UPM BIOFORE
BEYOND FOSSILS

UPM Jämsä River Mills

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2019

UPM Jämsä River Mills

UPM's Jämsä River Mills – Jämsänkoski and Kaipola – are located in the Jämsä River Valley in Central Finland. The Jämsänkoski mill is located on the banks of the Jämsänjoki River, and the Kaipola mill stands on the edge of Lake Päijänne. Production at Kaipola mill started in the 1950s and at the Jämsänkoski paper mill in the 1880s.

The mills function as a unit, with a total of six paper machines in operation. Uncoated magazine paper and label and packaging papers are produced at the Jämsänkoski mill, while coated magazine paper, catalogue paper and newsprint are produced at the Kaipola mill.

The main raw materials used in paper production at Jämsänkoski are mechanical pulp made of spruce pulpwood for the magazine papers, and chemical pulp, sourced from UPM's own mills or the market, for label and packaging paper. In Kaipola, the main raw materials are spruce pulpwood and recovered household paper.

Both of the mill sites include a debarking plant, a TMP plant, a water plant, a biological effluent treatment plant and a power plant. The Kaipola site also includes a deinking plant for recovered household paper. At both mill sites, the heat and a small portion of the electricity required for mill processes are produced by the mill's own power plant. Heat is also recovered from the TMP plants.

The water used at the Jämsänkoski mill is sourced from Lake Koski-Keskinen and the Iso-Ryöni ravine, while the water source for the Kaipola mill is the Tiirinselkä in Lake Päijänne.

Production capacity	1,365,000 tonnes of paper
Personnel	877
Products	**Magazine paper:** UPM Cat, UPM Impresse, UPM Impresse Plus, UPM Max, UPM Max S, UPM Smart, UPM Cote, UPM Ultra, UPM Ultra Silk, UPM Valor **Newsprint:** UPM News, UPM Brite, UPM Book, UPM Color, UPM EcoBasic, UPM EcoLite, UPM EcoPrime, UPM Opalite, UPM Opalite Plus **Label and packaging paper:** UPM Label Papers, UPM Packaging Papers
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ETJ+ – Energy Efficiency System ISO 9001 – Quality Management System ISO 22000 – Food Safety Management System OHSAS 18001 – Occupational Health and Safety System PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel

UPM Jämsä River Mills 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

EU Ecolabel www.ecolabel.eu
EU Ecolabel : FI/037/001

Review of the year 2019

The year 2018 was an excellent one for Jämsä River Mills in terms of the demand for paper and adjusted capacity, which is why our expectations for 2019 were quite reasonable. Unfortunately the decrease in the demand for graphic paper in Europe was more significant than expected, which was also reflected in the production volumes of Jämsä River Mills. In 2019, we focused on maintaining our ability to generate profit. This was supported by culture of aiming higher and responsibility, along with a drive to find new sustainable solutions to mitigate risks, create competitive advantages, open up new growth opportunities and help to answer the global challenges.

Work on reducing odour nuisances has continued

Work to reduce the odour nuicance caused by Kaipola waste water treatment plant has continued and the situation has improved thanks to the measures taken. In addition to the continuous oxygenation treatment, we continued to feed calcium nitrate into the waste water. The nitrate acts as an additional oxygen source in the waste water and prevents the formation of odour-causing hydrogen sulphide. As of late 2019, we have been able to recycle pre-sedimented waste water and therefore reduce the risk of hydrogen sulphide being formed due to delays. Thanks to the improvements made, we can now process water coming from the debarking plant separately before the water is directed to the treatment plant. This is an efficient way to reduce the organic load consuming waste water oxygen, especially in winter.

In June 2019, an open discussion on the regulations and obligations of a environmental permit and our preventive actions against odour was held for local residents living near the Kaipola mill. Nine people attended the event, including one local newspaper journalist.

Our stakeholders contacted us regarding the odour nuisance at Jämsänkoski, particularly in autumn 2019. Based on the study the exhaust air of the mill's sludge treatment building was identified as a potential source of the local odour nuisance. To eliminate the odour, activated carbon filters were installed in late 2019 to filter the exhaust air coming from the sludge treatment building. The measures to reduce the odour coming from the waste water will continue on the basis of the results achieved at the Kaipola mill.

Reduction of noise emission

Control measures to reduce the noise emission in both Kaipola and Jämsänkoski were taken in 2019. New noise blockers were installed and existing ones were maintained at both mills. Noise levels were measured and noise distribution models were updated after these procedures, in line with environmental permit obligations. Noise level reports for both mills were completed and delivered to the environmental authorities.

Malfunction at Kaipola

There was a major power failure at the Kaipola mill on 17 January 2019. The power cut was caused by an earth fault in the eastern 110kV power line that is part of the national power-distribution network. The power failure interrupted all mill operations, including pumping effluent from the mill area to the treatment plant. The effluent pumping plant is connected with an electrical connection to increase safety, but this emergency system was also down. Approximately 2600 m^3 of effluent was released into waterways. The environmental impacts of this were evaluated in agreement with The Centre for Economic Development, Transport and the Environment. The sampling and analysing was conducted by an external operator in line with the Central Päijänne monitoring programme. This event did not contaminate the environment. The malfunction was investigated in line with UPM's practices and corrective actions were taken.

Development of Arvajankoski rapids

We made preliminary plans for the development of the Arvajankoski rapids together with The Centre for Economic Development, Transport and the Environment. The preliminary plans for renovation cover the options and impacts of the potential demolition of the Arvajankoski headworks, the termination of regulations and the renovation of the rapid area. The planning stage also included an archaeological survey and an architectural history survey on the pumping plant. A preliminary survey conducted by an outside consultant was presented at an event held in November. The event was attended by people representing the authorities, the municipality of Jämsä and Kuhmoinen, residents living by the waterside of the Arvajankoski rapids, partners in the company and those from fishery areas. Based on the feedback we received at the event, we will continue to search for a feasible alternative.

Product safety and sustainability

Customer enquiries regarding our products mainly related to product safety, the origin of wood raw materials, forest certification, the amount of recycled fibre used in paper, and management systems. Customers of both label and packaging paper as well as customers of magazines and newspapers were interested in the origin of wood raw materials and forest certification. In recent enquiries, the origin of wood has been one of the most popular topics.

Product safety is especially important in the case of label and packaging papers used by the food industry. Our papers are safe to use throughout their product

lifecycles, and papers with food contact certificates can be used in direct contact with dry and non-fatty foods.

A certification for use involving contact with food was obtained for the label papers. It guarantees that the products comply with the German BfR Recommendation XXXVI and US FDA regulation Title 21 CFR, Parts 170–189. The ISO 22000 certificate held by the Jämsänkoski Speciality Papers unit guarantees that our operations meet the demands of the standard as part of the food supply chain. The raw materials used in our products are suitable for end use with food products, and our processes and products comply with the cleanliness requirements. The raw materials we use and our end products are always traceable.

UPM's environmental targets for 2030 at Jämsä River Mills is to further reduce water and energy consumption and the organic load of purified effluent. We have brainstormed measures to promote this objective and evaluate the techno-economic impacts of potential measures taken, both in working groups and together with the experts of the UPM research centre. Water consumption monitoring has improved on a day-to-day basis and the development of reporting on heat and electricity consumption has also been initiated by defining relevant key figures.

Assessments support the development of operations

Our operations have been assessed by independent external experts. The external audit of the ISO 14001 environmental system, the ISO 9001 quality system, the ISO 22000 product-safety system, the OHSAS 18001 occupational health and safety system, and the ETJ+ energy-efficiency system that was undertaken in the autumn noted a total of two minor non-conformities. Corrective measures and schedules for implementing them have been set for the minor non-conformities.

The external auditor stated that our target settings are at various levels. If there are a lot of goals, they cannot always be clearly recognised in various operations. We received positive feedback regarding well performed safety reporting, for example. The quarterly reviews held by the General Manager and different departments are the key sources of information on achieving the goals set. We also communicate a lot with people face-to-face. Information related to safety is dispersed efficiently and in a timely manner between mills.

The energy efficiency working group is now active, and its goal is to share the best energy saving ideas and practices with other mills. Simultaneously, common UPM-level approaches related to monitoring energy efficiency are created and our reporting is updated to support the monitoring and development of energy consumption.

The so-called multisite assessments of UPM paper mills are carried out following a separate plan. The assessments concern all certified systems. The goal is to ensure that the practices of different units are as compatible as possible. The auditors' extensive expertise in UPM's other industries brings new views to the development of operations. Internal assessment operations between the mills are developed based on experience.

We have begun preparations for meeting the requirements of the occupational health and safety standard ISO 45001. This standard emphasises management engagement, change management, risk assessment, and stakeholder co-operation.

Environmental permit review applications

The Vaasa Administrative Court's final decision concerning the environmental permit decision given to Kaipola in February 2017 arrived in early 2019 after complaints. No changes were made to the environmental permit regulations and

the permit is now legally valid. Originally, the environmental permit review was based on the entry into force of the BAT conclusions on pulp, board and paper production published in the autumn of 2014, and the clarification of the permit regulation concerning noise.

The Vaasa Administrative Court's final decision concerning the environmental permit decision given to Jämsänkoski in late 2016 arrived in early 2019 after complaints. Hardly any changes were made to the contested regulations and the permit is now legally valid.

The Vierelä landfill site in Jämsänkoski received an environmental permit decision at the end of 2018. An appeal has been filed and the decision is not final. Power plant ash is being temporarily stored at the Vierelä landfill site as needed. There has been no need for landfilling in recent years. The total surface area of the Vierelä landfill site is approximately 8.5 ha. Approximately 3.5 ha of this area is a closed disposal area, approximately 2 ha is an available disposal area, and approximately 3 ha is an unbuilt area. 1.5 ha of the closed area is made up of interim storage field.

An environmental permit application for the Pitkäniemi landfill site in Kaipola was submitted in August 2017. The Regional State Administrative Agency for Western and Inland Finland gave its decision on the suspension of landfill operations and the measures to be taken regarding the open waste-disposal area in February 2019. The city of Jämsä gave its decision regarding the interim storage of waste being directed to reuse and the expansion of the interim storage field in May 2019. The expansion of the interim storage field began in late 2019 in line with the decision.

The environmental impacts of the mills, in terms of watercourses and fishery, are being monitored by the Eurofins Environment Testing unit in Jyväskylä. The monitoring is carried out in accordance with the programme approved by the Centre for Economic Development, Transport and the Environment, in co-operation with the town of Jämsä. Air quality is monitored in co-operation with the town of Jämsä and Jämsän Aluelämpö Oy.

Pia Siirola-Kourunen, Environmental Manager

Antti Hermonen, General Manager

UPM Jämsä River Mills

Responsibility figures 2019

Waste

Amount of waste taken to landfill

0 kg

Waste is recovered as materials or for energy

Power plant ash directed to reuse

100%

Ash recovered for soil improvement and construction

Certified Fibre

86%

of fibre used in paper production was FSC and/or PEFC certified.

UPM's target is to use only certified fiber by 2030

Recycled Fibre

27%

of the fibre used at Kaipola

Taxes

Mills' local tax impact approx.

eur 25 million

Real estate tax EUR 0.8 million

Estimate of tax on salaries EUR 8.0 million

Estimate of corporate income tax EUR 16.3 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

4,424

environmental and safety observations, near-misses, safety walks and discussions recorded by the employees and contractors of UPM Jämsä River Mills

86%

less lost-time accidents (LTA) happened to own employees than in 2018.

Consumption impact*

Mill's consumption impact in region approx.

eur 37 million

in Finland approx.

eur 66 million

* Direct and indirect employees' private consumption of commodities through net income

Supply Chain

99%

of raw materials spend qualified against UPM Supplier and Third Party Code (wood suppliers not included)

Employment

The mills employed directly

877 people

and offered

137 summer jobs

Indirect employment effect in region approx.

860 persons

Energy

Biomass-based fuel

70%

of the fuel used by the power plants

Air

Power plant emissions into the air remained below the maximum permitted levels. Total fossil carbon dioxide emissions decreased slightly at both the Kaipola and the Jämsänkoski power plants. The use of peat at the mill site decreased year-on-year. Other emissions decreased or remained at the previous year's level. In comparison to previous years, the volume of nitrogen oxide emissions decreased at both plants thanks to the new adjustment models and new urea injection system to the boiler. These measures prepare us for the new, significantly stricter flue gas emission limits to be enforced in 2020.

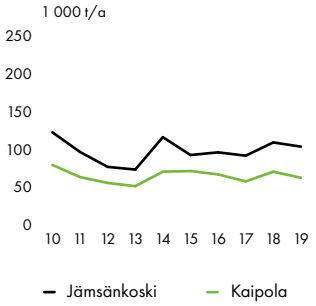
The use of biomass-based fuel – forest bioenergy, bark and sludge – increased slightly compared to the previous year. Their share of all fuel was approximately 70%. The use of oil amounted to less than 2% of the total at both plants.

Particulate measurements have indicated that the average air quality in the town of Jämsä has, for the most part, been good. During the spring street-dust season, particulate measurements have shown air quality to be satisfactory. The key sources of particulates in the air are traffic, the heating of buildings and a variety of diffuse emissions. Monitoring has shown that industrial and energy production plants generate very few particle emissions.

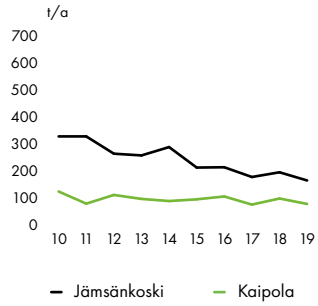
Most nitrogen emissions in the Jämsä region come from road traffic and the production of energy. The concentrations of nitrogen oxide measured in the town centre are below the guideline value.

The Jämsänkoski mill provides district heat to the district heating network in Jämsänkoski and Jämsä. The share of the heat provided is approximately 10% of the mill integrate's heat production.

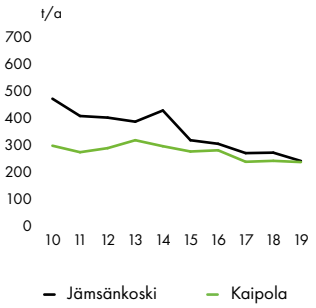
Fossil carbon dioxide, CO_2



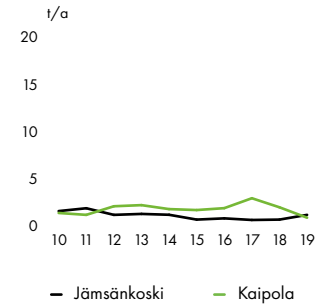
Sulphur dioxide, SO_2



Nitrogen oxides, NO_x

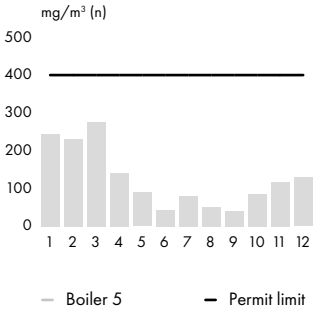


Particulates

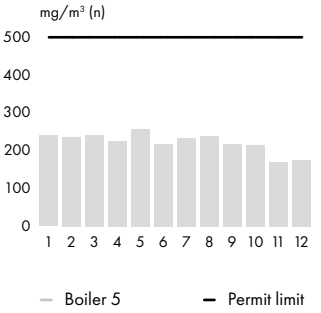


SPECIFIC EMISSIONS FROM THE POWER PLANT'S MAIN BOILER, Jämsänkoski

Sulphur dioxide, SO_2

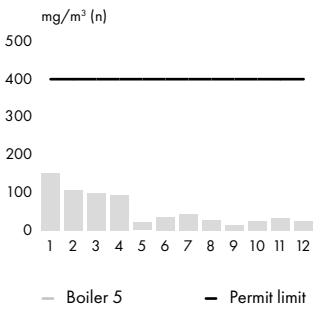


Nitrogen oxides, NO_x

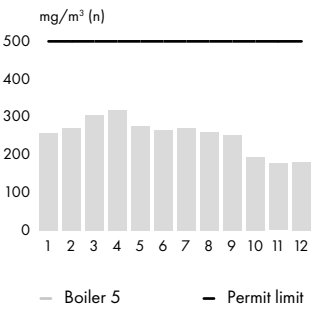


SPECIFIC EMISSIONS FROM THE POWER PLANT'S MAIN BOILER, Kaipola

Sulphur dioxide, SO_2



Nitrogen oxides, NO_x



Waste

One of UPM's global objectives is that by 2030, no process waste of any kind, and at any UPM location, will be disposed of in landfills or burned without recovering the energy produced. The objectives support the United Nations' global sustainability objectives for 2030.

All waste generated is reused, either as is or after further processing. Fractions that the mill and other operators cannot use as materials are used as sources of energy. As transporting fractions far away from the mill for further processing is not financially or environmentally effective, local partners play an important role in meeting this objective. The amount of waste generated by Jämsä River Mills decreased slightly from the previous year.

The largest waste fraction at both sites is ash from power plants, the level of which was lower than in 2018. All of the ash produced was reused. A significant portion of the ash was used for soil improvement, mainly in crop fields. The ash contains high amounts of calcium, and also important trace elements, such as magnesium and potassium. The ash complies with the requirements of the Finnish Fertiliser Product Act, and, in addition to self-monitoring, Evira monitors ash properties on a regular basis.

Another significant reuse application has been construction. In 2019, in addition to the improvements of forest roads, a 1 kilometre long road structure was built using nearly 9,000 tonnes of ash. The ash is used in road base to replace natural stone material and improve the load-bearing capacity and frost resistance of the road.

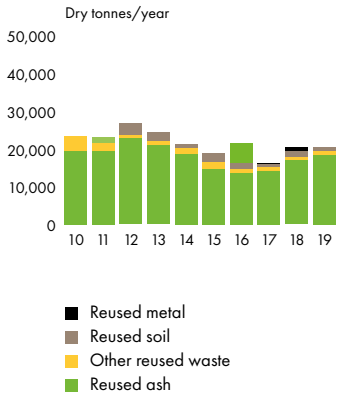
The utilisation of ash in organic fertiliser and cement-based product production has also been investigated. We will continue this development work in 2020.

In addition to ash, the most important waste fractions were soil from forest energy and drum reject generated during processing of recovered paper. As in previous years, the drum reject, consisting primarily of wood fibres and plastic, was sent to a local waste management company to be used as rawmaterial for recovered fuel. The soil was sifted and reused in the Himos area. The wood materials separated in the sifting process were forwarded to the Kaipola power plant for burning.

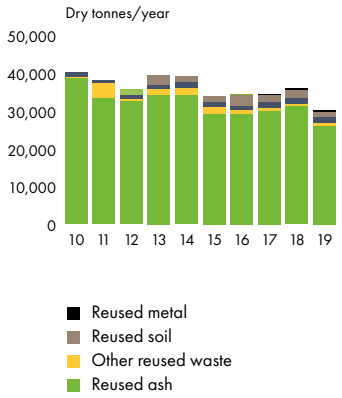
The mills' waste oils were sent to regeneration plants for reuse. Waste generated at the mills is carefully separated into different fractions, which are then reused as raw materials or for energy.

Oils, metals, plastics, papers and cardboards are reused. Hazardous waste is sent to Fortum Oy in Riihimäki for processing by various methods. Wood waste, plastics, and paper and board waste unsuitable for recycling are used to produce recovered fuel or sent to facilities such as the Rauman Biovoima energy plant for burning.

Process waste, Jämsänkoski



Process waste, Kaipola



Water

In compliance with UPM's environmental principles, the mills use water responsibly. The goal is to minimise the impact of the operations on local water resources.

Treated effluent from the Jämsänkoski mill is directed into the Jämsänjoki river and from the Kaipola mill into the Tiirinselkä lake in Päijänne. Jämsänjoki is also impacted by the town's municipal treatment plant and scattered loading from forestry and agriculture. The water quality of Jämsänjoki and Tiirinselkä depends on the quality of water coming from the Kankarisvesi lake. The water contains humus and is quite nutrient dense.

According to the 2018 joint monitoring results of Central Päijänne, Kaipola's effluents accounted for 6.2% of the phosphorus load and 2.7% of the nitrogen load in the monitored area. Correspondingly, Jämsänkoski's effluents accounted for 7.3% of the phosphorus load and 3.3% of the nitrogen load in the monitored area (Figure 1).

Scattered loading makes up a significant part of the load of Central Päijänne. The load coming from the water of Kankarisvesi, upstream of Jämsänjoki, accounted for on average 16% of the phosphorus load and 18% of the nitrogen load in the monitored area. The phosphorus load coming from upstream of Jämsänjoki and the catchment area of Jämsänjoki and Tiirin-Lehtiselkä accounted for 42% of the total load. The nitrogen load coming from these same areas made up 33% of the total load. Organic load is also included in the scattered loading.

The volume of process water used per tonne of paper produced increased slightly from the previous year's level. The volume of process water used complied with the best available technology (BAT ref 2014) level.

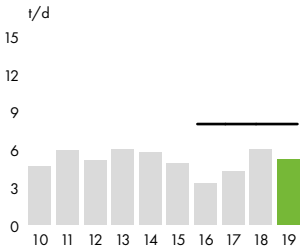
The effluent load of the Kaipola and Jämsänkoski mills remained below the emission limits according to environmental permits.

The effluent load of the Kaipola mill decreased from the previous year in terms of organic load, phosphorus load, nitrogen load and solids. The Kaipola mill's environmental permit includes monthly effluent discharge limits for chemical oxygen demand (COD), phosphorus and nitrogen. In addition, an annual discharge limit has been imposed for COD, and annual target values are in place for phosphorus and nitrogen. The monthly and annual emission limits for solid emissions in the purified effluent came into effect on 1 October 2018.

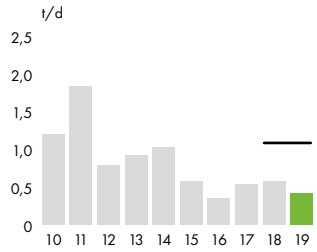
The effluent load at the Jämsänkoski mill decreased from the previous year in terms of organic load, phosphorus

JÄMSÄNKOSKI

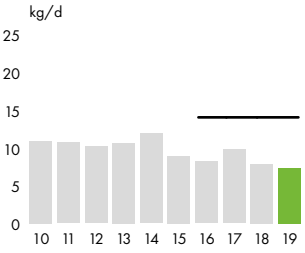
Chemical oxygen demand, COD



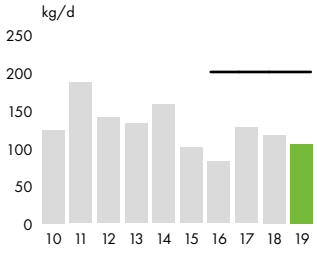
Total suspended solids, TSS



Phosphorus, P

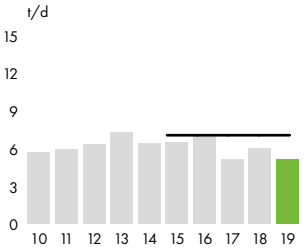


Nitrogen, N

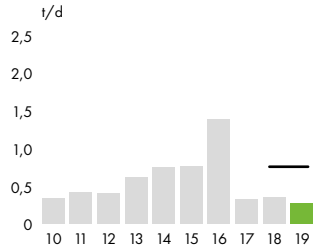


KAIPOLA

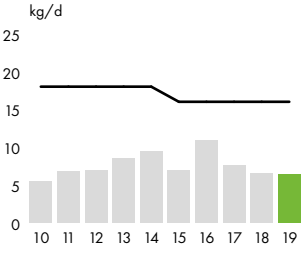
Chemical oxygen demand, COD



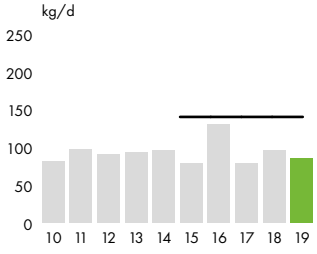
Total suspended solids, TSS



Phosphorus, P



Nitrogen, N



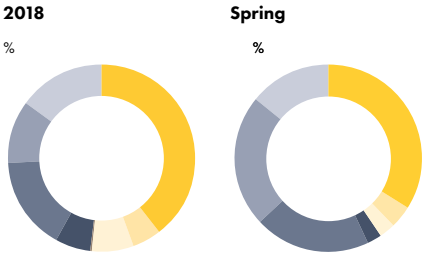
— Permit limit

load, nitrogen load and solids. The Jämsänkoski mill's environmental permit includes both monthly and annual effluent discharge limits for chemical oxygen demand (COD), phosphorus, nitrogen and solids.

Throughout the year, UPM employees identified 114 environmental observations and minor deviations that were dealt with in the daily operations of the mills, in accordance with the UPM operating model.

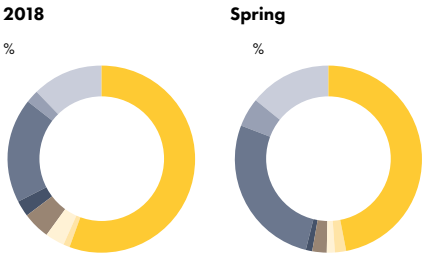
Figure 1. The distribution of Tiirin-Lehtiselkä's phosphorus and nitrogen load in 2018. Source: Joint Monitoring Programme for Central Päijänne 2018

PHOSPHORUS



	2018	2018
Vanhanselkä	40 %	34 %
Rain	5 %	4 %
UPM Jämsänkoski	7,3 %	2,8 %
Municipal treatment plant	0,2 %	0,1 %
UPM Kaipola	6,2 %	2,4 %
Upstream of Jämsänjoki	16 %	20 %
Scattered loading of Jämsänjoki	11 %	23 %
Catchment area of Päijänne	15 %	14 %

NITROGEN



	2018	2018
Vanhanselkä	55 %	47 %
Rain	1 %	2 %
UPM Jämsänkoski	3,3 %	1,5 %
Municipal treatment plant	4,7 %	2,3 %
UPM Kaipola	2,7 %	1,2 %
Upstream of Jämsänjoki	18 %	27 %
Scattered loading of Jämsänjoki	2 %	5 %
Catchment area of Päijänne	12 %	14 %

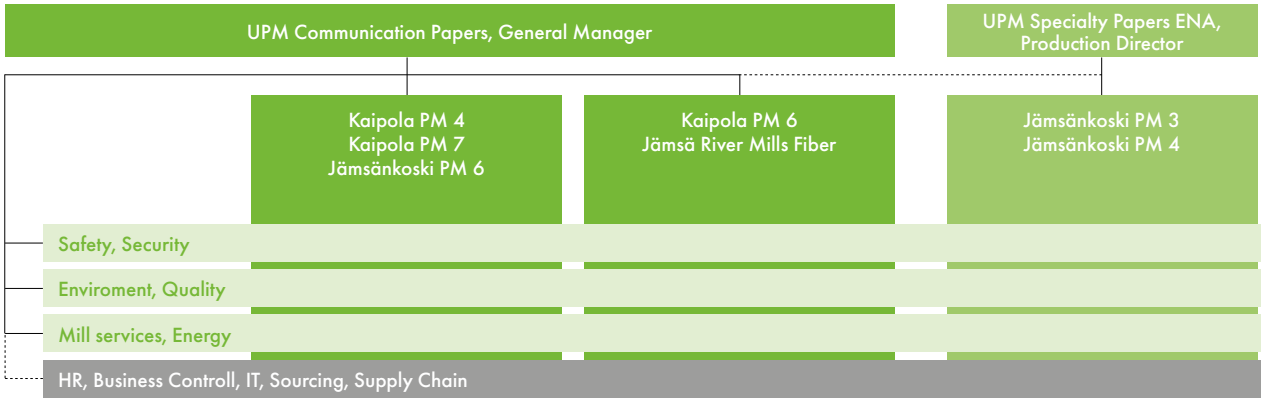
Organisational structure and management of exceptional situations

Jämsä Rivers Mills consist of two business areas as well as departments, which are responsible for safety and security, environmental protection, quality, mill services and energy. The group's functions also operate in our mills: business controll, sourcing, IT and HR services.

Jämsä River Mills management, departments and the safety organisation are responsible for the prevention of exceptional situations and the operational management of crises and exceptional situations. Jämsä River Mills has guidelines and rescue and firefighting plans for exceptional situations. The general manager heads the management of exceptional situations. Mill experts support the general manager in these efforts by providing specific expertise.

In the event of a major exceptional situation, these experts form the mill's crisis management team, which is responsible for the operational management of the situation. A major exceptional situation is an unforeseen chain of events that proceeds rapidly and has a significant impact on operations. Exceptional situations include serious accidents and hazardous situations (large fires, explosions and chemical and traffic accidents on the mill site), environmental damages, serious work-related injuries, cybersecurity threats and information attacks.

The operations of the mill safety organisation cover expert duties in occupational safety, mill guarding, firefighting and rescue operations, and the control of hazardous substances. Drills related to exceptional situations are an important part of preventive safety work. Firefighting and rescue operations are always led by the rescue authorities.



Societal responsibility

Safety
Our goal in UPM is to be the industry leader in health and safety. Our clear objective is zero fatal and serious accidents. Safety is fully embedded in our daily activities and is not considered less or secondary than any other interest. We strive to reduce and eliminate accidents under our control through continuous improvement and effective risk management.

Our employees, as well as business partners and their employees, are required to adopt safe work practices and to comply with the rules and standards we have established. Before accessing UPM production site, contractors get UPM safety training, which presents and demonstrates the basic safety requirements. This is complemented with a job specific safety induction and a permit to work.

In 2019, employees and contractors recorded 4,424 safety walks and discussions, near-misses and safety and environmental observations using the One Safety tool at Jämsä River Mills. There were over 1,000 more recorded events than in the previous year.

Many employees of Jämsä River Mills participated in accident training, evacuation drills, fire extinguishing drills, first aid training, safety training, occupational safety card training, and hot work licence training in 2019. The mills also organised safety training for new apprentices and continued to organize induction sessions for summer workers. We continued our collaboration with a liquid gas supplier that began in 2018 and gave mill employees training on the safe handling of liquid gas and on what to do in the event of an accident.

In spring 2019, Jämsä River Mills crisis management and on-call personnel participated in training on the management of exceptional situations and crisis communications.

The themes of the Safety Week held in April included the prevention of accidents during leisure time, use of personal protective equipment both at work and in free time and a healthy lifestyle.

In addition to basic safety standards, we gave our contractors safety training, for example, before annual maintenance shutdowns and significant maintenance work.

The fire protection organisation of Jämsä River Mills co-operates closely with local fire brigades by holding various drills, such as chemical accident and electric equipment room fire drills, in the risk areas of the mills several times a year.

Jämsä River Mills have made improvements in terms of their personnel and fire safety on various sites based on previous experience and UPM's best practices. For example, we have installed thermographic camera technology in storage areas to detect potential fires at an early stage.

In terms of chemical safety, a chemical exposure scenario was included in our sourcing procedure of new chemicals to meet the amended REACH regulation. The scenario assesses operating conditions under which the risks related to the use of the chemical in question are under control. Operating conditions are conditions like the volume, duration and frequency of use, process technology, process temperature, and ventilation and personal protective equipment used as risk management measures. The exposure scenario is created by the chemical manufacturer or importer as they register the chemical. The scenario is part of the safety data sheet.

In 2019, UPM's lost-time accident frequency (LTAF: the number of lost-time work accidents per one million hours of work) was 2.9 (2.7). The total recordable injury frequency (TRIF) was 7.1 (6.9). The TRIF includes LTA cases as well as cases of modified duties and accidents requiring medical treatment. In 2019, the LTAF figure was 0.7 and the total recordable injury frequency, i.e. the TRIF figure, was 5.8 at Jämsä River Mills.

In 2020, we will pay special attention to contractor safety, safety isolation procedures, and fire work safety.

Health and wellbeing at work
Jämsä River Mills has a fitness centre and a gymnasium that employees and their families may use for free. UPM also supports employees' exercise and cultural activities.

Employees' ability to work was also taken care of through a total of 647 versatile health checks. The health checks include both the age group examinations and statutory examinations for people performing tasks that may cause exposures. The age group examinations are performed every 5 years for people under the age of 50 and every 2.5 years for people over the age of 50. 218 pre-employment examinations were performed on new employees. As of August 2019, all new employees are tested for drug use during their pre-employment examination.

Encouraging learning
We encourage our employees to pursue professional growth and support them in learning and developing their skills further. Ensuring high performance for business success and continuous professional development is UPM's long-term goal.

At Jämsä River Mills, employee skills were ensured with several training sessions over a total of 1751 training days. Safety training was still the most important topic. In addition, we focused in particular on developing supervisory work by carrying out joint training sessions together with other Communication Papers units in Finland.

The UPM mills host apprenticeship programmes in which employees learn a profession through hands-on work and theoretical learning. Jämsä River Mills participated in an apprenticeship training programme, initiated in collaboration with the UPM Rauma and Tervasaari mills, which leads to the "Further Qualification for Power Plant Operators". Four people from Jämsä River Mills participated in the programme.

In January 2019, we launched a new two-year apprenticeship programme to secure our future need for labour and

recruited 22 future employees. There are also three parallel programmes: production, automation and mechanical maintenance. This programme will also be carried out in collaboration with the Rauma and Tervasaari mills. The goal of all programmes is to obtain the most versatile professional know-how possible.

At the end of 2019, we began the preparation and recruitment for apprenticeship programmes starting in spring 2020.

Stakeholder engagement
In August 2019, we participated in the national "Lions for clean water" (Leijonat puhtaan veden puolesta) event organised locally by Lions Club Finland. Local water management challenges were presented by the Lions clubs of Jämsä, an expert of water management plans from the ELY Centre of Central Finland, an expert from the Water and Transport Authority of Jämsä, and a UPM representative. After the presentation, a representative of the city of Jämsä led a lively discussion on the topic. Approximately 30 people attended the event.

In 2019, Jämsä River Mills participated in several recruitment events in Central Finland and visited educational institutions in the area to tell students about the mill operations. Groups of students also visited our mills.

The Biofore Share and Care programme
UPM is involved in many causes and community projects supporting sustainable development and the prosperity and welfare of the communities in which we are active. Our work on this arena is clearly connected to our Biofore Strategy and responsibility targets. It is coordinated under the umbrella of our Biofore Share and Care programme.

The Biofore Share and Care programme comprises three forms of support: sponsorships, donations and employee volunteering. The support can be a monetary contribution, products, materials or employee volunteering. In 2019, Jämsä River Mills participated in volunteer work to support the work coaching foundation Työvalmennusäätiö Avitus and continued to support the local youth through culture and sports clubs activities.

Tax impact
Tax revenue generated by UPM´s business operations is an essential part of our societal impact. UPM pays corporate income taxes in the countries where added value is created, and profit is generated. Based on UPM's corporate and operational structure, UPM reports and pays its corporate income taxes mainly in countries where production activity takes place and where innovations are developed. In addition to the taxes on income, UPM's various production inputs and outputs are also subject to taxation. Taxes are paid in accordance with the local tax legislation and regulations of the country in question.

In 2019, UPM's corporate income taxes paid and property taxes were approximately EUR 211 million in total (EUR 283 million in 2018).

The mills' operations also benefit the local community in many ways. Municipal share of corporate income taxes and the real estate taxes paid by UPM support the local economy. In addition, the taxes and social security contributions that UPM employees pay on their wages have also a significant local impact. Furthermore, the purchasing power of UPM employees and subcontractors maintains and enhances the vitality of the community.

Compliance in all our activities
Decision making, management and operations are guided by our values and by the UPM Code of Conduct. Responsible business practices, complemented by credible and transparent reporting, are the basis for our responsible business conduct across the whole value chain.

In 2019 UPM renewed the Code of Conduct and introduced a new training concept for all employees. By the end of the year, 96% of UPM's personnel had completed the training. 99% of all employees completed the training at Jämsä River Mills.

The UPM Supplier and Third-Party Code was revised to reflect the changes in the Code of Conduct. It will be implemented in early 2020. The UPM Supplier and Third Party Code lays out our minimum requirements for corporate responsibility relating to environmental impact, human rights, labour practices, health and safety, product safety, corruption and bribery.

UPM's target is to have 100% of raw material spend and 80% of all spend qualified against the UPM Supplier and Third Party Code by 2030 (Qualified spend). In 2019, 94% of UPM's raw material spend and 84% of all spend was qualified against the UPM Supplier and Third Party Code.

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	Paper	1,345,000 t	1,345,000 t	1,365,000 t
Raw materials	Wood Recovered paper Pulp Fillers and coating pigments Process chemicals	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Energy	Biomass-based fuels Fossil fuels Purchased energy[1]	74% 26%	68% 32%	70% 30%
Emissions to air	Particulates Sulphur dioxide, SO_2 Nitrogen oxides, NO_2 Fossil carbon dioxide, CO_2	3.2 t 241 t 495 t 145,023 t	2.3 t 281 t 500 t 175,340 t	1.7 t 231 t 465 t 161,752 t
Water intake	Process and cooling water	21,663,000 m^3	25,605,000 m^3	24,605,000 m^3
Discharges to water	Cooling water Effluent discharge Chemical oxygen demand, COD Biological oxygen demand, BOD_7 Phosphorus, P Nitrogen, N	6,137,000 m^3 15,495,000 m^3 3,419 t 128 t 6.3 t 75 t	9,853,000 m^3 15,717,000 m^3 4,392 t 219 t 5.3 t 78 t	9,050,000 m^3 15,523,000 m^3 3,752 t 150 t 5.0 t 69 t
Waste	Waste to landfill Recycled waste – ash – drum reject from the deinking plant – soil – metals – other Intermediate storage Hazardous waste – of which recyclable waste oil	[2] 	0 t 48,044 t 1,431 t 3,908 t 1,305 t 1,478 t 0 t 129 t 73%	0 t 44,417 t 1,451 t 2,623 t 661 t 1,530 t 0 t 132 t 73%
Size of mill area including all landfills maintained by the mill	Jämsänkoski and Kaipola	160 ha	160 ha	160 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
At Jämsä River Mills, no environmental deviations in categories 3–5	No	Category 3 deviation at Kaipola, caused by an extensive power cut in 01/2019
At Jämsä River Mills, improvement of safety results (TRIF < 6.0)	Yes (5.8)	The personnel's attitude towards safety has improved. The personnel understands that interfering is caring.
Stakeholder engagement in the local area	Yes	Open discussion event held regarding the regulations and obligations of Kaipola's environmental permit decisions
The promotion of UPM group's environmental objectives for 2030 at Jämsä River Mills	Partially yes	Preliminary plan completed

Targets for 2020

TARGET	REQUIREMENTS BY DEPARTMENT
At Jämsä River Mills, no environmental deviations in categories 3–5	Fast reaction to deviations
At the Jämsä River Mills, improvement of safety results (JOK TRIF < 6.0)	Special attention is paid to contractor safety, safety isolation procedures, and hot work safety
The promotion of UPM group's environmental objectives for 2030 at Jämsä River Mills	Implement measures set for 2020 (energy reporting development completed and more detailed reporting of water consumption used) and elaborate the plans for reaching our environmental goals
Continue to reduce the odour nuisance originating from the effluent of Jämsänkoski	Use the experience of eliminating effluent odours at the Kaipola mill

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 Jämsä River Mills Environmental and Societal Responsibility 2019 report as well as the information concerning UPM Jämsä River Mills in the Updated UPM Corporate Environmental Statement 2019.

On the basis of this examination, the environmental verifier has herewith confirmed on 2020-04-02 that the environmental management system, the updated UPM Jämsä River Mills Environmental and Societal Responsibility report and the information concerning UPM Jämsä River Mills 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 Communication Papers Oy
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