estimated to be around 5%. Changes caused by profusion can be seen in the condition of the lake bed in the immediate area of impact of the Kaukas mill in terms of the species and the amount of species, but as a whole the state of the fauna of the lakebed is good in eastern Pien-Saimaa, and excellent in parts.

However, the classification factors of the state of the water composition are currently very close as a whole to the boundary between good and satisfactory, and nutrient concentrations have been on a slight downward trend, particularly in the area near the mill. The condition of the water system is expected to continue improving gradually in the water management plan as well.

Spurred on by studies indicating that wood stored in the water had a possible positive effect on the nutrient load, bundles of wood were placed in the discharge ditch of the waste water purification plant on an experimental basis. The aim is to investigate how wood binds nutrients onto its surface in the water that flows into the biofilm. The study results will be completed in 2021.

# 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 staff continuously with regard to safety. During the year, we organised ten safety card training sessions and eight hot work courses. Those working at Tuosa were trained to act there in the event of fire, electricians received pneumatic equipment training and evacuation drills were held at the sawmill. In addition, we taught paper mill employees basic resuscitation and the use of a defibrillator. A major accident drill was carried out at the sawmill and, to do with this, in addition there was a drill at the mill site for each shift of the rescue department. While the corona situation prevailed, some of the training was moved to the following year and some was moved to be done online.

**The exercise habits of the personnel were promoted in many ways**

The sports club of the people at Kaukas, Kaukaan Lyly ry, became 80 years old. The anniversary was strongly overshadowed by the corona pandemic, and the planned events for the personnel were mostly left unheld. At the beginning of the year, the people at Kaukas were encouraged to take up exercise hobbies on a familiarisation day held in the hall, where they could find out about the activity of Lyly. With the corona pandemic, the use of the gym was restricted and team sport activities were stopped. The group exercise sessions, which had proved very popular, were made virtual. However, the gym and ball sports and tennis hall were actively used by people at Kaukas, taking health safety into account. Once the corona situation improved for a moment, a family event in Joutseno was arranged for the people at Kaukas. The traditional beach volleyball tournament on the beach of Myllysaari also managed to be held.

In addition to what the sports club offered, Kaukas employees were given a balance of 200 euros on their ePass to use on different fitness, well-being and culture services.

**Introducing the forestry industry to students and locals**

Our aim is to increase knowledge about jobs in the field and encourage young people to study process technology and work in the forestry industry. We participated in events organised by local educational institutions, such as the 'DuuniDay' contact event of the Lappeenranta University of Technology and the 'Kesäksi Duuniin' recruitment fair of the TE centre. Schoolchildren and students still visited our mills normally in the first part of the year until the activity was stopped after the corona pandemic began.

Guest lectures in the region's schools and educational institutions were also an integral part of our activities, albeit exceptionally in a virtual form. The work of the forest ambassadors also continued, as in previous years.


**Cooperation and promotion of health safety with local communities**

As a company, we are involved in many community projects which support sustainable development and promote the well-being of the communities around us. In 2020, most of our sponsorship 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, operators arranged, amongst other things, break time exercise for schoolchildren, tournaments, afternoon club activities and free sports introduction events for children. We provided timber from our sawmill for the traditional Myllysaari Midsummer bonfire built by Lions Club Lappeenranta Saimaa.

We were also involved in the Lappeenranta Family Center's Yrityskylä ('Company Village') where pupils in the sixth grade get to practise safely how work life, the economy and society are related to each other. In the village, children also get to learn about the opportunities provided by forests, both as an employer and as an industry. Activities in 2020 were partly on hold because of the corona situation, but continued normally again in November.

We were involved in the Read Hour campaign coordinated by the Children and Youth Foundation, which Kaukas people took part in by reading an excerpt from a favourite book of theirs to schoolchildren and talking about its importance to them via the means of a virtual lesson.

In September, nearly 220 sixth-grade pupils from six different schools in Lappeenranta learnt with us about the growth, management and recreational use of forests, and products obtained from wood, on forest trips organised jointly with the Finnish Forest Association. In addition, every pupil got a chance to plant a sapling that will become a part of the forest of the future and eat packed lunch by a campfire. The aim of the forest trips was to provide pupils with a positive forest experience and increase knowledge of the use of Finnish forests.

UPM has been actively involved in procuring masks during the corona pandemic. We have tried to ensure that we have enough masks for our own personnel, also during their free time, as well as contractors and visitors at our sites. We donated 55,000 surgical mouth and nose protectors to Eksote, the South Karelia Social and Health Care District, for use in home care. Face masks were also given for the 'Vastuulliset Wappusitsit ja fuksiviikot' event of the energy technology students of the local university.

**Added value for the region**

UPM's mills around the world may be the biggest employers and generators of tax revenue of their localities. This is also the case in South Karelia, where we create significant economic well-being, the positive effects of which can be seen in many ways. We are a significant generator of tax revenue on both national and local level. In 2020, UPM paid approximately 178 million euros in total in corporate income taxes and property taxes (211 million euros in 2019).

The operations of our mills also benefit local communities in many ways. 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 tax impact in the local area is approximately 20 million euros and the expenditure impact created by the integrated mill unit is approximately 49 million euros.

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.

New activity has arisen at the paper mill site as the premises left from previously closed paper and coating machines have been rented out for a new use. UPM's own research centre is utilising the vacant premises of the paper mill in its own projects, and in this way new life has been introduced into the empty halls again. A picture of the opening ceremony held for the personnel.

With around one thousand employees in 2020, UPM Kaukas is the largest private employer in Lappeenranta. We hired 180 summer employees, mostly from local educational institutions. Over the course of the year, we also offered internships to more than a hundred students and commissioned fifteen theses.

# Environmental parameters

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

| | | 2018 | 2019 | **2020** |
|---|---|---|---|---|
| **Production capacity** | Magazine paper | 305,000 t | 300,000 t | 305,000 t |
| | Pulp | 770,000 t | 770,000 t | 770,000 t |
| | – softwood | 440,000 t | 440,000 t | 440,000 t |
| | – birch | 330,000 t | 330,000 t | 330,000 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** | Biofuels | 88% | 91% | 91% |
| | Fossil fuels | 12% | 9% | 9% |
| | Purchased electricity[1)] | | | |
| **Emissions to air** include UPM's share of Kaukaan Voima's emissions | Fossil carbon dioxide, $CO_2$ | 155,271 t | 128,161 t | 105,658 t |
| | Nitrogen oxides, $NO_x$ | 1,247 t | 1,223 t | 1,021 t |
| | Sulphur dioxide, $SO_2$ | 62 t | 62 t | 248 t |
| | Dust particles | 114 t | 120 t | 127 t |
| | Total reduced sulphur, TRS | 43 t | 79 t | 42 t |
| **Water intake** | Process and cooling water | 86.4 million $m^3$ | 91.3 million $m^3$ | 85.4 million $m^3$ |
| **Discharges to water** | Effluentr | 34.6 million $m^3$ | 39.6 million $m^3$ | 36.2 million $m^3$ |
| | $BOD_7$ | 416 t | 344 t | 266 t |
| | COD | 12,936 t | 11,062 t | 9,434 t |
| | Solids, TSS | 559 t | 484 t | 384 t |
| | Phosphorus, P | 6 t | 5,9 t | 3,3 t |
| | Nitrogen, N | 137 t | 151 t | 123 t |
| | Organic halogen compounds, AOX | 85 t | 93 t | 75 t |
| **Waste** | Waste to landfill | 5,763 t | 5,447 t | 4,134 t |
| | – green liquor dregs | 5,758 t | 5,447 t | 4,134 t |
| | – mixed waste | 5 t | 0 t | 0 t |
| | Reused waste | 17,794 t | 26,215 t | 21,677 t |
| | – debarking reject sand and stones | 404 t | 524 t | 986 t |
| | – green liquor dregs | 7,059 t | 8,231 t | 5,368 t |
| | – lime sludge and lime | 1,530 t | 3,195 t | 4,654 t |
| | – ash from the power plant | 6,905 t | 6,367 t | 5,720 t |
| | – recycled cardboard and paper | 953 t | 488 t | 447 t |
| | – metal waste | 703 t | 414 t | 515 t |
| | – soil | 0 t | 6,547 t | 0 t |
| | – other separately collected waste | 240 t | 449 t | 1,289 t |
| | – waste water treatment sludge | 0 t | 0 t | 2,698 t |
| | Intermediate storage | 0 t | 197 t | 405 t |
| | –lime fertiliser | 0 t | 197 t | 405 t |
| | Hazardous waste | 596 t | 117 t | 265 t |
| **Land use** | Total amount of land use | 215 ha | 215 ha | 232 ha |
| | Area impermeable to water | | | 203 ha |
| | Area directed towards nature conservation | | | 29 ha |
| | Area directed towards nature conservation outside the place of business | | | 68 ha |

[1)] See UPM Corporate Environmental and Societal Responsibility Statement for more information (e.g. energy indicators).

# Performance against targets in 2020

| TARGET | ACHIEVED | COMMENT |
|---|---|---|
| A safe workplace<br>LTAF (lost time accident frequency) 0 | Partly | Two lost-time accidents occurred at the pulp mill. None at the paper mill.<br>LTAF pulp 4.1 and paper 0 |
| Active precautionary safety activity<br>– safety and environmental observations<br>Paper mill > 675<br>Pulp mill > 1,000<br>– safety rounds and discussions<br>Paper mill > 500<br>Pulp mill > 1,512 | Yes | Precautionary safety measures were carried out well.<br>877 observations and hazardous situation reports were made at the paper mill and 1,537 at the pulp mill.<br><br>A total of 619 safety rounds and discussions were carried out at the paper mill and 2,252 at the pulp mill. |
| Paper mill material efficiency<br>– fibre emissions < 6.0 t/d. | No | Fibre emissions to the purification plant in excess of the target (6.2) due to intermittent operation. |
| Reducing the specific emissions of the pulp mill compared to the previous year<br>– COD and AOX kg/Adt <2019 | Yes | Specific emissions decreased. |
| Reducing the amount of waste water<br>Pulp: < 2019 achieved<br>Paper: < 16.6 $m^3/t$ | Partly | The target of a reduction in waste water was successfully reached at the pulp mill. Due to the intermittent operation of the paper mill, water consumption exceeded the target. |
| Reducing fossil carbon dioxide emissions<br>– Reducing the use of natural gas | Yes | The amount of fossil carbon dioxide emissions decreased in comparison to the previous year. |
| Improving energy efficiency<br>– Pulp: ensuring energy self-sufficiency<br>– Paper: reducing specific consumption of energy | Partly | Pulp was energy self-sufficient in terms of steam, electricity was purchased because of the revision of the turbine and the specific energy consumption of paper production increased because of the intermittent operation year. |
| A report regarding the impacts of Kaukas on the water system has been made | Yes | The report was delivered to authorities in accordance with the schedule. |

# Targets for 2021

| TARGET | SCHEDULE | INDICATORS AND KEY MEASURES |
|---|---|---|
| Zero accidents | 2021 | LTAF (lost time accident frequency) 0<br>Clarification of safety lockout policies and observation training for the personnel. |
| Active precautionary safety activity | 2021 | Safety observations: pulp 1,000, paper 700<br>Safety rounds and discussions: pulp 1,500, paper 500 |
| Paper mill material efficiency | 2021 | Fibre emissions < 6.0 t/d.<br>Improving paper machine operability. |
| Reducing the specific emissions of the pulp mill compared to the previous year | 2021 | COD and AOX kg/Adt < 2020<br>More systematic investigation of disruptive situations and optimisation of the use of chemicals. |
| Reducing the amount of waste water | 2021 | Pulp: < the 2020 level<br>Paper: < 15 $m^3/t$<br>Development of real-time monitoring |
| Reducing fossil carbon dioxide emissions | 2021 | Reducing the use of natural gas<br>Increasing the use of pitch oil at the lime sludge kiln. |
| Improving energy efficiency | 2021 | Pulp: ensuring energy self-sufficiency<br>Paper: reducing specific consumption of energy<br>Development of real-time monitoring. |
| The operational reliability of the treatment of odorous gases has been improved at the pulp mill | 2021 | The amount of disruptive emissions<br>Improving the operational reliability of the odorous gas boiler. |

EMAS
Verified environmental management
REG.NO. FI - 000058

Revalidation 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 2020 statement as well as the information concerning UPM Kaukas in the Updated UPM Corporate Environmental and Societal Responsibility Statement 2020.

On the basis of this examination, the environmental verifier has herewith confirmed on 2021-04-08 that the environmental management system, the UPM Kaukas Environmental and Societal Responsibility 2020 statement and the information concerning UPM Kaukas in the Updated UPM Corporate Environmental and Societal Responsibility Statement 2020 are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.

We reduce the world's reliance on fossil-based materials by developing renewable and responsible products and solutions in all our businesses. **UPM Biofore – Beyond fossils.**

UPM

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