

UPM Fray Bentos

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2021



UPM Fray Bentos

The pulp mill is located on the coast of the river Uruguay, 5 km away from the city of Fray Bentos.

Construction of this state-of-the-art pulp mill began in 2005. The initial Environmental Authorization for Operation was granted by authorities on November 8th, 2007. Until June 2020, the environmental authority in Uruguay was the Ministry of Housing, Territorial Planning and Environment (MVOTMA) through the National Direction for the Environment (DINAMA). From June 9th, 2020 the environmental authority is the Ministry of Environment through the National Direction for Quality and Environmental Assessment (DINACEA).

Through the use of modern techniques high quality pulp is efficiently produced, most of it for the Asian and European markets.

The annual capacity of the mill is of 1.3 million tons of bleached eucalyptus pulp. Wood procurement is under the responsibility of UPM Forestal Oriental, which has been pioneering the development of eucalyptus plantations in Uruguay for over 25 years, since 1990. UPM has a 91% ownership in the Fray Bentos pulp mill and 100% in UPM Forestal Oriental. The UPM mill complex also accommodates the operations of four chemical plants that supply the bleaching chemicals for the process. These plants are under the responsibility of Kemira, which operates three of them (hydrogen peroxide, sodium chlorate, chlorine dioxide) while the fourth (oxygen) is operated by Praxair.

Maintenance of pulp mill operations is outsourced to Andritz, which supplied most of the production equipment for the construction of the mill.



Production capacity	1,300,000 ADt
Personnel	238
Products	UPM Euca (bleached eucalyptus kraft pulp)
Side-products	Electricity
Certificates	<p>EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System ISO 50001 – Energy Management System ISO 22000 – Food Safety Management System OHSAS 18001 – Occupational Health and Safety System PEFC Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council®</p> <p>All certificates can be found from UPM's Certificate Finder (available at www.upm.com/responsibility)</p>
Environmental labels	<p>EU Ecolabel Nordic Ecolabel</p> <p>UPM pulp products have the approval for use in EU Ecolabel and Nordic Ecolabel paper products.</p>



UPM Fray Bentos Environmental and Societal Responsibility Statement 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 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 17,000 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



The mark of responsible forestry

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



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

Review of year 2021

Performance

Fray Bentos pulp mill continued to achieve in 2021 high level of capacity utilization with steady operations, maintaining its reliability in pulp quality as well as high level of environmental performance, without any permit non-compliances.

In the last few years, some of the mill's stormwater ponds have shown algal growth at least during the warm part of the year. This phenomenon increased the water pH to 9 or slightly over, increasing the risk of a permit non-compliance. To control algal growth, UPM installed shade balls in some of the stormwater ponds, which proved to be an effective way to control the risk of permit exceedances due to high pH.

In 2021, Fray Bentos mill received two complaints from local neighbors regarding odor. The first one, on January 25th, when the mill was running normally, might have been the result of the accumulation of solids in the equalization basins after the lime kiln seal was damaged a few weeks before. The solids were removed from the basins as a corrective action. The second one was from December 6th, during a white liquor plant maintenance stop, that was previously informed to authorities. The burn liquor tank pressurized and, for safety reasons, to lower the pressure, the strong odorous gases (GOS) were vented for some minutes.

Emissions into the air remained at good levels. Handling of malodorous gases was in accordance with internal targets.

UPM Fray Bentos pulp mill is self-sufficient in electrical consumption through the energy generated by burning black liquor.

The mill's emissions are within the ranges associated to Best Available Techniques (BAT) as established in the European Commission Implementing Decision of 26 September 2014.

Environmental monitoring

UPM Fray Bentos mill is one of the most

monitored pulp mills worldwide, with more than 130 control parameters covering Uruguay river (water and biology), air, soil, fauna, groundwater, noise, among others.

Environmental monitoring activities under the responsibility of UPM Fray Bentos and implemented by several external experts continue to show, fourteen years after the startup, that there is no negative impact on the environment related to the operation of the pulp mill.

Transparency

Press releases related to events at the mill that could affect the community are shared with the local press, follow-up commission, Uruguayan environmental authorities as well as published in UPM's corporate website.

During 2021 no sessions of the follow-up commission have been convened by the authorities.

In 2021, 12 inspections were carried out by the Scientific Committee (integrated by Uruguayan and Argentinian members) of the Uruguay River Executive Commission (CARU), reaching 122 in total by December 2021. Results of the

monitoring carried out during these inspections are available in [CARU's website](#).

Results of the environmental monitoring plan requested by Uruguayan environmental authorities are available in [UPM's webpage](#).

Additional information on compliance with legal requirements can be found both in UPM's and Ministry of Environment's webpages.

The environmental product declaration for Fray Bentos pulp was updated and made available to customers.

Since the mill's start up, it has been arranged a system of weekly visits to the site which is open to the general public free of charge. The aim of the visits is to share the Biofore vision by reinforcing the stakeholders engagement, showing the operations to the public. Since 2008, around 35,000 people from Uruguay and several other countries have visited our facilities. During 2021, due to Covid-19 pandemic and in order to preserve the health of people and comply with established protocols, visits were restricted at the pulp mill site.



Federico Mantiñan
General Manager



Gervasio González
Environmental Manager

Contribution to UN Sustainable Development Goals in 2021



Supply chain

92%

of contract raw material spend covered by UPM Supplier and Third Party Code (wood not included).



Community

25 Projects

promoted by UPM Foundation in 2021
– 65 communities involved
– 16 NGOs in partnership
– over 1,400 participants
– 1,480 training hours



Water

Reduction in total phosphorus discharge per ton of pulp:

60%

Reduction in total nitrogen discharge per ton of pulp:

23%

Both calculated comparing 2021 to 2012 performance



Waste

49%

of total non-hazardous waste generated in 2021 returns to plantations, used as soil improver.

29%

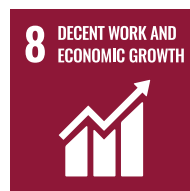
of total non-hazardous waste generated in 2021 is disposed in landfill.



Certified fiber

91%

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



Employment

238

Fray Bentos direct employees

65

mill technicians trained for Paso de los Toros



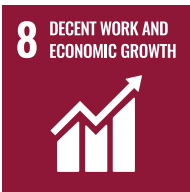
Environment

71 environmental observations

By actively doing environmental observations and taking needed actions beforehand, we efficiently prevent environmental deviations.

33 environmental rounds

carried out with subcontractors working within UPM Fray Bentos mill premises.



Taxes

Total tax impact approx.

USD 28 million

related to Fray Bentos mill and forestry operations in Uruguay in 2021, including:

- Income taxes on salaries
- Corporate income taxes and Free Trade Zone fees
- Property taxes including real estate tax
- Value Added Tax cost

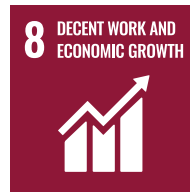


Biodiversity

UPM is the first private company in Uruguay to manage an area within the National System of Protected Areas.

12,309 ha

of conservation areas managed by UPM, covering native forest, grasslands, wetlands, riparian zones and palm areas.



Safety

Total Recordable Injury Frequency (TRIF):

4.1 injuries

per million hours worked (UPM employees & Contractors).



Air

Reduction in particulates emissions per ton of pulp:

60%

Calculated comparing 2021 to 2012 performance.



Health

100%

preventive health checks

- 100% workplace health risk assessments
- 95% personal kinetic posture evaluation
- 45% participation at annual Detox program
- 33% voluntary workers participated in the influenza vaccination programme



Renewable energy

92%

of fuels used in UPM Fray Bentos energy production during 2021 came from renewable sources.

Air



Water



Emissions into the air remained at very good levels, with all parameters within the conditions of the environmental permit.

Handling of malodorous gases from the production process was in accordance with 2021 internal targets.

In 2021, two external complaints related to odor events were recorded. The first odor event occurred on January 25th., and it might have been the result of the accumulation of solids in the equalization basins after the lime kiln seal was damaged a few weeks before, so the solids were removed from the basins as a corrective action. The second event took place on December 6th during a white liquor plant maintenance shutdown. The burn liquor tank pressurized the strong odorous gases (GOS) line and the strong odorous gas auxiliary boiler's seal let the gases vent as a safety measure.

Both reported odor events had a duration of minutes, with varying odor intensity.

Despite the nuisance created to people, odours originated at the pulp mill do not pose any potential risk of harm to the environment or human health.

The mill continues to proactively communicate to the community, local press, national stakeholders and members of the follow-up commission when there will be a planned activity that might cause the emission of odorous compounds to the air, as well as answering openly all related questions from stakeholders. In 2021, 10 press releases were published.

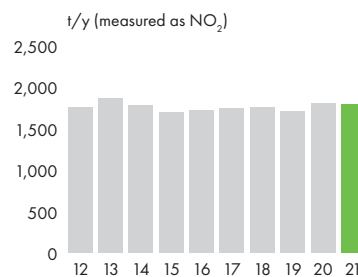
UPM Fray Bentos monitors ambient air quality since 2005. Results to date show that the operation of the pulp mill has no significant effect on the concentrations of pollutants in the air. Concentrations of all measured parameters have remained below limits established by Uruguayan Environmental Authorities and within the limits established in the environmental permit and BAT.

UPM Fray Bentos acquires raw water from the Uruguay River. Operations in 2021 required about 0.95 m³ of water per second and generated about 0.70 m³ per second of treated effluent.

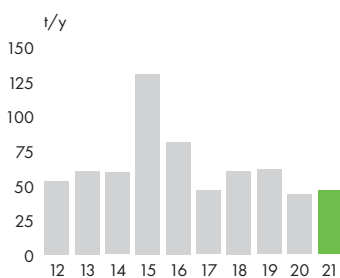
With the aim to avoid algae growth, which was affecting stormwater ponds pH, UPM installed shade balls covering the port stormwater pond by January 2021. Promising results were obtained after a few days, according to pH and oxygen demand (OD) follow up. In April 2021 UPM installed shade balls to cover the surface of the stormwater ponds located in raw water and wastewater treatment plant. Results were immediate, as it was for the port stormwater pond. Since the shade balls are in place, there have not been records of high pH due to algae growth and the OD dropped significantly at the stormwater ponds.

The 2021 annual average phosphorus load was within the permit limit of 60 kg/d as well as the internal monthly average of 55 kg/d target. It was the lowest phosphorus discharge since the mill's start-up: 28,9 kg/d. This was the result, among others, of the measures implemented to optimize the operation

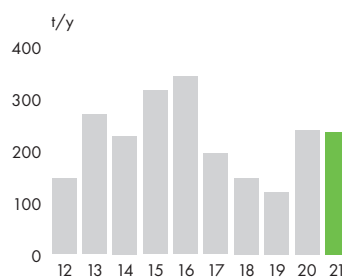
Nitrogen oxides, NO_x



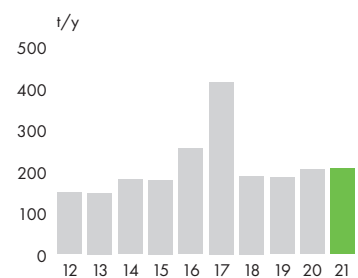
Sulphur dioxide, SO₂



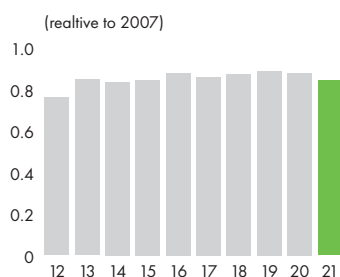
Dust



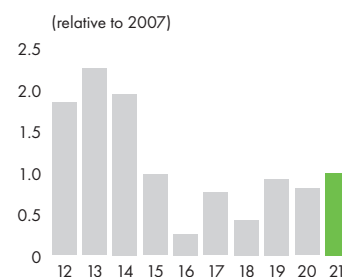
Biological oxygen demand, BOD₅



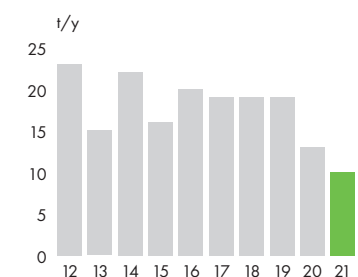
Fuel oil consumption



Electricity supplied to the national grid



Phosphorus, P



of the phosphorus removal system since its start-up in 2015.

Water quality monitoring results show that there is no significant variation between the sampling points located upstream and downstream from the mill that could be caused by its operation. Variation in time is similar in all sampling points, either reference points or near receptors of the mill's effluents. It was agreed with authorities to reduce the frequency of the Uruguay river water and fish analysis based on the monthly results obtained from 2005 until 2019. Therefore, since 2020, some parameters are analyzed annually, some twice a year, some every two months and others were removed from the monitoring plan.

Fish monitoring has been carried out twice a year since 2005 and since 2020 the frequency was reduced to annual as results continue to show that there is no decrease in the number of fish species, biomass or abundance in the zone of influence of UPM Fray Bentos mill's effluent discharge with respect to the reference area during baseline studies. Furthermore, the situation is the same at all three study

areas, either upstream or downstream from the mill. The condition of fish caught has been observed to be good without any macroscopic deformities or abnormalities. There are no differences in the general condition of fish caught from the different study areas.

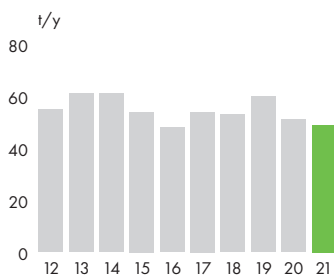
Up to this point exposure monitoring has revealed no concentration values of chloro-phenolic substances, phyto-sterols or resin acids in bile that suggest an impact of the UPM Fray Bentos pulp mill that could have repercussions on indicators of condition like Gonadosomatic index or Hepatosomatic index. The same happened with the concentrations of dioxins and PCB in muscle of the studied species, these values continued to be always low and below the maximum limits recommended by international organizations, Health-Canada, 2010, and by regional regulations, CARU's Digest 2020.

2021 fish monitoring study results, suggest that there is no appreciable impact in the diversity, abundance and biomass of the fish community in the areas that receive effluents from the UPM Fray Bentos pulp mill. So far

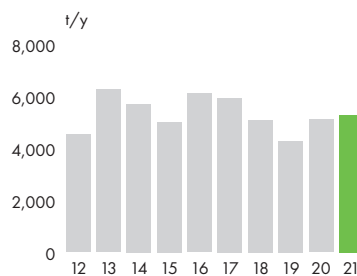


there is no history of negative effects of effluents from pulp mills that use BAT on the fish community, and the monitoring carried out in Uruguay river waters does not represent an exception.

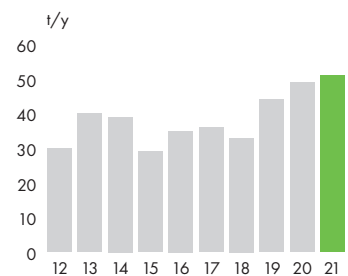
Nitrogen (inorganic), N



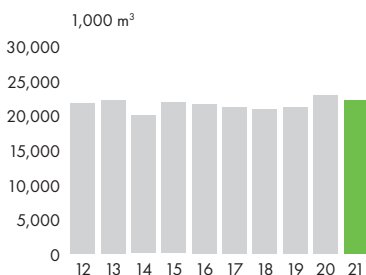
Chemical oxygen demand, COD



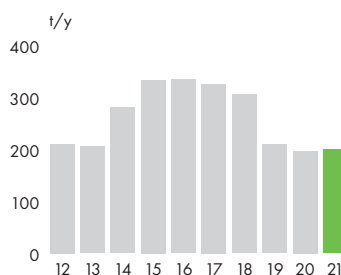
Adsorbable organic halogen compounds, AOX



Effluent flow (process wastewater)



Total suspended solids, TSS





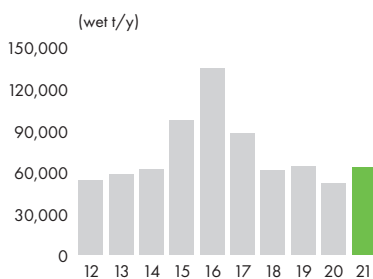
Waste

The UPM Fray Bentos landfill site is located inside the mill complex. In 2021 the landfill received 30.894 t of waste on dry basis¹⁾. This amount represents 29% of total non-hazardous waste generated at the Fray Bentos mill premises during 2021. In 2021 lime kiln sealing was damaged restricting the lime kiln feeding. This event rose the waste to landfill generation in two ways: Initially the spill was channeled, along with the high solids effluent (WAL), to the equalization system. The destination of the safety and equalization sludge accumulated during that period was the mill's landfill. Then, to take some lime out of the system and avoid sending solids to the equalization basins, the dregs filter worked with a thicker lime precoat. The precoat is accounted as dregs and disposed at landfill. Green liquor dreg represented approximately 74% of the total dry weight of solid waste bound for the landfill site in 2021.

Wood waste (mainly bark and wood fines) continues to be returned to plantations as soil amendments, together with sludge from the primary clarifier and dry biosludge from the activated sludge system. These types of waste, in 2021, represent a total of 73,659 t on dry basis (70% of total non-hazardous waste generated at the mill). About 36% of the wood waste was used as a biofuel for electricity generation in external facilities during 2021. In 2020 Rio Negro city hall installed a waste sorting site where, through social cooperative, authorized sorters handle the following materials for subsequent commercialization: paper and cardboard, plastic, combustible waste and metals. In 2021, UPM Fray Bentos delivered in total 181 t of paper, cardboard, plastics and combustible waste. The generation of hazardous waste in 2021 amounted to 109 t, representing 0.10% of total waste. More than 55% corresponded to used oil and water – hydrocarbon mix mainly from the mill shutdown maintenance works.

¹⁾ Waste disposed of in Municipal landfill not included.

Solid waste to industrial landfill

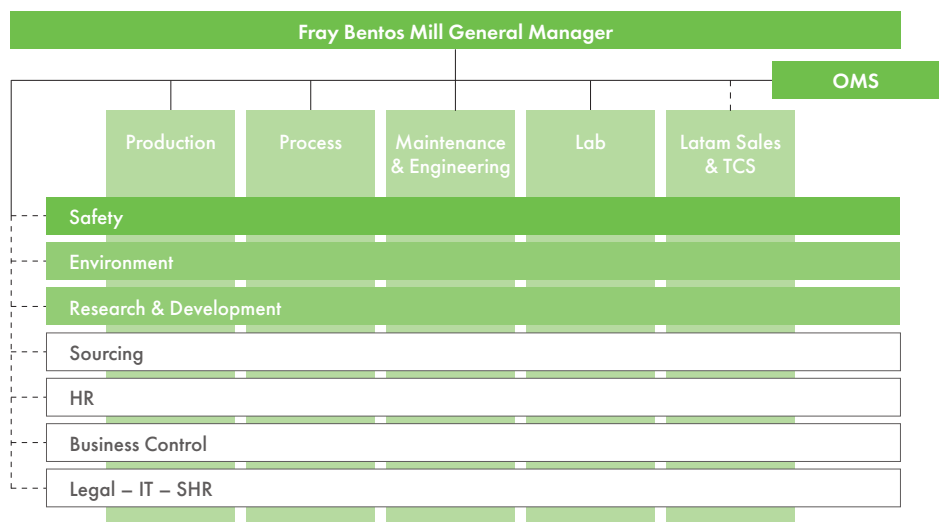


Management of crises and exceptional situations

Constant awareness of environmental issues is an integral part of UPM Fray Bentos mill's way of working. All employees are responsible for the effects their own field of operation has on the environment. Production Manager is responsible for the environmental performance achieved. The Environmental Manager coordinates environmental issues within the company, with authorities and with other partners. As part of the Operational Environmental Management Plan, UPM Fray Bentos mill has a contingency plan approved by Uruguayan environmental authorities which describes the internal procedures to follow in case of environmental contingencies related to the mill operations as well as responsibilities and communication flowchart.

Safety Manager, together with the mill's Safety Supervisor and the Fire Chief, plans and supervises health & safety activities within the company, with authorities and partners. The mill has an operation plan and a program of activities setting out goals, safety targets and plans for achieving them. In the event of an emergency response, UPM Fray Bentos mill has a fire brigade made up of sixty brigadiers including mill engineers and technicians from UPM and other companies working within the mill boundaries (Andritz, Kemira, Linde). The brigadiers are strategically distributed in five shifts in accordance with the mill's operations. The fire brigade is continuously trained by qualified personnel. In

the second semester of 2021, 35 trainee mill technicians for Paso de los Toros pulp mill participated in the brigade trainings, together with the sixty regular mill brigadiers. In 2021, fifty training sessions were carried out. Furthermore, drills of emergency situations are planned and conducted during the year. A chemical spill drill was carried out in 2021. New equipment for chemical emergency response was acquired: two level A suits to complete a set of 4, and 6 level B suits where replaced.





Societal responsibility

“Leadership and Educational Innovation Program” (Programa en Liderazgo e Innovación Educativa, PLIE) in Rio Negro.

Among several projects submitted, in 2021 the UPM Foundation promoted this program in Rio Negro, led by the Varkey Foundation. The purpose of the program, which combined face-to-face and remote instances, 104 hours in total, was to work on the professional capabilities of directors and teachers. PLIE seeks to enhance their capacities for the development of competent leadership, and thus have a favorable impact on student learning, on the revaluation of the teaching role and on the educational quality of the institutions. The program aimed to achieve actual implementations based on the realities of each center and thus achieve the necessary changes.

The core of “Leadership and management” focuses on the organization, professional development of teachers and the community, while that of “Leadership

for learning” delves into meaningful learning, active methodologies, development of skills for the 21st century and evaluation for learning.

As part of the training path, each institution designed an Educational Innovation Project that seeks to respond to a contextualized problem of the institution and offer a proposal to improve learning. In the case of Fray Bentos, the project, that reached 19 educational centers from initial, primary, secondary and tertiary educational levels, may impact about 3,500 students in the short term.

“The Educational Leadership and Innovation Program offered by the Varkey Foundation was one of the winners of the annual call for projects that the company carried out at the UPM Foundation in 2020. It is the first time that this program has been implemented in Uruguay and that motivates us to continue working through this line of action to enhance teaching skills by promoting continuous training opportunities, especially inside

the country where the opportunities to access this sort of trainings are more restricted”, explains Eduardo Harley, coordinator of the UPM Foundation. He also points out that “A community was generated among the participants in the sense of sharing information, experiences of the centers there are in and that exchange let them know that there are other teachers or directors who are in the same locality that can be reachable for support when needed. They saw that as something outstanding at the community level”.

“I found it very interesting and useful because we work from the methodology of projects, in a collaborative way, all the contents worked on being very applicable,” commented the director of the full-time school No. 73 of Fray Bentos, Sofia Vasella. Regarding what she learned, she explained: “I incorporated everything related to ICTs (information and communication technologies), but also to involve families as co-educators, giving them more prominence” To conclude, she emphasized that the program “opened our eyes to new teaching and learning scenarios, since it allows the school to reinvent itself according to new theories in education.”

“Having created a professional learning community in the city of Fray Bentos, where teachers share challenges and great opportunities to think together about the future of education, is an invaluable space that these educational centers now have”, said Agustín Porres, Regional Director of the Varkey Foundation.



Environmental parametres

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	Pulp	1,300,000 t	1,300,000 t	1,300,000 t
Raw materials and additives	Wood Pulping and bleaching chemicals	1) ¹⁾		
Energy¹⁾	Biogenic fuels Fossil fuels	92% 8%	93% 7%	92% 8%
Emission to air	Carbon dioxide, CO ₂ (fossil) Nitrogen oxides, NO ₂ Sulphur dioxide, SO ₂ Particulates Total Reduced sulphur, TRS	144,127 t 1,697 t 61 t 120 t 7 t	142,868 t 1,800 t 43 t 239 t 7 t	137,036 t 1,779 t 46 t 235 t 8 t
Water intake	Process and cooling water	27,963,847 m ³	30,048,539 m ³	30,125,282 m ³
Discharges to water	Process wastewater Process wastewater quality indicators – Biochemical oxygen demand, BOD ₅ – Chemical oxygen demand, COD – Suspended solids, TSS – Nitrogen, N (total) – Phosphorus, P (total) – Adsorbable organic halogen compounds, AOX	21,100,626 m ³ 184 t 4,280 t 209 t 60 t 19 t 44 t	22,811,413 m ³ 204 t 5,109 t 198 t 51 t 13 t 48 t	22,092,935 m ³ 206 t 5,282 t 200 t 49 t 10 t 52 t
Waste²⁾	Non-hazardous waste Waste to recycling, energy recovery and/or composting – Sludges – Bark and wood waste – Green liquor dregs – Others Waste to landfill and incineration w/o energy recovery – Green liquor dregs – Sludges – Others	 15,372 t 63,967 t – 448 t 16,225 t 5,686 t 6,767 t	 14,668 t 60,217 t 14 t 368 t 17,660 t 4,905 t 2,318 t	 14,495 t 59,164 t – 750 t 23,097 t 6,113 t 1,685 t
Hazardous waste		218 t	123 t	109 t
Total use of land	Total sealed area Total nature-oriented area on site Total nature-oriented area off-site ³⁾	553 ha 50 ha 503 ha 1,550 ha	553 ha 50 ha 503 ha 1,550 ha	553 ha 53 ha 500 ha 1,550 ha

¹⁾ See UPM Corporate Environmental and Societal Responsibility Statement for more information.

²⁾ Dry weight

³⁾ Corresponds to Mafalda protected area, included in the National System of Protected Areas as a requirement for the mill's environmental authorization. This area is managed by UPM Forestal Oriental.



Environmental objectives

Among the objectives set for 2022, the following can be highlighted:

- Continue transparent and effective proactive communication of environmental issues to all stakeholders.
- Contribute to UPM's corporate commitment to environmental responsibility.
- Promote environmental awareness within the mill, its main suppliers and partners, and all subcontractors working in mill area.
- Comply with the key environmental indicators defined for 2022 (see below).
- Renew the environmental authorization for operation (AAO)

Performance against targets in 2021

	TARGET	PERFORMANCE*	
COD discharge to the river (annual average)	≤ 5 kg/ADt	Achieved	Stable operation
Effluent discharge to the river (annual average)	≤ 20 m ³ /ADt	Achieved	Stable operation
Total phosphorus discharge to the river (monthly average)	≤ 55 kg/d	Achieved	Optimization of phosphorous removal and stable operation
Availability of strong odorous gases handling (annual average)	≥ 99.9%	Achieved	Stable operation
Availability of mild odorous gases handling (annual average)	≥ 99.5%	Achieved	Stable operation
Amount of permit exceedances	None	Achieved	Investment on stormwater ponds and stable operations

* see page 6 for more details

Targets for 2022

	TARGET	FOCUS ACTIONS
COD discharge to the river (annual average)	≤ 5 kg/ADt	Stable operations without significant disturbances
Effluent discharge to the river (annual average)	≤ 20 m ³ /ADt	Stable operations without significant disturbances
Total phosphorus discharge to the river (annual average)	≤ 55 Kg/d	Continue optimizing cleaning process, keeping good performance in phosphorous precipitation system
Availability of strong odorous gases handling (annual average)	≥ 99.9%	Stable operation without significant disturbances
Availability of mild odorous gases handling (annual average)	≥ 99.5%	Stable operation without significant disturbances
Amount of permit exceedances	None	Minimize algae growth in stormwater ponds



Revalidation statement

As an accredited environmental verifier (FI-V-0001), Inspecta Sertifointi Oy has examined the environmental management system and UPM Fray Bentos Environmental and Societal Responsibility 2021 statement as well as the information concerning UPM Fray Bentos in the Updated UPM Corporate Environmental and Societal Responsibility Statement 2021.

On the basis of this examination, the environmental verifier has herewith confirmed on 2022-04-20 that the environmental management system, the UPM Fray Bentos Environmental and Societal Responsibility 2021 statement and the information concerning UPM Fray Bentos in the Updated UPM Corporate Environmental and Societal Responsibility Statement 2021 are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.



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