The Biofore Company UPM

ENVIRONMENTAL Performance in 2014

UPM Pietarsaari

Through the renewing of the bio and forest industries, UPM is building a sustainable future across 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 our customers worldwide. The group employs around 20,000 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

The mill complex of UPM Pietarsaari by Alholma is an extensive centre for recycling making full use of the wood from the local municipalities. The logs are sawn to produce sawn goods while and the wood fibres are cooked to produce pulp. Some of the pulp is used to produce kraft paper, of which a part is further processed for the production of industrial wrapping paper. The cooking chemicals are recycled in the process. Bark and residual wood are utilised for energy production. Distances between facilities in the mill area are minimal. This enables, for instance, all waste water to be treated in UPM's new effluent treatment plant. **Cover:** Roland Semskar fishes professionally in the sea area by Pietarsaari.

UPM Pietarsaari

Situated on the coast of Ostrobothnia near Pietarsaari at Alholma, the UPM Pietarsaari complex comprises the Pietarsaari pulp mill, Alholma sawmill and UPM Metsä's Ostrobothnia office. UPM Metsä is responsible for wood procurement to, and mill monitoring at, the Pietarsaari pulp mill and the Alholma sawmill.

The pulp mill, sawmill and Metsä office continued to implement the local region's vision and further develop cooperation in 2014. This includes maintaining contact with key interest groups. By working closely with interest groups the common goals are to maintain good local relations and to ensure a constant supply of local wood. We inform local businesses and residents as well as forest owners and contractors in neighbouring municipalities about the importance of UPM in Pietarsaari.

The most noticeable event involving interest groups took place in the town square of Pietarsaari during the Jaakon Päivät festival. In developing infrastructural communications we achieved a significant milestone with other local interest groups when the decision was announced to electrify the railway line from Pännäinen to Alholma at the end of the year.

This environmental report covers environmental matters concerning the UPM Pietarsaari pulp mill and the Alholma sawmill in 2014. Environmental matters pertaining to UPM Metsä are covered in the UPM Metsä environmental statement.

Pine and birch pulp are produced on two fibre lines at the UPM Pietarsaari pulp mill. Sawdust pulp, which is combined to produce pine and birch pulp, is cooked in the sawdust boiler.

This publication, UPM Pietarsaari Environmental Performance 2014, is the mill's appendix to the joint environmental report for UPM paper and pulp mills for 2014, which handles environmental performance

	Pulp mill	Alholma sawmill
Production capacity	790,000 t	230,000 m^3
Personnel	290 and functions 20	62
Products	UPM Conifer – long-fibred softwood pulp UPM Conifer TCF – total chlorine-free softwood pulp UPM Conifer Thin – first forest thinning softwood pulp UPM Betula – short-fibred birch pulp UPM Betula TCF – total chlorine-free birch pulp	pine and spruce sawn goods
Other products Residuals	steam, electricity, bark and turpentine tall oil	sawdust, chips and bark
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System Standard ISO 9001 – Quality Management System Standard OHSAS 18001 – Occupational Health and Safety System Standard: UPM Pietarsaari PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® *All certificates can be found in UPM's Certificate Finder (available at www.upm.com/responsibility)*	
Environmental labels	All pulp types have been approved for use in papers bearing the EU Ecolabel and Swan trademark.	

FSC
www.fsc.org
FSC® C014719
The mark of responsible forestry
For FSC products, visit www.fsc.org

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

PEFC
PEFC/02-34-05
Promoting Sustainable Forest Management
www.pefc.org
Alholma sawmill
For PEFC products, visit www.pefc.org

UPM Pietarsaari Environmental Performance in 2014 is a supplement to the Corporate Environmental Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill specific environmental performance data and trends for the year 2014. The annually updated mill supplements and the UPM Corporate Environmental Statement form the joint EMAS Statement of UPM Corporation. The next Corporate Environmental Statement and next supplement will be published in 2016.

and parameters for 2014. This publication, along with the mill appendices, forms UPM's joint EMAS statement. The environmental report is available at www.upm.com. UPM's next joint EMAS statement will be published in the spring of 2016.

Some of the pulp produced at the pulp mill is sold, as before, as pulp stock to the paper mill owned by BillerudKorsnäs Finland Oy. Some of this paper production is sold for further processing to the Walki factory operating in the same mill area.

In Pietarsaari they continued to implement infrastructural investments significant also to UPM. Dredging work along the shipping route between Alholma and the open sea is in its final stages. At the end of the year work began to improve conditions on the Kolppi-Pohja road. Plans to electrify the branch railway are in full swing. Cooperation continues between the Pietarsaari Town and other interested parties. The channel project on the agenda list is the triangle circuit at Pännäinen. This would improve rail transport communications between southern Finland and Alholma. The implementation of these logistical proposals would not only enhance UPM in terms of transport opportunities to other business areas between inner Finland and Pietarsaari, but also develop seafaring modes of cargo transportation.

Attention at the pulp mill was focused on optimising operations at the new effluent treatment plant and implementing bottle investment of pulp production. The investment goal is to increase production while reducing pulp emissions. Despite the two-week autumn shutdown the pulp production level was almost at the same level as for the previous year.

In 2014 there were 2 accidents leading to absence from work. The accident frequency level was 3.9 – i.e. 3.9 work accidents per million working hours completed (in 2013, 2).

The most significant investment for the sawmill in 2014 was the renewal of the sticking machine during the summer shut down. The new machine replaces the old one which was commissioned in 1969.

The UPM Pietarsaari pulp mill and Alholma sawmill are responsible for their own environmental issues. These are coordinated and monitored by the UPM Pietarsaari Environmental Manager.

The common environmental goals of the pulp mill and sawmill are to avoid putting further strain on the environment and to keep emissions below the statutory permitted levels while increasing production levels.

Kari Saari
Environmental Manager

Veikko Petäjistö
General Manager of
the Pulp Mill and Mill Complex

Mika Åby
Director, Alholma Sawmill

Environmental year 2014
– achievement of goals

The most important long-term goal for the pulp mill is the increase in production levels without placing any further strain on the environment. UPM has also established environmental goals in pulp business operations which also concern each individual pulp mill and are to be achieved by 2020.

The new effluent treatment plant began operations at the end of 2013. The main focus was to optimise the running of this plant.

A higher control system was commissioned for steering operations.

The purification efficiency level at the effluent treatment plant is excellent. Plant operations are running smoothly with no hint of difficulty in handling varying loads of waste water.

The new effluent treatment plant ensures opportunities for further development of the pulp mill in compliance with the mill's long-term environmental goals.

With the exception of total nitrogen effluent, quantitative waste water volumes from the pulp mill were slightly lower than for the previous year (2013). Discharges into the sea – calculated in terms of specific discharges – were clearly on the Best Available Technique level (BAT ref 2014).

Emissions into the air in 2014 were in line with levels from previous years although somewhat higher than in 2013. Volumes of emissions into the air calculated in terms of specific emissions were clearly on the BAT level (BAT ref 2014).

None of the environmental permit limits were exceeded in 2014.

Pulp mill

In 2011 UPM introduced the on-going Clean Run programme in order to improve

The cleaning efficiency of the new effluent treatment plant has proved to be excellent. In 2014 operations were optimised, for instance, to minimise foaming.

Maximising sawmill operations is a prime objective at Alholma sawmill. Best available techniques are observed when removing production 'bottlenecks'.

and develop environmental performance. The Clean Run programme can be found in the UPM Environmental Report 2014.

The pulp mill experienced 133 environmental deviations in 2014. This figure is almost the same as for the previous year (129). Deviations are classified into levels of 1–5. No deviations at levels 3 and 4 occurred in 2014; such deviations must not exceed two.

Each department updated its own environmental priorities and continued to carry out respective environmental risk surveys.

Optimising the running of the effluent treatment plant continued. A higher control system was commissioned for steering actions of operations. The accuracy of readings from non-stop gauges was secured by laboratory measuring operations.

Recycling of solid waste proved highly successful: 11,962 tonnes of waste was used for recycling purposes. This figure was considerably higher than for previous years.

There were two complaints made about noise pollution caused by the mill.

Alholma sawmill

A new system of lighting was installed during sticking machine investment operations. Energy-saving LED lighting was installed in indoor and outdoor areas.

Wood waste from the sticking machine moves directly by conveyor belt to the chipper. As a result, vehicle transportation and the chipping station are no longer required.

The waste sorting point was moved indoors. Waste sorting signs and instructions were reviewed and redefined.

Over 900 people are employed on a daily basis in the mill complex at Alholma. On-going processes, a tidy mill area and a healthy environment enable staff to enjoy themselves at work and at leisure.

Air

As in previous years, the pulp mill had a surplus of electricity solely from energy obtained from the combustion of black liquor. The surplus electricity was sold to the electricity network via UPM Energy.

The pulp mill and sawmill sold bark from debarked wood and wood-based waste to Alholmens Kraft for generating energy.

Emissions into the air measured with the specific emission coefficients were good according to BAT* standards. Emissions remained below permitted levels when converted into specific emissions.

Emission levels for 2014 were slightly higher than those for the previous year.

Uptimes and downtimes relating to planned and unplanned shutdowns caused some minor smell disturbances in areas close to the mill.

Permit levels were not exceeded during normal operations.

Emissions of fossil nitrogen oxide per pulp tonne produced fell slightly and were below the mill target level.

The long-term goal is to achieve a pulp mill free of carbon dioxide. The percentage of biofuels during pulp production was still very high, 99.88%.

The combustion of malodorous gases in the recovery boiler was successful throughout the year with a high utilisation coefficient. Because of high disturbance levels strong odorous gases had to be channelled into the reserve burner from time to time.

Strong odorous gases were channelled via the reserve burner 1.9% of the time. The corresponding level for 2013 was 1.0%. Thus, the 2014 figure is slightly higher.

Air quality in the Pietarsaari region

Local air quality is continuously monitored at two surveillance points: one is located in Pietarsaari near the town centre, the other in Vikarholmen, Larsmo. Impurities in the air remained well below the specified permit guideline levels – except for airborne particles (PM10). The latter exceeded the permitted value of 50 µg/m^3 on 17 days (the maximum permitted amount is 35 days).

* BAT = Best Available Techniques

EMISSIONS INTO THE AIR FROM PULP PRODUCTION IN 2014

	Solid particles t/a	Sulphur dioxide t SO_2/a	TRS t S/a	Nitrogen oxides t NO_2/a	Chlorine compounds t Cl/a
Recovery boiler	86	14	3	915	
Lime kiln	12	3	2	71	
Reserve burner (torch)		52			
Bleaching plant 1					2.7
Bleaching plant 2					0.7
Fugitive emissions			30		
Total	98	69	35	986	3.4

DESTRUCTION OF MALODOROUS GASES, % of time

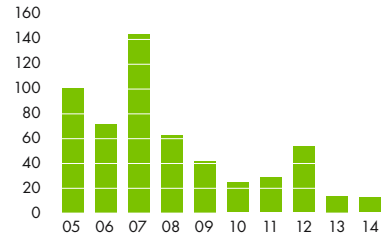
	2012	2013	2014
Combustion in recovery boiler	95.6	99	98.1
Combustion in reserve burner (torch)	4.2	0.8	1.2
Transfer to smoke stack	0.2	0.2	0.7

Traffic-related levels of nitrogen oxide were quite high, as in the last few years.

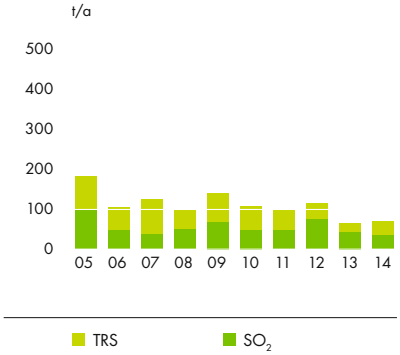
Daily average emissions for malodorous sulphur compounds were below the permit limit (10 µg S/m^3) at both surveillance points. The highest average daily levels of malodorous sulphur compounds recorded were 1.6 µg S/m^3 near the town centre in September and 2.1 µg S/m^3 in Vikarholmen in August.

The highest average hourly levels recorded were 14.2 µg S/m^3 near the town centre in May and 13.8 µg S/m^3 in Vikarholmen in July.

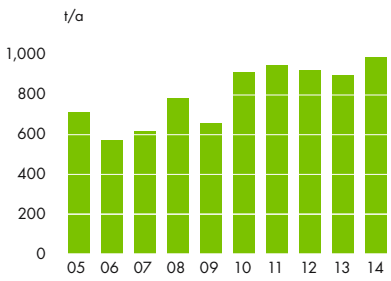
DEVELOPMENT OF SPECIFIC FOSSIL CARBON DIOXIDE EMISSIONS AT THE PIETARSAARI MILL
% (2005 = 100)



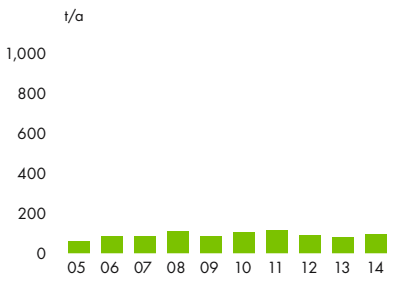
GASEOUS SULPHUR COMPOUNDS
t/a



NITROGEN OXIDES, NO_2
t/a



PARTICLES
t/a



Effective production is the result of smooth cooperation between various operators in this extensive (210-hectare) mill complex.

Fourth generation fisherman Roland Semskar on the sea by Pietarsaari. He and his 'fisherman friend' border collie, Figge have experienced both rough and smooth!

Water

Untreated water sourcing

UPM Pietarsaari acquires untreated water for mill operations from the Larsmo Lake.

Total untreated water consumption at the pulp mill and sawmill was approximately 51,243,000 m^3, of which just under 50% was used for cooling operations while the rest served as process water at the pulp mill. The percentage of untreated water used at the Alholma sawmill is negligible – less than 0.1%.

Discharges into the sea

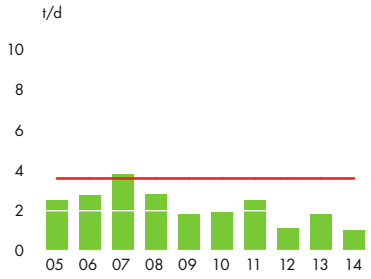
New effluent load targets were set in 2014 from the pulp mill for constantly improving operations. As a result, permit levels were not exceeded at any time during 2014.

Quantitative levels of waste water from the mill were slightly lower than those for 2013.

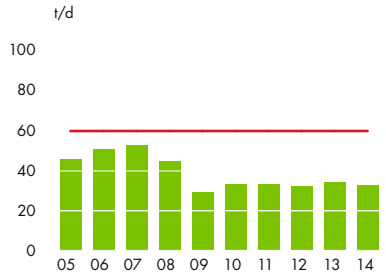
EFFLUENT LOADS IN 2014

	Annual average 2014	Target (pulp mill share) 2014	Permitted level (annual average)
COD, t/d	33	35	60
BOD_7, t/d	1.0	1.0	3.6
Nitrogen, kg/d	570	400	700
Phosphorus, kg/d	32	35	55
AOX, t/d	0.15	0.20	0.5
Solid particles, t/d	2.4	1.5	no restrictions posed

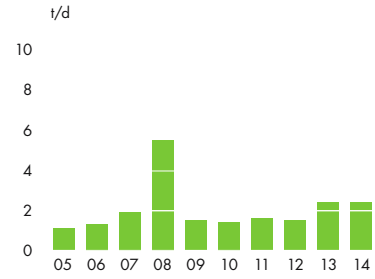
BIOLOGICAL OXYGEN CONSUMPTION, BOD_7



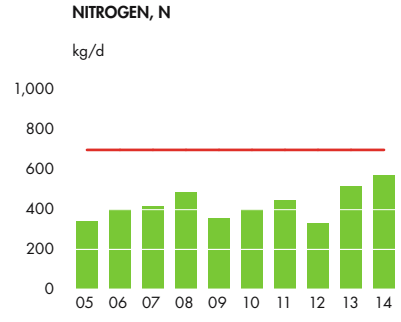
CHEMICAL OXYGEN CONSUMPTION, COD



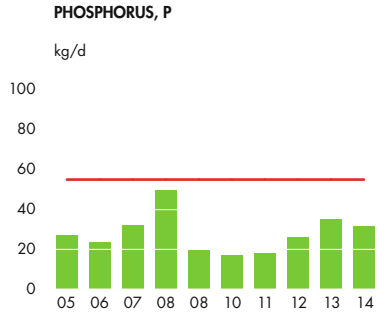
SOLID PARTICLES, TSS



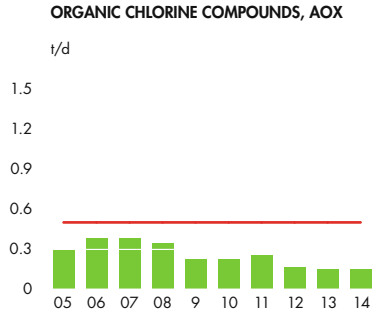
NITROGEN, N



PHOSPHORUS, P



ORGANIC CHLORINE COMPOUNDS, AOX



— Permit limit

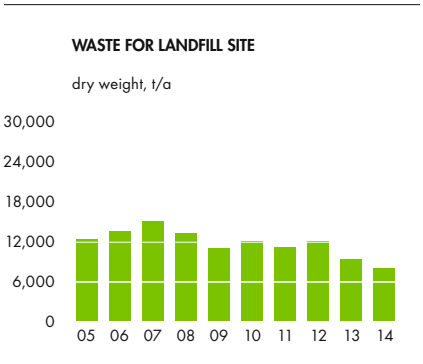
Waste

The UPM Pietarsaari landfill site is located in the mill complex. Solid waste in 2014 amounted to 16,071 t – about 1,000 t more than for the previous year. This increase was due to the temporary storage of dredging sludge at the landfill site. The aim is to combine dredging sludge with other types of organic waste and make use of these on the landfill site when closing the northern section in the next few years. These organic waste types at the landfill site amounted to 1,707 t twig rejects and 3,038 t bark waste. The removal of organic waste will decrease the formation of methane at the landfill site. Although the operational effects are small, they are parallel with the decrease in greenhouse gas emissions.

Volumes of waste transferred to the landfill site fell considerably. The amount of green lye sludge was less than for the previous year and it was also utilised in the test construction area.

Other waste fractions were utilised more effectively than before. 7,150 t waste, which had been stored temporarily in previous years, was utilised.

71.4 tonnes of hazardous waste was transferred elsewhere for processing, including about 57.3 tonnes of lubricants and grease for recycling purposes.



SOLID WASTE (dry weight, t/a)

	To landfill site	For temporary storage	For recycling
Combusted chalk and lime	36		937
Green lye sludge	7,102		50
Twig rejects	461	562	6
Sand containing bark			443
Tree and bark waste		19	796
Paper and cardboard for recycling	53		65
Sludge		2,621	267
Cable and metal scraps			1,080
Cleaning waste	97		171
Construction waste and soil materials	170	138	997
Total solid waste 2014	7,919	3,340	4,812
Total solid waste 2013	9,343	381	5,353

Kim Finnäs is a member of the construction team. His day-to-day work also includes recycling and sorting materials from repairing, dismantling or construction operations.

Environmental parameters 2014

The environmental parameters in the table below are based on total pulp production at the UPM Pietarsaari pulp mill and sawn goods at the Alholma sawmill. Parameters for production and consumption of raw materials and energy are expressed in total figures for the UPM Group in the 2014 environmental report for UPM pulp and paper mills. The figures in the table can be compared with those for 2013. For years prior to 2013 the figures include the paper mill figures.

Production capacity	Sawn goods	230,000 m^3
	Pulp	790,000 Adt
Raw materials and chemicals	Wood	See UPM Corporate Environmental Statement for more information
	Cooking and bleaching chemicals	
	Others	
Energy	Biofuels and fossil fuels	Biofuels 99.88%
		Fossil fuels 0.12%
	Purchased energy	See UPM Corporate Environmental Statement for more information
Emissions into the air	Solid particles	98 t
	Sulphur dioxide, SO_2	69 t
	Malodorous sulphur compounds, TRS (S)	35 t
	Nitrogen oxides, NO_2	986 t
	Carbon dioxide, CO_2 (fossil)	5,875 t
Untreated water	Fresh water for process and cooling	51,208,255 m^3
Discharges into the sea	Cooling and rain water	25,855,522 m^3
	Cleaned discharged water	33,199,337 m^3
	Biological oxygen consumption, BOD_7	361 t
	Chemical oxygen consumption, COD_{cr}	11,843 t
	Solid particles, TSS	874 t
	Total phosphorus, P_{tot}	11.6 t
	Total nitrogen, N_{tot}	172.6 t
	Organic chlorine compounds, AOX	53.1 t
Solid waste for landfill site *(abs. dry)*	Green lye sludge	7,102 t
	Lime	36 t
	Twig rejects	461 t
	Construction waste and earth materials	170 t
	Other waste	150 t
	Total	7,919 t
Waste for recycling	Chalk	937 t
	Paper and carton	65 t
	Metal waste	1,080 t
	Sand containing bark	443 t
	Wood and bark waste	796 t
	Green lye sludge	50 t
	Construction waste and earth materials	997 t
	Cleaning waste	171 t
	Dredging sludge	267 t
	Twig rejects	6 t
	Total	4,812 t
For temporary storage	Twig rejects	562 t
	Dredging sludge	2,621 t
	Wood and bark waste	19 t
	Construction waste and earth materials	138 t
	Total	3,340 t
Hazardous waste		71 t
Mill area		210 ha

Despite mill ownership changes over the years in the UPM Pietarsaari mill area, operations have continued and production has increased at all the mills.

Priority areas in environmental protection

- After the successful start-up in the effluent treatment plant the most important environmental goal is to optimise effluent treatment plant operations.
- Complete utilisation of all organic waste by 2016
- Constant improvement in energy efficiency at the mill in compliance with the energy-saving agreement
- At the Alholma sawmill the main priority is to improve energy efficiency by ensuring full production operations, optimising the drying capacity and installing LED lighting along the saw line.

Goals for 2015

PULP MILL

- To increase Clean Run observations of environmental deviations
  – Level 3 deviations must not exceed two.
- In each department, environmental risk surveys will be conducted.
- Reduction of waste at the landfill site
  – Surveys will continue into recycling solid waste.
  – Special emphasis will be placed on recycling organic waste.
- Preparations for closing the northern section of the landfill site
- Implementation of the development programme for saving energy will continue.

ALHOLMA SAWMILL

- Maximising production
  – More effective planning operations
  – Optimising the drying capacity
  – Improving energy efficiency in lumber kilns
- LED lighting will be installed along the saw line.
- Reducing environmental loads in the sawmill process
  – The best available techniques (BAT) will be applied in all investments and environmental decisions.
  – Environmental issues will be observed when appointing external contractors.

EMAS
Verified environmental management
REG.NO. FI - 000058

VALIDATION STATEMENT

As an accredited environmental verifier (FI-V-0001), Inspecta Sertifiointi Oy has examined the environmental management system and the information of UPM Pietarsaari Environmental Performance 2014 report and of UPM Corporate Environmental statement 2014. On the basis of this examination, the environmental verifier has herewith confirmed on 2015-03-31 that the environmental management system, this UPM Pietarsaari Environmental Performance report and the information concerning UPM Pietarsaari of UPM Corporate Environmental statement are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.

UPM

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