UPM BIOFORE
BEYOND FOSSILS

UPM Kaukas

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2019

UPM Kaukas

The mills of UPM Kaukas sit on the shores of Lake Saimaa in Lappeenranta, Finland. The mill site houses a pulp and paper mill, a biorefinery and a sawmill. UPM's largest R&D centre, the wood sourcing management of UPM Forest and the Lappeenranta forest service office are also based at Kaukas.

The Kaukas mills form a unique integrated bio-forestry unit that produces pulp, magazine paper, sawn timber, biofuels and energy from renewable raw materials. In addition to UPM's mills, the site houses a biomass power plant operated by Kaukaan Voima Oy, which produces heat and electricity for the mills and the neighbouring community. Around 80% of the energy produced by Kaukaan Voima is generated using renewable biomass.

Having several mills operating in the same area offers many benefits, and an integrated mill site enables efficient control of environmental issues. The short distances between the mills facilitate co-operation, decrease the need for transport and allow effluents to be treated by a shared biological treatment 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, and the social responsibility of the entire integrated unit.

Production capacity	300,000 tonnes of coated magazine paper 770,000 tonnes of softwood and birch pulp 510,000 cubic metres of pine and spruce timber 130,000 tonnes of renewable diesel and naphtha
Personnel	Paper mill 242, pulp mill 312, sawmill 127, biorefinery 88, UPM Forest 30 and NERC 178. Overall, there are around 1000 people working at UPM Kaukas in Lappeenranta.
Products	Magazine papers: (MWC, LWC): UPM Star, UPM Valor, UPM Ultra Pulp: UPM Betula, UPM Conifer, UPM Conifer Reinforcement Sawn timber: UPM Timber, UPM Plus Biofuels: UPM BioVerno diesel and UPM BioVerno naphtha Biomedical products: GrowDex®, FibDex® Residues: pitch oil, turpentine and tall oil
Bioenergy	Heat energy and electricity
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ETJ+ – Energy Efficiency System ISO 9001 – Quality Management System PEFC™ – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® OHSAS 18001 – Occupational Health and Safety Management System ISCC EU (International Sustainability and Carbon Certification) ISCC PLUS (International Sustainability and Carbon Certification) RSB EU RED (Roundtable on Sustainable Biomaterials) RSB low ILUC risk (Roundtable on Sustainable Biomaterials) RSB Standard for Advanced Products (Roundtable on Sustainable Biomaterials), Finland's national sustainability scheme ISO 22000 – Food Safety Management System All certificates can be found from UPM's Certificate Finder (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. EU Ecolabel FI/11/001 for paper products About PEFC products: www.pefc.fi For more information about FSC products, visit http://fi.fsc.org

UPM Kaukas Environmental and Societal Responsibility 2019 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 2019. 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 2021.

UPM offers renewable and responsible solutions and innovate 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 18,700 people worldwide and our annual sales are approximately EUR 10.2 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

FSC www.fsc.org FSC® C014719
The mark of responsible forestry

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

PEFC PEFC/02-31-80 Promoting Sustainable Forest Management www.pefc.org

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

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

Review of the year 2019

Our environmental performance improved in various fields. COD emissions to the water system decreased by 10%, and an investment was made to significantly reduce water consumption at the paper mill. The pulp mill achieved a new annual production record.

Operations comply with the new environmental permit

In 2019, the environmental impact of the UPM Kaukas integrated mill site remained relatively unchanged, as it has since the turn of the millennium. There are variations in the emissions parameters in different years, but the overall impact has remained unchanged. In 2019, operations retained material efficiency, and raw materials were used very carefully.

The year had two distinctive periods in terms of production at the pulp mill. Planned service interruptions at the start of the year limited the mill's production, but the second half of the year was highly productive and stable. The realisation of investments made in previous years enabled the pulp mill to achieve a new annual production record. The paper mill also increased its production.

Active development and dialogue

The year 2019 saw operations that complied with the new environmental permit. UPM Kaukas systematically took care of its obligations in compliance with both the environmental permit and the BAT document. Water consumption at the paper mill exceeded the BAT level. In order to remedy the situation, an investment was made to reduce water consumption in the autumn. As a result, water consumption will be reduced in 2020. Over the course of the year, various investigations were conducted in compliance with the environmental permit, timber yards were asphalted and rainwater collection in the fields was improved. The impact of the floating timber reserve on the water system was studied over a period of several months.

Fifteen pieces of stakeholder feedback were received in 2019. Fourteen of them concerned odour emissions that occurred under exceptional circumstances. Under normal conditions, mill site odour emissions are well controlled and we have no disturbances while burning malodorous gases. Odour emissions in the vicinity of the biological effluent treatment plant have been monitored using the Finnish Meteorological Institute's continuous meters as of June 2019. Regular measurements were initiated at six locations to determine noise level variations at different times of the day and year.

Reaching for ambitious 2030 targets

Environmental objectives at Kaukas included improving energy efficiency, reducing carbon dioxide emissions from fossil fuels and reducing water consumption. In addition, the pulp mill specifically aimed to reduce water contamination, and the paper mill aimed to improve material efficiency. These objectives were partially reached. Energy efficiency was improved at both the pulp and the paper mill. As the pulp mill recovery boiler produced a record-breaking amount of energy, the amount of fossil fuels in steam production could be reduced in comparison to the previous year. Fossil carbon dioxide emissions decreased. The water consumption of the process calculated per tonne of product was reduced at the paper mill. The pulp mill's water consumption increased, but the quantity of specific emissions into the water system decreased significantly. The material efficiency objective of the paper mill was achieved.

UPM has set various ambitious environmental goals for its operation, and initiated measures to reach these 2030 targets. The objective is to use only recycled nutrients in the company's biological effluent treatment. UPM Kaukas made significant progress towards this objective, and in 2019, 30% of the nutrients used were already recycled nutrients. Reducing fossil carbon dioxide emissions by half is one of the company's targets. At Kaukas, most emissions are generated as a result of using natural gas as lime kiln fuel. In order to develop the process, a master's thesis was commissioned on alternative lime kiln fuels. The paper mill will reach the halfway point of its goal of reducing

water consumption by half by 2030 as a result of the investments made in 2019.

To ensure the mill integrate's water supply, a new water intake pipe was installed parallel to the old one. The aim is not to increase water consumption but to ensure sufficient water supply in all weather conditions and water levels of Lake Saimaa.

Committed to zero accidents

UPM's current target is zero accidents. In 2019, the number of lost-time accidents was one at both the pulp and the paper mill, whereas two such accidents occurred at the biorefinery and three at the sawmill. The total number of accidents at the Kaukas mill integrate was slightly lower than in the previous year. As a precautionary measure, UPM employees and contractors are required to file reports of all near-miss situations and safety and environmental observations. These reports are reviewed daily, and any corrective measures are taken without delay. In addition, safety talks and safety walks are organised actively at the work sites. The global One Safety operating model's mobile application was introduced in 2019. The targets set for proactive safety reports were clearly exceeded. At the pulp mill, the number of lost-time accidents was reduced by one third in comparison to the previous year, and a good level of occupational safety was maintained at the paper mill for the third year in a row.

Value from responsibility

Corporate responsibility is an essential aspect of UPM operations. With its approximately 1,000 employees and 180 summer trainees, UPM was the largest private employer in the City of Lappeenranta. Tax revenue generated by UPM's business operations is an essential part of our social impact. The impact on local tax contributions is approximately EUR 28 million in the Lappeenranta area and the consumption impact of the mill integrate is approximately EUR 50 million. UPM also supports the vitality of local communities through sponsorship which, in 2019, emphasised support for learning, reading and sports activities for children and youth. Study visits, mill visits and a presence at events are used to educate young people on sustainable development, working life and society. In addition, forest trips are organised for schoolchildren.

Vesa Volmari
General Manager of UPM Kaukas integrate

Minna Maunus-Tiihonen
Environmental Manager

Management of crises and exceptional situations

The following types of events are included within the management of crises and exceptional situations and communications at the Kaukas mill property and surrounding area:

- Serious accidents and near-miss situations (major fires, explosions, chemical accidents etc.)
- Environmental damages
- Serious occupational injuries (including accidents on the way to or from work) and traffic accidents on the mill site
- Serious interruptions in production
- 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.

Management of crises and exceptional situations

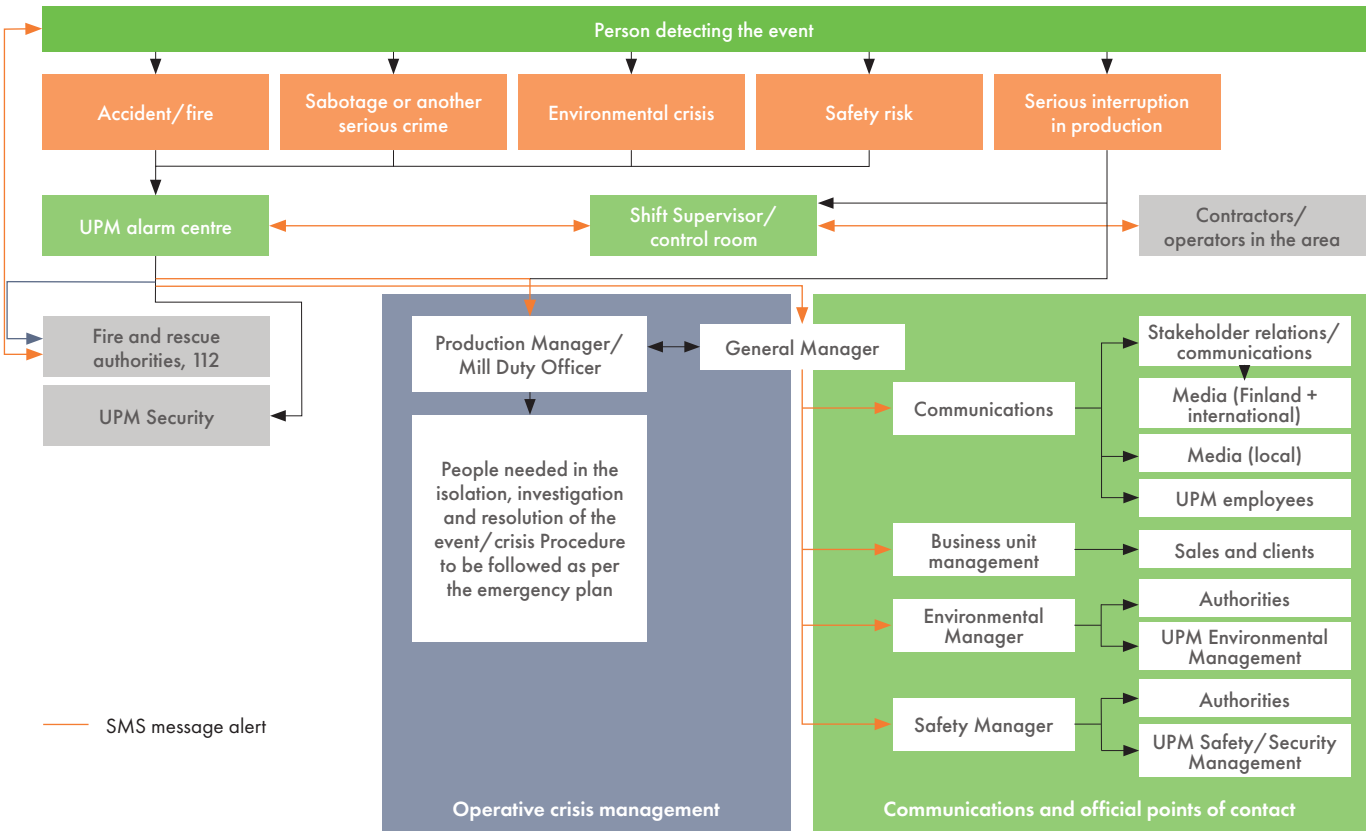
Operational management includes the controlled shutdown of production and measures required to gain control of the exceptional situation, among other things. Event investigation and flow of information proceed in accordance with the organisation's chain of command and agreed roles. Our crisis communication group either consists of members of the mill's executive board or is formed separately on a case-by-case basis.

Exceptional situations involving Kaukaan Voima Oy and projects being run at the Kaukas mill site will be dealt with in accordance with the Kaukas integrate guidelines and organisational actions. External companies operating on the mill site will follow their own guidelines. However, all emergencies will be reported to the UPM Kaukas mills alarm centre in addition to the general emergency number.

Emergency drills are conducted annually. In 2019, the most significant drills included the evacuation drills at the Kaukas paper mill and sawmill, as well as the fire extinguishing and pressure equipment drill for fires involving liquids at the biorefinery. The South Karelia Rescue Department and contract fire brigades visited at various sites within Kaukas and practised within the mill site during 2019. Pulp and paper mill employees were provided with crisis management and crisis communication training.

Biorefinery employees practised operating in the event of an emergency and using the refinery's fire extinguishing equipment in November.

Crisis communication organisation chart



UPM Kaukas

Responsibility figures 2019

Water

COD emissions to Lake Saimaa decreased by

10%

30%

of treatment plant nutrients were recycled nutrients.

Energy

Biofuels accounted for

91%

of fuel used.

Waste

5%

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

0 tonnes

waste was taken to landfills from the paper mill.

Air

Fossil carbon dioxide emissions to air decreased by

17%

Odour emissions at the treatment plant have been measured since June.

Certified fiber

80%

of the fibre used in paper production was FSC and/or PEFC certified. UPM's goal is to use only certified fibre by 2030.

Taxes

UPM Kaukas local tax impact approx.

EUR 28 million

Real estate tax EUR 0.9 million
Estimate of tax on salaries EUR 8.6 million
Estimate of corporate income tax EUR 18.4 million based on the number of employees*.

*Approximately 30% of corporate income tax goes to municipalities, which is split between each municipality according to their share of business activities and forests operations.

Safety

One lost-time accident occurred at the pulp mill, which was

67%

less than in 2018. A good level of occupational safety was maintained at the paper mill for the third year in a row.

Supply chain

98.5%

of the integrate's raw materials by value were sourced from suppliers who have accepted the UPM Supplier and Third Party Code (wood suppliers not included).

Community

59

internships for students in vocational upper secondary education and

22

students writing their thesis. UPM actively collaborated with schools and educational institutions.

Employment

UPM Kaukas directly employed

990 staff and

180 summer employees.

Indirect employment effect in region approx.

1,040 persons.

Furthermore, an average of 452 workers from contractors worked at the site daily.

Health

The gym at the mill workers' sports club Kaukaan Lyly was used

26,778 times.

A record-breaking number of Kaukas employees participated in instructed sports activities.

Consumption impact*

Mill's consumption impact in region approx.

EUR **50** million

in Finland approx. EUR 101 million.

*Private consumption from internal and indirect employees' net wages on commodities was 452 external people with tax numbers within the Kaukas mill site in 2019.

Air

Atmospheric emissions complied with the new permit limits. In 2019, all atmospheric emissions were within the reference values from the BAT document published in autumn 2014. Among the Kaukas units, the pulp mill generated the highest proportion of atmospheric emissions.

The total emissions of malodorous sulphur compounds (TRS), carbon monoxide (CO), particulates and chlorine gas (Cl_2) increased. The quantities of sulphur dioxide (SO_2), nitrogen oxides (NO_x) and fossil carbon dioxide emissions (CO_2) decreased. Specific production emissions decreased with regard to particulates, but increased overall. Diffuse emissions* and accidental emissions increased compared to the previous year. The accidental emissions occurred in connection with the shutdown and ramp-up of the pulp mill. This increased the quantity of emissions, as untreated malodorous gases were emitted to the air via the chimney. According to air quality measurements for the City of Lappeenranta, the guideline values for sulphur were not exceeded.

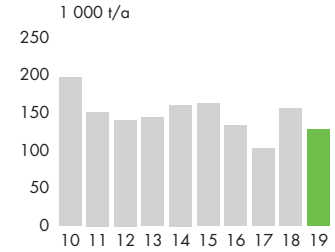
Some of the natural gas used as lime kiln fuel was replaced with pitch oil, a renewable fuel which is generated as a residue in the biorefinery. A thesis was commissioned on alternatives to the natural gas used as lime kiln fuel. The thesis did not identify a deployable solution, but the study is ongoing. The share of fossil carbon dioxide emissions from all carbon dioxide emissions was approximately 3%.

Temporary odour emissions to the environment occur at the biological effluent treatment plant in situations where chemicals must be used to adjust the pH. TSR concentrations have been measured at the treatment plant and the nearby residential area as of June 2019. According to the measurement results, the recommended air quality values were not exceeded within the residential area during the measurement period, and no long-lasting odours were detected. According to the measurements, the odour situation in the area surrounding the treatment plant has clearly improved in comparison to the previous measurement period of 2017. Thus, the measures taken at the treatment plant during the past few years have been successful.

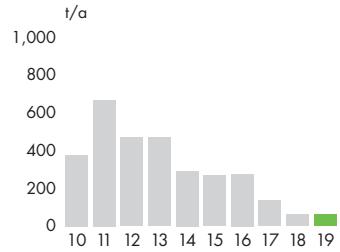
99.5% of weak malodorous gases and 99.2% of strong malodorous gases were recovered and burned. The total annual airborne emissions from the UPM Kaukas pulp mill and power production unit are presented in the following graphs. These figures also include UPM's share of the total emissions from Kaukaan Voima.

*Diffuse emissions comprise TRS compounds from the process units' flue gases, diffuse emissions and accidental emissions. Isolated emissions come from sources that are not included in the processing of malodorous gases, and accidental emissions are situations where malodorous gases that would normally be processed are released into the air unprocessed. The quantities of diffuse emissions are directly proportional to production.

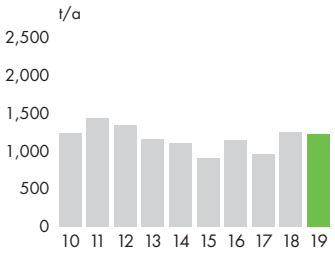
Fossil carbon dioxide, CO_2



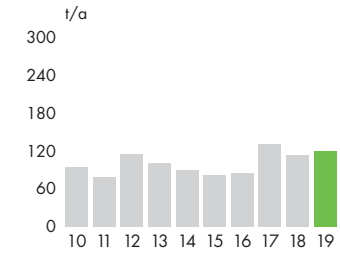
Sulphur dioxide, SO_2



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

Around 31,900 tonnes of waste (as dry matter) was generated at Kaukas in 2019. This amount includes around 24,000 tonnes of process waste and around 7,900 tonnes of other recyclable waste. The figures also include UPM's share of Kaukaan Voima's process waste.

The amount of waste taken to the Tuosa landfill was 5,447 tonnes, a reduction of 5% compared to the previous year. The remaining process waste was re-used. 82% of the total amount of waste was reused. In 2019, the only fraction taken to landfill was green liquor dregs, generated in the chemical circulation of pulp and the quantity of which depends on the pulp production volume. Only a few reuse applications exist for green liquor dregs. Some of it was mixed with ash and used in earth construction (field base) as we have done before, and some was used when finalising the closure of the mixed waste landfill.

The use of waste was studied in various fields.

Waste taken to Tuosa

The tonnes in the graph are given as dry weights.

In 2019, a total of 18,300 tonnes of process waste was reused or stored for reuse. Bottom ash, fly ash and green liquor dregs were used in earth construction, and debarking reject sand was used as compost raw material and aeration material.

Noise

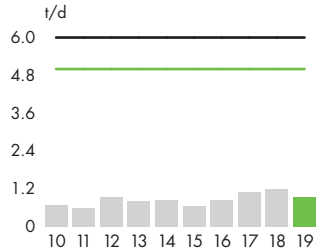
Operations at the Kaukas mills cause noise in the environment. According to the environmental permit, the noise level in outdoor areas of the residential area in the vicinity of the mill site may not exceed 55 dB in the daytime and 50 dB at night. A computational noise model has been drawn up for the mill site's circle of influence, the reliability of which is monitored by an external company on an annual basis.

In 2019, the noise level remained below the limit values in the daytime at all monitoring sites. At night, the required level was not achieved at all measurement sites. At these monitoring sites, noise reduction using noise barriers, for example, is challenging for geographical reasons. The residential buildings are located on upward slopes, and the sources of noise are located both above and below the houses.

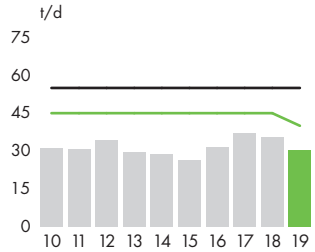
Patrolling guards started carrying out regular noise measurements at the Kaukas mill site in 2019. The aim is to establish the impact of the seasons and various process situations on the noise level. Based on the measurements, sites with noise levels that could be reduced with various measures have been identified. Investments have already been made for corrective measures to be implemented in 2020 at two of the sites.

Water

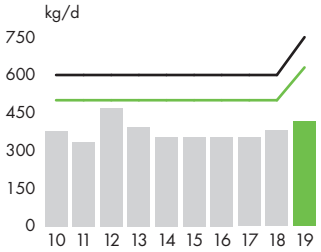
Biological oxygen demand, BOD_7



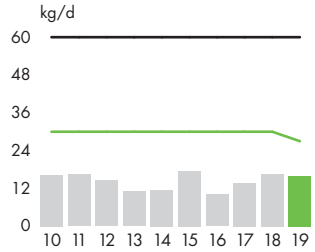
Chemical oxygen demand, COD



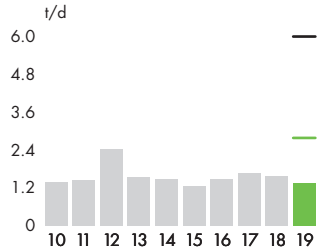
Nitrogen, N



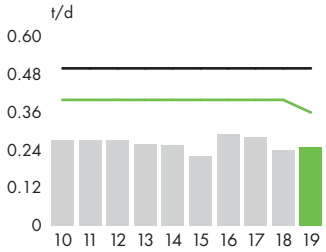
Phosphorus, P



Total suspended solids, TSS



Adsorbable organic halogen compounds, AOX



Monthly limit Annual permit

The Kaukas mill used a total of 91 million cubic metres of water in the manufacture of pulp and paper in 2019. 43% of this was process water that was treated at the biological effluent treatment plant before discharge. Water consumption increased in comparison to the previous year. The most significant reason for this was the increased production of the pulp mill. In addition, the changes implemented to run rainwater to wastewater treatment in compliance with the new environmental permit increased the volume of water to be processed.

The effluent load to the lake decreased in terms of biological oxygen demand (BOD), chemical oxygen demand (COD), solids and phosphorus (P). Nitrogen (N) load and halogenated organic compounds (AOX) load increased slightly. The effluent loads of both pulp and paper production remained within the limits specified in the BAT document published in autumn 2014, except for phosphorus, the value of which was below the minimum level. In 2019, the volume of water used in paper manufacture exceeded the BAT level, but the investment deployed in the autumn will reduce water consumption in 2020 significantly.

In order to ensure water supply at the Kaukas mill integrate, a new water intake pipe was installed at the water intake plant, parallel to the old one. This was done because the surface level fluctuation of Lake Saimaa has caused risks to sufficient water supply during dry summers. The investment ensured that sufficient volumes of water can be supplied to the mills in all circumstances.

Timber is stored in water by the mill site. The impact of water storage on the water system was studied.

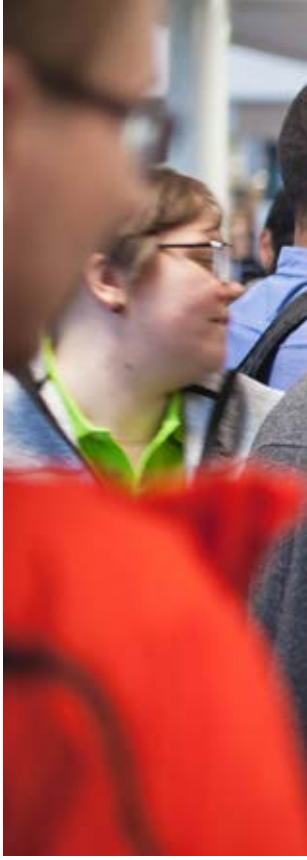
The performance of the biological treatment plant was good, and treatment efficiency has remained stable over the past few years. The operation of the Kaukas treatment plant was analysed by two external companies in 2019. Both companies concluded that the operation of the treatment plant is effective. The treatment plant's operation is reported in terms of its treatment efficiency, or reduction of various substances. In 2019, the reduction rate was 99% for BOD, 81% for COD and 97% for solids.

30% of the nutrients required by the treatment plant already consisted of recycled nutrients in 2019. This is a major milestone towards UPM's objective of completely replacing synthetic nutrients with recycled nutrients by 2030.

Wastewater monitoring was improved to meet the requirements of the new environmental permit. Observations were made in summer 2018 regarding the deviating colour of lake water. A boat was procured for the mill integrate for visual monitoring of lake water. Despite regular monitoring, no phenomenon similar to that of the previous summer was detected.

At Kaukas, timber is also stored on water. The UPM Research Centre examined the impact of the floating timber reserve on the water system. In the tests, timber of various ages was stored in a container, and the nutrient and oxygen demand contents of the water in the container were measured. The results indicated that the nutrient load of storing timber in water is infinitesimal and the oxygen demand is low. Timber storage in water contributes to the water system's biodiversity, as it improves the habitat of insects, fish and birds.

Societal responsibility



No compromises on safety
Occupational, process and environmental safety are integral to our daily activities and considered second to none. Our current target is to have zero accidents. We strive to reduce and eliminate accidents under our control through continuous improvement and effective risk management. We require all UPM employees and contractors to report any environmental and safety observations. We provide our staff with continuous safety training. In the past year, we organised 12 safety card trainings, 7 hot-work courses, 4 accident response drills and 7 evacuation drills for our employees. We provided 165 paper mill employees with training in basic resuscitation and the use of a defibrillator. In addition, 99 Kaukas employees participated in first aid training. We also provided 36,642 local households and enterprises with a safety bulletin as required by law.

Each Kaukas paper mill employee participated in work community training that covered matters such as attitudes and the relationship between work community atmosphere and satisfaction at work.

We promote the health and well-being of our employees
Mill workers' sports club Kaukaan Lyly had another record-breaking year. The use rate of Lyly's gym increased, and Kaukas employees were encouraged to participate in sports, for example by organising two weightlifting courses. Cross-training is now well-established as the most popular form of group exercise among Kaukas employees, but Zumba and fitness boxing in particular increased in popularity among new sports enthusiasts. Fitness exercise classes were organised three times a week and had 10 to 15 participants per class. The 11 Lyly divisions inspired employees to participate in sports by organising 16 orienteering events, as well as a floorball tournament and a volleyball tournament. Ice hockey was played twice a week.

Almost 450 Kaukas employees and their family members participated in Summer Olympics for children, Christmas celebrations and a family event. In addition to the sports clubs offered, Kaukas employees were given a balance of EUR 100 on their ePass, which they could use on fitness and culture activities.

Introducing the forest industry to students and locals
Our aim is to inform young people about jobs in the forest industry and encourage them to study process technology and pursue careers in the field. We organised visits for hundreds of schoolchildren and students at our mills. We participated in events organised by local educational institutions, such as the DuuniDay contact event at Lappeenranta University of Technology and the Kesäksi Duuniin recruitment exhibition.

We also participated in the Chemists for Bioeconomy FEC training that aims to employ people with higher education. At the Shaking up Tech event organised by Aalto University, Lappeenranta University of Technology and Tampere University, we held a workshop that provided young women attending upper secondary education with the opportunity to, for example, remove microplastics from Lake Saimaa water. Guest lectures in the region's schools and educational institutions were an integral part of our activities.

We also participated in Lappeenranta Family Center's miniature town, Me & My City, which familiarises school children with entrepreneurship and the world of work. In the miniature town, children learn about the employment and industrial opportunities provided by forests. Children roleplay applying to work in the town, and at the town's UPM office they get to work as business unit managers, factory workers, marketing and communication managers and researchers. In 2019, the miniature town activities were participated in by 4,890 sixth year and 3,780 ninth year students.

In September, we opened the factory gates to the general public. Visitors to the event had the opportunity to familiarise themselves with the operation of our units by taking a bus tour and a tour of the event site established in the yard of Mutteri. The planting machine, HCT timber lorry and forestry machine displayed at the event were especially popular among children. The event attracted over 2,000 people.

Community engagement
We support sustainable development and promote the well-being of the communities around us by participating in numer-

ous community projects as a company. UPM's Biofore Share and Care programme demonstrates our commitment to responsibility through sponsorship and employee volunteering. In 2019, most of our sponsorship was aimed at supporting learning, reading and sports activities for children and youth. Our employees have used the volunteering opportunities available by, for example, manufacturing seal-friendly fish traps at the mill site's workshops during their working hours.

We cooperate with various local associations and societies. With our help, they organised activities including break time exercise for schoolchildren, tournaments, after-school activities and free sports introduction events for children. The Vehkataipale School located near the mill site has used UPM's forests in teaching, and a video discussing their unique forest school was filmed with our support.

In August, we familiarised nearly 350 sixth year students from ten Lappeenranta schools with the growth and management of forests and timber products on forest trips organised jointly with the Finnish Forest Association. The children had the opportunity to plant tree seedlings and enjoy a packed lunch by a campfire.

The Lasten Liike exercise clubs for children coordinated by the Finnish Olympic Committee, supported by companies and implemented by sports clubs, were organised at eight schools in Lappeenranta in 2019. UPM supported a total of 14 clubs participated in by 148 children.

The bird houses given as presents and awards at Kaukas also have a background in the desire to support local communities. Made out of sawn timber from Kaukas mills, the bird houses were commissioned by the local Laptuote association, which employs people with learning difficulties, the long-term unemployed and other groups at risk of exclusion from the job market. To every Lappeenranta resident's delight, we provided timber for the traditional Myllysaari Midsummer bonfire built by Lions Club Lappeenranta Saimaa.

Additional value for the region

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. In 2019, the UPM Group paid a total of approximately EUR 568 million in various taxes and contributions.

The mills' operations also benefit local communities in many ways. Real estate taxes and the municipal share of corporate income taxes paid by UPM support the local economy. In addition, the taxes and social security contributions that UPM employees pay on their wages have a significant local impact. Our impact on local tax contributions is approximately EUR 28 million in the Lappeenranta area and the consumption impact of the mill integrate is approximately EUR 50 million.

Our mills use over five million cubic metres of wood, most of which is sourced from nearby areas. In addition to forest

owners, this provides work and a livelihood to harvesters and log truck operators, forest workers and other forestry professionals.

With around one thousand employees in 2019, 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 more than 70 student internships and commissioned 22 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.

		2017	2018	**2019**
Production capacity	Magazine paper	314,000 t	305,000 t	300,000 t
	Pulp	740,000 t	770,000 t	770,000 t
	– Softwood	420,000 t	440,000 t	440,000 t
	– Birch	320,000 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	92%	88%	91%
	Fossil fuels	8%	12%	9%
	Purchased electricity [1]			
Emissions to air include UPM's share of Kaukaan Voima's emissions	Fossil carbon dioxide, CO_2	102,199 t	155,271 t	128,161 t
	Nitrogen oxides, NO_x	958 t	1,247 t	1,223 t
	Sulphur dioxide, SO_2	136 t	62 t	62 t
	Dust particles	131 t	114 t	120 t
	Total reduced sulphur, TRS	25 t	43 t	79 t
Water intake	Process and cooling water	85.6 milj. m^3	86.4 milj. m^3	91.3 milj. m^3
Discharges to water	Effluent	40.0 milj. m^3	34.6 milj. m^3	39.6 milj. m^3
	BOD_7	384 t	416 t	344 t
	COD	13,071 t	12,936 t	11,062 t
	Solids, TSS	595 t	559 t	484 t
	Phosphorus, P	4.9 t	6 t	5.9 t
	Nitrogen, N	125 t	137 t	151 t
	Halogenated organic compounds, AOX	102 t	85 t	93 t
Waste	Waste to landfill	[2]	5,763 t	5,447 t
	– Green liquor dregs		5,758 t	5,447 t
	– Mixed waste		5 t	0 t
	Reused waste		17,794 t	26,215 t
	– Debarking reject sand and stones		404 t	524 t
	– Green liquor dregs		7,059 t	8,231 t
	– Lime sludge and lime		1,530 t	3,195 t
	– Ash from the powerplant		6,905 t	6,367 t
	– Recycled cardboard and paper		953 t	488 t
	– Metal waste		703 t	414 t
	– Soil		0 t	6,547 t
	– Other individually collected waste		240 t	449 t
	Intermediate storage		0 t	197 t
	– Lime fertiliser			197 t
	Hazardous waste		596 t	117 t
Size of mill area Including all landfills maintained by the mill	Mill area	215 ha	215 ha	215 ha

[1] See UPM Corporate Environmental and Societal Responsibility Statement for more information (e.g. energy indicators).
[2] Reporting of waste data was changed in 2018.

Performance against targets in 2019

TARGET	ACHIEVEMENT	COMMENTS
A safe place to work LTAF (lost time accident frequency) of zero	No	The number of lost-time accidents was one at both the pulp and the paper mill. LTAF pulp 1.94 and paper 2.54
Active preventive safety activities – Safety and environmental observations Paper mill > 675 Pulp mill > 1,000 – Safety walks and talks Paper mill > 420 Pulp mill > 1,080	Yes	Preventive safety measures were successfully implemented. There were 841 observations and incident reports at the paper mill and 1,387 at the pulp mill. A total of 836 safety walks and talks were organised at the paper mill and 1,625 at the pulp mill.
Paper mill material efficiency – Fibre waste to treatment plant < 7.0 t/d	Yes	The paper mill operated in a material-efficient manner. The quantity of fibre emissions remained below the target.
Reducing specific emissions at the pulp mill compared to the previous year – COD and AOX kg/Adt < 2018	Yes	Specific emissions also decreased.
Reducing effluent volumes Pulp: < 2018 achieved Paper: < 18 m^3/t.	No	The wastewater reduction objective was not achieved. The volume of water run to the treatment plant increased as timber yard water was drained to treatment. Deployment of the paper mill investment in the autumn reduced the volumes of wastewater. The results will be seen in the coming years.
Reducing carbon dioxide emissions from fossil fuels – The consumption of natural gas was reduced	Yes	Fossil carbon dioxide emissions decreased in comparison to the previous year.
Improving energy efficiency – Pulp: secure energy self-sufficiency – Paper: reduce specific consumption of energy	Yes	The pulp mill produced an increased amount of energy and achieved energy self-sufficiency. The specific energy consumption of paper production decreased.
Secure operations in accordance with the environmental permit that entered into force in 2018	Yes	Reporting and monitoring were updated to comply with the permit. Special reports were drawn up in compliance with the agreed schedule.

Targets for 2019

TARGET	SCHEDULE	MEASURES
Zero accidents	2020	LTAF (lost time accident frequency) of zero
Active preventive safety activities	2020	Safety observations; pulp 1,000, paper 675 Safety walks and talks: pulp 1,512, paper 500.
Paper mill material efficiency	2020	Fibre waste to treatment plant < 6.0 t/d
Reducing specific emissions at the pulp mill compared to the previous year	2020	COD and AOX kg/Adt < 2019
Reducing effluent volumes	2020	Pulp: < the 2019 level Paper: < 16.6 m^3/t
Reducing carbon dioxide emissions from fossil fuels	2020	The consumption of natural gas was reduced
Improving energy efficiency	2020	Pulp: secure energy self-sufficiency Paper: reduce specific consumption of energy
An investigation was carried out on the impact of the Kaukas mills on the water system.	2020	Has the report been delivered to authorities?

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 updated UPM Kaukas Environmental and Societal Responsibility 2019 report as well as the information concerning UPM Kaukas in the Updated UPM Corporate Environmental Statement 2019.

On the basis of this examination, the environmental verifier has herewith confirmed on 2020-03-31 that the environmental management system, the updated UPM Kaukas Environmental and Societal Responsibility report and the information concerning UPM Kaukas in the Updated UPM Corporate Environmental Statement 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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