UPM BIOFORE
BEYOND FOSSILS

Updated UPM Corporate Environmental and Societal Responsibility Statement 2020

UPM PULP AND PAPER MILLS

ABOUT THIS REPORT

EMAS reporting at UPM pulp and paper mills
All of UPM's European pulp and paper mills (except Caledonian and Shotton in UK), as well as the Fray Bentos pulp mill in Uruguay and the Changshu paper mill in China are registered with the EU Eco-Management and Audit Scheme (EMAS), a voluntary environmental management system for companies and other organisations to improve, evaluate and report on their environmental performance on an annual basis.

UPM Corporate Environmental and Societal Responsibility Statement together with the Environmental and Societal Responsibility reports of each pulp and paper mill of UPM comprise the global EMAS statement of UPM Corporate. The statement has been done according to the European Commission regulation (EC) No 1221/2009.

Since 2018 societal responsibility indicators are part of all the mill supplements. UPM considers it important to report all the impacts generated at the mill locations, whether it is environmental or societal.

Information within the corporate part concerning the sites mentioned here as well as the information used for calculation of UPM Corporate level EMAS core indicators has been assessed and verified by the respective national EMAS auditor.

The present EMAS corporate part is the update of the UPM Corporate Environmental and Societal Responsibility Statement 2018. Both documents as well as the mill supplements are available at **upm.com**.

The next Corporate Environmental and Societal Responsibility Statement will be published in 2022.

Corporate responsibility reporting at UPM
At UPM, the environmental and corporate responsibility reporting is integrated with the company's annual reporting. The UPM Annual Report 2020 follows the framework and disclosures of the Global Reporting Initiative's (GRI) Sustainability Reporting Standard and meets the requirements of the Core option. For the Annual Report and GRI content index table, please order a printed copy of the report or visit **upm.com/responsibility**.

Scope of the report
This statement forms the corporate part of the environmental and societal responsibility statement, which has been verified in accordance with the EU's Eco-Management and Audit Scheme (EMAS). The following sites are included in the EMAS scope:
– UPM Augsburg
– UPM Changshu
– UPM Ettringen
– UPM Fray Bentos
– UPM Hürth
– UPM Jämsä River Mills
– UPM Kaukas
– UPM Kymi
– UPM Nordland Papier
– UPM Pietarsaari
– UPM Plattling
– UPM Rauma
– UPM Schongau
– UPM Steyrermühl
– UPM Tervasaari

Corporate registration number: FI-000058

Information about sites without EMAS registration
The UK sites UPM Caledonian and UPM Shotton as well as the non-European site UPM Blandin are not EMAS registered. The information concerning these sites has not been assessed or verified within EMAS context.

UPM

UPM delivers renewable and responsible solutions and innovates for a future beyond fossils across six business areas: UPM Biorefining, 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 18,000 people worldwide and our annual sales are approximately EUR 8.6 billion. Our shares are listed on Nasdaq Helsinki Ltd.

upm.com

UPM**BIOFORE-BEYOND** FOSSILS

Contents

All process water is treated in mechanical and biological effluent treatment plants before being released into watercourses.

Environmental targets show direction

UPM's Biofore strategy guides us in the achievement of our responsibility targets for 2030 and contributes positively to achieving the UN Sustainable Development Goals (SDGs).

In order to guide our responsibility activities, we have established a set of responsibility focus areas with targets and key performance indicators which are reviewed every year based on a materiality analysis. We have also identified the SDGs where we can have the greatest impact, either by minimising our negative impacts or by increasing our positive impacts. Those most relevant SDGs for UPM are aligned with the responsibility focus areas.

In terms of environmental responsibility, the focus areas are sustainable products, the climate, the use of forests and water, and the reduction of waste.

UPM's environmental focus areas, key performance indicators and current Group-level performance in relation to the relevant targets can be seen in the table below. The annual target-setting of UPM's pulp and paper mills is published in the mill supplements. The mill-level targets reflect UPM's long-term targets at a local level. In addition, the mill-level targets focus on the specific local development areas.

ENVIRONMENTAL	2030 TARGET	2030 FOLLOW-UP/2020 RESULTS
Product stewardship Taking care of the entire lifecycle	• Climate-positive product portfolio (continuous) • Development of new products and services with contribution to the UN Sustainable Development Goals (continuous) • All applicable products eligible for ecolabelling by 2030	• Scientific study on substitution and storage effect initiated • Assessment developed as part of sustainable product design concept, launch in 2021 • 82% (83%) of UPM sales was eligible for ecolabelling
Waste Promoting material efficiency and circular economy – reduce, reuse and recycle	• No process waste sent to landfills or to incineration without energy recovery by 2030	• 89% (89%) of UPM's total process waste was recovered or recycled. The total amount of waste to landfills increased by 3% compared to 2019.
Climate Creating climate solutions and working towards carbon neutrality	• Fossil CO_2 emissions from our own combustion and purchased electricity (Scope 1 and 2) reduced by 65% by 2030 [1)] • Maximise the business benefits of greenhouse gas claims (continuous) • Improve energy efficiency annually by 1% (continuous) • 70% share of renewable fuels (continuous) • Acidifying flue gases (NO_x/SO_2) reduced 20% by 2030 [1)]	• Fossil CO_2 emissions reduced by 20% compared to 2015 and 6% compared to 2019 • UPM sold greenhouse gas claims worth nearly 1.1 million CO_2 tonnes • Energy efficiency target was not achieved • Level of 72% (70%) reached in the use of renewable fuels • 19% reduction achieved since 2015 for the UPM average product
Water Using water responsibly	• Effluent load (COD) reduced by 40% by 2030 [2)] • Wastewater volume reduced by 30% by 2030 [2)] • 100% of nutrients used at effluent treatment from recycled sources by 2030 [2)]	• 33% reduction in effluent load achieved since 2008 for the UPM average product • 10% reduction in wastewater volume achieved since 2008 for the UPM average product • 28% of nutrients from recycled resources
Forests and biodiversity Ensuring sustainable land use and keeping forests full of life	• Climate-positive land use (continuous) • All fibre certified by 2030 [3)] • Positive impact on biodiversity (continuous): implementing biodiversity programme and developing monitoring system [4)]	• Five year annual average carbon sink of UPM's own and leased forests was approx. 6.1 m tonnes of CO_2 equivalents • 83% (82%) of all wood used by UPM is sourced from certified forests • Improvement measured in all quantitative biodiversity indicators

[1)] From 2015 level
[2)] From 2008 level, relevant for pulp and paper production
[3)] Forest management certification
[4)] Covers UPM own forests in Finland

Environmental development – Pulp

Our annual pulp production capacity of 3.7 million tonnes is produced in Finland and in Uruguay. In 2020, global market pulp demand was significantly impacted by the COVID-19 pandemic, both positively and negatively. Our pulp mills had a strong year of production.

The UPM Fray Bentos mill in Uruguay continued to break production records and also the environmental performance continued to be strong.

UPM is currently building a new world-class pulp mill near Paso de los Toros in central Uruguay. The USD 2.7 billion investment in a 2.1 million-tonne greenfield eucalyptus pulp is scheduled to begin production in the second half of 2022.

Fibre sources

In 2020, 80% of wood used in pulp production was from FSC® and/or PEFC™ certified forests with the remainder coming from controlled sources.

Energy

UPM's pulp mills are more than self-sufficient in energy usage and providing surplus heat for the integrated paper mill or to external parties and providing surplus electricity to the grid. The share of renewable energy remained on a good level at 93%.

Air

In 2020, there was slight increase in the specific emission of fossil carbon dioxide. Nitrogen oxide, sulphur dioxide, particulates and total reduced sulphur stayed in the same good level.
We tightened our 2030 targets for reducing our emissions of fossil CO_2 and acidifying flue gases (NO_X and SO_2) in January 2020. New target to reduce acidifying flue gases is 20% by 2030 from 2015 levels. Progress since 2015 has been good, being 12,5% so far. In line with UPM's commitment to reduce fossil CO_2 emissions by 65% until 2030 a road map to achieve this target has been drawn and its implementation is in progress.

Water

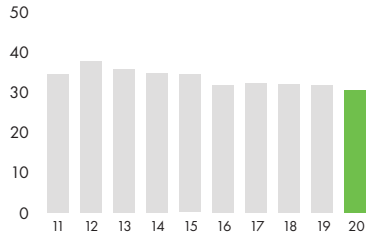
In 2020 there was an improvement achieved in specific waste water reduction from 32.0 m^3/t in 2019 to 30.7 m^3 per tonne of pulp in 2020. The waste water volume per tonne of pulp has decreased by 29% and COD per tonne of pulp has decreased by 50% from 2008 levels, which is the base year of our target. All mills have road maps for reducing water use and effluent load to achieve the 2030 targets. In UPM Pietarsaari an improved pulp line and better washing efficiency already resulted in a 9% reduction in specific waste water volumes per tonne of pulp.

Waste

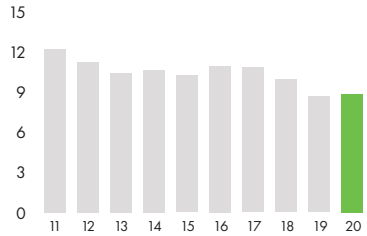
The amount of waste sent to landfills decreased in 2020, being 12.6 kg per tonne of pulp. Over the last ten years the amount of waste sent to landfills has decreased by 29%. Green liquor dregs are one of the most challenging side streams of UPM's pulp, and we are currently developing several innovative processes for utilising this material in Finland and Uruguay.

Read more at
upmpulp.com

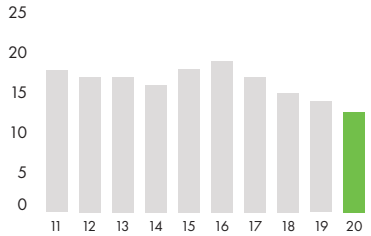
Process waste water volumes per tonne of chemical pulp
m^3/t



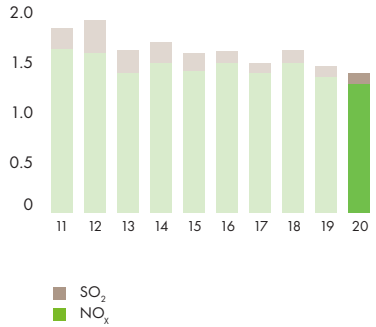
COD load per tonne of chemical pulp
kg/t



Landfill waste per tonne of chemical pulp
kg/t



Acidifying flue gases per tonne of chemical pulp
kg/t



Environmental development – Paper

In 2020, demand for label, release and packaging papers was strong, as the COVID-19 pandemic caused an increase in consumable goods and e-commerce. The conversion of paper machine 2 at the UPM Nordland mill in Germany, from fine paper to speciality grades, was finalised in 2019 and the rump-up was continued in 2020.

While the graphic paper market has been declining at a steady pace over the past years, in 2020, the COVID-19 pandemic and related lockdown measures caused an unexpected and severe temporary disruption to demand. UPM Chapelle newsprint mill in France was permanently closed in July. UPM Kaipola mill was permanently closed in January 2021. Plan for the sale of the UPM Shotton paper mill in Wales was also announced.

Fibre

In 2020, 26% of all fibre used in UPM's paper production was recycled fibre. In 2020, 85% of the fibres used in paper production originated from FSC® and/or PEFC™ certified sources, the remainder came from controlled sources.

Water

Average waste water volume and COD load from paper production has already been on a relatively low level for the last 10 years, and achieving further improvements per tonne of product is becoming more and more challenging. However, good improvement was reached regarding the use of fresh water, as water intake decreased from 25 m^3 per tonne of paper to 24 m^3/t. All mills have prepared a road map in order to reach their targets for reducing water use and effluent load by 2030. In UPM Changshu optimisation of operations continued and process waste water volumes decreased further by 14% per tonne of paper.

Air

In 2020, emissions of NO_x and SO_2 per tonne of paper slightly decreased. Emissions of fossil CO_2 per tonne of paper slightly increased in 2020. However, we further tightened our 2030 targets for reducing our emissions of fossil CO_2 and acidifying flue gases (NO_x and SO_2) in January 2020. At UPM Nordland paper mill in Germany, we are building a natural gas-based combined heat and power (CHP) plant. At UPM Hürth paper mill in Germany, we have partnered with E.ON to replace the fossil-fuel-based steam supply with a biomass-fired boiler. At the UPM Changshu paper mill in China, we are modifying the natural gas boiler to further reduce NO_x emissions.

Energy

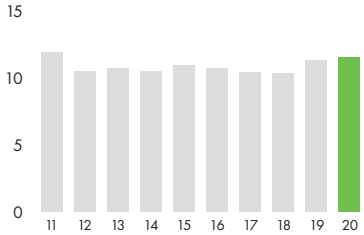
The electricity consumption per tonne of paper remained stable compared to 2019. In 2020, 38% of fuels used for on-site energy generation were based on biomass. For purchased electricity, the renewable share was 11% in 2020.

Waste

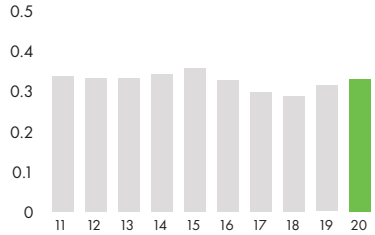
In 2020 the amount of landfilled waste per tonne of paper increased by 26% in comparison to 2019. That was caused by weakened reuse possibilities due to Covid-19. The biggest waste fraction for UPM's paper mills is ash, which results from energy generation at the mills. Overall for UPM's paper mills in 2020, over 91% of waste was recycled or recovered as energy.

Read more at
upmpaper.com

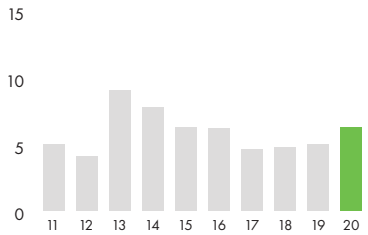
Process waste water volumes per tonne of paper
m^3/t



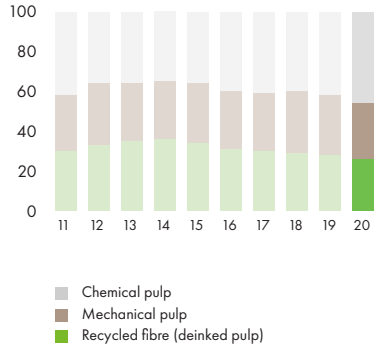
Fossil carbon dioxide emissions per tonne of paper
CO_2 t/t



Landfill waste (incl. incineration without energy recovery) per tonne of paper
kg/t



Fibre raw materials used in UPM's paper
%



Environmental development – Common topics for pulp and paper

Supplier assessments and requirements

The UPM Supplier and Third Party Code defines the minimum requirements concerning social, environmental and economic responsibility that apply to all our suppliers and third party intermediaries (e.g. agents, joint venture partners and distributors acting on behalf of UPM). It is additionally expected that our suppliers advance the same requirements in their own supply chains.

In addition to conducting risk assessments as part of our supplier selection, we carry out continuous risk assessments covering our entire existing supplier base. Risk assessments are an integral part of our supplier management activities. We utilize them to reveal possible shortcomings in supplier performance and compliance.

Clean Run

Clean Run is a global, holistic concept to manage the daily environmental performance all over UPM. It brings additional value to the ISO 14001 environmental management system which is a basis for all our environmental operations globally. Clean Run is also a tool to manage environmental risks and to continuously develop the controls. Sharing best practises between the sites is an essential part of the Clean Run concept.

Clean Run is continuous improvement of environmental performance towards zero deviation target. The concept offers a framework for all sites to plan the actions to improve their environmental performance.

Clean Run categorises environmental incidents from 0–5 based on the severity of environmental impact: Environmental walks and discussions, observations (Category 0), near misses (Category 1–2) and deviations (Categories 3–5).

In 2020 we made some adjustments in the Clean Run concept. The Clean Run audits were replaced by a "Clean Run and 2030 targets review" which will focus on compliance, risk management and 2030 targets.

In 2020, no serious environmental incidents occurred at UPM's pulp and paper mills. However, 17 (2019: 19; 2018: 26) minor temporary deviations from permit limits did occur. Those were immediately reported to authorities and corrective measures were taken to prevent similar situations from occurring again.

Best Available Techniques (BAT)

Industry-specific reference documents are developed by the European IPPC Bureau. The conclusions for the pulp and paper industry were published by the EU Commission in September 2014. The BAT conclusions are now the reference for setting permit conditions for installations covered by the EU's Industrial Emissions Directive. The implementation period is four years. UPM is benchmarking its production lines against the BAT values.

Environmental core indicators 2020

UPM PAPER MILLS

Scope: all UPM paper mills

	2018		2019		2020	
Production	9,060,000 t		8,230,000 t		7,020 000 t	
	Total amount per year	Indicator per tonne of paper	Total amount per year	Indicator per tonne of paper	Total amount per year	Indicator per tonne of paper
Energy efficiency						
Total direct energy consumption						
Electricity consumption	11,900 GWh	1,300 kWh/t	10,900 GWh	1,300 kWh/t	9,200 GWh	1,300 kWh/t
Steam consumption	10,800 GWh	1,200 kWh/t	10,000 GWh	1,200 kWh/t	8,500 GWh	1,200 kWh/t
Total renewable energy consumption [1]						
Electricity consumption			2,700 GWh	330 kWh/t	1,600 GWh	220 kWh/t
Steam consumption			4,300 GWh	520 kWh/t	3,400 GWh	480 kWh/t
Material efficiency						
Chemical pulp	2,490,000 t	280 kg/t	2,380,000 t	290 kg/t	2,260,000 t	320 kg/t
Mechanical pulp	1,950,000 t	220 kg/t	1,730,000 t	210 kg/t	1,400,000 t	200 kg/t
Recycled fibre pulp	1,850,000 t	200 kg/t	1,600,000 t	200 kg/t	1,270,000 t	180 kg/t
Minerals	2,150,000 t	240 kg/t	2,030,000 t	250 kg/t	1,740,000 t	250 kg/t
Binder	257, 000 t	28 kg/t	230,000 t	28 kg/t	200,000 t	30 kg/t
Water						
Water intake	222,000,000 m^3	25 m^3/t	202,000,000 m^3	25 m^3/t	165,000,000 m^3	24 m^3/t
Process waste water	96,600,000 m^3	11 m^3/t	94,600,000 m^3	12 m^3/t	81,300,000 m^3	12 m^3/t
COD [2]	27,400 t	3 kg/t	27,900 t	3 kg/t	24,000 t	3 kg/t
TSS [2]	2,700 t	0.3 kg/t	2,400 t	0.3 kg/t	2,000 t	0.3 kg/t
Side-products [3]	183,000 t	20 kg/t	177,000 t	22 kg/t	157,000 t	22 kg/t
Ash	117,000 t	13 kg/t	125,000 t	15 kg/t	106,000 t	15 kg/t
Wood residues	62,300 t	7 kg/t	47,900 t	6 kg/t	45,600 t	6 kg/t
Others	3,900 t	0 kg/t	4,700 t	1 kg/t	5,500 t	1 kg/t
Non-hazardous waste [3]						
Recycling, energy recovery, composting	500,000 t	55 kg/t	468,000 t	57 kg/t	453,000 t	65 kg/t
Ash [4]	241,000 t	27 kg/t	207,000 t	25 kg/t	176,000 t	25 kg/t
Sludges	200,000 t	22 kg/t	193,000 t	23 kg/t	207,000 t	29 kg/t
Others	60,300 t	7 kg/t	67,500 t	8 kg/t	70,500 t	10 kg/t
Intermediate storage	8,800 t	1 kg/t	1,900 t	0.2 kg/t	0 t	0 kg/t
Ash	8,700 t	1 kg/t	1,900 t	0.2 kg/t	0 t	0 kg/t
Others	20 t	0.002 kg/t	0 t	0 kg/t	0 t	0 kg/t
Landfill, incineration without energy recovery	43,600 t	5 kg/t	40,800 t	5 kg/t	44,100 t	6 kg/t
Ash [4]	17,000 t	2 kg/t	16,200 t	2 kg/t	19,400 t	3 kg/t
Sludges and pulp rejects	22,700 t	3 kg/t	9,800 t	1 kg/t	9,200 t	1 kg/t
Others	4,000 t	0 kg/t	14,800 t	2 kg/t	15,600 t	2 kg/t
Recycling rate	91%		92%		91%	
Hazardous waste [5]	2,800 t	0.3 kg/t	3,000 t	0.4 kg/t	4,100 t	0.6 kg/t
Emissions to air						
CO_2 fossil	2,630,000 t	300 kg/t	2,600,000 t	320 kg/t	2,332,000 t	330 kg/t
NO_x, as NO_2	3,800 t	0.4 kg/t	3,100 t	0.4 kg/t	2,300 t	0.3 kg/t
SO_2	740 t	0.1 kg/t	640 t	0.1 kg/t	370 t	0.1 kg/t
Particulates	69 t	0.01 kg/t	34 t	0.004 kg/t	28 t	0.004 kg/t

For indicators for biodiversity and societal issues, please see the mill supplements where e.g. information about the mill area is included. All mill supplements are available at www.upm.com/responsibility.

[1] Reporting of energy indicators changed in 2019.
[2] Includes the load before effluent treatment in AUG, HÜR and CAL (waste water is treated externally).
[3] Reported in dry tonnes.
[4] Including ash, which is considered as hazardous waste in the UK.
[5] Total tonnes.

Environmental core indicators 2020

UPM PAPER MILLS

Scope: EMAS-registered UPM paper mills

	2018		2019		2020	
Production	8,840,000 t		7,850,000 t		6,490,000 t	
	Total amount per year	Indicator per tonne of paper	Total amount per year	Indicator per tonne of paper	Total amount per year	Indicator per tonne of paper
Energy efficiency						
Total direct energy consumption						
Electricity consumption	11,400 GWh	1,300 kWh/t	10,100 GWh	1,300 kWh/t	8,300 GWh	1,300 kWh/t
Steam consumption	10,300 GWh	1,200 kWh/t	9,300 GWh	1,200 kWh/t	7,600 GWh	1,200 kWh/t
Total renewable energy consumption [1]						
Electricity consumption			2,400 GWh	310 kWh/t	1,200 GWh	180 kWh/t
Steam consumption			3,800 GWh	490 kWh/t	2,700 GWh	420 kWh/t
Material efficiency						
Chemical pulp	2,450,000 t	280 kg/t	2,343,000 t	300 kg/t	2,200,000 t	340 kg/t
Mechanical pulp	1,840,000 t	210 kg/t	1,629,000 t	210 kg/t	1,250,000 t	200 kg/t
Recycled fibre pulp	1,850,000 t	210 kg/t	1,428,000 t	180 kg/t	1,100,000 t	170 kg/t
Minerals	2,090,000 t	240 kg/t	1,970,000 t	250 kg/t	1,630,000 t	250 kg/t
Binder	248,000 t	28 kg/t	221,000 t	28 kg/t	193,000 t	30 kg/t
Water						
Water intake	199,000,000 m^3	23 m^3/t	180,000,000 m^3	23 m^3/t	153,000,000 m^3	24 m^3/t
Process waste water	90,700,000 m^3	10 m^3/t	85,700,000 m^3	11 m^3/t	70,900,000 m^3	11 m^3/t
COD [2]	26,600 t	3 kg/t	26,600 t	3 kg/t	20,000 t	3 kg/t
TSS [2]	2,700 t	0.3 kg/t	2,300 t	0.3 kg/t	1,800 t	0.3 kg/t
Side-products [3]	183,000 t	21 kg/t	177,000 t	23 kg/t	157,000 t	24 kg/t
Ash	117,000 t	13 kg/t	125,000 t	16 kg/t	106,000 t	16 kg/t
Wood residues	62,300 t	7 kg/t	47,900 t	6 kg/t	45,600 t	7 kg/t
Others	3,900 t	0 kg/t	4,700 t	1 kg/t	5,500 t	1 kg/t
Non-hazardous waste [3]	536,000 t	61 kg/t				
Recycling, energy recovery, composting	498,000 t	56 kg/t	407,000 t	52 kg/t	396,000 t	61 kg/t
Ash [4]	241,000 t	27 kg/t	171,000 t	22 kg/t	153,000 t	24 kg/t
Sludges	200,000 t	23 kg/t	191,000 t	24 kg/t	198,000 t	30 kg/t
Others	57,600 t	7 kg/t	45,300 t	6 kg/t	45,100 t	7 kg/t
Intermediate storage	8,800 t	1 kg/t	1,900 t	0.2 kg/t	0 t	0 kg/t
Ash	8,700 t	1 kg/t	1,900 t	0.2 kg/t	0 t	0 kg/t
Others	20 t	0.002 kg/t	0 t	0 kg/t	0 t	0 kg/t
Landfill, incineration without energy recovery	29,500 t	3 kg/t	30,600 t	4 kg/t	2,600 t	0.4 kg/t
Ash [4]	16,400 t	2 kg/t	16,000 t	2 kg/t	0 t	0 kg/t
Sludges and pulp rejects	9,800 t	1 kg/t	0 t	0 kg/t	0 t	0 kg/t
Others	3,400 t	0.4 kg/t	14,500 t	2 kg/t	2,600 t	0.4 kg/t
Recycling rate	93%		93%		99%	
Hazardous waste [5]	2,700 t	0.3 kg/t	2,800 t	0.4 kg/t	2,900 t	0.4 kg/t
Emissions to air						
CO_2 fossil	2,525,000 t	300 kg/t	2,470,000 t	320 kg/t	2,215,000 t	340 kg/t
NO_x, as NO_2	3,400 t	0.4 kg/t	2,800 t	0.4 kg/t	1,700 t	0.3 kg/t
SO_2	670 t	0.1 kg/t	600 t	0.1 kg/t	320 t	0.1 kg/t
Particulates	58 t	0.01 kg/t	34 t	0.004 kg/t	25 t	0.004 kg/t

For indicators for biodiversity and societal issues, please see the mill supplements where e.g. information about the mill area is included. All mill supplements are available at www.upm.com/responsibility.

[1] Reporting of energy indicators changed in 2019.
[2] Includes the load before effluent treatment in AUG, HÜR and CAL (waste water is treated externally).
[3] Reported in dry tonnes.
[4] Including ash, which is considered as hazardous waste in the UK.
[5] Total tonnes.

Environmental core indicators 2020

UPM CHEMICAL PULP MILLS

Scope: all UPM pulp mills

	2018		2019		2020	
Production	3,510,000 t		3,700,000 t		3,640,000 t	
	Total amount per year	Indicator per tonne of chemical pulp	Total amount per year	Indicator per tonne of chemical pulp	Total amount per year	Indicator per tonne of chemical pulp
Energy efficiency						
Total direct energy consumption						
Electricity consumption	2,300 GWh	650 kWh/t	2,200 GWh	600 kWh/t	2,100 GWh	570 kWh/t
Steam consumption	10,700 GWh	3,100 kWh/t	11,700 GWh	3,100 kWh/t	13,700 GWh	3,800 kWh/t
Total renewable energy consumption [1]						
Electricity consumption			2,000 GWh	550 kWh/t	1,900 GWh	510 kWh/t
Steam consumption			10,800 GWh	2,900 kWh/t	12,800 GWh	3,500 kWh/t
Material efficiency						
Wood	16,000,000 m^3	5 m^3/t	16,400,000 m^3	4 m^3/t	15,900,000 m^3	4 m^3/t
Process chemicals [2]	409,000 t	120 kg/t	457,000 t	120 kg/t	442,000 t	120 kg/t
Water						
Water intake	220,000,000 m^3	63 m^3/t	224,000,000 m^3	61 m^3/t	214,000,000 m^3	59 m^3/t
Process waste water	113,000,000 m^3	32 m^3/t	119,000,000 m^3	32 m^3/t	112,000,000 m^3	31 m^3/t
COD	35,100 t	10 kg/t	32,200 t	9 kg/t	32,400 t	9 kg/t
TSS	1,300 t	0.4 kg/t	1,100 t	0.3 kg/t	1,200 t	0.3 kg/t
AOX	250 t	0.1 kg/t	290 t	0.1 kg/t	270 t	0.1 kg/t
Residues [3]					71,000 t	19.0 kg/t
Tall oil					69,000 t	19.0 kg/t
Turpentine					1,500 t	0.4 kg/t
Side-products [4]	3,100 t	1 kg/t	2,800 t	1 kg/t	1,200 t	0.3 kg/t
Green liquor dregs	2,800 t	1 kg/t	1,400 t	0.4 kg/t	120 t	0.03 kg/t
Lime	310 t	0.1 kg/t	1,400 t	0.4 kg/t	1,100 t	0.3 kg/t
Non-hazardous waste [4]	150,000 t	43 kg/t	176,000 t	48 kg/t	146,000 t	40 kg/t
Recycling, energy recovery, composting	94,900 t	27 kg/t	108,000 t	29 kg/t	98,400 t	27 kg/t
Sludges	15,400 t	4 kg/t	15,800 t	4 kg/t	17,500 t	5 kg/t
Bark and wood waste	65,800 t	19 kg/t	68,600 t	19 kg/t	66,100 t	18 kg/t
Others	13,700 t	4 kg/t	23,200 t	6 kg/t	14,800 t	4 kg/t
Intermediate storage	1,900 t	1 kg/t	17,200 t	5 kg/t	1,900 t	1 kg/t
Bark and wood waste	1,300 t	0.4 kg/t	350 t	0.1 kg/t	540 t	0.1 kg/t
Lime	260 t	0.1 kg/t	200 t	0.1 kg/t	720 t	0.2 kg/t
Construction waste	300 t	0.1 kg/t	0 t	0 kg/t	0 t	0 kg/t
Others	110 t	0.03 kg/t	16,600 t [5]	4 kg/t	670 t	0.2 kg/t
Landfill	52,800 t	15 kg/t	51,300 t	14 kg/t	46,000 t	13 kg/t
Green liquor dregs	36,600 t	10 kg/t	38,700 t	10 kg/t	38,500 t	11 kg/t
Sludges	7,000 t	2 kg/t	5,700 t	2 kg/t	4,900 t	1 kg/t
Lime	6,300 t	2 kg/t	0 t	0 kg/t	0 t	0 kg/t
Others	2,900 t	1 kg/t	6,900 t	2 kg/t	2,600 t	1 kg/t
Recycling rate	63%		61%		67%	
Hazardous waste [6]	770 t	0.2 kg/t	430 t	0.1 kg/t	540 t	0.1 kg/t
Emissions						
CO_2 fossil	323,000 t	92 kg/t	270,000 t	73 kg/t	277,000 t	76 kg/t
NO_x, as NO_2	5,200 t	2 kg/t	5,000 t	1 kg/t	4,700 t	1 kg/t
SO_2	240 t	0.1 kg/t	160 t	0.1 kg/t	390 t	0.10 kg/t
Particulates	740 t	0.2 kg/t	560 t	0.2 kg/t	650 t	0.2 kg/t
TRS	86 t	0.02 kg/t	120 t	0.03 kg/t	92 t	0.03 kg/t

[1] Reporting of energy indicators changed in 2019.
[2] Main chemicals used: oxygen gas, sodium hydroxide, sodium chlorite or chlorate, sulphuric acid, limestone, hydrogen peroxide.
[3] Sold volumes.
[4] Reported in dry tonnes.
[5] 15,200 t of sludge moved from sedimentation pool to intermediate storage field.
[6] Total tonnes.

For indicators for biodiversity and societal issues, please see the mill supplements where e.g. information about the mill area is included. All mill supplements are available at www.upm.com/responsibility.

UPM plays a significant role in contributing to societal development

Transparent reporting on all the aspects of responsibility, including environmental, social and economic is very important in UPM. In 2017 we expanded our EMAS reports to cover local societal impacts in addition to the traditionally reported environmental performance. With "societal" we refer both to the socio and economic impacts.

Each mill presents its most important societal impacts in its mill supplement. Many issues are similar to all the mills. The mill supplements provide e.g. information on our contribution to employment, health and safety of employees, tax income and purchasing power, responsible sourcing as well as co-operation with the communities.

Employment

EMAS mills employed directly around 7,900 people in 2020. In addition, significant indirect employment impacts are generated by use of raw materials and services. We have been able to calculate the indirect employment effects for Finnish EMAS mills using a mathematical model developed by the Research Institute of the Finnish Economy (Etla). The model is based on input-output statistics from Statistics Finland. Those statistics show how companies from different industries buy goods and services from each other. The six EMAS production units in Finland generated around 3,660 direct jobs and around 3,600 indirect jobs in the region in 2020.

Health and safety

Our goal in UPM is to be the industry leader in health and safety. 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 2020, in the entire UPM, lost-time accident frequency (LTAF, the number of lost-time work accidents per one million hours of work) was 2.8 (2.9 in 2019). The total recordable injury frequency (TRIF) decreased, reaching 5.3 (7.1). The TRIF includes LTA cases as well as cases of modified duties and accidents requiring medical treatment. The frequency of accidents involving UPM's contractors was 3.5 (LTAF) and 6.2 (TRIF) in 2020. The mill specific safety figures can be found in the mill supplements.

Our safety work is based on long-term planning, effective safety communications and leadership. Safety is integrated in all our new and ongoing projects, and proactive safety is well-integrated in project plans and site practices. For us, good quality means thorough investigation and effective risk management, and this has played an important role in making our operations safe. We have utilised cross-learning to improve safety in our units: Sharing safety observations and best practice on safety have allowed us to learn from each other and improve safety in our units.

UPM's economic impact spreads not just on the corporate or country level but also in the local communities.

Purchasing power

Effects on the consumption generated by the Finnish mills were also calculated by the earlier mentioned Etla's model. Consumption impacts are generated by employees working at the mill and employees working at the value chain of the mill, typically working in other industries. That presents direct and indirect employees' private consumption of commodities through net income. Consumption impact generated by the six EMAS sites in Finland in 2020 was around EUR 170 million locally and EUR 320 million nationally.

Tax impact

Tax income generated by our business operations is an essential part of our societal impact as the tax income strengthens the vitality of the local community and supports public services. UPM pays corporate income taxes in the countries where added value is created and profit is generated. Based on UPM's corporate and operational structure, UPM reports and pays its corporate income taxes mainly in countries where production activity takes place and where innovations are developed. In 2020, UPM's corporate income taxes paid and property taxes were approximately EUR 178 million in total (EUR 211 million in 2019).

In addition to the taxes on income, UPM's various production inputs and outputs are also subject to taxation, which is either paid by UPM (e.g. energy taxes and real estate/property taxes) or collected by UPM (e.g. VAT, payroll taxes and social security contributions). Taxes are paid in accordance with the local tax legislation and regulations of the country in question.

The mills' operations benefit the local community in many ways. Municipal share of corporate income taxes and real estate taxes paid by UPM support the economy of the local community. In addition, the income taxes on salaries and social security contributions paid by UPM employees have also a significant local impact. Local tax impact figures are presented in the EMAS mill supplement for China, Austria, Uruguay and Finland. Those nine EMAS mills in their respective municipals/countries generated in total approximately EUR 165 million local tax impact (when including e.g. the above mentioned local taxes). EMAS mills in Germany have not published their local tax footprint in 2020 mill supplements, but in Germany, the 6 EMAS mills generated in total around EUR 115 million local tax impact including income taxes on salaries and social security contributions, municipal trade taxes and real estate taxes.

Co-operation with communities

We are committed to developing the vitality of the communities close to our operations through active co-operation and open dialogue with local stakeholders as well as, for example, through sponsorships and employee volunteering under the umbrella of our Biofore Share and Care programme. The focus areas of UPM's Biofore Share and Care programme are: Reading & learning, Engaging with communities and Beyond fossils initiatives.

The mills' engagement with the local communities are for example cases in which support has been given to the local educational institutions and associations or community consultation via regular roundtables with local stakeholders. Details about the mills' engagement activities can be found from the mill supplements.

Responsible sourcing

UPM is committed to responsible sourcing practices throughout the entire supply chain. We work closely with our suppliers to ensure that our suppliers understand and meet all of the company's requirements. UPM requires its suppliers to comply with the UPM Supplier and Third Party Code that defines suppliers' minimum requirements in terms of responsibility with regard to matters such as environmental impact, human rights, labour practices, health and safety, product safety, corruption and bribery.

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 2020, 96% of UPM's raw material spend and 84% of all spend was covered by UPM Supplier and Third Party Code.

Glossary

Activated sludge process
A three-stage biological effluent treatment method.

AOX, Adsorbable organic halogen compounds
AOX represents the total amount of chlorine bound to organic compounds in waste water. Such compounds occur naturally, but are also formed in conjunction with the bleaching of chemical pulp. AOX should be limited to a level where it has minimum environmental impacts.

BAT, Best available techniques
The best available technology that allows for solutions that are technically, economically and environmentally the most efficient and advanced.

BOD, Biological oxygen demand
COD, Chemical oxygen demand
The effluent, or waste water of pulp and paper mills includes organic substances which consume oxygen during biodegradation. Low oxygen content in fresh and sea water can have an adverse effect on plant and animal life. BOD refers to the amount of oxygen consumed in the biological decomposition of organic compounds. COD refers to the amount of oxygen consumed in the complete chemical oxidation of organic compounds.

CO_2, Carbon dioxide
Combustion product of carbon. Fossil carbon dioxide emissions arise from fossil fuels like coal, oil and petrol.

CHP, Combined heat and power technology
Combined heat and power (CHP) production (or cogeneration) is when both electricity and heat are produced at a thermal power plant. The heat is used, for example, in industry or district heating, or as process steam.

Chain of Custody (COC)
An unbroken trail of documentation to guarantee the identity and integrity of the data used as, for example, in demonstrating the origin of wood.

Chemical pulp
Generic name for wood-based fibres separated from each other by "cooking" wood chips or plants in hot alkaline or acidic solutions of various chemicals.

Consumption impact
Consumption through net income generated by employees working at the plant and employees working at the value chain of the plant (typically working in other industries). Calculated using a model build by The Research Institute of the Finnish Economy (Etla).

Deinking
The process whereby the ink and impurities are removed from recovered paper.
Deinked pulp: see recycled fibre pulp.

EMAS, Eco-Management and Audit Scheme
Voluntary environmental management system for companies and other organisations to improve, evaluate and report on their environmental performance on an annual basis. The environmental review is approved by a third-party accredited EMAS verifier.

Forest certification
An independent review process that determines whether a forest is managed in a responsible manner. There are two global forest certification schemes: FSC® (Forest Stewardship Council®) and PEFC™ (Programme for the Endorsement of Forest Certification).

Graphic recovered paper
Mainly white paper collected from households, e.g. newspapers, magazines, catalogues and copy paper.

ISO 9001
Quality management system standard published by the International Organisation for Standardisation (ISO).
This is a voluntary, international and third-party certified system.

ISO 14001
Environmental management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

ISO 22001
Food Safety management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

ISO 45001
Occupational Health and Safety management system standard published by the International Organisation for Standardisations (ISO). This is a voluntary, international and third-party certified system.

ISO 50001
Energy management system standard published by the International Organisation for Standardisation (ISO). This is a voluntary, international and third-party certified system.

Lost-time accident frequency (LTAF)
Lost-time accidents per million hours worked. Calculation is as follows: (The number of accidents at work resulting in absence or disability one or more days)/(Actual hours worked)*1,000,000. Lost time accident type excludes modified duties, medical treatments and first aid cases, but includes fatal accidents. UPM reports separately for workforce (including UPM employees and supervised workers) and contractors.

Mechanical pulp
Generic name for wood-based fibres separated from each other mechanically.

N, Nitrogen
P, Phosphorus
N and P are chemical elements essential for plant and animal life. Both substances occur naturally in wood and are often added as a nutrient in biological treatment plants. Excessive levels released into watercourses can cause nutrient enrichment, i.e., eutrophication, which accelerates the growth of algae and other vegetation.

NO_x, Nitrogen oxides
These gases are produced during combustion. In moist air, nitrogen oxides can form nitric acid which, in turn, is precipitated as "acid rain". This nitrogen-containing rain also has a fertilising effect, i.e. eutrophication.

Recycled fibre pulp
Fibres and fillers retrieved from recovered paper. If the recovered paper is deinked, the processed pulp is also called deinked pulp.

SO_2, Sulphur dioxide
This gas is generated by burning sulphur-containing fuels. On contact with moist air, SO_2 forms sulphuric acid, which contributes to "acid rain" and acidification.

Supplier Qualification
UPM suppliers are qualified against the UPM Supplier and Third Party Code that defines suppliers' minimum compliance requirements in terms of responsibility with regard to matters such as environmental impact, human rights, labour practices, health and safety, and product safety. Supplier spend in EMAS mill supplements covers all UPM business-to-business spend excluding wood and wood-based biomass sourcing. Wood sourcing figures are not currently available for each mills, but only for regions.

Sustainable forest management
In the longterm, a sustainably managed forest means that it is not harvested more than it grows. Sustainably managed forests maintain their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil (now and in the future), relevant ecological, economic and social functions, at local, national and global levels without damaging other ecosystems.

Total Recordable Injury Frequency (TRIF)
Recordable injuries per million hours worked. Calculation is as follows: ('LTA at work excluding contractors (number of LTAs which are one or more days)'+'Modified duty'+'Medical treatment')/'Actual hours worked (UPM)'*1,000,000. Total Recordable Injury type excludes first aid cases. UPM reports separately for workforce (including UPM employees and supervised workers) and contractors.

TRS, Total reduced sulphur
Reduced sulphur compounds that usually cause odour problems and that are released, for example, during chemical pulp production.

TSS
TSS are solid materials, including organic and inorganic, that are suspended in the water.

Revalidation statement

As accredited or licensed environmental verifiers,

- Inspecta Sertifiointi Oy (FI-V-0001) for UPM Changshu, UPM Fray Bentos, UPM Jämsä River Mills, UPM Kaukas, UPM Kymi, UPM Pietarsaari, UPM Rauma and UPM Tervasaari
- Quality Austria Trainings, Zertifizierungs und Begutachtungs GmbH (AT-V-0004) for UPM Steyrermühl
- TÜV NORD CERT Umweltgutachter GmbH (DE-V-0263) for UPM Augsburg, UPM Ettringen, UPM Hürth, UPM Nordland, UPM Plattling and UPM Schongau

have examined the environmental management systems of each mill mentioned above, the information contained in the Environmental and Societal Responsibility 2020 statements, the information in the corporate part, as far as it concerns the respective mills, as well as the information used for the calculation of UPM Corporate level EMAS core indicators.

Following these examinations and the examination of the Updated UPM Corporate Environmental and Societal Responsibility Statement 2020 on 30/06/2021 Inspecta Sertifiointi Oy as the coordinating environmental verifier of this common EMAS validation herewith confirms that the environmental management systems and the Updated UPM Corporate Environmental and Societal Responsibility Statement 2020 together with the Environmental and Societal Responsibility 2020 statements comply with the requirements of the EU's EMAS regulation (EC) No. 1221/2009.

upm.com

UPM
Alvar Aallon katu 1
PO Box 380
FI-00101 Helsinki
FINLAND
Tel. +358 2041 5111
Fax +358 2041 5110

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