

UPM Caledonian

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2021



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 250,000 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 idenfied 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 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 millspecific environmental and societal performance data and trends for the year 2021.



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

Production capacity	245,000 tonnes of paper		
Personnel	274		
Products	Coated Magazine Papers: UPM Cote H UPM Cote SB (Customer Specific) H UPM Ultra H UPM Ultra Silk H UPM Ultra Silk Plus H UPM Cote Blueshade H		
Cerfiticates	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 2021

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.

Impact of COVID

COVID continued to present a significant challenge for the mill in 2021 with further lockdowns in the first half of the year and high infection rates for lengthy periods of time. This affected staffing levels throughout the process due to personnel isolating during periods of infection. The COVID risk assessment that had been established in 2020 was used as a vehicle for establishing and communicating a very comprehensive package of measures aimed at eliminating or mitigating the risks.

Our mitigation measures have included highlighting the importance of symptom awareness with temperature checks for everyone coming to site and regular antigen testing promoted. Vaccine uptake has also been strongly encouraged.

Hygiene measures in the workplace have been increased with extra cleaning and hand sanitiser stations set up in work areas and across the site. Airborne transmission mitigation is particularly important with this virus, and we have learned a lot about the benefits of good ventilation. Carbon dioxide monitoring has been carried out and ${\rm CO}_2$ monitors are in place in our common work areas to ensure our ventilation remains at a good level.

Social distancing has changed how we carry out our day to day work with restricted numbers in our control rooms, virtual meetings and trying to keep 2m apart from colleagues at work as much as possible.

With an established vaccine programme and decreasing infection rates there is hope that we are emerging from the pandemic and Caledonian can focus on a revised agenda to take health and safety forward.

COVID has brought changes and challenges to how we work in ways none of us could have foreseen. Personally, we thank all our Caledonian colleagues for rising to this challenge together.

Environmental Performance

UPM Caledonian operates within the boundaries of an Integrated Pollution Prevention and Control (PPC) Permit. The conditions of this permit are transposed from the European Industrial Emissions Directive with reference to the current Pulp and Paper BREF document. In 2021 there was one instance of non-compliance against the PPC permit to report to SEPA primarily as a result of fuel related issues within the CHP boiler which resulted in the carbon monoxide being above the one hour PPC emission limit value. Each instance requires investigation with remedial action put in place to prevent a recurrence.

Reporting to SEPA is required on a quarterly basis for a variety of param-

BM Mundo

Bryan McMurdo General Manager

eters including emissions to air, effluent and waste. There were significant improvements seen in several parameters including reductions in emissions to air for sulphur dioxide.

As an integral part of the manufacturing process Caledonian operates a biomass fuelled combined heat and power plant (CHP) which supplies all of the sites current steam demand and meets a proportion of the electrical demand. The CHP plant is fuelled 100% by biomass from virgin and recycled sources with all fuels sourced locally. We continue to work closely with our biomass suppliers to ensure a consistent fuel quality with the added benefit of reducing the waste ashes from the combustion process.

Alternative recovery options for the flyash waste produced from the boiler were sourced in 2020 with significant progress being made on finding alternative ash disposal routes to ensure no waste ash is disposed to landfill. In 2021 only 2% of all flyash went to landfill which was after a boiler interruption and the flyash characteristics were altered



Shavenhallas

Sharon Gallagher
Environment & Compliance Manager

as a consequence of water ingress into the silo. This material was not suitable to be disposed of to one of the recovery routes. It is envisaged that there will be no waste to landfill from 2022 onward.

The annual maintenance shut of the CHP boiler which usually takes place in springtime was delayed until July primarily due to COVID travel restrictions. The performance of the boiler for the 17 month operating period was very good with few additional interruptions. There is no scheduled maintenance shut in 2022 as the site will move back to a springtime shut. During the shut in 2021 some of the maintenance carried out had a positive impact on the emissions to air with a significant reduction in total particulates after the shutdown

Occupational Health and Safety

UPM strives for zero accidents across all sites and has a target of 1.5 (LTAF) for Communication Papers. Lost time is calculated as the number of lost time accidents per million hours worked (LTAF), for Caledonian the reported figure for 2021 was 6.0 which was a disappointing result. The LTAF is for UPM employees only and does not include contractors, in addition to this there were 8 recorded incidents for contractors.

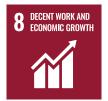
The business plan for Caledonian Paper has the objective of re-energising safety which includes the setting of safety targets for all personnel ranging from all Supervisors and Managers carrying out a minimum number of safety walks to all employees recording a minimum of 3 safety observations within the One Safety system. Safety observations are a key a tool to prevent accidents and incidents.

The 2021 safety walk target was successful with 136% achieved and 108% of the safety observation target achieved 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.

Absence performance for 2021 was high at 5.2% which was heavily influenced by the COVID isolation rules. The health and wellbeing facilities were gradually reintroduced during 2021 as COVID restrictions allowed. The use of the onsite gym is used by many employees and is an excellent facility for all employees to maintain good levels of fitness.

UPM Caledonian

Contribution to UN Sustainable Development Goals in 2021



Community

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

£180,000

as charitable donations from employees.

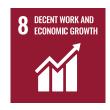


Water

3,485,800_{m³}

in fresh water consumption

12% reduction in effluent COD tons over last 10 years (2012 vs 2021)



Safety

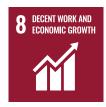
895

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

40 included an environmental element

176

Satety walks in 2021



Qualified Spend

99%

of raw materials spend excluding wood qualified against UPM Supplier and Third Party Code.

UPM's target is to have 100% of raw material spend covered by UPM Supplier and Third Party Code by 2030. In 2021 96% of raw material spend was covered by UPM Supplier and Third-Party Code.



Certified fiber

95%

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. In 2021 the share of certified fibre reached 84%

104,049 tons

of LWC sold under PEFC or FSC certification scheme in 2021

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

36%

reduction in Sulphur Dioxide emissions to air (2020 vs 2021)

25%

reduction in Nitrogen Oxides (NO_x) emissions to air in last ten years (2012 vs 2021)



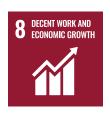
Energy

63%

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

274 People

Total persons at Caledonian Paper





Waste



The CHP boiler had a 96% operating rate excluding the annual maintenance shut in July 2021 and had reasonable output from the turbine at 23.0MW. There was one instance of elevated carbon monoxide levels which occurred in January and required reporting to the Scottish Environmental Protection Agency. This occurrence was for a one hour period with a measurement of 150.3 mg/m³ which was only just above the emission limit value of 150mg/Nm³ and is suspected to be primarily as a result of a pocket of poorer quality fuel causing boiler instability. The operator reacted quickly to bring all emissions back within permit limits.

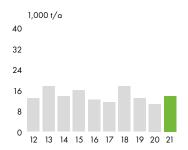
Work continued with the optimisation of the dosing of the sulphur containing chemical used to minimise corrosion in the boiler which contributed to a significant reduction of 36% in the sulphur dioxide emissions to air. 2021 saw the lowest level of sulphur dioxide emissions from the CHP boiler since it began operation in 2009. Although hydrogen Chloride emissions increased slightly in comparison to 2021 (+9%) they remain at a significantly lower level than during the first 10 years of the boiler operations. Total particulate emissions increased in 2021 which were heavily impacted during the first half of 2021 before the annual maintenance shutdown. As part of the abatement for total particulates there are 4 bag house filters which capture the particulates and reduce the emissions to air. Several sections of the bag house filters were replaced during the annual shutdown making them more effective and resulted in a significant reduction in the particulate emissions in the second half of 2021.

Due to a change in the waste classification of flyash Caledonian reported waste to landfill in 2019 for the first time in many years, which continued into 2020. Caledonian worked with several waste organisations to find a recovery option for the flyash and carried out trials on two of these routes during 2020. Both these suppliers were approved as successful recovery options and were utilised in the latter half of 2020 and fully in 2021.

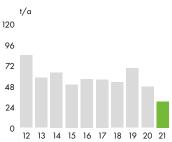
The first recovery option utilises the high pH and calcium chloride content of the flyash in the consolidation of hazardous liquid waste which creates a neutralised material and is then used in land remediation. The second recovery option involves the carbonation of the flyash forming a limestone material that is then blended with other materials to form aggregate pellets, this option conforms to the end of waste criteria. By utilising these recovery options Caledonian reduced material to landfill in 2021 to 169 dry tons (1.5% of all site waste) and it is envisaged that we will have zero waste to landfill from 2022 onwards. Both solutions are a significant step for Caledonian in achieving the 2030 Clean run target of zero waste to landfill.

Work continues with the waste contractors to ensure the recovery and recycling of the mills waste streams whilst actively trying to reduce the waste streams produced at site.

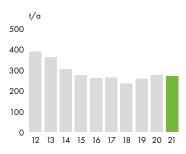
Fossil carbon dioxide, CO



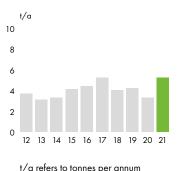
Sulphur dioxide, SO,



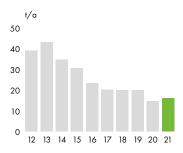
Nitrogen oxides, NO



Particulates



Chlorides, HCl



Solid waste



All waste volumes based on dry tonnes

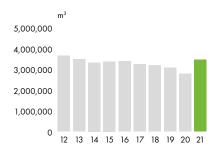
Water



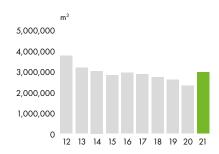
All water used onsite is municipal mains potable water. The water used in the papermaking process undergoes several recycling routes before being discharged to the effluent system. Caledonian has a primary effluent treatment plant for solids removal which is then combusted in the CHP boiler with the 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. No breaches of these parameters occurred during 2021.

Caledonian had a difficult year in terms of water and effluent volumes with increased volumes in both due to several production related issues. The increased volumes also had a negative impact on both total suspended solids tons and chemical oxygen demand (COD) tons with increases in both. Caledonian has included these areas in the mills business plan for 2022 and will be an area of focus throughout the coming year as we work towards UPMs 2030 targets.

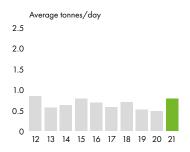
Freshwater Consumption



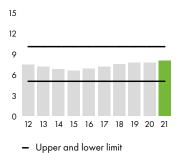
Effluent Volume



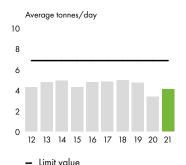
Total suspended solids, TSS



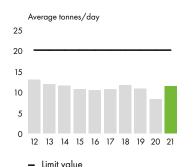
Effluent PH



Biological oxygen demand, BOD,



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 quarter 1 2021 the planned installation of a new grinding surface for one of our four Pressure Groundwood (PGW) grinders was carried out. In this case due to COVID-19 travel restrictions vendor support was provided remotely using mobile video technology. The goal of the installation is to reduce overall electrical consumption in the PGW plant and a result review at the end of 2021 indicates that the project has so far delivered the targeted energy saving. Follow up of the performance of this new grinding surface technology for the Mill will continue through 2022.

With the increase in renewable generation sources electricity pricing has become less predictable over recent years with greater volatility seen in the market price. From autumn 2021 there has been an unprecedented increase in energy prices across the whole of Europe greatly impacting all energy intensive industries. By using market signals and predictions the Mill has actively load shed electrical consumption during electricity peak price periods. Although electrical consumption overall has not changed from these actions, this has had the effect of contributing to reduce the overall grid peak load.

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.

The main concern of the ERT team is to ensure all personnel are under no threat from the situation or incident and if there are any casualties to carry out initial first aid. The next step for the teams is to protect the surrounding areas from any possible contamination or damage from the incident, ie storm

drain system in the event of a chemical or oil spillage.

Due to the social distancing requirement of COVID face to face safety training was suspended in 2021 however where possible e-learning training was completed. Practical safety training will be a focus in 2022 with confined space rescue training and use of breathing apparatus scheduled.

All incidents are recorded on the global One Safety system and are investigated to prevent recurrence.

Societal responsibility

Biofore Share and Care Progamme

UPM is involved in many causes and community projects supporting sustainable development and the prosperity and welfare of the communities in which we are active. Our work on this arena is clearly connected to our Biofore Strategy and responsibility targets. It is coordinated under the umbrella of our Biofore Share and Care programme.

The Biofore Share and Care programme comprises three forms of support: sponsorships, donations and employee volunteering. The support can be a monetary contribution, products, materials or employee volunteering. Local sponsorship is target-oriented and long-term involvement in the community where UPM operates.

Our focus is on activities and programmes that are relevant to our business, support innovation and sustainability, or promote local vitality and wellbeing. The four focus areas of UPM's Biofore Share and Care programme are: Reading & learning, engaging with communities and beyond fossil initiatives.

In 2020 Caledonian gave a substantial quantity of face masks to the local charity Hansel Village and in 2021 chose this same charity to receive a donation from the company as part of the Biofore Share and Care programme which is involved in many causes and community projects supporting sustainable development and the prosperity and welfare of the communities in which UPM are active.

Hansel is one of Ayrshire's leading care organisations supporting people and their families living with a learning disability and those with autism. Further information is available from www.hansel.org.uk

Food Banks

In addition to the Hansel donation the Trade Union at Caledonian Paper gave a donation to North Ayrshire foodbank. There are 428 foodbanks across the UK working to tackle food poverty and hunger in our local communities. In 2020/21, The Foodbank Network provided 2,537,198 three-day emergency food supplies and support to UK people in crisis. Of these, 980,082 went to children.

Food is donated

Schools, churches, businesses and individuals donate non-perishable, in-date food to a foodbank. Large collections often take place as part of Harvest Festival celebrations and food is also collected at supermarkets.

Food is sorted and stored

Volunteers sort food to check that it's in date and pack it into boxes ready to be given to people in need.

Professionals identify people in need Foodbanks partner with a wide range of care professionals such as doctors, health visitors, social workers and police to identify people in crisis and issue them with a foodbank voucher.

Clients receive food

Foodbank clients bring their voucher

to a foodbank centre where it can be redeemed for three days' emergency food. Volunteers meet clients over a warm drink or free hot meal and are able to signpost people to agencies able to solve the longer-term problem.

Engaging with Society – Caledonian Charity Fund

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 co-operation and open dialogue with various stakeholders as well as, for example, through sponsorships and employee volunteering

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



Typical Food Parcel



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.

In 2021 the following charities were selected sharing a fund of £6,000

- Ayrshire Hospice
- Hillhouse
- Irvine Sea Cadets
- St John Ogilvy, Care for the Community
- Coastwatch
- Ayrshire Young Parkinsons Group
- ENABLE Glasgow

Cycle to Work

Caledonian Paper has subscribed to the UK government's cycle to work scheme for many years. The Government's am-



bition that cycling and walking are the natural choices for shorter journeys, or as part of a longer journey, was clearly set out in the Cycling and Walking Investment Strategy published in 2017. If we can increase levels of active travel, such as cycling, the benefits are substantial. For individuals, it means cheaper travel and better health. For businesses, it means increased productivity and increased footfall in shops. And for society as a whole it means lower congestion, better air quality, and vibrant, attractive places and communities.

The incentive is to make sure that Cycle to Work schemes continue to attract new cyclists and are as inclusive as possible so that people travelling to work have the opportunity to realise the benefits that cycling affords. The employee benefit enables employees to hire cycles for active travel and/or cyclist's safety equipment from the employer, or from a third party, in return for a deduction from their earnings known as salary sacrifice.

Many employees regularly cycle to and from work on a daily basis.

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.

Environmental parameters

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

		2019	2020	2021	
Production capacity	Paper LWC	250,000t	250,000t	245,000t	
Raw materials	Pulp				
(BDT)	Pigments				
	Process Chemicals	See UPM Corporate Environmental and Societal			
Energy	Biogenic Fuels	Responsibility Statement for more information			
	Fossil Fuels				
	Electricity				
Emission to air	Sulphur Dioxide, SO _v	68t	47t	30t	
	Nitrous Oxides, NO _v	257t	273t	269t	
	Carbon Dioxide, CÔ ₂ (fossil)	12,790t	10,559t	13,695t	
	Particulates	4t	3t	5t	
Water intake	Fresh Water	3,061,181 m ³	2,773,748m³	3,485,800m ³	
Discharges to water	Chemical Oxygen Demand (COD)	3,903t	3,009t	4,133t	
	Total Suspended Solids	186t	172t	286t	
	Biological Oxygen Demand (BOD _s)	1,714t	1,220t	1,482t	
	Effluent Volume	2,581,041 m ³	2,290,046m ³	2,947,726m ³	
Non-hazardous waste and Side Products ¹⁾	Side Products	Ot	Ot	Ot	
	Waste to recycling, energy recovery and or composting (See below for breakdown)	6,167t	6,995t	10,496t	
	– Boiler Ash	4,461t	5,223t	8,371t	
	– Bark & Other Wood Residues	1,025t	1,159t	971t	
	- Domestic	294t	242t	356t	
	– Waste Paper			161t	
	– Other	387t	192t	456t	
	– Metals		178t	181†	
	Waste to Landfill (Flyash)	6,118t	2,596t	169t	
Hazardous Waste	Hazardous Waste	22t	37t	10t	
	Recovery Rate	50%	73%	98%	
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	

¹⁾ All waste is dry tonnes



Performance against targets in 2021

TARGET	ACHIEVEMENT	COMMENTS
1 Clean Run Deviations Zero category 3, 4 or 5 deviations	No	category 3 deviations reported in 2021 l instances of carbon monoxide emission limit value being above the PPC hourly permit limit due to fuel fluctuations resulting in boiler instability.
2 Key Efficiency targets to be included in area business Plans	Yes	All areas looking at energy efficiency targets. This will continue into 2022.
3 Update roadmap to reach 2030 sustainability targets. Look at short and long term proposals to achieve 2030 targets	Partial	This is ongoing into 2022. Further studies will be required on the technology required to close any gaps in achieving the 2030 targets.
4 Review of mill waste streams	Yes	Full analysis of all streams carried out. New recovery options for flyash now established which has reduced the waste tons to landfill.

Environmental targets 2022

Key Areas of Focus for 'Fit for 55'

TARGET

- 1 Zero deviations against existing legislative requirements, including PPC permit and Water consent levels
- 2 Carry out a sitewide groundwater and soil analysis plan with key testing and reporting of key parameters in accordance with PPC permit
- 3 Investigate opportunities for site carbon reduction
- 4 Update roadmap to reach 2030 sustainability targets. Look at with and without investment proposals to achieve 2030 targets. The area of water use will be a focus for 2022.
- 5 Ensure efficiency targets are included in area plans including MWh/t, m³/t, compressed air and heat recovery and COD. A target of 12m³/t LWC for effluent volume is set for 2022.



Validation statement

As an accredited environmental verifier, Inspecta Sertificinti Oy has examined the evidence of procedures and processes of the environmental management system and UPM Caledonian Environmental and Societal Responsibility 2021 statement.

On the basis of this examination, the environmental verifier has herewith confirmed on 2022-04-13 that the UPM Caledonian Environmental and Societal Responsibility 2021 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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