

UPM Kymi

ENVIRONMENTAL AND SOCIAL RESPONSIBILITY 2021



UPM Kymi

The UPM Kymi integrated mill site in the Kuusankoski quarter of Kouvola produces paper, pulp and energy. The mill site, located on the shore of the Kymijoki River, is home to the UPM Kymi pulp mill and UPM Communication Papers Oy's Kymi paper mill. The key products of these mills are uncoated and coated fine paper as well as bleached birch and softwood pulp. The pulp mill is also a significant producer of bioenergy. In addition, pulp production generates crude tall oil and turpentine, which are used in the production of bioeconomy products. Fine paper production uses 100% chemical pulp. Birch, pine and spruce are used as raw materials.

UPM has had a significant role in the birth and development of the local community for 150 years. Even today, our impact in the region is significant, both as a taxpayer and as an employer.

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 Kymi integrated mill site. Kymin Voima Oy's biofuel power plant and the PCC plant are not included in the scope of this report.



Production capacity	715,000 t of coated and uncoated fine paper 870,000 t of birch and conifer pulp
Personnel	719
Products	Fine papers: UPM Finesse, UPM Fine, UPM PrePersonal, UPM Poste, UPM Office, New Future, KymLux, UPM Digi Finesse, UPM Jetlabel, UPM Vellum, UPM Labelcoat Prime Pulp: UPM Betula and UPM Conifer
Bioenergy	Heat energy and electricity
Side-products	Lime sludge and sodium bisulphite
Residues	Tall oil and turpentine
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System ISO 22000 – Food Safety Management System OHSAS 18001 – Occupational Health and Safety System ISO 50001 – Energy Management System PEFC Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel UPM pulp products are approved for use in EU Ecolabel and Nordic Ecolabel paper products.



UPM Kymi Environmental and Societal Responsibility 2021 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2021. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next Updated UPM Corporate Environmental Statement and also this supplement will be published in 2023.

UPM delivers renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Fibres, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. As the industry leader in responsibility, we are committed to the UN Business Ambition for 1.5°C and the science-based targets to mitigate climate change. We employ 17,000 people worldwide and our annual sales are approximately EUR 9.8 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com



For more information about FSC certification visit fsc.org



For more information about PEFC certification visit pefc.org



EU Ecolabel : FI/011/001

Review of the year 2021

Kymi's environmental performance improved in 2021. The steady and efficient operation of the wastewater treatment plant resulted in lower discharges to water than in the previous year.

In 2021, the pulp mill's market situation was good and, despite the global challenges caused by the COVID pandemic, production almost reached the previous year's level. The market situation in the paper mill was also clearly better than in the previous year. The volume of pulp sold to third parties was slightly lower than the year before.

Measures to protect our own personnel and those of our partners from the COVID-virus continued throughout the year. Due to the COVID pandemic, the planned maintenance shutdown at Kymi's integrated mill site in spring was postponed until the end of the year.

Environmental load reduced in many areas

Obligations related to environmental protection have been taken care of systematically and in compliance with the environmental permit.

We were able to reduce our environmental load in many ways. For example, discharges to water decreased from the previous year's level as the wastewater treatment plant operated steadily and efficiently.

The lime kiln particle emissions and the chlorine content of acidic bleaching

steam exceeded the annual limit. In addition, a leak from a birch digester released black liquor into the river through a storm drain. This was also recorded as exceeding the environmental permit limit. The mill's emissions for all other areas were under the permit limits.

The integrated mill site's environmental objectives included activities under the Clean Run programme launched in 2011, reducing abnormal emissions, increasing environmental awareness among employees, decreasing water consumption and wastewater discharges, decreasing odour emissions and lime kiln particle emissions, increasing the reuse of process waste and reducing the amount of solid waste going to landfill as well as active participation in studies seeking to reuse green liquor dregs.

The Clean Run programme was part of the Kymi mill site's normal operations in 2021. All abnormal emissions were recorded with the OneSafety tool and their underlying causes were studied. An environmental review was arranged once a week during the pulp and paper mill's morning meetings to review the environmental issues and events of the previous week in detail.

During the year, 13 stakeholder feedbacks were received, mostly concerning odour emissions during malfunctions, shutdowns and start-ups.

In 2021, the environmental investments included the installation of a fourth field in the electrostatic precipitator of the lime kiln and the conversion of all rectifiers to more efficient three-phase rectifiers. The automation and control systems of the electrostatic precipitators were modernised as well. In addition, improvements to recover the malodorous gases were made during the maintenance shutdown.

Proactive safety work

UPM's ongoing target is zero accidents. We require all UPM employees and contractors to use the global One Safety reporting tool to report all near misses, safety and environmental observations. Reports are dealt with daily and corrective action is taken without delay.

We actively encourage our personnel to have safety discussions and to carry out safety walks around the mill. The targets set for proactive safety notifications were exceeded at both the paper and pulp mills.



Matti Laaksonen

Matti Laaksonen
Mill Manager
Kymi paper mill



Anna Laksio

Anna Laksio
Occupational Safety and
Environmental Manager
Kymi paper mill



Päivi Hyvärinen

Päivi Hyvärinen
Environmental Manager
Kymi pulp mill



Jyri Kylmä

Jyri Kylmä
Mill Manager
Kymi pulp mill

Contribution to UN Sustainable Development Goals in 2021



Water

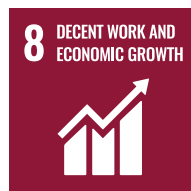
Suspended solids decreased between 2012 and 2021 by

52%

Phosphorus emissions decreased between 2012 and 2021 by

55%

(Figures for the Kymi pulp mill production).



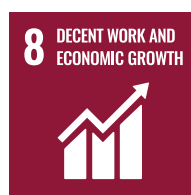
Training

The pulp and paper mill personnel had

6,399

hours of training.

100% of the personnel have completed the training on UPM's Code of Conduct.



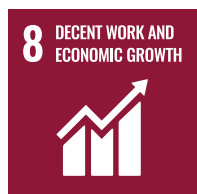
Consumption impact*

Integrate's consumption impact in the region approx.

EUR 38 million

In Finland approx.
EUR 69 million.

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



Safety

Proactive safety work actively carried out

2,463

safety and environmental observations and near-misses recorded by pulp and paper mill employees and contractors. In addition, a total of

1,660

safety walks and discussions were recorded.



Supply chain

99%

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



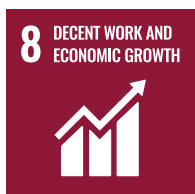
Certified fibre

74%

of fibre used in pulp production was FSC and/or PEFC certified. UPM's target is to use only certified fibre by 2030.

76%

of fibre used in paper production was FSC and/or PEFC certified. UPM's target is to use only certified fibre by 2030.



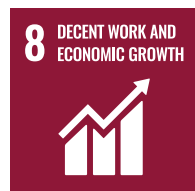
Employment

Mill employed

719 people and

135 summer workers

Indirect employment effect in region approx. 700 persons.



Taxes

Integrate's tax impact approx.

EUR 35 million

Real estate tax EUR 0.5 million
Estimate of tax on salaries EUR 6.6 million
Estimate of corporate income tax EUR 27.7 million based on the number of employees*

* share for all the municipalities approx. 30%. Each municipality receives a share of this depending on the ratios calculated based on business and forest operations in the municipality



Energy

Over

87%

of the energy came from renewable fuels in 2021. The pulp production used black liquor as main fuel.



Air

Sulphur dioxide emissions from the Kymi pulp mill were reduced by

92%

between 2012 and 2021.

Aerial emissions complied with the permit limits, with the exception of lime kiln particle emissions and chlorine emissions from the bleaching acid scrubber.

The lime kiln particle emissions exceeded the annual permit limit. The high level of particle emissions was caused by structural changes made to the feed end of the lime kiln in the autumn of 2017 to increase efficiency. These changes resulted in a significant increase in the particle emissions from the lime kiln. During the maintenance shutdown scheduled for May 2019, structural changes were made to the feed end of the lime kiln to resolve the dust issue. The changes made to the feed end of the lime kiln reduced dust emissions but not to the extent expected. Further investigations revealed that some of the lime kiln electrostatic precipitator fields do not work optimally. Even after the measures described above, dust emissions were still high. The increase in pulp production has increased the lime kiln production and flue gas rates compared to the original proportioning of the electrostatic precipitator.

During the scheduled maintenance shutdown in 2021, a fourth field was installed in the electrostatic precipitator and the rectifiers of all four fields was replaced for more efficient three-phase rectifiers. The automation and control systems of the electrostatic precipitators was modernised at the same time. These investments are estimated to reduce the post-electrostatic precipitator dust emission to the stack to less than half of the current level and increase the usability of the electrostatic precipitator.

The chlorine content of the acidic bleach steam exceeded the environmental permit limit because the droplet separators in the gas scrubber were damaged. The droplet separators were repaired during the 2021 maintenance shutdown.

Total NO_x emissions remained at the same level as the previous year. Gaseous sulphur emissions were very low.

It was also recorded that 99.6% of mild malodorous gases and 99.9% of strong malodorous gases were recovered and burnt.

The increase in production volume has placed more strain on the recovery of malodorous gases and led to the temporary occurrence of unpleasant odours during process disturbances. However, TRS emissions at the Kouvola City Environmental Services measuring station in central Kuusankoski remained low. The average hourly TRS content only exceeded 5 µg/m³ limit for 0,21% of the total number of hours within 2021, equating to a total of approximately 18 hours.

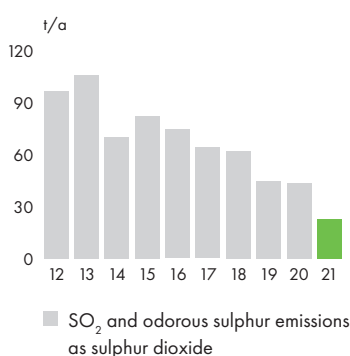
In 2021, carbon dioxide emissions increased from the previous year due to process failures in the lime kiln. As of 2019, CO₂ consumed by the PCC plant is now deducted from our CO₂ emission figures in accordance with the EU Emission Trading Scheme.

With the exception of dust emissions from the lime kiln, the air emissions represented the best available technology in relation to the emission levels set by the BAT conclusions on the paper and pulp industry.

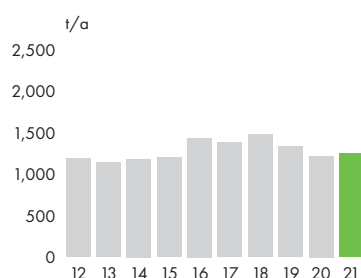


The investments made in the electrostatic precipitator during the maintenance shutdown in November are aimed at reducing dust emissions. The picture shows the lifting of a new field added to the electrostatic precipitator.

Gaseous sulphur emissions
SO₂ *

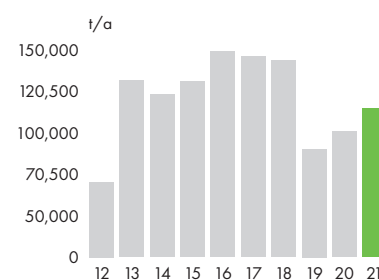


Nitrogen oxides, NO₂ *



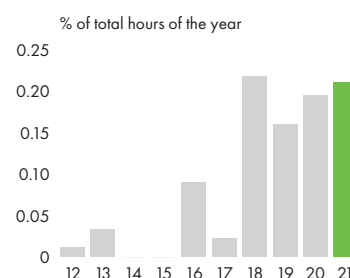
Fossil carbon dioxide*

CO₂ sequestered in PCC reduced in 2012 and 2019–2021



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

Percentage of TRS hourly average concentrations above 5 µg/m³ per year



Waste



The total amount of waste in 2021 was 21,800 tonnes, of which 9,972 tonnes was disposed of as dry material in the landfill (Lamminmäki). In 2021, only green liquor dregs was disposed of at the Lamminmäki landfill. In 2021, 121 tonnes of green liquor dregs were also used for the construction of the experimental parking lot in Keltti in cooperation with the City of Kouvola.

Most of the green liquor dregs produced by the mill had to be dumped in landfills, as there were no continuous reuse applications. The green liquor dregs generated in the recovery process is a challenging waste section for which, despite many research projects, no viable solution for its continuous recycling has yet been found.

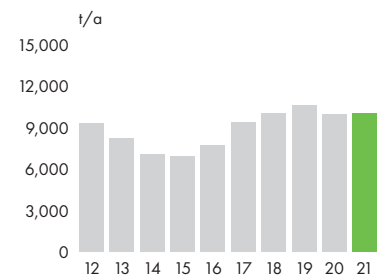
Around 4,900 tonnes of ash was delivered for reuse in 2021. As before,

ash created during bioenergy production was delivered for granulation, after which it was applied to forests owned by UPM. The idea is to recycle the nutrients from the wood that is brought to the mill back into the forest. Other reuse applications in 2021 included the binding of green liquor dregs in the Lamminmäki landfill structures, Encore's field structures and the structures of the experimental parking lot in Keltti in cooperation with the City of Kouvola. At the end of 2021, there was no ash in temporary storage.

In 2021, around 1,800 tonnes of bark waste was delivered to be reused as culture medium raw material and around 1,200 tonnes for range structures.

No process waste from the paper mill was taken to landfill in 2021.

Solid waste taken to a landfill dry*



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

In cooperation with the City of Kouvola, a pilot project was launched to use UPM Kymi's green liquor dregs and Kymi Voima's fly ash to build a car parking area. The study will test, among other things, the frost resistance and load-bearing capacity of the car parking structure. The aim is to find new uses for green liquor dregs. In picture samples are taken from field structure.



The wastewater treatment plant operated well, steadily and efficiently throughout the year. Thanks to its good performance, water discharges were lower than in the previous year.

The plant's operational efficiency is illustrated by 99% reduction in the biological oxygen demand and a 83% reduction in the chemical oxygen demand. Solids were reduced by 96%.

In 2021, the total water consumption at Kymi was around 85 million m³.

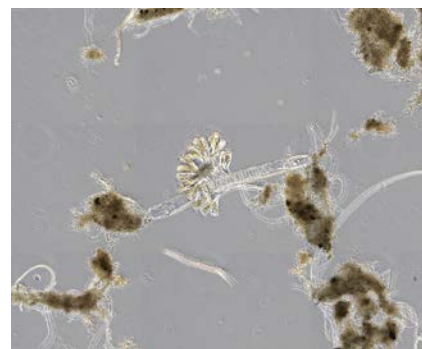
For COD and AOX, UPM's 2030 emission targets were already met.

The paper mill's wastewater volume and solid loss per tonne of product decreased from the previous year due to fewer shutdowns and start-ups on the paper machines compared to the previous year. The paper mill experienced one exceptional discharge, when calcium carbonate sludge leaked into the stormwater line and into a ditch that drains into the Kymijoki River. The leak was caused by a rupture in the bottom of the tank due to a bearing failure in the mixer. The tank and bearing were

repaired immediately after the leak was detected.

The pulp mill's wastewater volume was at the previous year's level and the solids loss specific emissions decreased from the previous year due to the good, steady operation of the wastewater plant.

In the autumn of 2020, the wastewater treatment plant began a test drive of nitrogen-rich reject water from the biogas plant. Its goal was to investigate the replacement of industrially manufactured nitrogen and phosphorus with recycled nutrients as the wastewater treatment plant's source of nutrients. The test drive continued until the beginning of March 2021. A study was also carried out on the reject water test drive. The reject water did not remain in use in the treatment plant since it could not replace the target amount of nitrogen that was fed to the plant in the form of urea. In addition, the inlet of reject water caused undesirable changes in the microbial population at the treatment plant. The previous test drive was carried out in spring 2019. UPM's aim is that all nutrients used at the biological wastewater treatment plant will be recycled by 2030.

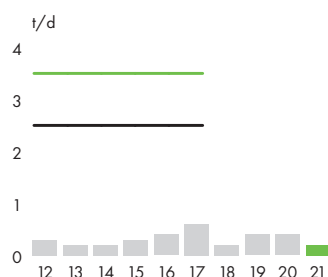


Water samples are regularly taken from the biological wastewater treatment plant for analysis. The picture shows a microscopic image of the microbial population in the aeration basin.

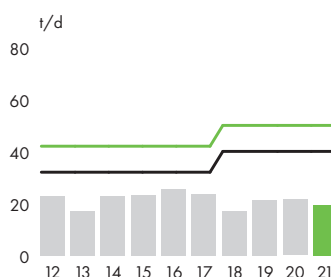
During the shutdown of the pulp mill, an equipment failure caused about three cubic metres of lye to leak from a birch digester onto the asphalted yard. The leakage was diverted to a well, from where it should have gone to a sewer and then to a waste water treatment plant. The failure allowed lye to enter the Kymijoki River through the stormwater system.

The water consumption and water emissions of the pulp and paper mill represented the best available technology in relation to the emission levels set by the BAT conclusions on the paper and pulp industry.

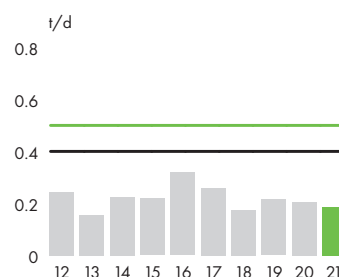
Biological oxygen demand, BOD



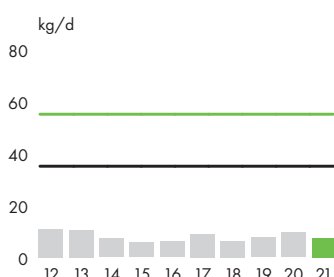
Chemical oxygen demand, COD_{cr}



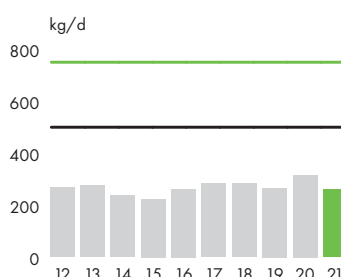
Adsorbable organic halogen compounds, AOX



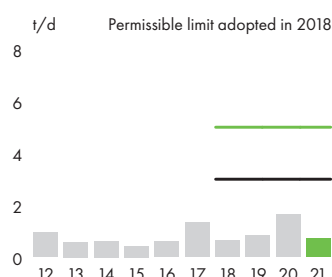
Phosphorus, P



Nitrogen, N



Total suspended solids



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

Management of crises and exceptional situations

The following types of events are included within the management of crises and exceptional situations and communications at the Kymi mill property and surrounding area:

- Serious accidents and near-miss situations (major fires, explosions, chemical accidents etc.)
- Environmental damage
- Serious work injuries (including accidents on the way to or from work) and traffic accidents on the mill site
- Serious interruptions in production
- Other exceptional situations such as sabotage, demonstrations, work health and safety risks, pandemics, risks that could harm UPM's reputation, cyber threats and network destruction, and threatening situations not within Kymi, e.g., at other industrial plants etc.

Rescue operations are always led by the rescue authorities. The operational management of emergencies is the responsibility of the production organisation. Operational management means, for example, the controlled shutdown of production and other measures to bring the exceptional situation under control. Incident investigation and the flow of information proceed in accordance with the responsibility in the line organisation and agreed roles. The crisis communication group either consists of members of the mill's management group or is separately agreed upon on case-by-case basis.



New compressed air breathing equipment purchased for the Kymi factory fire brigade.

Exceptional situations concerning Kymin Voima Oy and projects being run at the Kymi mill site will be dealt with in accordance with the Kymi guidelines and organisational actions. External companies operating on the mill site will follow their own guidelines. However, all emergencies will be reported as per the Kymi mill emergency policy.

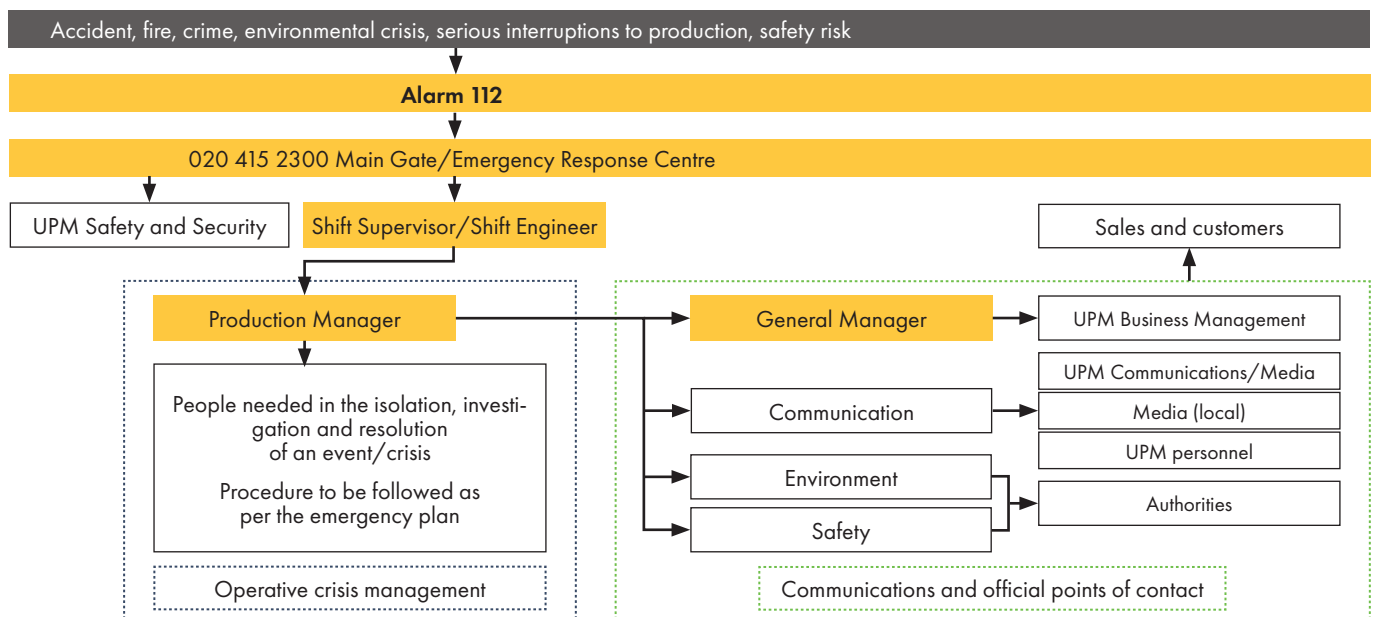
The new UPM Kymi mill site emergency policy entered into force on 1 January, 2021. Emergency calls must always be made to the emergency number 112 or via the 112 Suomi application.

UPM Central Control must then also be informed of the incident.

In 2021, there were no crisis situations at Kymi.

The exceptional situation caused by the COVID pandemic continued throughout 2021. The paper and pulp mills followed separate emergency procedures covering both their own personnel and contractors and visitors. The COVID response groups, that were set up for the mills, met regularly.

The crises management chain of command – communications and flow of information at UPM Kymi



Social responsibility

We are committed to safety and our permanent goal is zero accidents. We aim to prevent accidents through proactive safety work, continuous improvement and effective risk management. Occupational, process and environmental safety are fully embedded in our daily activities and is not considered less or secondary than any other interest. Our employees, as well as business partners and their employees, are required to adopt safe work practices and to comply with the rules and standards we have established.

In 2021, there were no lost time accidents at the paper mill. At the end of the year, it had been six years since the last accident. There were four accidents at the pulp mill last year.

We organise safety training for our personnel on a regular basis. Due to the COVID pandemic, most of the trainings were conducted remotely, but we were also able to organise some face-to-face training on first aid and safety at work. In addition, the paper mill employees were taught how to use a defibrillator and refreshed on what to do in case of an emergency.

This year, three employee at the paper mill were again awarded the Best Safety Ambassador certificate by UPM Communication Papers. This was the second time that honourable mentions were awarded in Kymi. The certificate is a sign of exceptionally meritorious safety-related work and initiative that enhances safety for colleagues and the paper mill as a whole.

In 2021, both the Kymi pulp and paper mills were selected for the UPM Group's Frontrunner Club. The club membership is part of the company's annual Safety Award and is a testament to exemplary safety work and the achievement of UPM's safety objectives.

UPM supported the fight against the COVID pandemic by distributing Covid-19 home tests to its personnel for their leisure time, in addition to face masks. In November, a major annual maintenance shutdown was carried out at Kymi's integrated mill site, in the preparation of which the ensuring of health and safety of both our own personnel and our contractors, played an important role. During the maintenance

shutdown, around 1,800 employees from other companies worked on the mill site, in addition to our own personnel. More than 3,200 COVID tests were carried out during the shutdown. Extensive testing prevented COVID contamination chains from occurring in the shutdown. There were also no lost time accidents at work during shutdown work.

Well-being and health at work

Employees' well-being is supported with an ePass, the balance of which can be used for various sports, cultural and wellbeing services. In 2021, this benefit was utilised by 90% of employees at the Kymi pulp mill and 85% at the paper mill.

Occupational healthcare services are available to Kymi employees. In the summer, UPM introduced the new Mental Concern remote service to support employee wellbeing, and at the end of the year, UPM's occupational health services in Finland were harmonised with the new occupational healthcare agreement.

Employees' ability to work was also taken care of through versatile health checks. These health checks include both age group-based examinations and statutory examinations for people performing tasks that may cause exposure.

Encouraging learning

We encourage our personnel to develop their skills. In 2021, the total number of training hours for all personnel at the paper mill was 4,172 and at the pulp mill

2,227. 100% of our employees at both the paper mill and the pulp mill have completed the training on the UPM Code of Conduct.

Through our apprenticeship programmes, we ensure that future employees have the skills they need. The programmes are typically targeted at shop-floor positions in production or maintenance. In autumn 2021, more than 30 apprentices were appointed for the Kymi paper and pulp mill.

Evaluations to support operational development

We are regularly assessed by external independent experts. The external audits of the ISO 14001 environmental management system, ISO 9001 quality management system, ISO 22000 food safety management system, ISO 45001 occupational health and safety management system and ISO 50001 energy management system carried out at the pulp and paper mill in 2021 did not identify any serious nonconformities. Corrective measures and schedules for implementing them have been set for the minor non-conformities.

In addition, so-called Multisite assessments between UPM mills are carried out according to a separate plan. The assessments concern all certified systems. The aim is to ensure that practices are as consistent as possible across mills. The extensive expertise of auditors from other UPM units and divisions brings new insights to operational development.



At the pulp and paper mill, face masks and home tests were distributed for recreational use.



During the annual maintenance shutdown at Kymi in November, around 1 800 employees from outside companies worked at the mill site, in addition to our own personnel. Health safety was ensured through, among other things, comprehensive and extensive COVID testing.

Stakeholder engagement

The general COVID pandemic situation affected the cooperation with different stakeholders throughout the year, and, for example, mill visits and study trips could not be organised. In the early part of the year, Kymi was involved in two online recruitment events.

Kymi was a guest speaker at the Bioeconomy – Made in Kymenlaakso webinar in the autumn. The webinar was part of the project New Winds in Bioeconomy at Xamk University of Applied Sciences, South-East Finland. The audience included people working in the bioeconomy and circular economy as well as representatives of educational and research institutions.

In November, Kymi participated in a virtual KouAhead event for all 9th graders in Kouvola, where young people were presented with possibilities for further studies, vocational education and jobs.

Value creation generates tax revenue

The tax revenues generated by UPM's operations have a significant social impact at both national and local level. In 2021, UPM's corporate income taxes paid and property taxes were approximately EUR 306 million in total (EUR 178 million in 2020).

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

Our local tax impact in the region was about EUR 35 million. The local effect on consumption in Kouvola created

by the integrated mill site amounted to approximately EUR 38 million in 2021. For Finland as a whole, the impact was approximately EUR 69 million. These figures reflect the consumption generated by direct and indirect employees' net wages.

UPM is one of the largest employers in Kouvola. In 2021, the Kymi mills and other UPM operations in the city employed around 850 people. Including the global operations personnel, a total of 719 people worked at the Kymi integrated mill, and we also hired around 135 summer workers.

Responsible sourcing

UPM is committed to responsible procurement practices throughout the procurement chain. We require all suppliers to comply with the UPM Supplier Code and Third Party Code. UPM's target is to have 100% of raw material spend and 80% of all spend covered by UPM Supplier and Third Party Code by 2030. In 2021, this figure was 99% for Kymi.

Environmental parameters

The figures related to production as well as raw material and energy consumption are published as aggregated figures on group level in the UPM Corporate Environmental and Societal Responsibility Statement.

		2019	2020	2021
Production capacity	Coated and uncoated fine paper	710,000 t	705,000 t	715,000 t
	Pulp	870,000 t	870,000 t	870,000 t
Raw materials	Timber Purchased pulp Chemicals	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Energy	Biomass-based fuels	89%	89%	87%
	Fossil fuels	11%	11%	13%
	Purchased energy ¹⁾			
Emissions to air	Sulphur, SO ₂	44.5 t (SO ₂ and malodorous sulphur emissions as sulphur dioxide)	43.5 t (SO ₂ and malodorous sulphur emissions as sulphur dioxide)	22.9 t (SO ₂ and malodorous sulphur emissions as sulphur dioxide)
	Nitrogen oxides	1,327 t	1,215 t	1,249 t
	Carbon dioxide (fossil)	77,916 t	90,566 t	107,043 t
	Particles	243 t	215 t	382 t
Water intake	Process and cooling water	92,284,161 m ³	91,767,230 m ³	85,197,993 m ³
Discharges to water	Cooling water	55,263,794 m ³	53,547,537 m ³	47,910,108 m ³
	Effluent	37,020,367 m ³	38,219,414 m ³	37,237,443 m ³
	COD _{Cr}	7,674 t	7,782 t	6,963 t
	BOD ₇	146 t	148 t	85 t
	AOX	78.7 t	75.4 t	67.4 t
	Phosphorus	2.74 t	3.43 t	2.71 t
	Nitrogen	97.4 t	116 t	94.7 t
Side products	Calcium dust	–	–	3,559 t
	Sodium bisulphite	–	–	2,350 t
	Total	–	–	5,909 t
Waste²⁾	Landfill			
	– green liquor dregs	10,533 t	9,938 t	9,972 t
	– lime sludge	–	–	–
	– mixed waste	11 t	–	–
	– process waste	–	–	–
	– building waste	6 t	1 t	3 t
	Reused waste			
	– ash	1,938 t	6,132 t	4,910 t
	– green liquor dregs	–	–	121 t
	– sludge	439 t	185 t	0 t
	– lime, lime sludge	251 t	123 t	129 t
	– bark and wood waste	2,718 t	3,099 t	3,261 t
	– cores and wrapping	3,361 t	3,188 t	5,303 t
	– waste paper and cardboard	224 t	67 t	118 t
	– metal	607 t	263 t	274 t
	– combustible waste	495 t	418 t	–
	– concrete and asphalt waste	912 t	1,356 t	1,447 t
	– biowaste	21 t	18 t	19 t
	– other waste	782 t	275 t	1,130 t
	Temporarily stored waste intended for reuse			
	– ash	1,948 t	0 t	0 t
Hazardous waste		178 t	161 t	123 t
Land use	Total amount of land use	290 ha	255 ha	255 ha
	Area impermeable to water		110 ha	110 ha
	Area directed towards nature conservation		145 ha	145 ha

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

¹⁾ See UPM Corporate Environmental and Societal Responsibility Statement for more information (e.g. energy indicators)

²⁾ Dry weight

The pulp mill's performance against targets in 2021

OBJECTIVES AND INDICATORS	ACHIEVED	COMMENTS
Minimising abnormal emissions – Categories 3–5, 0 cases	No	Permit limit exceeded 3 times: lime kiln particle emissions, the chlorine content of acidic bleaching steam and the birch digester lye discharge into the stormwater drain.
Solid waste to landfill < 12.5 kg of dry matter/tonne of pulp	Yes	Actual figure below target. The amount of green liquor dregs is considerable.
Reducing water consumption at the pulp mill – Goal: < 38 m ³ / tonne of pulp	Yes	Water consumption reduced through birch line washing improvements and optimisation.
COD emissions – Goal: < 9.0 kg / tonne of pulp	Yes	Good, steady operation of the wastewater treatment plant.
AOX emissions – Goal: < 0.10 kg / tonne of pulp	Yes	Improvements and optimisation in birch line washing and good, steady operation of the wastewater treatment plant.
Solids to river – Goal: < 1.0 tonne/day	Yes	Good, steady operation of the wastewater treatment plant.
Pulp mill CO₂ emissions – Goal: < 50 kg of CO ₂ / tonne of pulp	No	Lime kiln still mainly fuelled by natural gas.
SO₂ + TRS emissions – Goal: < 0.1 kg of sulphur/tonne of pulp	Yes	Actual figure very low.
NO_x emissions – Goal: < 1.55 kg / tonne of pulp	Yes	The recovery boiler's NO _x emissions became low after the adjustments made to the combustion air distribution.
Lime kiln particles – Goal: < 0.05 kg / tonne of pulp	No	Annual permit limit exceeded.

The paper mill's performance against targets in 2021

OBJECTIVES AND INDICATORS	ACHIEVED	COMMENTS
No abnormal emissions – Classes 3–5	No	One exceptional discharge, calcium carbonate sludge, entered the stormwater line as a result of a tank leak.
Waste to landfill 0 t	Yes	No process waste to landfill.
Reducing water consumption at the paper mill < 10 m ³ /tonne of paper	No	The target was reached in six months, but the average for the whole year was slightly above the target.
Solids loss at the paper mill < 10 kg / tonne of paper	No	The target was reached in two months, but the average for the whole year was above the target.
Number of environmental observations: 60 pcs	Yes	The number of environmental observations was 62.

Pulp mill targets for 2022

OBJECTIVES AND INDICATORS	SCHEDULE	RESPONSIBILITIES BY DEPARTMENT
No permissible limits exceeded – Classes 3–5	2022	Reducing of lime kiln particle emissions. Reducing odour complaints. Stable, good functioning of the wastewater plant.
Solid waste to landfill < 12.5 kg of dry matter/tonne of pulp	2022	Actively participating in research seeking reuse applications for green liquor dregs. Finding a reuse application for green liquor dregs.
Water consumption < 37 m ³ /t of pulp	2022	Optimising fibre line washing at the maximum production level.
COD emissions < 9 kg/tonne of pulp	2022	Optimising fibre line washing at the maximum production level and good, steady functioning of the wastewater plant.
AOX emissions < 0.10 kg/tonne of pulp	2022	Optimising fibre line washing and chlorine dioxide doses at the maximum production level and steady functioning of the wastewater plant.
Solids to river < 1.0 t/d	2022	Maintaining steady operation and proceeding with scheduled maintenance work at the wastewater treatment plant.
CO₂ emissions < 50 kg of CO ₂ /tonne of pulp	2022	Optimising the operation of the lime kiln. Minimising unplanned shutdowns. Attaining a good paper mill operation rate.
SO₂ + TRS emissions < 0.1 kg of sulphur/tonne of pulp	2022	Minimising unplanned shutdowns.
NOx emissions < 1.40 kg/tonne of pulp	2022	Minimising unplanned shutdowns.
Lime kiln particles < 0.05 kg/tonne of pulp	2022	A fourth field was installed in the electrostatic precipitator during the 2021 shutdown.



In December 2021, a new oxygen plant producing gaseous oxygen was started at the pulp mill. The oxygen plant will reduce the indirect environmental impact of the Kymi mill's operations, as the oxygen it produces will replace the liquid oxygen previously delivered to the mill by trucks.

Paper mill targets for 2022

OBJECTIVES AND INDICATORS	SCHEDULE	RESPONSIBILITIES BY DEPARTMENT
No abnormal emissions – Classes 3–5	2022	Continuous improvement of environmental awareness and risk identification.
Reducing water consumption at the paper mill <10 m ³ /tonne of paper	2022	Improving paper machine runnability.
Solids loss at the paper mill <10 kg/tonne of paper	2022	Improving paper machine runnability.
Number of environmental observations 60 observations / year	2022	Developing environmental communications, understanding environmental observations, improved recognition and reporting.



In November, the Integrated maintenance visits also included the replacement of the packaging machine on paper machine 8.



Revalidation statement

As accredited environmental verifier (FI-V-0001), Inspecta Sertifiointi Oy has examined the environmental management system and the information of UPM Kymi Environmental and Societal Responsibility 2021 report and of UPM Corporate Environmental and Societal Responsibility Statement 2021.

On the basis of this examination, the environmental verifier has herewith confirmed on 05/04/2021 that the environmental management system, this UPM Kymi Environmental and Societal Responsibility report and the information concerning UPM Kymi of UPM Corporate Environmental and Societal Responsibility Statement are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.



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