The Biofore Company UPM

ENVIRONMENTAL
performance in 2015

UPM Rauma

UPM leads the reformation of bio and forest industries. We are building a sustainable future in six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Paper Asia, UPM Paper Europe and North America, and UPM Plywood. Our products are made of renewable raw materials and are recyclable. We serve a global base of customers. The group employs around 19,600 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

UPM Rauma

UPM'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 supplies the raw and chemically treated water used at the site, and is responsible for the treatment of the site's industrial and municipal waste waters. The companies collaborate closely in energy production, and Rauman Biovoima supplies the district heating power used by the city of Rauma. Rauman Biovoima's operations support the city's Hinku carbon neutrality project.

The Rauma mill has three paper machine lines, a fluff pulp line, a twin-line debarking plant, two grinderies, 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, the mill produces fluff pulp for the production of hygiene products and tabletop products.

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

This report on UPM Rauma Environmental Performance in 2015 is the mill's supplement to the UPM Corporate Environmental Statement 2015 for UPM paper and pulp mills and it presents the mill's environmental performance and parameters. UPM's joint EMAS report is formed by the annual environment report and mill-specific annexes. UPM's corporate environmental statement is available at www.upm.com. UPM's next joint EMAS statement will be published in spring 2017.

Production capacity	970,000 tonnes of paper 150,000 tonnes of fluff pulp
Personnel	580
Products	Uncoated magazine paper: UPM Max, UPM Cat, UPM Smart Coated magazine paper: UPM Star, UPM Ultra, UPM Cote, UPM Valor, UPM Cote Silk, UPM Ultra Silk, UPM Cote Blueshade Fluff pulp
Certificates	EMAS (EU Eco-Management and Audit Scheme) ISO 14001 – Environmental management system ISO 9001 – Quality management system standard OHSAS 18001 – Occupational health and safety system standard PEFC™ Programme for the Endorsement of Forest Certification FSC® Forest Stewardship Council® ETJ+ Energy Efficiency System *The certificates can be found using the Certificate Finder tool at www.upm.com/responsibility*
Environmental labels	EU Ecolabel

FSC
www.fsc.org
FSC® C014719
Vastuuntuotetun metsänhoidon merkki

For more information on FSC products, please visit www.fsc.org.

PEFC
PEFC/02-31-80
Kestävän metsätalouden edistämiseksi
www.pefc.org

For more information on PEFC products, please visit www.pefc.org.

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

Environmental year 2015

In 2015, further measures were taken to improve cost efficiency at the Rauma paper mill. The reduction of pulp consumption increased the use of mechanical pulp. Due to increased use of mechanical pulp, the electricity consumption per tonne of paper produced also increased.

Implementation and optimisation of investments on energy efficiency carried out during previous years continued in 2015. The electric energy consumption per tonne of pulp produced at the TMP plant decreased compared to 2014. This was achieved through the optimisation and improvement of investments on energy efficiency that had been carried out earlier. New investments aimed at saving energy were carried out towards the end of 2015 and new measures to improve energy efficiency have also been planned for 2016. A certain amount of the electricity used in paper production is green electricity.

In paper production, the target set for water consumption remained elusive. Specific water consumption levels increased slightly from those in 2014. Solids losses also increased slightly, and the overall target was not achieved. The specific emissions of the mill were in compliance with BAT levels in all areas.

The production of CTMP pulp was started in spring 2015 by altering the concept of the existing production line of mechanical pulp. The aim is to increase the volume further. In the CTMP process, more organic material ends up in the waste water than in the production of regular mechanical pulp. This is reflected in a slight increase of the COD load at the treatment plant. The CTMP pulp is used to replace other pulp.

No significant change occurred in the amount of chemicals stored at the mill site. The reporting specifications of the Finnish Safety and Chemicals Agency (Tukes) require an operational principle document to be maintained for chemical procedures. The Rauma mill is committed to maintaining the required level of safety. Chemical safety is based on UPM's internal chemical handling standard. A containment basin was built and added to the mill's rain water system to improve environmental safety. Any chemicals or water used for extinguishing that have flowed into the surface water sewer system at the mill site can be directed to the basin.

Three environmental non-conformances were recorded during the year. In two cases, waste water that had gone through primary settling leaked into the sea for a short time. One occurrence of leakage was caused by a failure in the automation system and the other by a broken pump. The third non-conformance was caused by broke from a paper machine ending up in a rain water channel. The non-conformances had only a minor environmental impact.

In 2015, noise prevention work mainly focused on preventive maintenance. Noise caused by the forest industry facilities is below permit limits.

Construction works continued at the Sampaanalanlahti field with the construction of the surface structure. Preparations were also made for the next phase of construction by isolating the next basin to be filled from the waterway. Power plant ash is utilised in the works, improving the reuse percentage of factory waste.

Compliance with the ISO 14001 standard was reassessed in 2014 and an annual assessment was carried out in 2015. In 2015, the ETJ+ energy efficiency system was introduced and certified at the mill.

Review applications for the environmental permit for the mill, the port and the waste water co-treatment plant were submitted for processing.

Constant improvement while making operations more effective

The mill is constantly developing its processes and operations, providing personnel and partners with training and continuing to minimise risks to the environment. All figures indicate that the mill's operations comply with the Best Available Technology (BAT) criteria. The group-wide Clean Run campaign to avoid environmental deviations continued. Risk mapping documents and risk management plans are kept up to date.

Our operations are evaluated by the environmental authorities and independent external environmental specialists. The mill works in co-operation with various parties on a regional level.

We participate in drawing up regional environmental programmes, analysing the state of waters and planning programmes of measures in compliance with the Water Framework Directive. In particular, we want to take part in projects aimed at improving the state of the Rauma sea area and the Baltic Sea. An updated monitoring programme for sea areas was established.

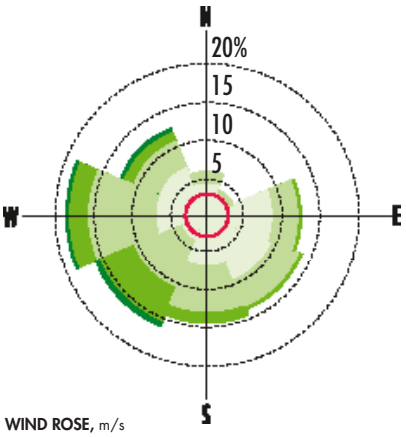
The EU Ecolabel has been awarded to all production at the paper mill. The label shows that a product has been manufactured in a way that saves energy and water, minimises the amount of waste, favours renewable natural resources and uses raw materials that are as environmentally friendly as possible. The EU Ecolabel is the only independent environmental label valid throughout Europe.

Timo Suutarla, General Manager

Eerik Ojala,
Environmental and Safety Manager

Air

Sulphur emissions increased slightly compared to the previous year. The reason for the increase in sulphur content is the higher sulphur content in the sludge due to adjustments made to the pH. There were no major changes in the amount of fuels containing sulphur. Nitrogen oxide emissions have decreased from the previous years. partly thanks to more efficient control of oxygen levels during combustion. Fossil CO_2emission levels have remained low. Only around 3% of the total amount of fuels used were fossil fuels.



WIND ROSE, m/s

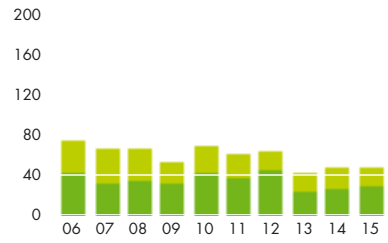
- Calm
- 0.5–2.9
- 3.0–4.9
- 5.0–6.9
- >7.0

The wind rose shows the direction of the wind. Wind directions and speeds were measured in Sinisaari in Rauma in 2015. The measurement point is approximately 0.5 kilometres from the mill towards the city.

*Source: Finnish Meteorological Institute, Monitoring air quality in Sinisaari, Rauma in 2015 (**Ilmanlaadun seuranta Rauman Sinisaaressa 2015**).*

FOSSIL CARBON DIOXIDE, CO_2

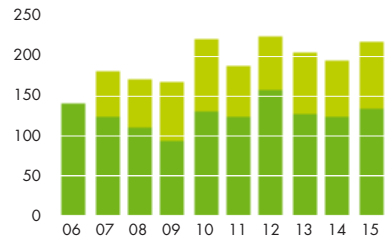
1,000 t/a



- Rauman Biovoima, UPM's share
- Paper mill

SULPHUR DIOXIDE, SO_2

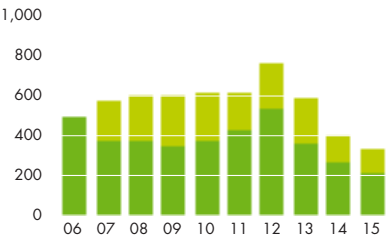
t/a



- Rauman Biovoima, UPM's share
- Rauman Biovoima, other

NITROGEN OXIDES, NO_2

t/a

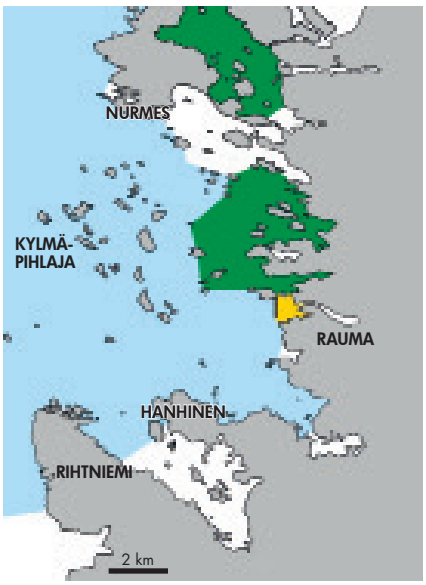


- Rauman Biovoima, UPM's share
- Rauman Biovoima, other

Water

An operational committee made up of representatives from UPM, Metsä Fibre and the city of Rauma is in charge of developing the co-treatment and monitoring its operation. UPM still has the responsibility for waste water treatment, but in 2015 it was integrated as part of the energy operation.

Waste water treatment results were good. Annual total emissions were in compliance with BAT levels.



- Excellent
- Good
- Satisfactory
- Passable
- Poor

Source: Lounais-Suomen vesi- ja ympäristötutkimus Oy

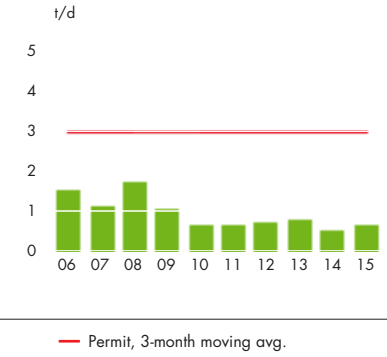
The general usability of the Rauma sea area in 2014.

The usability classification is a classification method used earlier 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.

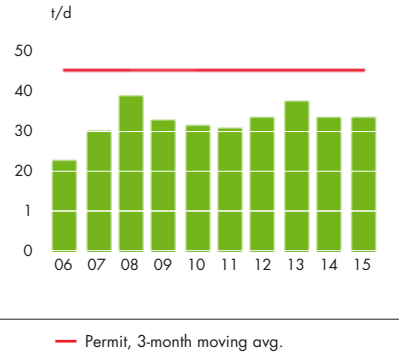
Noise

Previously agreed actions to reduce the noise emissions were completed and the noise distribution model was updated in 2013. Preventive noise reduction activities will be continued.

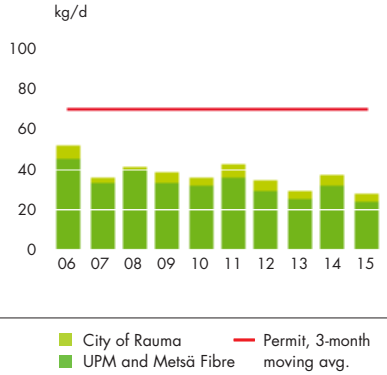
BIOLOGICAL OXYGEN DEMAND, BOD_7



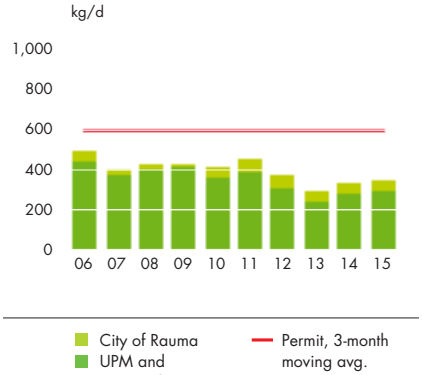
CHEMICAL OXYGEN DEMAND, COD_{Cr}



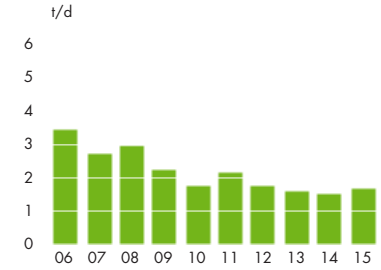
PHOSPHORUS, P



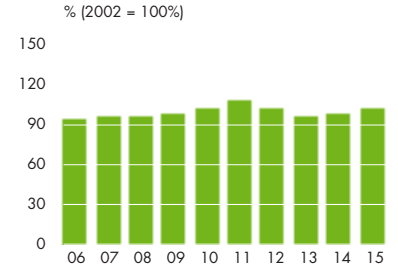
NITROGEN, N



SUSPENDED SOLIDS INTO THE SEA

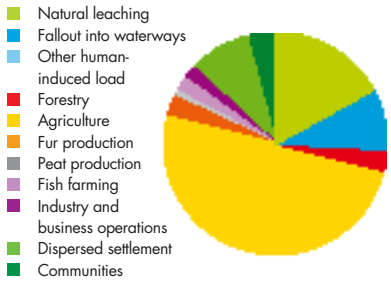


PROCESS WATER CONSUMPTION

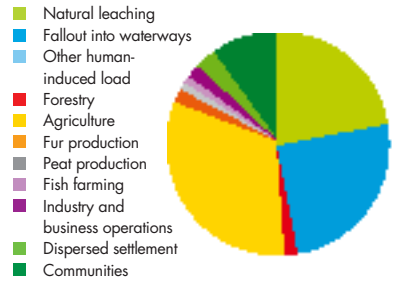


EMISSIONS INTO WATERWAYS IN THE RIVER BASIN DISTRICT OF THE KOKEMÄENJOKI RIVER – ARCHIPELAGO SEA – BOTHNIAN SEA

PHOSPHORUS



NITROGEN



The ecological classification of bodies of surface water within the regional programme of area measures was good in the southern part of the Rauma coast and satisfactory further north. The share of the total nutrient load in surface water produced by industry and businesses was small, at less than 2%, of which only about 10% was useful to algae (causing eutrophication).

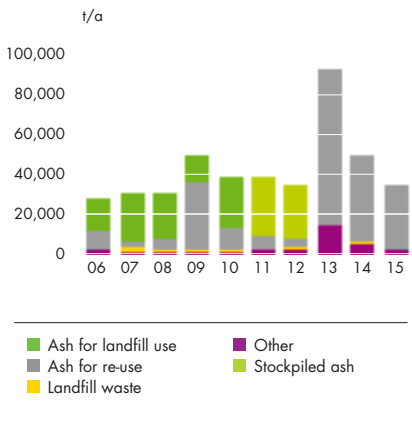
*Source: West Finland Regional Environment Centre (**Länsi-Suomen ympäristökeskus**), River basin management plan for the River Basin District of River Kokemäenjoki – Archipelago Sea – Bothnian Sea until 2015 (**Kokemäenjoen–Saaristomeren–Selkämeren vesienhoitoalueen vesienhoitosuunnitelma vuoteen 2015**)*

Waste

The majority of solid waste can be reused, with the exception of domestic and process waste. Ash is generated at the Rauman Biovoima power plant, but UPM organises the disposal of the ash in accordance with a mutual agreement. The landfill area complies with the latest environmental requirements. Different waste types are stored in dedicated areas, which makes it possible to reuse them in the future. In 2016, the aim is to continue using ash and other recycled materials from the forest industry in the surface structures of landfills 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 32,496 tonnes of power plant ash was reused in the construction works at the Sampaanalanlahti field. The ash was not stored temporarily and no ash was unloaded from temporary storage. 142 tonnes of kaolin was reused, 11 tonnes of which was from temporary storage. The amount of landfill waste remained very low. The 'Other' waste category consists of domestic waste, process waste, metal waste and hazardous waste. The waste amounts used in the figures have been calculated as dry weights. The landfill monitoring programme is being managed by the authorities.

BY-PRODUCTS AND WASTE



Environmental indicators 2015

The figures concerning production and consumption of raw materials and energy are given as whole numbers on a corporate level in the Environmental Statement of UPM's pulp and paper mills.

Production capacity	Paper RaumaCell	970,000 t 150,000 t
Raw materials	Pulp and chemicals	Information available in the UPM corporate environmental statement.
Energy	Biogenic and fossil fuels Purchased energy (UPM)	Biogenic 68%, fossil 32%.
Emissions into air	Particulates Sulphur dioxide, SO_2 Nitrogen oxides, NO_x Fossil, CO_2	3 t 132 t 213 t (203 t + NO_x 10 t from propane) 47,906 t
Water consumption	Process and cooling water	13,712,124 m^3
Emissions to water	Clean cooling water Process effluent Biological oxygen demand, BOD_7 Chemical oxygen demand, COD_{Cr} Solids Phosphorus, P Nitrogen, N	1,424,356 m^3 12,597,520 m^3 86 t 3,409 t 224 t 4 t 49 t
Waste	Waste to landfill* – Kaolin – Process waste (UPM) – Process waste (Rauman Biovoima) – Domestic waste (UPM) – Domestic waste (Rauman Biovoima) To temporary storage to wait for reuse – Ash – Kaolin Reused waste – Ash – Kaolin – Metal waste, etc. (UPM) – Metal waste, etc. (Rauman Biovoima) – Recycled fibre, etc. – Wood waste – Soil, crushed brick (UPM) – Soil, crushed brick (Rauman Biovoima) Incineration – Energy waste Hazardous waste – UPM – Rauman Biovoima	 0 t 243 t 38 t 16 t 0 t 0 t 0 t 32,496 t 142 t 532 t 530 t 149 t 1 t 442 t 10.2 t 1,569 t 35 t 2 t
Size of mill area		198 ha

** Waste amounts given as dry weights.*

Printing papers manufactured in Rauma are used by magazines such as Seura, Avotakka, Bluewings, Yhteishyvä and Eeva.

Achievement of objectives for 2015

- No serious environmental non-conformances occurred.
- The solids loss target of the paper machines – less than 1.4% – was not achieved.
- The water consumption target of the paper machines – less than 10.7 cubic metres per tonne – was not achieved.
- Energy efficiency improved in pulp production. Work to enable the mill to achieve its overall energy consumption goals continues.
- Ash reuse rate was over 70%.

Environmental objectives for 2016

The most significant actions for improving safety and protecting the environment in 2016 will be:

- Preventing environmental non-conformances and achieving the Clean Run objectives
- Further reductions of water consumption and solids loss
  - Water consumption less than 10.9 cubic metres per tonne
  - Solids loss less than 1.4% of production
- Improving energy efficiency
  - Reuse percentage of ash over 70%

EMAS
Todennettu ympäristöasioiden hallinta
REG.NO. FI - 000058

VALIDATION STATEMENT

Accredited verifier DNV GL Business Assurance Finland Oy Ab (FI-V-0002) has audited the Environmental Management System of UPM Rauma, the Environmental Performance in 2015 report and the joint Environmental Statement 2015 of UPM's paper and pulp mills. On the basis of this audit, it was stated on 19 April 2016 that the UPM Rauma Environmental Management System, this Environmental Performance in 2015 report and the information regarding UPM Rauma in the Environmental Statement 2015 of UPM's pulp and paper mills comply with the requirements of the EU's EMAS Regulation (EC) No. 1221/2009.

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