

UPM Kymi

Environmental and societal responsibility 2017



UPM Kymi

The UPM Kymi mill in Kuusankoski, Kouvola, by the Kymi river consists of a paper and pulp mill. The Kymi production plants form a modern integrated mill site that produces coated and uncoated fine paper and bleached birch and softwood pulp. In 2017, Kymi employed 711 people.

The paper mill is divided into two production units. Paper machine 8 and the coater form a production line that produces coated fine paper. The high-quality printing paper is delivered in reels and sheets. Paper machine 9 produces uncoated fine paper on reels and in sheets to be used as printing paper, forms and envelopes as well as copier/printer paper. The pulp mill's two fibre lines produce bleached softwood and birch pulp. A sawdust digester is used to cook sawdust pulp that is added to the birch pulp.

The production plants receive the heat energy and most of the electricity they need from the pulp mill's energy production and Kymin Voima Oy's biofuel power plant located on the mill site. Schaefer Kalk Finland Oy's PCC plant is also located on the mill site. Kymin Voima Oy's biofuel power plant and the PCC plant are not included in the scope of this report.



Paper mill • Capacity	730,000 t
Personnel	437
Products	Printing papers: UPM Finesse (gloss, premium silk, matt, silk), UPM Finesse, UPM Fine, UPM PreLaser, UPM PrePersonal, UPM Form, UPM Poste, UPM Poste Insert, UPM Office, New Future, Yes, Kym Ultra, KymLux, UPM Digi fine, UPM Digi Fine Pro, UPM Jetlabel, UPM LabelCoat prime
Pulp mill • Capacity	760,000 t
Personnel	274
Products	UPM Betula and UPM Conifer
Residues	Thermal energy, electricity, tall oil and turpentine
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 9001 – Quality Management System ISO 14001 – Environmental Management System ETJ+ – Energy Efficiency System OHSAS 18001 – Occupational Health and Safety System PEFC™ - Programme for the Endorsement of Forest Certification FSC® - Forest Stewardship Council ISO 22000 – Food Safety Management System All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel UPM pulp products have the approval for use in EU Ecolabel and Nordic Ecolabel paper products.



UPM Kymi 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) 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



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For more information on FSC products, please visit <http://fi.fsc.org>



Review of the year 2017

In 2017, the market situation for the pulp and paper mill was good, but due to a long maintenance shutdown and challenges surrounding the supply of wood caused by wet weather, no new production records were made. The volume of pulp sold to third parties increased from the previous year. Obligations related to environmental protection were covered systematically in compliance with the environmental permit. Mill emissions complied with the permit conditions. We were able to reduce our environmental load to some extent.

The integrated mill site's environmental objectives included maintaining compliance with the Clean Run programme launched in 2011, reducing abnormal emissions, ensuring efficient flow of information and use of the Clean Run programme, increasing environmental awareness among employees, decreasing water consumption, solid losses and odour emissions, increasing the reuse of process waste and reducing the amount of solid waste sent to landfill sites.

The environmental permit limit was not exceeded

The Clean Run programme was part of the Kymi mill site's normal operations in 2017. All abnormal emissions were recorded with the One Safety tool and their underlying causes were studied. The Kymi mill site has not exceeded any of its environmental permit limit values since the launch of the Clean Run programme.

An environmental review was arranged once a week during the pulp and paper mill morning meeting to review the environmental issues/events of the previous week in more detail. In 2017, about 80 people received training in the operation of the effluent treatment plant.

Pulp mill investment project completed

The Kymi-870 investment project was completed last autumn. The aim of the project was to increase the annual production volume of the pulp mill to 870,000 tonnes, while improving cost efficiency and environmental performance. Investments included changes in chip handling, improvements in birch line washing, sorting and bleaching, changes



The paper mill's Safety and Environmental Manager Hanna Eklund (left) and the pulp mill's Environmental Manager Päivi Hyvärinen noted that the emissions complied with the environment permit conditions in all areas and the environmental load was reduced.

in the evaporation plant, causticising plant and recovery boiler, and improvements in biosludge treatment. The new lines were connected to the process during the autumn shutdown.

Stakeholder feedback

Three pieces of stakeholder feedback were received in 2017. All of the feedback concerned unpleasant odours, which were caused by malodorous gases being released to the surrounding area due to process disturbances or equipment malfunctions.

Development projects

In 2017, the Kymi site also continued the waste re-use development project in co-operation with external partners. The objective of the project is to continue to find new ways of reusing process waste and use them to improve the waste re-use rate.

Environmental investments in 2017 included directing water from the peroxide loading site to the wastewater treatment plant, introduction of aeration compressors at the wastewater treatment plant, renovation of sludge treatment and changes in the birch bleaching line.

Markku Laaksonen,
General Manager,
Kymi pulp mill

Päivi Hyvärinen,
Environmental Manager,
Kymi pulp mill

Matti Laaksonen,
General Manager,
Kymi paper mill

Hanna Eklund,
Safety and Environmental Manager,
Kymi paper mill

Responsibility figures 2017

Employment



The Kymi pulp and paper mill employed a total of

711 people.

The total number of UPM personnel working at the integrated mill site was about 750. 150 people had summer jobs.

Indirect employment effect in region approx. 800 persons.

Taxes



30 Meur

The Kymi integrated mill's effect on taxes in Kouvola: Real estate taxes EUR 1 million; estimated tax on salaries EUR 8 million; estimated corporate income tax EUR 21 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

Kymi's consumption impact in region approx. EUR 42.9 million.

in Finland approx. EUR 78 million.

Air



Airborne emissions have been reduced in 2008–2017; sulphur dioxide, SO₂

-57%

Figure from the Kymi pulp mill production



Energy

Energy produced using renewable fuels

87%

Pulp production used black liquor as main fuel.

Certified fibre



72%

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

Work safety



The number of accidents resulting in sick leave for UPM personnel at the pulp and paper mill was

0

Over the past 10 years, the number of accidents resulting in sick leave for UPM personnel at the Kymi mill has decreased by 100%: The number of accidents resulting in sick leave for our own personnel was 34 in 2008 and 0 in 2017.

Waste



Ash for re-use over

4100_t

Ash was utilised in forest road soil for a stretch of about 3 kilometres, granulated in forest fertilisation, and in field and landfill structures.

Water



Emissions into water were decreased in 2008–2017, Phosphorus, P

-50%

Figure from the Kymi pulp mill production

Health

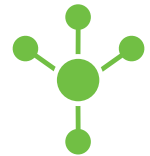


Sick leave percentage at the Kymi mills

4.1%

According to UPM's EES survey, the well-being at work index was increased by +1 to 68. The response rate for the survey was 89% at the paper mill and 82% at the pulp mill.

Supply chain



96%

The value of raw materials (excluding timber) from suppliers who have approved the UPM Supplier and Third Party Code.



Local co-operation

The total number of schoolchildren and students visiting the UPM Kymi mills and UPM's events was nearly

3000

UPM supports the education and employment of young people through active collaboration with educational institutions, industry organisations and the city.

Air and noise



The mill met all environmental permit limits for air emissions. The total NO_x and particle emissions reported in tonnes decreased slightly compared to the previous year. This was due to lower production volume compared to the previous year.

It was also recorded that 99.7% of weak malodorous gases and 100% of strong malodorous gases were recovered and burned.

The increase in product volume has placed more strain on the recovery of malodorous gases and led to the temporary occurrence of unpleasant odours during process disturbances. This issue was taken into consideration during the planning stages of the Kymi-870 project, and improvements were made to both the process and the recovery system during the shut-down (due to the connection

of machinery) in 2017. TRS emissions at the Kouvola City Environmental Services' measuring station in central Kuusankoski remained very low. The average hourly TRS content only exceeded the level of 5 µg/m³ during 0.02 % of the total hours in 2017.

CO₂ emissions decreased slightly from the previous year. CO₂ consumed by the PCC plant has not been deducted from the CO₂ emission figures.

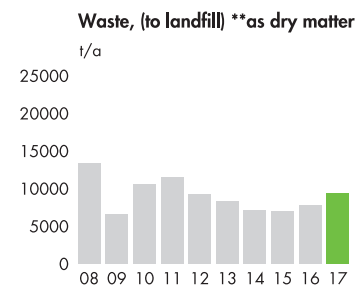
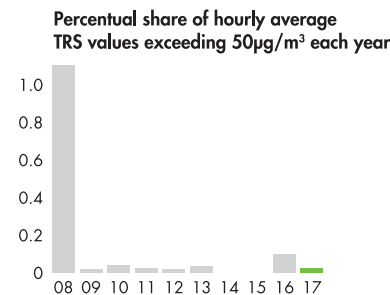
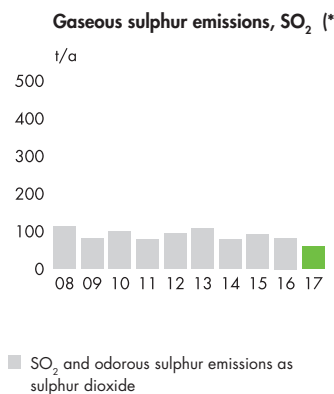
In November, there was a disturbance in the malodorous gas treatment at the pulp mill's birch digester, which caused unpleasant odours in the surrounding area. UPM received two pieces of stakeholder feedback for this incident, and the abnormal situation was reported to the authorities.

Waste

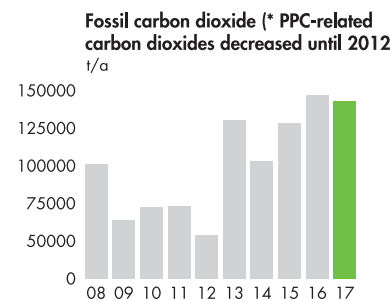
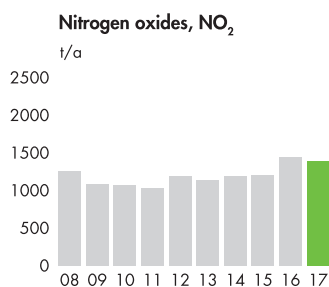


The total amount of waste for 2017 was approximately 29,200 tonnes, of which approximately 9,340 tonnes was taken to a landfill (the municipal landfill or the Lamminmäki landfill). 9,310 tonnes of waste was taken to the Lamminmäki landfill as dry matter. The amount of waste sent to landfill sites increased from the previous year due to the lack of re-use applications for green liquor dregs and the need to deposit 30% more of it at landfill. In 2017, 52 tonnes of green liquor dregs was combusted in the Kymin Voima Oy boiler at the end of test runs already started in the previous year. Green liquor dregs produced in the recovery process still formed the most significant waste component taken to the Lamminmäki landfill and no viable solution has been found for its continuous recycling.

A total of 11,636 tonnes of wastewater sludge was combusted in the Kymin Voima Oy boiler. Approximately 4,100 tonnes of ash was reused in 2017. As before, ash created during bioenergy



** Includes Kymin Voima Oy's ash corresponding to the energy used by Kymi.



* Includes Kymin Voima Oy's emissions with regard to the energy consumed by Kymi.

Water



production was delivered for granulation, after which it was applied to forests owned by UPM. The idea is to recycle nutrients brought to the mill in the wood back into the forest. Other re-use applications in 2017 included binding green liquor dregs used in landfill and field structures and UPM's forest road structures. In addition, fly and bottom ash was temporarily stored at the Kymi mill site for future reuse applications in 2017.

Approximately 4,300 tonnes of bark and wood waste was delivered to be re-used as culture medium raw material in 2017.

UPM's Zero Solid Waste project, which began in 2015, also continued in 2017. The project's goal is to find reuse applications for all of the mill's process waste types by 2030, including green liquor dregs. The plan is to not be sending anything to landfill by that time. In accordance to this project, 95 tonnes of green liquor dregs from the Kymi mills was used for bioconcrete test runs in 2017.

The effluent load to the river remained below all the environmental permit limits throughout the year. The reductions indicating the efficiency of the treatment plant were 98% for biological oxygen demand (BOD) and 77% for chemical oxygen demand (COD). The solids reduction rate was 91%.

The COD and AOX loads (t/d) decreased from the previous year, as the production level of the pulp mill was lower. This was also reflected in the decreased COD and AOX loads compared to the previous year.

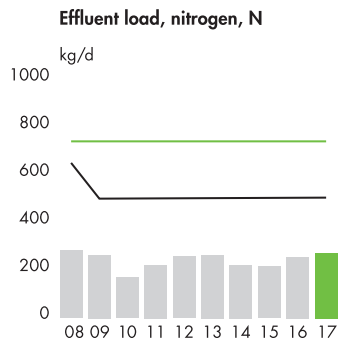
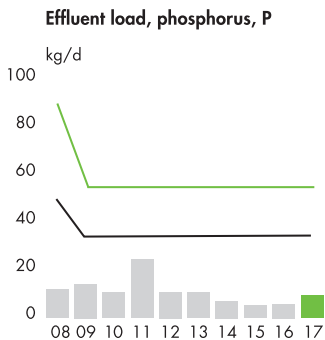
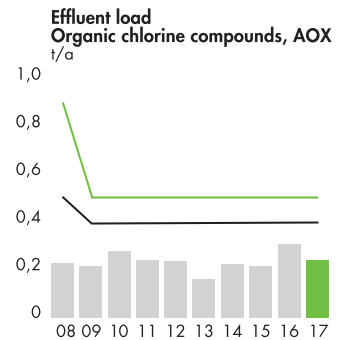
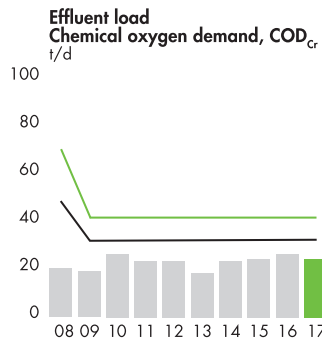
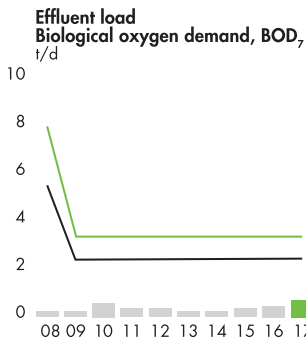
The biological treatment plant experienced equipment-related problems while the workload from the fibre line was higher than normal. Because of this, the amount of solids from the biological treatment plant was higher than usual in the spring. However, this did not affect the annual emission averages, as for the rest of the year the plant was operating smoothly. The monthly permit limits set in the environmental permit were not exceeded during the spring.

In 2017, the Kymi mill site used a total of 86 million m³. Water consumption at the integrated mill site decreased by approximately 6% year-on-year due to the decrease in both mills' production volume compared to the previous year.

The paper mill's solids loss and water consumption was slightly lower than in 2016. Water consumption was monitored in autumn 2017. Before this, the pulp mill's water consumption was included in the paper mill's water consumption levels. Also, the pulp mill's water consumption decreased slightly from the previous year.

For the pulp and paper mill, the results achieved remain below the upper effluent limit of the BAT (Best Available Techniques) reference.

In summary, the effluent load of the pulp and paper mills remained at or below the BAT reference limit throughout 2017.



— Permit limit, monthly mean value
 — Permit limit, annual mean value

Societal responsibility

UPM is one of the largest employers in the Kouvola region. The number of personnel working at the Kymi pulp and paper mills is 711. With the global functions personnel included, the total number of UPM personnel in the integrated mill site was 756. In 2017, a total of 901 people were employed by different UPM functions in Kouvola. The Kymi mills hired 150 summer workers. Retiring personnel are replaced via the recruiting of new people through apprenticeship-based training programmes.

The Kymi integrated mill's effect on taxes in Kouvola in 2017 is approximately EUR 30 million. The share of property taxes is EUR 1 million, which goes directly to the municipality. Estimated municipal tax from personnel wages is EUR 8 million, and approximately 60% of this goes to the municipality. Estimated share of corporate tax is EUR 21 million based on the number of employees, and the distributive share going to municipalities is approximately 30%, which is split between each municipality according to their share of business activities and forests.

UPM's collaboration with the neighbouring area includes maintaining an active dialogue and working with various officials, institutions, businesses and organisations. A good example of this

is co-operation with schools, the local rescue department and water protection association.

The safety of the people working at the mill site and living nearby is our number one priority. Last year there were no industrial accidents resulting in sick leave at the Kymi mills, and as for environmental protection, everything was done according to the permits. Fire and rescue drills were performed systematically.

According to the annual Employee Engagement Survey, well-being at work has improved at the Kymi mill site. In addition to the department-specific improvement measures, a joint plan for well-being at work was implemented. Special attention is paid to good leadership and management. A new supervisor training programme was initiated at the end of the year.

Informing young people

Our aim is to inform young people of jobs in the forest industry and encourage them to study process technology and pursue careers in the field. Schoolchildren and students attended school trips to the mills. In turn, experts from the Kymi mill site visited secondary schools as Forest of Opportunities ambassadors telling the pupils about employment in the forest industry.

The forest industry was again highly visible at the KouAhead event for 9th graders. Held at a shopping centre, the event attracted about 1,000 young people and other audience members. At the Duunitreffit recruiting event, UPM provided information about available jobs, apprenticeship training, traineeships and thesis opportunities.

Various projects from UPM's Share and Care programme have also included Kouvola. One example of these is the Sanat haltuun (Words Matter) event organized by the Finnish Reading Centre in the Kouvola Region Vocational College. The goal was to inspire young people to read and improve their reading skills. The main targets for our sponsorships also involve young people and sports, through sports clubs and associations for the public good.

Environmental education

Towards the end of 2016, the Local waters school project was launched in Kouvola as a collaborative effort between UPM Kymi and the Kouvola Rotary Clubs, and it was continued in 2017. The project is part of the curriculum approved by the Finnish National Board of Education in which topics related to environmental education and sustainability are included in a number of different subjects.

The goal of the project is to generate more interest in the natural sciences and especially water-related themes among pupils in primary education. UPM has donated equipment required for studying water to the schools involved in the project in 2016–2017. The pupils will use it to measure water quality and report their results to the national register managed by the Finnish Environment Institute. Backpacks containing water testing equipment were donated to 10 secondary schools and about 20 primary schools in the Kouvola region. UPM and the Rotarians managed the school collaboration together, and guidance on the use of the testing equipment was provided by UPM personnel responsible for environmental matters at the Kymi site. The water study theme was also introduced to about 460 Kouvola area 6th graders at a forest day event in Valkeala.



Päivi Hyvärinen and Ossi Nikki from Kymi and Osmo Siira from the Kuusankoski Rotary Club show the contents of the water testing backpack to the 6th graders at the Commercial forest cycle day event in Valkeala.

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.

Production capacity	Coated and uncoated fine paper Pulp	730 000 t 760 000 t
Raw materials	Wood Purchased pulp Chemicals	Please refer to the UPM Corporate Environmental Statement for information
Energy	Biofuels Fossil fuels	Please refer to the UPM Corporate Environmental Statement for information
Air emissions	Sulphur, SO ₂ Nitrogen oxides, NO _x Carbon dioxide, CO ₂ (fossil) Particulates	64.0 t (SO ₂ and malodorous sulphur emissions as sulphur dioxide) 1,377 t 144,478 t 64.5 t
Water intake	Process and cooling water	86,465,220 m ³
Emissions to water	Cooling water Effluent Chemical oxygen demand, COD _{Cr} Biological oxygen demand, BOD ₇ Adsorbable organically bound halogens, AOX Phosphorus, P Nitrogen, N	49,934,338 m ³ 36,530,882 m ³ 8,482 t 206 t 94 t 3.30 t 103 t
Waste	Waste to landfill (as dry matter): Green liquor dregs Sludge Lime, lime sludge Mixed waste Process waste Recycled waste (as dry matter): Ash Green liquor dregs Lime sludge Bark and wood waste Cores and wrapping Waste paper and cardboard Metal Combustible waste Concrete and asphalt waste Biowaste Other waste Temporarily stored waste intended for reuse (as dry matter): Ash Hazardous waste	9,215 t 74 t 28 t 16 t 3 t 4,107 t 147 t 207 t 4,258 t 3,945 t 146 t 1,016 t 809 t 1,008 t 32 t 976 t 3,114 t 94 t
Mill area		250 hectares

The figures include Kymin Voima Oy's waste and emissions with regard to the energy consumed by the Kymi site.

Pulp Mill's performance against targets in 2017

OBJECTIVES AND INDICATORS	ACHIEVED	COMMENTS
Minimising environmental non-conformances -0 cases in classes 3 to 5	Yes	No permit limits exceeded
Processing time of Clean Run notifications < 2kk	Yes	Systematically discussed in morning meetings. In total, 242 Clean Run -notifications were made.
Setting internal alarm limits in accordance with the current production level.	Yes	Internal alarm limits calibrated. Abnormal emissions recorded and discussed in morning meetings.
Reducing odour emissions	Partially	Monitoring the recovery of vapours improved in the Kymi-870 project. Optimising the dosage of bleaching chemicals. A total of three odour complaints were recorded.
Reducing solid waste to landfills <12.5 kg dry matter/tonne of pulp	No	Green liquor amount is big
Reducing water consumption at the pulp mill -target < 41.5 m ³ /tonne of pulp	Yes	Improving washing performance on the birch line as part of the Kymi-870 project.
CO₂ emissions -target < 100 kg CO ₂ /tonne of pulp	No	Disturbances in the lime kiln increased CO ₂ emissions.
COD emissions -target < 12.5 kg/tonne of pulp	Yes	Improving washing performance on the birch line as part of the Kymi-870 project.
AOX emissions -target < 0.16 kg/tonne of pulp	Yes	Improving washing performance on the birch line as part of the Kymi-870 project.
SO₂+TRS emissions -target < 0.1 kg S/tonne of pulp	Yes	Sulphur emissions have been minor.
NO_x emissions -target < 1.55 kg/tonne of pulp	No	Disturbances in the lime kiln increased NO _x emissions.

Paper mill's targets for 2018

OBJECTIVES AND INDICATORS	ACHIEVED	COMMENTS
No environmental non-conformances -luokat 3-5	Yes	No environmental non-conformances.
Waste to landfills 0 t	No	Approx. 6 tonnes of waste to landfills.
Reducing water consumption at the paper mill < 10 m ³ /tonne of paper	No	Not achieved. Target was reached by the end of 2017 (September-December).
Solids loss at the paper mill, < 10 m ³ /tonne of paper	No	Target was reached by the end of 2017 (September-December).

Pulp mill's performance against targets in 2017

OBJECTIVES AND INDICATORS	SCHEDULE	UNIT'S RESPONSIBILITIES
Minimising environmental non-conformances -0 cases in classes 3 to 5	2018	Setting internal alarm limits in accordance with the current production level. Optimising the recovery of vapours. Balancing the wastewater treatment plant operation.
Solid waste to landfills <12.5 kg ka/tonne of pulp	2018	Finding a reuse application for removed lime sludge dust. Optimising the amount of green liquor dregs for budget production. Continuing the test runs with green liquor dregs at Kymin Voima.
Water consumption <40 m ³ /tonne of pulp	2018	Optimising fibre line washing at the maximum production level.
COD emissions < 10 kg/tonne of pulp	2018	Optimising fibre line washing at the maximum production level.
AOX emissions < 0.14 kg/tonne of pulp	2018	Improving washing performance on the birch line as part of the Kymi-870 project.
Solids to river < 1.3 t/d	2018	Smooth operation of the wastewater treatment plant.
CO₂emissions < 100 kg CO ₂ /tonne of pulp	2018	Optimising the operation of the lime kiln. Minimising unplanned shut-downs.
SO₂+TRS emissions < 0.1 kg S/tonne of pulp	2018	Minimising unplanned shut-downs.
NO_x emissions < 1.55 kg/tonne of pulp	2018	Optimising the operation of the lime kiln. Minimising unplanned shut-downs.
Lime kiln particulates <0.05 kg/tonne of pulp	2018	Optimising the operation of the lime kiln.

Paper mill's targets for 2018

OBJECTIVES AND INDICATORS	SCHEDULE	UNIT'S RESPONSIBILITIES
No environmental non-conformances -classes 3 to 5	2018	Continuous improvement of environmental awareness, improving communication.
Solid waste to landfill 0 t	2018	Improving sorting.
Reducing water consumption at the paper mill < 10 m ³ /tonne of paper	2018	Improving line-specific monitoring.
Solids loss at the paper mill, < 10 m ³ /tonne of paper	2018	Improving line-specific monitoring.
Environmental notifications, 40 notifications/yr	2018	Continuous improvement of environmental awareness, improving communication.



VALIDATION STATEMENT

As accredited environmental verifier (FI-V-0001), Inspecta Sertifiointi Oy has examined the environmental management system and the information of UPM Mill name Environmental and Societal Responsibility 2018 report and of UPM Corporate Environmental statement 2018. On the basis of this examination, the environmental verifier has herewith confirmed on 2019-04-09 that the environmental management system, this UPM Mill name Environmental and Societal Responsibility report and the information concerning UPM Mill name of UPM Corporate Environmental Statement are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.



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