

UPM Caledonian

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2023



UPM Caledonian

UPM's Caledonian mill is situated in Irvine on the West Coast of Scotland approx. 50 kilometres southwest of Glasgow. In production since April 1989 the Caledonian mill is capable of producing 235,000 tonnes of lightweight coated paper (LWC) for printing magazines, catalogues, brochures. The mill has a Biomass Combined Heat and Power (CHP) plant, a single paper machine line, a debarking plant, a pressurised groundwood (PGW) mechanical pulp mill and a primary effluent treatment plant. Effluent is then treated further in the neighbouring Municipal Waste Water Treatment Plant operated by a third party.

Environmental issues are an integral part of everyday operations. Targets are set as part of our annual business planning process with our key environmental aspects and impacts identified through our regulatory and business requirements to demonstrate continuous improvement. These are followed closely throughout the year. Our objective is to produce attractive and competitive paper with the lowest possible overall environmental impact. Through open communication we actively provide our customers, employees, environmental authorities, as well as our local community with information on environmental issues and knowledge of the mills operations.



UPM Caledonian Environmental and Societal Responsibility 2023 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 2023.

We deliver renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Fibres, UPM Energy, UPM Rafflatac, 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 16,600 people worldwide and our annual sales are approximately EUR 10.5 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

Production capacity	235,000 tonnes of paper
Personnel	280
Products	Coated Magazine Papers: UPM Cote H UPM Cote Blueshade H UPM Cote Ivory H UPM Cote SB (customer specific) H UPM Ultra H UPM Ultra Silk H UPM Ultra Silk Extra H UPM Ultra Matt H
Certificates	ISO 9001 – Quality Management System ISO 14001 – Environmental Management System 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 from UPM's Certificate Finder (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel



The mark of responsible forestry
For more information about FSC certification visit fsc.org



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



Review of year 2023

In accordance with Pollution Prevention and Control (Scotland) regulations 2012 Caledonian Paper has an integrated management system in effect covering environment, quality and occupational health and safety to ensure compliance with all permit conditions and applicable legislation.

This Report gives information on the Mill's performance and covers the most significant environmental impacts – emissions to Air and Water; Waste and Material consumption.

2023 was a challenging year for all paper production with a downward turn in demand seen in communication papers which resulted in Caledonian taking periods of downtime. Although the additional downtime can be effectively utilised for maintenance the overall specific efficiencies are impacted.

The CHP boiler had a scheduled maintenance shut in March 2023 which involved a major turbine overhaul, replacement of economizer 3 and replacement of boiler ducting that has corroded over the last few years.

Soon after the maintenance shut there was a failure with one of the 2 ID fans that are required to maintain the proper air to fuel ratios and control the temperature of the flue gases and ultimately ensures safe and efficient operation of the boiler. Consequently, the boiler output was down to 60% and we ran our auxiliary boiler in tandem to ensure the steam demand for the paper making process was sufficient. The Auxiliary boiler is fired by natural gas which impacted the total carbon dioxide emissions from site.

Environmental Performance

We reported two incidents to SEPA under our PPC permit in 2023: one relating to a 1 hour high carbon monoxide emission from the CHP boiler and the other for a contained smoldering fire in the biomass storage area.

Reporting to SEPA is required on a quarterly basis for a variety of parameters including emissions to air, effluent and waste. On an annual basis we are required to report the mass of all emissions under the Pollutant release and Transfer Register. A difference of 10% from one years results to the next year must be explained. In 2023 we have seen reductions in some key emissions to air; namely nitrous oxides, total particulates and hydrochloride compounds. Some of

this reduction can be explained by a reduction in operational hours of the boiler however we have been working closely with our biomass suppliers and have seen improvements in the various biomass fuel streams.

Flyash from the CHP boiler is one of the main wastes that is produced and leaves site. Nearly all of the flyash is recycled either via separation and carbonation for the cement industry or for land reclamation by consolidating with other hazardous wastes. We continue to investigate ways of minimising the waste streams generated at site and explore opportunities for recycling and re-use of these wastes.

Flue2Chem

UPM Caledonian Paper is participating in the carbon capture and utilisation project Flue2Chem. Flue2Chem is a consortium of sixteen organisations, evaluating the full end to end business and environmental impacts of converting emissions from foundation industries (such as metal, glass, paper and chemicals) to more sustainable consumer products. These CO₂ emissions would traditionally be emitted to the atmosphere, but if captured, they can have a valuable second life as a raw material. The project aims to demonstrate how carbon dioxide emissions can be

re-used and ultimately reduce the need to extract more oil and gas to make consumer products.

Caledonian will install the carbon capture unit at site during Q2 of 2024 for approximately a 3-month period.

Energy Efficiency

We installed 3 turbo blowers into the PM (paper machine) vacuum system as a replacement for the liquid ring vacuum pumps which has achieved significant energy savings. The older vacuum system had fixed speed pumps with constant air flow to each pump. The new turbo blowers are driven by high speed fans, are variable speed controlled and only provide as much vacuum as is required by the process and are considered BAT (Best Available Technique) in accordance with the Pulp and Paper BREF document. Additional benefits of the turbo blowers will also be increased paper machine clothing lifespans and with the removal of the PM Vacuum cooling tower there will be a decrease to water consumption and reduce the site's legionella risk.

Our environmental permit was varied for the installation with some additional environmental monitoring required for both noise and volatile organic carbon (VOC's) emissions. ▶



Bryan McMurdo
General Manager



Sharon Gallagher
Environment & Compliance Manager

► **Occupational Health and Safety**
 UPM strives for zero accidents across all sites and has a target for the Lost Time Accident Frequency (LTAF) of 1.5 for Communication Papers. This is calculated as the number of lost time accidents per million hours worked. For Caledonian the reported LTAF figure for 2023 was 1.9 which was disappointingly above the target, however this was a significant improvement from the previous year. Another measure of safety performance is the Total Recordable Incident Frequency (TRIF). This has a wider definition and includes medical treatment cases and those working modified duties. The UPM Communication Papers target here is 6.0. Caledonian's TRIF performance was 9.5 which again was above the target, but a big improvement on the previous year. 2023 safety statistics does not include contractor data.

Compliance with site procedures and leading by good example helps develop and sustain our safety culture. We assess and mitigate health and safety risks in our operations and continuously develop safer ways of working. All employees are encouraged to raise safety observations when they identify potential safety issues. A target average of 4 safety observations per person was set and we managed to meet and exceed this target by over 30% for this. Equally impressive was the performance for the level of safety walks completed at 108%. The purpose of safety walks is to have a systematic process in place to follow the implementation of safety rules and guidelines, ensuring their compliance and to find and share good practices. They often require observing a task being carried out at close proximity and a follow up discussion with those involved.

Development and training for the Emergency Response Team has continued and an external training resource was used to deliver specialist training to enhance the First Aid qualifications of the team by considering a selection of potential major trauma scenarios, relevant to our operations. A further session also dealt with firefighting and extinguisher training.

Absence performance for 2023 dropped to 3.64% from the 2022 level of 4.0%. There has been a huge focus on health and well being of our employees with campaigns focused on cancer awareness, mental health and men's health. Some focus areas in 2024 will include nutrition and general fitness.

UPM Caledonian

Contribution to UN Sustainable Development Goals in 2023



Community

Through the Caledonian Employee Charity Fund, local charities have benefitted from

£196,080

as charitable donations from employees.



Water

2,884,838m³

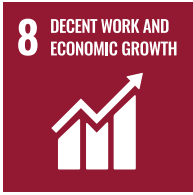
in fresh water consumption (16% reduction 2022 vs 2023)

25.7%

reduction in effluent COD tons 2022 vs 2023

15%

reduction in effluent TSS Tons 2022 vs 2023



Safety

1,382

safety observations and incidents reported by employees, visitors and contractors of which

55 included an environmental element

246

Safety walks in 2023

100

Formal safety discussions with area teams



Certified fibre

91%

of fibre used in paper production at Caledonian was FSC and /or PEFC certified. UPM's target is to have all fibre certified by 2030.

111,929 tons

of LWC sold under PEFC or FSC certification scheme in 2022

UPM is committed to sustainable forest management and credible certification systems, FSC and PEFC. Forest certificates guarantee that the wood raw material comes from the sustainably managed forests with legal logging operations.



Air

37%

reduction in Nitrogen Oxides Emissions to air (2022 vs 2023)

27%

reduction in Total Particulate Matter emissions to air (2022 vs 2023)



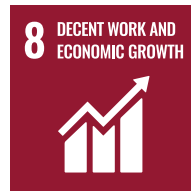
Energy

65%

of all required electricity is generated onsite using renewable sources via the CHP biomass fueled boiler.

100%

of all steam is utilised onsite for the papermaking process.



Employment

Caledonian employed

280 People

Total persons at Caledonian Paper

Air



The CHP boiler had a 84% operating rate in 2023 with a major maintenance shutdown for the whole month of March. There was one instance of elevated carbon monoxide levels during the pre-installation set up of the APC system which was reported to the Scottish Environmental Protection Agency. This occurrence was for a one hour period with a measurement of 160.5 mg/m³ which was above the emission limit value of 150mg/Nm³. To enable to APC software to control the boiler it was necessary during the pre installation to take the boiler to its extreme limits to allow the software to learn how to react. The APC software was installed and operational from November 2023.

We have seen significant reductions in several emission to air including 55%

reduction in Chlorine, 37% reduction in nitrogen oxides and 27% reduction in total particulates. These reductions are partially due to the lower operating rate in 2023, however a significant proportion of the reduction can be attributed to working with our biomass suppliers to improve the overall quality and reduce the levels of contamination that can come in with the recycled fuels.

Sulphur dioxide emissions increased slightly (+8%) primarily due to optimisation of the dosing of the sulphur containing chemical used to minimise corrosion in the boiler.

Fossil carbon dioxide emissions also increased in 2023 (+15%) due to increased operational hours of the Auxiliary boiler which operates on natural gas.

Waste



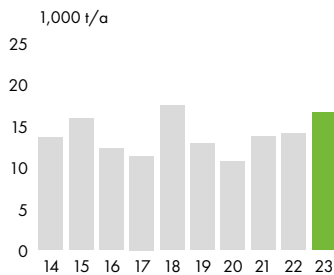
We carried out audits of our external waste contractors during 2023 to ensure that all disposal options were effective and in compliance with applicable legislation, no issues were found. Caledonian utilises one contractor for the majority of the sites waste and two contractors for all flyash. All waste from site during 2023 was recycled, reused or provided energy from waste.

The location of the various waste collection areas across the mill was reviewed and there is no need to change any of these in the prevention of cross contamination.

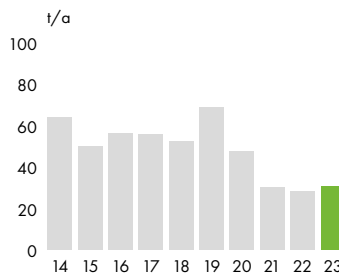
Year on year we are achieving reduced volumes of waste leaving site.

There was new legislation introduced in the UK regarding the recycling of packaging materials. The Extended Producer Responsibility regulation requires collection and reporting of packaging data for the importing of packaging and the supply of packaged goods to the UK market. Charges will be introduced for the recycling of all packaging materials that ultimately end up in household bins.

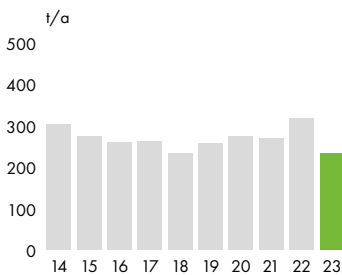
Fossil carbon dioxide, CO₂ (scope 1)



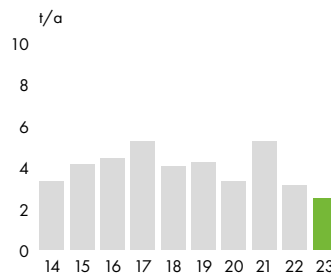
Sulphur dioxide, SO₂



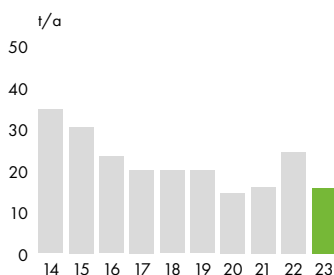
Nitrogen oxides, NO_x



Particulates

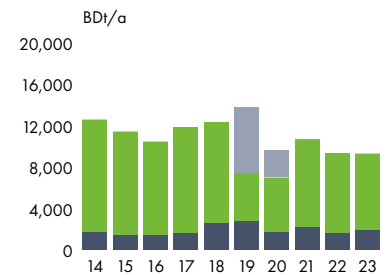


Chlorides, HCl



t/a refers to tonnes per annum

Solid waste



- Ash (Landfill)
- Hazardous
- Ash (Recycled)
- Recycled/Recovered

All waste volumes based on dry tonnes

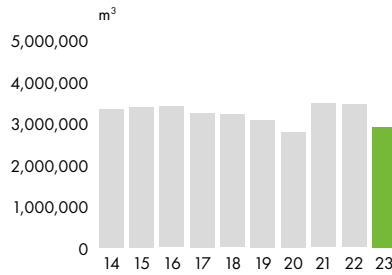
Water



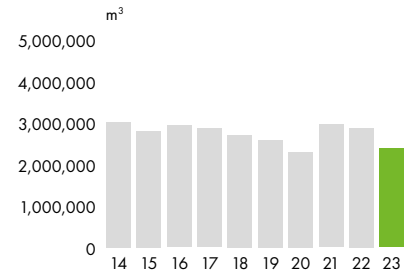
All water used onsite is municipal mains potable water. The water used in the papermaking process undergoes several recycling routes before being discharged to the effluent system. Caledonian has a primary effluent treatment plant for solids removal which is then combusted in the CHP boiler with the excess water effluent being discharged to the municipal secondary effluent treatment plant for further processing. The agreement between Caledonian and the operator of the municipal secondary treatment plant has limits on several parameters with the treatment provider sampling and analysing the key parameters on a daily basis.

The water audit that was carried out in 2022 by the UPM team generated several focus areas for water efficiencies. Many of these were addressed throughout 2022 and 2023 and have achieved water savings. Unfortunately, with a lower production rate in 2023 it was difficult to achieve specific water savings per tonne of product when taking the whole year into consideration. Further potential for water savings will be a focus area in 2024.

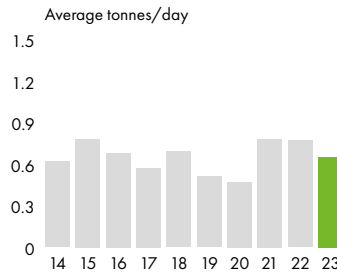
Freshwater Consumption



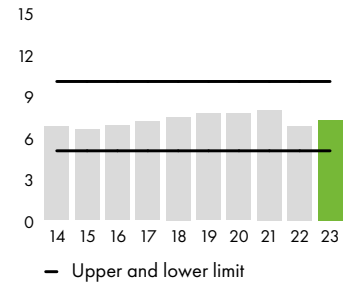
Effluent Volume



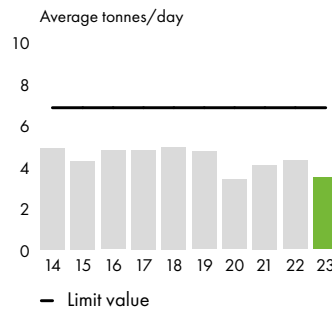
Total suspended solids, TSS



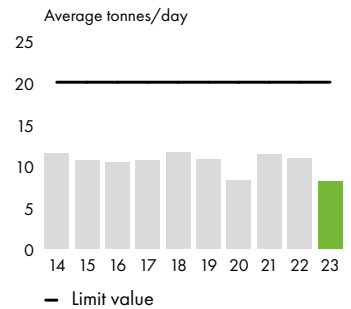
Effluent PH



Biological oxygen demand, BOD₅



Chemical oxygen demand, COD



Energy Efficiency

Mechanical Pulp used in the LWC product manufactured at Caledonian is produced by the Pressure Groundwood (PGW) process. This process area is the single biggest electrical consumer in the Mill and saving electrical energy when producing PGW pulp is a clear focus area. In 2021 the installation of a new grinding surface for one of our four Pressure Groundwood (PGW) grinders was carried out. The goal of the installation was to reduce overall electrical consumption in the PGW plant and a review of the project has delivered the targeted

energy saving. Another of these stones was installed in the latter half of 2023 with a further stone due for installation in 2024 which will contribute to further energy savings.

An advance process control system (APC) was installed in the in the CHP boiler in November 2023 to aid the combustion process. This investment will support an improvement to the boiler load control accuracy resulting in an improvement to the overall combustion efficiency and should give a reduction in

gas flow rates which will have a benefit for both erosion potential and lower emissions to air for NO_x. The APC system will be developed and optimized during 2024 to realise these benefits.

The installation of the turbo blowers as a replacement to the liquid ring pumps on the PM vacuum system will also be optimized in 2024 to further enhance the energy efficiency savings and develop water savings also.

Customer Visits

We have had a number of customer visitors to the mill during 2023, with a mix of printer, publishers and merchants, from the UK, and abroad. Immediate Media, Associated News Papers and Gould UK to name a few from the UK market, as well as Lindenmeyr INC and CTP from the USA and South Africa.

The interest in the mill production of paper is now including the impact we have on the outside world, this can be from forestry practices and accreditations through to the chemical sourcing.

Management of crises and exceptional situations

Caledonian has systems in place for emergency preparedness and response which includes both environmental and OHS incidents. Operational procedures have been established which take into account both normal and abnormal situations which may arise throughout the organisation and addresses the requirements to control, minimise and prevent any negative impacts. These procedures are available to all personnel within the Quality First database.

We have an established emergency response team (ERT) on each shift who are multi skilled and trained to assess and contain a variety of incidents. If the situation or incident can be managed by the team itself then they shall do so with retrospective contact being made with the relevant authorities and agencies. Further details of the ERT responsibilities are detailed on pages 8 and 9.

Societal responsibility

2023 was a busy year for UPM Caledonian with several fundraising events and staff initiatives launched.

In March we opened our new and improved Gym with new equipment for all employees to use, we currently have 171 employees who use the facility. We also launched our Smart-Spend app which is set up for staff to use various discount codes and offers to save money on everything from holidays, weekly shop, food subscriptions and cinema tickets. It is proving to be a very handy tool for saving money for our staff.



We also offered the opportunity for staff to become Mental Health Wellbeing Champions and offered training for those who were assigned the role and responsibility. On taking the role they would be designated to offer advice to anyone at work suffering from mental health issues, providing a key point of contact, as well as advice and guidance in seeking the professional help that the individual may need. These issues can range from personal or work-related stress to all sorts of symptoms indicative of employee burnout.

They can also include long-standing mental health conditions, such as depression or anxiety. We also launched our wellbeing room for employees. The purpose of the room itself, is to provide a calm, quiet space where people can drop in if feeling stressed or anxious at work. Or even simply if they need a few minutes to themselves. The room can also be utilised for managers and employees to have conversations around health and wellbeing, away from the operation or office environment.

Engaging with Society – Caledonian Charity Fund

We impact local communities and societies in many ways. Understanding the impact that we have is an essential component of our business success. In many locations, we are a significant employer, taxpayer and partner to local entrepreneurs, making positive contributions to the local economy. We apply several precautionary measures to mitigate and remedy potential negative environmental and social impacts on our surrounding communities.

The Caledonian Paper Charity Fund was established in 1995 with the ultimate aim of providing charitable donations to local groups to enhance the quality of life. Employees contribute a donation from their salary on a monthly basis with UPM Caledonian matching these contributions.

Throughout the year contributors to the scheme can nominate appropriate causes to be considered for a donation. Very often the suggested nominations are charities that have supported the family and friends of employees at a very difficult time. Annually all the nominations are considered and the committee will agree which charities will receive a donation from the fund.

Some of the charities receiving donations in 2023 were:

- Ayrshire Hospice
- Crosshouse Children's Fund
- Cerebral Palsy Scotland
- Disability Football Team
- RNLI Ayrshire
- The Lennox Partnership

In June the CHP Shutdown Team donated to Irvine and Troon Cancer Care for the vital support they provide for our community. The CHP Shutdown Team were awarded The Best Safety Ambassadors for their work during our March Shut last year which was a testing time but the team showed excellent teamwork and safety awareness. As a thank you they were able to choose a charity to donate to and Irvine and Troon Cancer Care was the very worthy choice, donating £300.

In September we held our first Macmillan Coffee morning which was a great success and raised an impressive £584. We will make this an annual event which hopefully will grow each year.



In November we took part in our first 'Movember' with a team of 16 staff members who signed up to grow a moustache or take part in a fitness challenge for the month of November. We raised £3510 and again this is something we will continue to take part in annually, hoping to grow our team in 2024.

On an annual basis 6 training scenarios are identified to allow the team to refresh their skills in mock incidents. Some of the first aid scenarios will cover the treatment of heart attacks; crush injuries; eye injuries and administering CPR. Area familiarisation is important to ensure

the team know where hazardous/flam- mable chemicals are stored and where firefighting equipment is located.

Photos of Major Trauma Management and Firefighting activities training carried out in 2023 are shown below:

Safety

Our goal in UPM is to be the industry leader in health and safety. Our clear objective is zero fatal and serious accidents. Safety is fully embedded in our daily activities and is not considered less or secondary than any other interest. We strive to reduce and eliminate accidents under our control through continuous improvement and effective risk management.

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.

Before accessing UPM production site, contractors get UPM safety training, which presents and demonstrates the basic safety requirements. This is complemented with a job specific safety induction and a permit to work.

Emergency Response Team (ERT): Caledonian has an ERT team for each shift consisting of 7 persons each. The main purpose of this team is to safely and efficiently respond to incidents, to stabilise any causality or plant abnormality until suitable professional help arrives (if required). This team undergo extensive training including first aid; fire fighting; chemical incidents; rescue plans and being familiar the site layout.



Environmental parameters

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

		2021	2022	2023
Production capacity	Paper LWC	245,000t	235,000t	235,000t
Raw materials (BDT)	Pulp Pigments Process Chemicals	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Energy	Biogenic Fuels Fossil Fuels Electricity	See UPM Corporate Environmental and Societal Responsibility Statement for more information		
Emission to air	Sulphur Dioxide, SO _x	30t	28t	30t
	Nitrous Oxides, NO _x	269t	318t	233t
	Carbon dioxide, CO ₂ (on-site fossil emissions, scope 1)	13,695t	14,031t	16,489t
	Carbon dioxide, CO ₂ (fossil emissions from purchased energy, scope 2)	24,707t	24,425t	14,599t
	Particulates	5t	3t	2.5t
Water intake	Fresh Water	3,485,800m ³	3,433,839m ³	2,884,838m ³
Discharges to water	Chemical Oxygen Demand (COD)	4,133t	3,974t	2,954t
	Total Suspended Solids	286t	280t	237t
	Biological Oxygen Demand (BOD ₅)	1,482t	1,556t	1,256t
	Effluent Volume	2,947,726m ³	2,871,688m ³	2,371,539m ³
Side Products		0t	0t	0t
Non-hazardous waste¹⁾	Waste to recycling, energy recovery and or composting (See below for breakdown)	10,496t	9,246t	9,282t
	– Boiler Ash	8,371t	7,624t	7,376t
	– Bark & Other Wood Residues	971t	1,005t	935t
	– Domestic	356t	169t	289t
	– Waste Paper	161t	160t	156t
	– Other	456t	139t	145t
	– Metals	181t	149t	381t
	Waste to Landfill (Flyash)	169t	0t	5t
Hazardous Waste	Hazardous Waste	10t	0t	2.2t
Recovery Rate²⁾		98%	100%	99.95%
Land use	Total use of land	33ha	33ha	33ha
	Total sealed area on site	10ha	10ha	10ha
	Total nature-oriented area on site	23ha	23ha	23ha

¹⁾ All wastes are dry weight

²⁾ Recovery rate is based on total waste



Performance against targets in 2023

TARGET	ACHIEVEMENT	COMMENTS
1 Ensure compliance against PPC permit with zero category 3 or above deviations.	No	Cat 3 deviation for one instance of one hourly CO above PPC ELV during APC pre-installation checks. This was reportable to SEPA.
2 Key efficiency targets are improved or maintained and included in area plans including effluent volume < 11.5m ³ /Te, COD < 2.2kg/Te, site emissions and COD.	Partial	Key efficiency targets are included in area plans, with stability in most areas, however there has been some targets where improvements have not been achieved; eg effluent volume has increased by 0.6m ³ /ton LWC.
3 Update roadmap to reach 2030 sustainability targets. Look at with and without investment proposals to achieve 2030 targets.	Yes	Performance against targets monitored. Further studies will be required on the technology required to close any gaps in achieving the 2030 targets.
4 Energy efficiency roadmap to be created (electricity and gas; water and effluent; compressed air).	Partial	3 energy efficient turbo blowers added to paper machine vacuum system. Energy use is closely monitored and taken into account for the whole operation. This will further be investigated during 2024
5 Key safety accountability targets <ul style="list-style-type: none"> • Safety walks : 6 per identified person • Near Miss/Observation: 1 per quarter per employee • Are safety meetings: 5 per annum per area 	Partial	<ul style="list-style-type: none"> • 246 walks carried out in 2023 Tgt was 228 • 1,382 observation raised in 2023, Tgt was 1,056 • 20 area meetings carried out with a tgt of 24 for 2023

Environmental, Societal and key OHS targets 2024

Key Areas of Focus

TARGET
1 Ensure permit compliance <ul style="list-style-type: none"> • with no clean run deviations category 3 or above • develop awareness across mill to increase environmental observations
2 Key efficiency targets are improved or maintained and included in area plans including effluent volume, site emissions and COD
3 Utilities efficiency team continued with energy efficiency roadmap to be developed : electricity and gas; water and effluent; compressed air
4 Key Safety accountability targets <ul style="list-style-type: none"> • SOP (safe operating instructions) reviews : 10 per production area • Safety observations : 2 per employee per year • Safety walks : 6 per identified employee
5 Focus on health and wellbeing : develop a calendar for focus areas for 2024.



Validation statement

As an accredited environmental verifier, Inspecta Sertifointi Oy has examined the evidence of procedures and processes of the environmental management system and UPM Caledonian Environmental and Societal Responsibility 2023 statement.

On the basis of this examination, the environmental verifier has herewith confirmed on 2024-04-12 that the UPM Caledonian Environmental and Societal Responsibility 2023 statement is in compliance with UPM's internal reporting guidelines, and there is no evidence of non-compliance with applicable legal requirements relating to the environment.



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