

UPM Rauma

# Environmental and Societal Responsibility 2017



# UPM Rauma

UPM Paper ENA Oy's Rauma mill is located by the sea on the west coast of Finland, near Rauma's city centre. Metsä Fibre Oy's pulp mill, Forchem Oy's tall oil distillation plant and Rauman Biovoima Oy's biofuel power plant are also based at the mill site. UPM Paper ENA Oy produces the raw and chemically treated water used at the site, and is responsible for the treatment of the site's industrial and municipal wastewaters. The companies collaborate closely in energy production, and Rauman Biovoima supplies the district heating power required by the city of Rauma. Rauman Biovoima's operations support the city's Hinku carbon neutrality project.

UPM-Kymmene Oyj changed its corporate structure in the summer of 2016. The Rauma mill, excluding RaumaCell, is part of UPM Paper ENA Oy, which is one of UPM-Kymmene Oyj's subsidiaries. RaumaCell is still part of UPM-Kymmene Oyj.

The Rauma mill has three paper machine lines, a fluff pulp line, a twin-line debarking plant, two grinders, two TMP plants, a surface water treatment plant, a biological effluent treatment plant and a landfill site for industrial waste.

The paper machines manufacture magazine papers – one of the machines produces uncoated, supercalendered (SC) paper, while the other two produce lightweight coated (LWC) paper. The paper made in Rauma is used in magazines, sales catalogues and advertising products. In addition to paper, RaumaCell produces fluff pulp for the production of hygiene and tabletop products.

Also located at the UPM Paper ENA Oy mill site is Rauman Biovoima Oy's biofuel power plant, which procures its operation, maintenance and environmental services from UPM Paper ENA Oy. Approximately 90% of the energy produced by Rauman Biovoima Oy for UPM is produced using renewable fuels. As the power plant is a separate company, its operations have only been included in this annual report with regard to vicarious liability.



<b>Production capacity</b>	960,000 tonnes of paper 150,000 tonnes of fluff pulp
<b>Personnel</b>	580
<b>Products</b>	<b>Uncoated magazine paper:</b> UPM Max, UPM Cat, UPM Smart, UPM Impresse, UPM Impresse Plus, UPM Max S <b>Coated magazine paper:</b> UPM Star, UPM Ultra, UPM Cote, UPM Valor, UPM Cote Silk, UPM Ultra Matt, UPM Star Silk
<b>Certificates</b>	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality 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 ETJ+ Energy Efficiency System  All certificates can be found from UPM's Certificate Finder (available at <a href="http://www.upm.com/responsibility">www.upm.com/responsibility</a> )
<b>Environmental labels</b>	EU Ecolabel



UPM Rauma Environmental and Societal Responsibility 2017 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at [www.upm.com](http://www.upm.com)) and provides mill-specific environmental performance data and trends for the year 2017. The annually updated mill supplements and the UPM Corporate Environmental Statement together form the joint EMAS Statement of UPM Corporation. The next Corporate Environmental Statement and also this supplement will be published in 2019.

UPM leads the forest-based bioindustry into a sustainable, innovation-driven, and exciting future across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Paper ENA and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve our customers worldwide. The group employs around 19,100 people and its annual sales are approximately EUR 10 billion. UPM shares are listed on NASDAQ OMX Helsinki. UPM – The Biofore Company – [www.upm.com](http://www.upm.com)



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EU Ecolabel : FI/011/001

# Review of the year 2017

In 2017, measures to improve the energy efficiency of paper production were continued. The measures were implemented by improving process operations. No new investments for saving energy were made.

Despite the implemented measures, the mill's electricity consumption per tonne of paper produced increased, due to increased consumption of mechanical pulp. The total electricity consumption of the paper machines decreased slightly compared to the previous year. Steam consumption decreased slightly at mill level. The change in the steam consumption was affected by changes in the production efficiency of the paper machines. No special investment measures were implemented to decrease the steam consumption.

Several suggested measures for saving electricity were recorded in UPM's internal energy audit. These will be tested in 2018, where possible.

In paper production, the target set for water consumption remained elusive, even though water consumption per tonne of paper produced decreased slightly compared to 2016. Solids losses also decreased slightly, but the overall target was not achieved. The specific emissions of the mill were in compliance with BAT levels in all areas.

No changes occurred in the amount of chemicals stored at the mill site. The use of SO<sub>2</sub> was already abandoned in 2016, and the production equipment was disassembled in 2017. The reporting specifications of the Finnish Safety and Chemicals Agency (Tukes) require an operational principle document to be maintained for chemical procedures, which was updated in 2017. The operational principle document also includes a preventive safety plan. The Rauma mill is committed to maintaining the required level of safety. Chemical safety is also based on UPM's internal chemical-handling standard.

Active preventive safety work was continued in 2017. Four environmental deviations with minor environmental impacts were recorded during the year. The disturbances were related to electrical faults, and caused a short-term, partly treated effluent discharge to the sea, filler (kaolin) leakage to the mill's rainwater network and mixed sludge leakage to the terrain. The leakages were successfully recovered and contained within the mill area, and they

did not have environmental impacts. All deviations have been inspected carefully, and corrective measures have been taken.

In 2017, noise-prevention work mainly focused on preventive maintenance. The mill received four instances of external noise-related feedback. These were resolved together with other industries in the area, and were either exceptional situations or corrective measures were taken to reduce the noise. The noise in these cases was not caused by the operations of UPM Paper ENA Oy. Noise caused by UPM facilities is below permit limits.

Construction works continued at the Sampaanalantahti field with the construction of the surface structure and stabilisation. Power-plant ash is utilised in the works, increasing the percentage of reused factory waste. Also the waste land from the dredging of the deep draft channel next to Rauma was utilised as building material for the field and stabilised into the field base.

In 2017, some changes were made to waste processing and recycling. The most significant change was stopping mill-waste deposits to landfill. This al-

lowed the mill to achieve its "Zero Solid Waste to Landfill" target. The amount of mill waste was also successfully reduced by improving waste sorting. The contractor responsible for waste transport was changed.

Annual audits in accordance with the 14001 and ETJ+ standards were conducted in 2017.

Review applications for the environmental permit for the mill, the port and the wastewater co-treatment plant were submitted for processing in 2015. The basis of this is the requirement in section 80 (1) of the Finnish Environmental Protection Act to apply for the review of the environmental permit, due to new BAT conclusions. The environmental permit must also be reviewed due to changes in operation. The processing of the review applications has not yet been completed. The application also included a baseline report on the mill area. In addition, standpipes were installed in the area and environmental measurements of the soil and water were made to evaluate contamination. On the basis of the survey, no soil and groundwater restoration measures are necessary.



Timo Suutarla,  
General Manager



Eerik Ojala,  
Manager, Environment and Safety

# Responsibility figures 2017

## Waste



Reused ash

**100%**

## Energy



Percentage of biomass-based fuels at the mill

**87%**

## Water



Percentage of recycled nutrients in the effluent treatment plant

**100%**

## Safety



Preventive safety work development

**+ 44%**

based on safety observations, near-miss reports, safety discussions and safety rounds compared to 2016.

## Taxes



The Rauma mill's effect on taxes are approximately

EUR **21** million

Real estate taxes EUR 0.5 million

Estimated tax on salaries EUR 5.9 million

Estimated corporate income tax EUR 14.8 million based on the number of employees\*

\*Approximately 30% of this goes to municipalities, which is split between each municipality according to their share of business activities and forests operations

## Consumption impact



Mill's consumption impact in region approx.

EUR **31.9** million

in Finland approx.

EUR **62** million

## Health



Decrease in the total amount of absences

**14%**

during the last five years

## Stakeholder collaboration

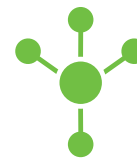


Collaboration with educational institutions

**27** people

This number consists of apprenticeships, diploma works and on-the-job learners

## Supply Chain



**99%**

of raw materials spend (excl. wood) qualified against UPM Supplier and Third Party Code

## Employment



Workforce at the Rauma mill in 2017

**580** people

Indirect impact on local employment

**690** people

Summer workers and trainees

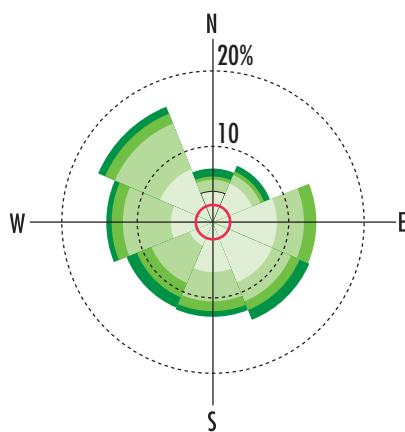
**95** people

# Air



Sulphur emissions remained unchanged compared to the previous year. There were no major changes in the amount of fuels containing sulphur. Nitrogen oxide emissions remained unchanged compared to previous years. Fossil CO<sub>2</sub> emissions increased due to the increase in use of recovered fuel. Renewable fuels were the source of more than 87% of all of UPM Rauma's CO<sub>2</sub> emissions.

The air-quality measurement point nearest to the Rauma mill is located in Sinisaari. The nearest measurement point is approximately 0.5 kilometres away from the mill, towards the city. The wind rose shows the direction of the wind.

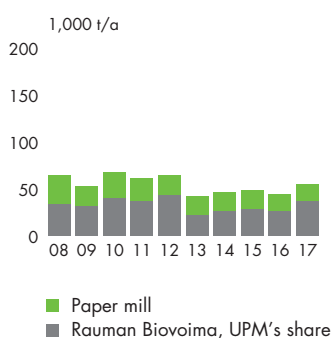


Wind rose, m/s

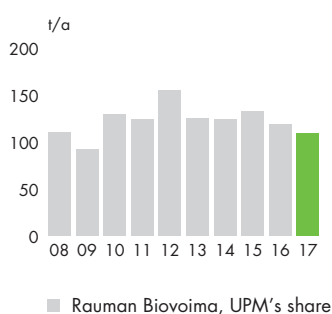
- Calm
- 0.5–2.9
- 3.0–4.9
- 5.0–6.9
- >7.0

Source: Finnish Meteorological Institute, Monitoring air quality in Sinisaari, Rauma in 2017.

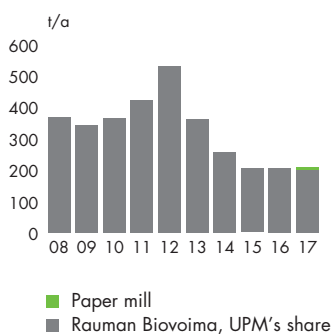
## Fossil carbon dioxide, CO<sub>2</sub>



## Sulphur dioxide, SO<sub>2</sub>



## Nitrogen oxides, NO<sub>x</sub>



# Waste

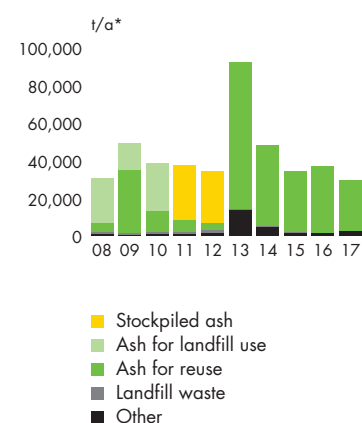


Ash from the power plant was reused in the construction works at the Sampanalanlahti field. The rest of the generated waste was mill waste, recycled fibre, metal and hazardous waste, and combustible waste.

All solid waste is reused as materials or energy. Ash is generated at the Rauman Biovoima power plant, and all the ash was reused as building material for the field. In 2017, the aim is to continue using ash and other recycled materials from the forest industry, possibly in the surface structures of landfill sites and in the construction of storage areas. New ways of reusing materials in earthworks are also being looked into. Ash will be used to replace other construction materials.

A total of 27,323 tonnes of power-plant ash was reused. The ash was not stored temporarily, and no ash was unloaded from temporary storage. The amount of landfill waste remained very low, at 38 tonnes. The "Other" waste category consists of domestic waste, process waste, metal waste and hazardous waste. The landfill monitoring programme is being managed by the authorities.

## Waste and reuse



\* calculated as dry weights

# Water

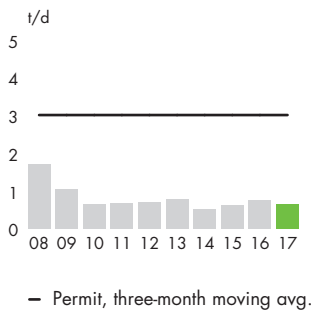


An operational committee, made up of representatives from UPM Paper ENA Oy, Metsä Fibre Oy and the city of Rauma, is in charge of developing the co-treatment and monitoring its success. UPM Paper ENA Oy still has responsibility for wastewater treatment.

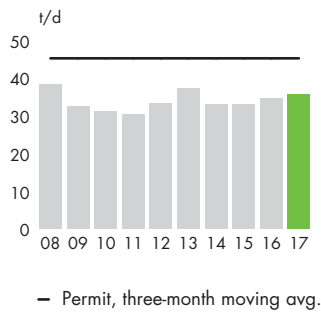
No significant changes took place in terms of emissions into waterways. There were some minor changes, due to changes in production levels.

Wastewater-treatment results were good. Annual total emissions were in compliance with BAT levels. The wastewater effluent load from the forest industry and the joint treatment plant is now so low that the state of the sea water can no longer be significantly improved by making treatment more efficient.

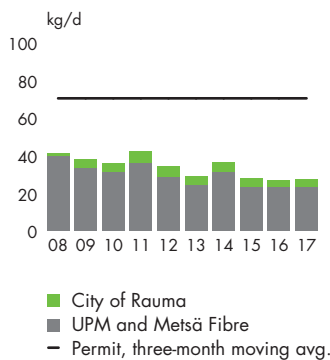
**Biological oxygen demand, BOD<sub>7</sub>**



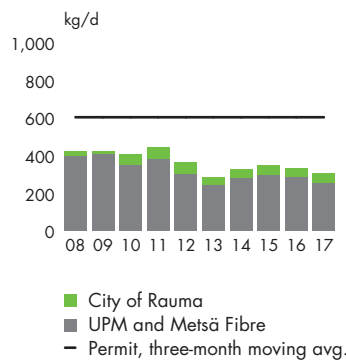
**Chemical oxygen demand, COD<sub>c</sub>**



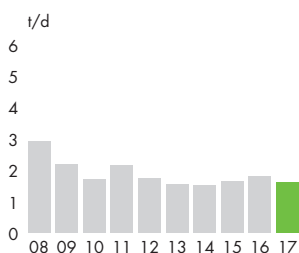
**Phosphorus, P**



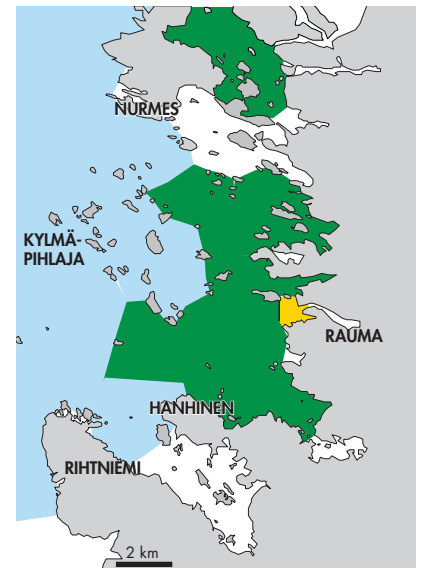
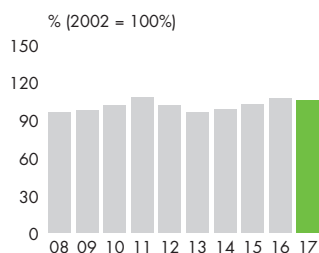
**Nitrogen, N**



**Suspended solids into the sea**



**Process water consumption**



- Excellent
- Good
- Satisfactory
- Passable
- Poor

The general usability of the Rauma sea area in 2017.

The usability classification is a classification method previously used by Finland's environmental administration. The classification is based on the phosphorus and chlorophyll content, and the amount of E. coli bacteria in the production layer between June and September. The classification was determined based on the weakest quantity.

Source: Lounais-Suomen vesi- ja ympäristötekniikka Oy

# Societal responsibility

Well-functioning dialogue with stakeholders is key to our success. Our most important stakeholder groups are our customers, employees and suppliers, officials and decision-makers, the media, non-governmental organisations and local communities.

We affect the communities and societies around us in many ways. We are committed to promoting the vitality of the communities near our facilities through active collaboration and open dialogue with different stakeholders, as well as through sponsorships and donations. For UPM, social responsibility means that we are committed to responsible and ethical business practices wherever we operate.

UPM is committed to responsible sourcing throughout the supply chain. Close collaboration with our suppliers helps us to ensure that our suppliers understand and meet our sustainability and responsibility requirements.

We require all suppliers to uphold the UPM Supplier and Third-Party Code, which lays out our minimum requirements for corporate responsibility relating to environmental impact, human rights, labour practices, occupational health and safety and product safety. The supplier Code of Conduct is supplemented by individualised regulations, guidelines and supplier requirements, such as the list of restricted chemicals in the pulp and paper business.

To UPM, the health and safety of employees, visitors and all other people affected by our operations are of paramount importance. Our aim is to be the industry leader in safety. Thanks to the company-wide Step Change in Safety initiative, UPM's work-safety statistics have improved considerably.

All of our employees – as well as our partners and their employees – working at our premises are expected to follow the UPM safety rules and principles. All contractors working at UPM facilities must complete a work safety induction. UPM's safety induction gives an overview of the procedures by which contractors can ensure a safe work day at UPM.

UPM Paper ENA Oy supplies the raw water for the city and forest industry. The wastewater co-treatment plant purifies the wastewaters of both the forest industry and the community simultaneously. The operation was started in 2002, and the results have been exclusively positive. The Rauma production facility of the meat company HKScan became operational at the end of 2017, and its wastewaters have also been purified at the co-treatment plant as planned.

Rauman Biovoima provides the paper mill with all of the process steam needed and, in practice, all of the district heating power used by the city of Rauma. More than 87% of the fuel



used for producing energy was entirely bio-based.

The deepening work for the southern Rauma channel was started in 2016. The depth of the channel was increased to meet the draught requirement of 12.0 metres. The work included dredging, spoil depositing and safety device alteration work related to the markings of the channel. This project is the Finnish Transport Agency's first sea-way project where all of the clean dredge spoils were deposited in a dredge-spoil basin built in connection with the project. Contaminated soils were deposited in a separate dredge-spoil basin in Sampaanalantahti, an area owned by UPM Paper ENA Oy, where they were stabilised to form part of the field base.

In 2017, the mill's total wood usage was 1.28 million cubic metres, which mainly came from the adjacent areas.

The Suiklansuo landfill site owned by UPM Paper ENA Oy was shut down in 2017. The last deposits to the site before it was closed down were green liquor dregs from Metsä Fibre Oy and mill waste from UPM. Depositing of green liquor dregs and mill waste to Suiklansuo was discontinued in 2017.

In terms of occupational safety, there were 11 lost-time accidents at the mill in 2017, one of which was a contractor accident. One of the accidents was classified as serious. Active preventive safety work to improve safety increased by 44% compared to 2016. The personnel was largely very active.

Total percentage of absences has decreased by 25.5% over the past ten years. The achieved level is good.



# Environmental parameters 2017

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 Statement.

<b>Production capacity</b>	Paper Rauma Cell	960,000 t 150,000 t
<b>Raw materials</b>	Pulp and chemicals	See UPM Corporate Environmental Statement for more information
<b>Energy</b>	Biomass-based and fossil fuels Purchased electricity (UPM)	Biogenic 79%, fossil 21% See UPM Corporate Environmental Statement for more information
<b>Emissions to air</b>	Particulates Sulphur dioxide, SO <sub>2</sub> Nitrogen oxides, NO <sub>x</sub> Carbon dioxide, CO <sub>2</sub> (fossil)	3 t 108 t 207 t 54,490 t
<b>Water intake</b>	Process and cooling water	14,054,555 m <sup>3</sup>
<b>Discharges to water</b>	Clean cooling water and rainwater in the area Effluent volume Biological oxygen demand, BOD <sub>7</sub> Chemical oxygen demand, COD <sub>Cr</sub> Suspended solids, TSS Phosphorous, P Nitrogen, N	507,410 m <sup>3</sup> 12,187,869 m <sup>3</sup> 86 t 3,244 t 210 t 3.6 t 39 t
<b>Waste*</b>	Landfill waste – Mill waste	38 t
	Temporarily stored waste intended for re-use – No waste was temporarily stored	
	Recovered waste	
	– Ash	27,323 t
	– Kaolin	0 t
	– Metal waste etc.	1,439 t
	– Recycled fibre etc.	789 t
	– Wood waste	0 t
	– Soil	0 t
	– Biowaste	10 t
	– Mill waste	64 t
	– Sludge from the effluent treatment plant	22,835 t
	Incineration	
	– Energy waste	945 t
	Hazardous waste	56 t
<b>Size of mill area</b>		198 ha

\* Waste amounts given as dry weights



# Performance against targets in 2017

TARGET	ACHIEVEMENT	COMMENTS
No serious environmental non-conformances	Yes	No serious environmental non-conformances occurred
Solids loss of paper machines was less than 1.4%	No	Achieved rate 1.5%
Paper-machine water consumption was less than 10.9 m <sup>3</sup> /t	No	
Ash re-use rate over 70%	Yes	
Solid waste deposits to the landfill area were discontinued in 2017	Yes	Achieved as planned

# Targets for 2018

TARGET
Preventing environmental non-compliances and achieving the “Clean Run” objectives
Further reductions of water consumption and solids loss <ul style="list-style-type: none"> <li>• Water consumption less than 11.6 m<sup>3</sup>/t</li> <li>• Solids loss less than 1.4% of production</li> </ul>
Further improvement of energy efficiency
Ash re-use rate 100%



### Revalidation statement

Accredited verifier Inspecta Sertifiointi Oy (FI-V-0001) audited the Environmental Management System, the updated information in the UPM Rauma Environmental and Social Responsibility 2017 report and the updates made to the UPM Corporate Environmental Statement 2015, insofar as the updated information concerns UPM Rauma.

The audit concluded on 09/04/2018 that the Environmental Management System, the updated information in this UPM Rauma Environmental and Social Responsibility 2017 report and the updates made to the UPM Corporate Environmental Statement 2015, regarding UPM Rauma, comply with requirements of the EU’s EMAS Regulation (EC) No. 1221/2009.



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