UPM BIOFORE
BEYOND FOSSILS

UPM Schongau

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2022



UPM Schongau

UPM Schongau is located in a meander of the river Lech in the town of Schongau in Southern Germany.

The site was established back in 1887. It was here, back in 1962, that one of the world's first flotation deinking system was put into operation. This breakthrough enabled recovered graphic paper to be recycled into new printing paper.

Today, the UPM Schongau site operates three paper machines to manufacture rolls of printing paper for newspapers, newspaper supplements, advertising papers, brochures, magazines, paperbacks and catalogues. In terms of volume, recovered paper is the most important raw material at the site. Other raw materials used include waste wood from sawmills and pigments that are added as fillers. Some of these pigments come from SMI, another company based at the site.

UPM Schongau has two power plants that use the cogeneration principle to produce electricity and steam. In paper production, electricity is needed to drive the machines, while steam is needed to dry the wet paper web.

The waste water generated from the production process is treated in the on-site effluent treatment plant.

Production capacity	Up to 740,000 tonnes/year
Personnel	567 (total employees as at 31 December 2022)
Products	Standard and improved newsprint and calendered uncoated paper: UPM Brite UPM News UPM ReCat UPM Eco UPM EcoPrime UPM MaxS UPM EcoBasic UPM Book
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System ISO 50001 – Energy Management System DIN ISO 45001 – Occupational Health and Safety 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 in the UPM Certificate Finder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel and Blue Angel (RAL-UZ 14a or 72) for UPM News, UPM Eco H/G, UPM ReCat and UPM EcoBasic

UPM Schongau Environmental and Societal Responsibility 2022 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 2022. 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 2024.

UPM delivers renewable and responsible solutions and innovates 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 17,200 people worldwide and our annual sales are approximately EUR 11.7 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

FSC www.fsc.org FSC® C014719
The mark of responsible forestry

For more information about FSC certification visit www.fsc.org

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

For more information about PEFC certification visit www.pefc.org

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

BLUE ANGEL THE GERMAN ECOLABEL
www.blauer-engel.de/uz72

Review of the year 2022

Environmental protection has been an important topic at the Schongau site for many years. Continuous reduction of energy and water needs, high raw material yield to reduce waste and the use of environmentally responsible chemical additives in the production process lie at the heart of our continuous improvement process, which, since the mill was certified to international standards, has been controlled using environment, quality, energy and occupational safety management systems.

As a company of the Finnish UPM Group, we acknowledge our responsibility towards the environment and are committed to minimising the impact of our production operations on the environment and our employees.

Production and environment
As one of the first paper recyclers in Germany, we have been contributing to a circular economy for more than 60 years.

We support sustainable forestry when purchasing wood chips for fresh fibre production by working according to the PEFC and FSC Standards.

Environmental performance
We are reporting on our environmental performance in a Group-wide database. Here, deviations are recorded according to predefined categories, from 1 (not significant) to 5 (serious environmental damage).

We also record our specific emissions using key water, air and waste figures and can report very good results when compared across UPM and even Europe.

In accordance with the specifications of our integrated management system for quality, environment, energy and occupational safety, we evaluate environmental impact through internal and external audits.

Paper production requires considerable amounts of energy. In previous years, we therefore made substantial efforts to increase our energy efficiency on the site.

To pursue continuous improvement in energy efficiency and environmental responsibility, we also set targets and measures for 2022.

Our airborne emissions have been well below the limit values for many years. Over the last decade, we have managed to reduce the specific nitrogen oxide load by 28% by replacing the steam power plant and implementing other technical measures on the energy generation plants, such as flue gas recirculation.

The absolute quantity of waste and by-products fell, primarily by reducing the operating time of the solid material boiler (HKW 2).

We were also able to recycle all the boiler ash from the combined heat and power plant for use as a product for soil stabilisation, as an aggregate for various building materials, and for the use of caustic soda in our own production facilities.

We also worked with a filler supplier to develop another way to reuse the ash – as a substitute for some of the burnt lime needed for producing calcium carbonate.

Wolfgang Ohnesorg
General Manager

Ute Soller,
Manager OHS/Environment/
Management Systems

Martin Heinrich,
Management System Representative

- In the waste water system, we launched the "Advanced Process Control" project, which uses artificial intelligence to optimise the way the system operates. The system is already in operation and will now be further developed by comparing the calculated target values against the actual data.

  In 2022, there were four complaints due to noise and light, which were addressed immediately. We also received feedback from our neighbours about unpleasant odours. This situation has been improved considerably thanks to many small measures and good communications with our neighbours.

UPM Schongau

Contribution to UN Sustainable Development Goals in 2022

Energy

District heating in Schongau was increased by

12%

between 2013 and 2022

Certified fibre

In 2022, the proportion of wood chips from sustainably managed forests (PEFC + FSC) was

89%

74%

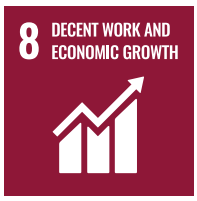
Proportion of recycled fibres in paper we produced in 2022

Water

Specific nitrogen load in treated waste water (kg nitrogen per tonne of paper) reduced by

52%

in the period 2013–2022



Employment

Currently

28

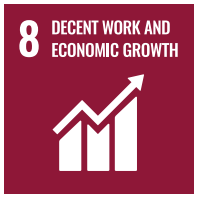
trainees at the Schongau mill
10 paper technologists
1 paper technologist on a dual work-study programme
8 operating technology electricians
9 industrial mechanics

Air

Specific nitrogen oxide emissions from the power plants reduced by

28%

in the period 2013–2022



Occupational safety

Number of accidents with lost time has been reduced by

33%

(6 in 2013; 4 in 2022)

Air

Waste

Airborne emissions were kept at a consistently low level in 2022. We were able to replace natural gas with thermally recycled internal production waste and waste wood. The high proportion of primarily biomass fuels helps to reduce our fossil CO_2 emissions.

The specific NO_X emissions have not changed much over the last few years. The minor fluctuations are the result of using gas and steam turbines in a way that optimises heat and power.

With the fluidised bed boiler, the average concentrations of nitrogen oxides (NO_X) and particulate matter are at a low level, well below the limit values.

Emissions from energy generation plants exceeded the half-hourly average values for CO and NO_X and one daily average value for NO_X. In autumn, multiple instances of exceeding the mercury half-hourly average values were reported. We are still in the process of verifying these breaches and a second approved mercury measuring device has been placed online. Parallel measurements are still ongoing.

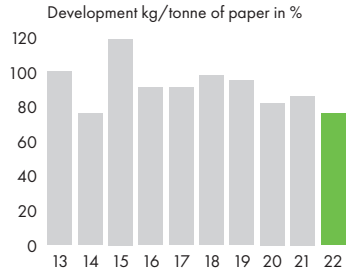
EMISSIONS FROM CHP PLANT 2022

	Limit value (Daily average value) (mg/Nm³)	Mean value of measurements (mg/Nm³)
Fluidised bed boiler/continuous measurement		
CO	50	23
Particulate matter	5	0.8
SO_2	50	3
NO_X	150	124
Hg_{total}	0.03	0.01
HCl	10	0
C_{total}	10	0
Fluidised bed boiler/one-time measurement		
HF	1	ND
Cd, Tl	0.05	0.0001
Sb, As, Pb, Co, Cr, Cu, Mn, Ni, V, Sn	0.5	0.004
PCDD/F	0.1 ng/Nm³	0
Gas and steam turbine/continuous measurement		
CO[1]	100–50	18
NO_X	75–100	30

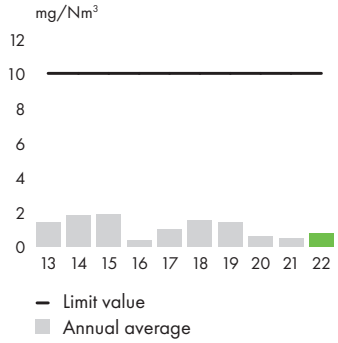
ND = not detectable

[1] Different limit values are defined for the gas and steam turbine depending on the operating mode. The first value is for the gas turbine; the second value is for the waste heat boiler. A mixed calculation is carried out when both systems are operated.

Nitrogen oxides, NO_x



Particulates



Solid fuel is used in the fluidised bed boiler at the Schongau site. Most of the ash (64,977 t) produced during energy generation is categorised as ash product (in accordance with the German Law on the Circular Economy – *Kreislaufwirtschaftsgesetz*) and is used in the building materials and cement industry. The recovery rate is, however, affected by seasonal and cyclical fluctuations. In 2022, 100% of the ash was recycled for use as a product. Furthermore, the sawdust produced (2901 t) is categorised as a by-product and fully reused.

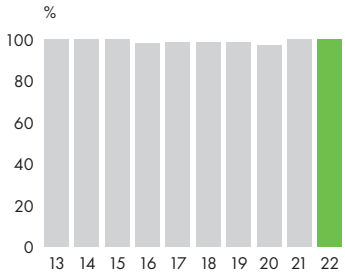
In 2022, the recycling rate for non-hazardous waste and by-products was 100%. The bed ash from the combined heat and power plant was fully recycled. The majority of hazardous waste is fabric filter ash from the CHP plant.

Landfill

The former Rösenau landfill site on the mill premises is on the other side of the river Lech. Until 2009, it was used for disposing of ash and bed sand from HKW 2. This landfill is leased out and used for energy generation using photovoltaic systems.

The Rösenau landfill has not yet been fully switched over to the after-closure phase. Monitoring of the lysimeter field to assess surface impermeability has not yet been completed. However, the landfill ash bed is impermeable to water. There is no accumulation of seepage water or landfill gas. Several groundwater depth indicators have been installed around the landfill. These are checked for landfill impact on a quarterly basis. The impact on the groundwater has been assessed as non-harmful to the environment.

Recovery rate
(non hazardous waste and side-products)



Water

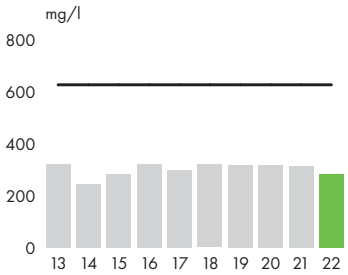
Large volumes of water from the river Lech are required to cool the power plants, steam turbines and machines. This cooling water is not contaminated at all during use and can therefore be discharged directly back into the river. The heat load discharged in this way is constantly monitored. The process water used in the paper production process is bank-filtered water from the river Lech. Only a small proportion of the water, which is used multiple times, leaves the cycle as waste water.

The capacity of the multi-stage operational treatment plant is the same as a plant for 420,000 inhabitants. Water is first treated chemically and mechanically, and then anaerobically in the IC reactor. Further aerobic treatment takes place in activation and secondary treatment tanks.

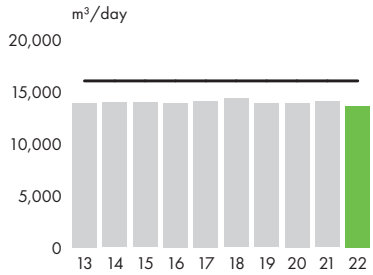
The high quality of the treated waste water is constantly checked, both internally and by the authorities.

The BOD_5 concentration and load was exceeded multiple times in the treatment plant over the Christmas shutdown due to an insufficient nutrient supply.

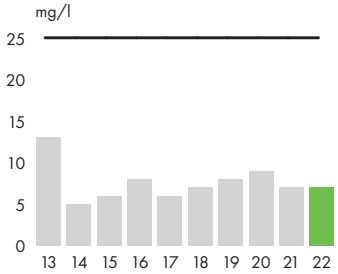
Chemical oxygen demand, COD



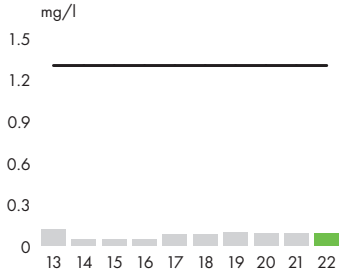
Effluent volume



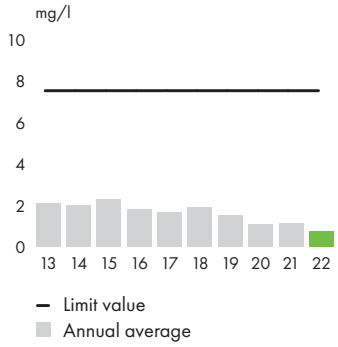
Biological oxygen demand, BOD_5



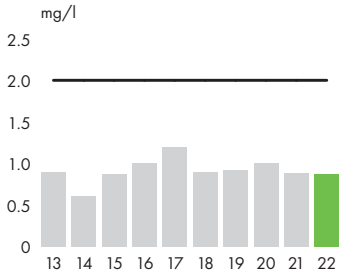
Adsorbable organic halogen compounds, AOX



Nitrogen (inorganic), N



Phosphorus, P



Organisational structure and emergency organisation

Operators in charge are appointed for environmentally relevant production plants and ancillary facilities.

As required by law, appointed officers advise the mill management and the specialist departments in the following areas: emission control, water protection, waste, hazardous goods, radiation protection and internal rail operations.

In addition, there are designated representatives responsible for the integrated management system (quality, environment, energy) and for occupational safety, fire protection and data protection.

Comprehensive emergency plans have been defined for emergencies of all kinds, such as fire, industrial accidents and environmental incidents. From alerting to immediate action and follow-up, there are guidelines to minimise the effects of an emergency. At the emergency centre (factory gate), detailed flow charts are available for different types of emergencies. For larger-scale emergencies, there are emergency staff who decide on the further action to take.

Social responsibility

Well-functioning stakeholder dialogue is a key component for success for UPM. We are committed to developing the vitality of the communities close to our operations through active cooperation and open dialogue with various stakeholders, as well as through sponsorships and employee volunteering.

We impact local communities and societies in many ways. Understanding the impact that we have is essential for our business to succeed. In many locations, we are a key employer, taxpayer and partner to local entrepreneurs, making a significant contribution to the local economy. We take precautionary measures to mitigate or prevent any negative environmental and social impacts on our surrounding communities.

Occupational safety
At UPM, we aim to be an industry frontrunner in occupational health and safety. Our clear goal is zero fatal and serious accidents. We are working to reduce or eliminate accidents in our sphere of influence through continuous improvement and effective risk management. In the process, we have also paid increasing attention to reporting positive events. Dealing with occupational health and safety issues is part of our management culture and is further cultivated through various events. For example, all managers were invited to the "Heroes of Occupational Safety" cabaret.

Through our consistent and systematic approach to occupational safety, we were able to reduce the number of accidents from six to four. The rate of 5.1 is again better than the previous year.

However, we have still not reached our target. We are continuing to work to reduce the accident rate and avoid serious accidents altogether.

Occupational healthcare
UPM Schongau is committed to a working environment, approach to work and life style that are healthy for all employees.

With this in mind, in 2022, numerous health-related services and activities were again offered to the workforce to promote occupational health.

At two occupational safety days, employees had the opportunity to learn about nutrition, especially for shift work, and undergo bowel cancer screening.

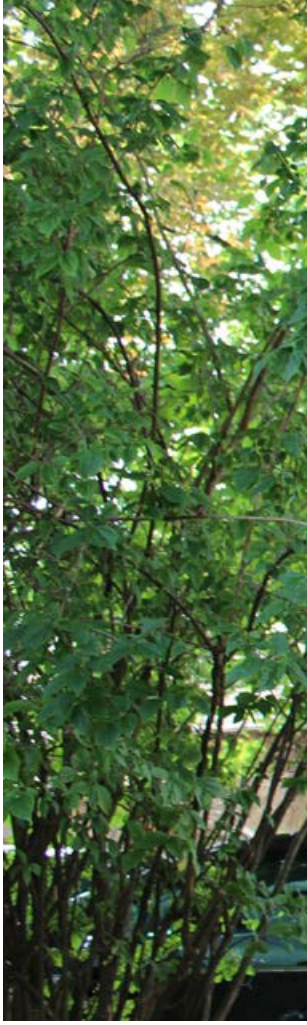
Occupational Health Promotion also presented the services it provides and was able to persuade many employees to join its activities and courses.

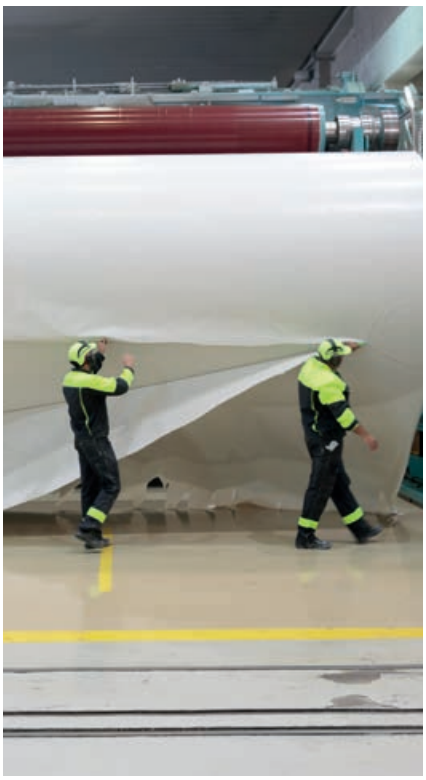
A new concept was developed for occupational integration management. The team is working together to prevent or reduce stress and strain at work and was able to introduce a few initiatives in 2022.

Engaging with communities
UPM Schongau supports numerous clubs and campaigns throughout the region. In 2022, summer festivities were once again on the agenda in the Wieskirche, with UPM Schongau sponsoring the classical concerts.

In addition, the mill is involved with various sports clubs and also provides financial support for the youth work carried out by the Pfaffenwinkel School of Music. Summer 2022 also featured a trainee project in which self-made pallet furniture was auctioned off with the proceeds going to the Rett Syndrome Foundation. In order to help regional institutions, UPM Schongau has been providing accommodation for Ukrainian refugees since spring 2022.

Biodiversity
The Schongau mill continues to take part in the *"Lebensraum Lechtal"* biodiversity project to protect habitats in the Lech valley and maintains spawning grounds in the Lech and nest boxes for birds and bats on the mill site. It also has an initiative to reduce light pollution to promote biodiversity.





Removal of paper sample for quality check

Trainees install nest boxes on the site

Cooperation with schools and education

The training facilities at UPM Schongau provide training for paper technologists, operating technology electricians and industrial mechanics.

In September 2022, nine trainees started their training with an extensive induction programme. In collaboration with the surrounding schools, UPM Schongau was able to offer 18 interns the opportunity to take a one-week taster internship in 2022.

Our training team was also present at various training fairs, which once again took place in person this year. The training team was also involved in a range of careers projects at various schools and helped students prepare for applications and initial interviews.

Efforts are currently under way to reduce the mill's light emissions.

Environmental parameters

Data on production volumes and the consumption of raw material and energy, as well as all specific indicators per tonne of paper, are published as aggregated figures at group level in the Corporate Environmental and Societal Responsibility Statement for UPM's pulp and paper mills.

		2020	2021	**2022**
Production capacity	Paper (3 paper machines)	Up to 740,000 t	Up to 740,000 t	Up to 740,000 t
Raw materials and additives	Recovered paper Wood chips Fillers Process chemicals Operating supplies	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Energy	Renewable fuels	39%	39%	35%
	Fossil fuels	61%	61%	65%
	Purchased power Hydropower	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Emissions to air	Carbon dioxide, CO_2 fossil (direct, scope 1) [1]	165,020 t	135,866 t	149,833 t
	Carbon dioxide, CO_2 fossil (indirect, scope 2)	501,762 t	384,234 t	358,423 t
	Nitrogen oxides, NO_x	142 t	150 t	132 t
	Sulphur dioxide, SO_2	0.2 t	1.1 t	1.3 t
	Particulate matter	2.0 t	2.1 t	2.1 t
	Carbon monoxide, CO	38 t	48 t	45 t
Water intake	Process, cooling and drinking water	20,871,958 m^3	24,101,870 m^3	24,894,617 m^3
	of which cooling water	15,159,566 m^3	18,335,352 m^3	19,295,720 m^3
	of which drinking water	17,723 m^3	20,149 m^3	19,212 m^3
Discharges to water	Effluent volume	5,060,754 m^3	5,109,588 m^3	4,960,824 m^3
	Chemical oxygen demand, COD	1,620 t	1,583 t	1,413 t
	Biological oxygen demand, BOD_5	41 t	34 t	31 t
	Phosphorus, P	5.1 t	4 t	4.4 t
	Nitrogen (inorganic), N	5.1 t	6 t	4.9 t
	Adsorbable organic halogen compounds, AOX	0.5 t	0.5 t	0.5 t
	TOC	–	451 t	430 t
	TNb	–	28 t	25 t
Waste and by-products [2]	By-products			
	– Ash	75,408 t	71,547 t	64,977 t
	– Saw dust	2,910 t	4,132 t	2,901 t
	Waste for recycling			
	– Bed sand	1,359 t	4,157 t	3,918 t
	– Metal	744 t	759 t	600 t
	– Construction waste	902 t	2,121 t	1,141 t
	– Paper and board	375 t	353 t	306 t
	– Other	563 t	529 t	5,696 t
	Waste for disposal			
	– Bed sand	2,715 t	0 t	0 t
	– Construction waste	0 t	0 t	0 t
	Reuse rate (non-hazardous waste and by-products)	97%	100%	100%
	Hazardous waste	1,621 t	1,455 t	1,608 t
Land use	Total land use:	38 ha	38 ha	38 ha
	Sealed area:	23 ha	23 ha	23 ha
	Nature-oriented area on site:	8.5 ha	8.5 ha	8.5 ha
	Nature-oriented area off site:	42 ha	42 ha	42 ha

[1] The operation of the gas and steam plant (terminology is mill-dependent) is based on energy prices and the electricity produced is fed into the public electricity network. The site electricity needs are largely covered by the public electricity network. The Scope 1 CO_2 volume reported here for UPM Schongau excludes emissions from the electricity fed into the network.

[2] Quantity, incl. moisture.

Performance against targets in 2022

TARGETS	TARGET ACHIEVED
1 Energy savings	
– Project application/approval for "Optimisation of hot water system across entire mill through currently unused condensation steam for HKW 3 and condensate recovery from the PM heat recovery systems" (energy savings of 5000 MWh, CO_2 savings > 600 t/a)	– Postponed to 2023
– Implementation of the plan for targeted, type-specific energy use in TMP grinding (LC grinding PM6) • Electricity savings of 5000 MWh/a • CO_2 savings of 2476 t/a	– Achieved, plan implemented; – Savings currently lower due to capacity
– Check possibilities for reducing target temperature of hot water extension to buffer 2 (55°C to 45°C) without negative impact on production cycle. CO_2 savings: 350 t/a	– Postponed to 2023
– Implementation of project "Renovation of TMP heat recovery including increase in capacity". Resulting CO_2 savings: 5000 t/a	– Implementation ongoing until Q2/2024
2 Waste water	
– Implementation of plan for automated regulation of process stabilisation in treatment plant and long-term load reduction (APC)	– Achieved, will continue until Q2 2023
– Implementation of plan to handle sulphur in waste water on way to waste water treatment plant (KF SOG7 ventilation)	– Implementation ongoing
3 Waste	
Plan for checking product quality of fabric filter ash and preparation for decision-readiness	Postponed to 2023
4 Clean Run category 3	
Reduction of incidents involving airborne emissions by optimising HKW 2 mode of operation	Not achieved

Targets for 2023

TARGETS AND MEASURES	DEADLINE	RESPONSIBLE
1 Energy and fossil CO_2 savings		
– Increase in performance of HKW 2 through APC solutions: constant operation and closer to boiler performance limits; Savings of 2500 t CO_2/a and 13,000 MWh/a	30/09/2023	AL EN/AL APC
– Replacement of the existing TMP heat recovery system; Savings of 14,000 t CO_2/a and 70,000 MWh/a	30/04/2024	AL HST
– Setup of an electrode boiler for steam production through electricity; Savings of 7500 t CO_2/a	30/06/2023	AL EN/AL ENG
2 Waste water		
Expert opinion on reduction of loads of parameters relevant to waste water charges, with study of offset possibilities	30/06/2023	AL HST/AL WETW
3 Waste		
Plan for checking product quality of fabric filter ash and preparation for decision-readiness	30/09/2023	AL WETW/AL EN/AL ENG
4 Airborne emissions		
Implement measures to prevent mercury peaks in HKW 2 flue gas	30/06/2023	AL EN
5 Clean Run category 3		
Reduction of incidents involving airborne emissions by optimising HKW 2 APC mode of operation and involving waste water by optimising the treatment plant mode of operation during mill shutdowns	31/12/2023	AL EN/AL HST

EMAS
Verified environmental management
REG.NO. FI - 000058

Environmental verifier's declaration on verification and revalidation activities

The undersigned EMAS environmental verifier Astrid Günther (DE-V-0357), acting on behalf of the environmental audit organisation "TÜV NORD CERT Umweltgutachter GmbH", licensed for NACE Code 17.12 (Manufacture of paper and paperboard), declares to have verified whether the UPM GmbH Schongau mill site located at Friedrich-Haindl-Straße 10, Schongau, 86956, Germany, as indicated in the updated Corporate Environmental and Societal Responsibility Statement 2022 of the aforementioned site (registration no. FI-000058), meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 as amended by Commission Regulation (EU) 2017/1505 and Commission Regulation (EU) 2018/2026 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:
– the verification and validation have been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
– the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
– the data and information in the updated 2022 Corporate Environmental and Societal Responsibility Statement of UPM GmbH, Schongau mill, present a reliable, credible and accurate image of all activities of UPM GmbH, Schongau mill, within the scope indicated in the updated Corporate Environmental and Societal Responsibility Statement 2022.

This declaration is not equivalent to registration under EMAS. EMAS registration can only be granted by a competent body in accordance with Regulation (EC) No 1221/2009. This declaration shall not be used as a standalone piece of public communication.

Essen, 26 July 2023

Astrid Günther
Environmental verifier
DE-V-0357
TÜV NORD CERT Umweltgutachter GmbH

UPM GmbH
Friedrich-Haindl-Straße 10
86956 Schongau
Germany
Tel. +49 8861 213-0
Fax +49 8861 213-106

For further information, please contact:
Wolfgang Ohnesorg
General Manager
Tel. +49 8861 213-0

Ute Soller
OHS/Environment/
Management Systems
Tel. +49 8861 213-442

Martin Heinrich
Management System Representative
Tel. +49 8249 802-340

E-mail: info.schongau@upm.com

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8/2023