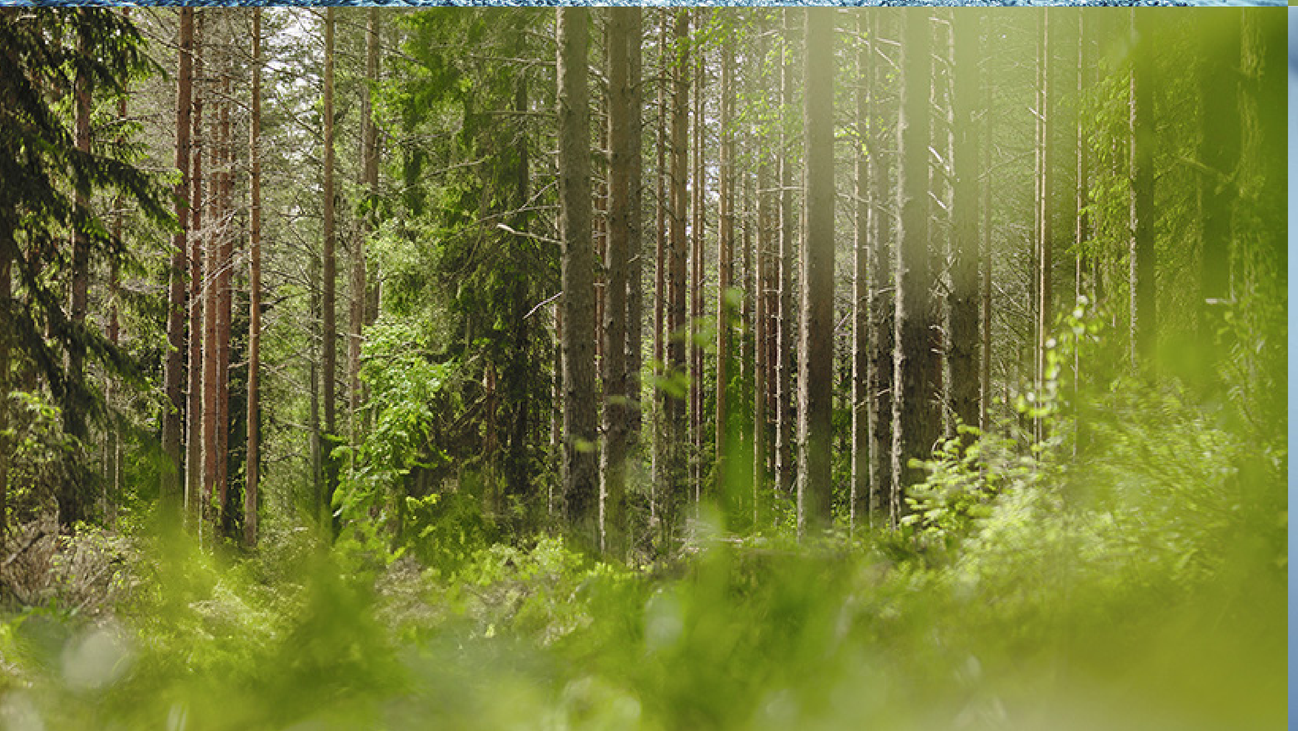
GREEN BOND REPORT 2023

UPM



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Leader in responsibility

Dow Jones Sustainability Index: The only forest and paper company in the Dow Jones European and World Sustainability Indices (DJSI) for 2023–2024.

MSCI ESG ratings: An AAA rating in the assessment. MSCI ESG Research provides ESG ratings on global public companies, according to their exposure to industry-specific ESG risks and ability to manage those risks relative to peers.

CDP Programme: One of few companies to achieve a double A for our leadership in corporate transparency and performance on climate change and forests. For the water questionnaire, we received an A-, which is also a leadership position.

S&P Global's Sustainability Yearbook: Top 10% S&P Global CSA Score in the Sustainability Yearbook 2023 as one of the top-scoring companies in our industry.

EcoVadis: The highest possible Platinum level for our sustainability performance for which only 1% of over 100,000 companies assessed globally attain.

Nature Benchmark: First among our peers in the paper and forest segment and among the top overall performers in the 2023 Nature Benchmark by the World Benchmarking Alliance.

Bloomberg Gender-Equality Index (GEI): UPM is among the 484 public companies globally and one of the three Finnish companies in the 2023 index. The GEI lists the companies most committed to transparency in gender reporting and advancing women's equality.

Executive summary

We have science-based targets and a solid track record of concrete action to both mitigate climate change and safeguard biodiversity. We source our raw materials from sustainably managed forests and process them into climate-positive products that help our customers achieve their sustainability goals.

Sustainability also plays an important role in our financing. We established a Green Finance Framework in November 2020, which received the overall rating of Dark Green from CICERO Shades of Green. We have issued three Green Bonds: EUR 750 million in November 2020, EUR 500 million in March 2021 and EUR 500 million in May 2022.

In this report, we present the allocation of the proceeds and impacts achieved of these three bonds. Detailed information on the final allocation of the May 2022 EUR 500 million bond proceeds can be found on pages 10–16. Details of the previously issued bonds are available in the Green Bond Reports 2020, 2021 and 2022. Links to the reports can be found below. This report is based on the green finance portfolio as at 31 December 2023 and the November 2020 Framework. We have used a portfolio approach but share also bond by bond information. Impact reporting is presented at the portfolio level.

We have reported our EU Taxonomy-eligible and Taxonomy-aligned activities in the Annual Report 2023 and have also made an internal assessment on the alignment share of the use of proceeds of the issued bonds.

In November 2023, we published our updated Green Finance Framework, which also received an overall Dark Green rating from Second Party Opinion (SPO) provider S&P Global Ratings. Summary of the new Framework can be found from Appendix 2 and the links to the new Framework and SPO are below.

°CICERO Dark Green

The second-party verifier CICERO has reviewed our Green Finance Framework with the best possible rating, CICERO Dark Green.

- Green Finance Framework November 2020
- CICERO Second Party Opinion November 2020
- Green Finance Framework November 2023
- S&P Global Ratings Second Party Opinion November 2023
- Green Bond Report 2020
- Green Bond Report 2021
- Green Bond Report 2022
- UPM Annual Report 2023
- UPM Responsibility Statement
- UPM Annual Report 2023 – EU taxonomy

Green Bond portfolio

EUR 1,750m

using Eligible Assets and Projects from the following categories:

Sustainable forest management

- 825,000 certified hectares
- 4.7 million tonnes carbon sink
- Positive impact on biodiversity

13 CLIMATE ACTION
15 LIFE ON LAND

Climate-positive products and solutions

- 1,632 patents
- 183 trademarks
- Bio-based solutions to replace fossil-based materials
- 792,000 tonnes emissions saved

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION

Hydropower

- 1,029 GWh hydropower generation

7 AFFORDABLE AND CLEAN ENERGY
13 CLIMATE ACTION

Green Bond summary

Green Bond Allocation 31 December 2023

EUR 1,750 million Proceeds

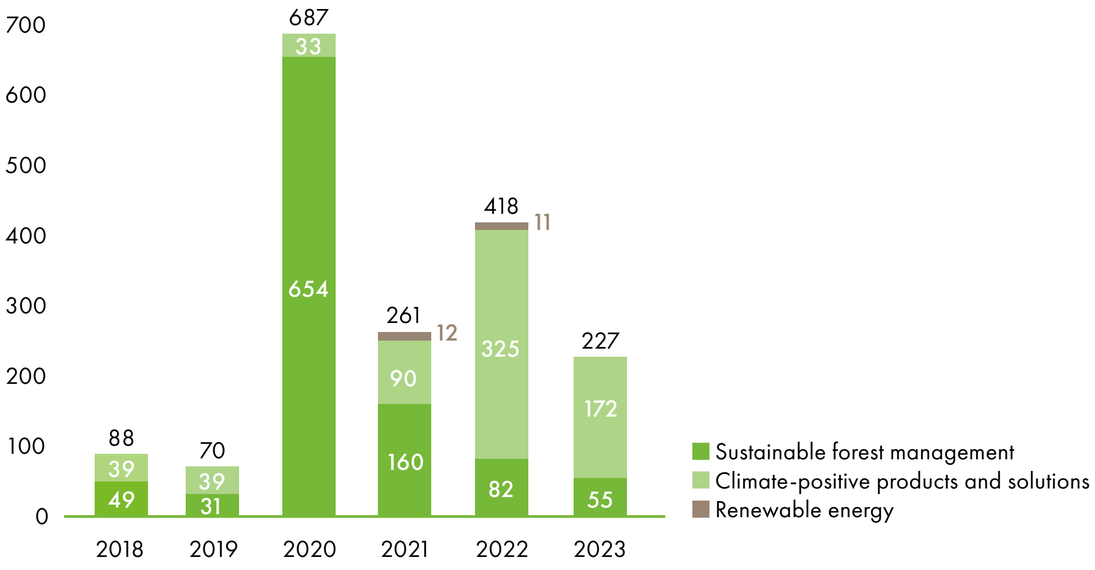
EUR million (%)

FINLAND
24%

GERMANY
25%

URUGUAY
51%

Allocation per year per category (EUR million)



Annual carbon sink 2023

4,710
tonnes CO_2e /EUR 1 million
(calculated for the Sustainable forest management, EUR 1,031m)

or

2,770
tonnes CO_2e /EUR 1 million
(calculated for the whole nominal value of the bond portfolio, EUR 1,750m)

Green Bond summary

Green Bond portfolio allocated proceeds and impacts				
Issuer	UPM-Kymmene Oyj			
Bond type	Senior, unsecured			
Listing	Euronext Dublin			
Second Party Opinion	CICERO			
Nominal value total/per bond	EUR 1,750 million	EUR 750 million	EUR 500 million	EUR 500 million
ISIN		XS2257961818	XS2320453884	XS2478685931
Bond ratings		Baa1 Moody´s, BBB+ Standard & Poor´s	Baa1 Moody´s	Baa1 Moody´s
Issue date		19 November 2020	22 March 2021	23 May 2022
Maturity date		19 November 2028	22 March 2031	23 May 2029
Coupon		0.125%	0.500%	2.250%
Proceeds allocated	EUR 1,750 million/ 100%	EUR 750 million/100%	EUR 500 million/100%	EUR 500 million/100%
Look-back period	1-3 yrs	2-3 yrs	1-2 yrs	1-2 yrs
Re-financing*	EUR 945 million/54%	EUR 750 million/100%	EUR 125 million/25%	EUR 70 million/14%
Financing *	EUR 805 million /46%	`-	EUR 375 million/75%	EUR 430 million/86%
Capex or capitalised	EUR 1,515 million/87%	EUR 677 million/90%	EUR 438 million/88%	EUR 400 million/80%
Opex	EUR 235 million/13%	EUR 73 million/10%	EUR 62 million/12%	EUR 100 million/20%
EU Taxonomy alignment	50%	12%	67%	90%
Geographical split	51% Uruguay, 24% Finland, 25% Germany	77% Uruguay, 23% Finland	43% Uruguay, 16% Finland, 40% Germany	20% Uruguay, 35% Finland 46% Germany

All proceeds of the bond portfolio allocated to Cicero Dark Green categories

Categories used	EUR 1,750 million	EUR 750 millon	EUR 500 million	EUR 500 million	Impact indicators	Related SDGs
Sustainable forest management	**EUR 1,031 million**	**EUR 672 million in total**	**EUR 222 million in total**	**EUR 137 million in total**	• 825,000 hectares of certified forest • Carbon sink of UPM´s own and leased certified forests in Finland and in Uruguay 4.7 million tonnes of CO_2 equivalents • Positive impact on biodiversity measured in UPM's own forests in Finland and land in Uruguay by selected indicators	13 CLIMATE ACTION, 15 LIFE ON LAND
Forest assets carrying value	EUR 592 million	EUR 592 million				
Sustainable forest management costs	EUR 266 million	EUR 80 million	EUR 88 million	EUR 98 million		
Plantation acquisition Uruguay	EUR 118 million		EUR 112 million	EUR 6 million		
Nursery investment Uruguay	EUR 21 million		EUR 21 million			
Forest asset and land acquisition Finland	EUR 34 million			EUR 34 million		
Climate-positive products and solutions	**EUR 697 million**	**EUR 78 million in total**	**EUR 278 million in total**	**EUR 340 million in total**	• 1,632 patents and patent applications, 183 trademarks in Biochemicals, Biomedicals, Biocomposites and Biofuels businesses at the end of 2022 • This represents the amount of patents and trademarks that generated costs during the period of 2018–2022 • Biochemicals plant investment will offer new bio-based solutions that replace fossil-based solutions for the material sector • 792,000 tCO_2 saved emissions from Biofuels production for the period of 2022–2023	12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION
R&D costs in biobusinesses	EUR 208 million	EUR 78 million	EUR 76 million	EUR 53 million		
Biochemical plant investment Germany	EUR 431 million		EUR 202 million	EUR 229 million		
Biofuels plant costs Finland	EUR 59 million			EUR 59 million		
Hydropower	**EUR 22 million in total**			**EUR 22 million in total**	• Generation of 1,029 GWh renewable hydropower	7 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION
Hydropower costs	EUR 22 million			EUR 22 million		

* Costs occured prior bond issuance: re-financing, costs occured after bond issuance: financing
Note: Carbon sink information is based on a recent study by the Natural Resource Institute of Finland for UPM´s own and leased assets in Finland and Uruguay.
Note: Figures presented in this report are rounded and therefore the sum of individual figures might deviate from the presented total figure.

Green Bond summary

EU Taxonomy alignment

The EU Taxonomy is a sustainable finance classification system, which defines criteria for economic activities that are considered environmentally sustainable. It represents an important step towards achieving carbon neutrality by 2050 in line with the EU climate goals.

In 2023, we conducted a thorough evaluation of the eligibility and alignment of taxonomy activities based on the sustainability requirements defined in the regulation. All our taxonomy activities aim at a substantial contribution to climate change mitigation (CCM). In 2023, all our Taxonomy key performance indicators (KPIs) improved: UPM's total Taxonomy-aligned turnover including the nuclear activities* was 10% (8%) of total turnover, Taxonomy-aligned CapEx was 35% (26%) of total CapEx and Taxonomy-aligned OpEx 20% (17%) of total OpEx as defined in the Disclosures Delegated Act. Our Taxonomy assessment and its results are based on the current knowledge and available interpretation of the regulation.

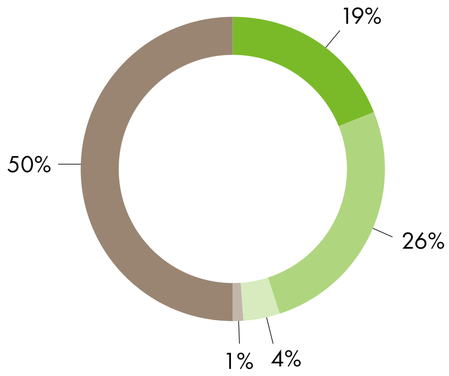
The Taxonomy regulation is still under development and does not cover all the sustainable economic activities. The majority of our products and services, such as pulp, paper, timber, plywood and label materials contributing to the turnover, are not included in the EU Taxonomy. Please see more information in our Annual Report 2023, pages 145–154.

UPM has reported taxonomy alignment starting from 2022. The taxonomy eligibility and alignment evaluation of the use of proceeds of the issued Green Bonds have been based on the 2022 and 2023 assessments. The bonds issued in 2020 and 2021 are evaluated based on this assessment and therefore include estimates. The main categories used that are fully taxonomy aligned are capitalised forest regeneration costs during the growth cycle, capitalised investment in the Leuna biochemicals project and capital expenditure and maintenance related to our biofuels business. Taxonomy-eligibility and alignment of the Green Bond portfolio in total was 50%.

* Nuclear activities are not part of the Green Finance Framework

Framework category	Taxonomy category	EUR 750m XS2257961818	EUR 500m XS2320453884	EUR 500m XS2478685931	Total portfolio
EUR million (%)					
Sustainable forest management	1.3 Forest management	80	124	134	338
Climate-positive products and solutions	3.6 Manufacture of other low-carbon technologies	11	207	239	457
	4.13 Manufacture of biogas and biofuels for use in transport	3	3	60	66
Renewable energy	4.5 Electricity generation from hydropower			17	17
	Total aligned	93/12%	335/67%	451/90%	879/50%
	Not aligned	657/88%	165/33%	49/10%	871/50%

EUR 1,750m bond portfolio taxonomy alignment



- 1.3 Forest management
- 3.6 Manufacture of other low-carbon technologies
- 4.13 Manufacture of biogas and biofuels for use in transport
- 4.5 Electricity generation from hydropower
- Not aligned

We create a future beyond fossils

We supply sustainable materials for everyday consumer needs, reliable carbon-free energy to electrify society and renewable alternatives to fossil-based materials and fuels.

Biofore strategy drives our transformation as a frontrunner in biomaterials. High performance, innovations and responsibility are the cornerstones of our strategy. Our products enable our customers and consumers to make more sustainable choices. We invest in sustainable growth and innovate for a future beyond fossils.

Our transformation has been taking place for more than 10 years, at an increasingly fast pace. We have an agile operating model and nurture a culture of high performance and integrity. Responsibility is at the core of everything we do.

Our renewable and recyclable products meet the everyday needs of consumers while addressing many global challenges such as climate change and resource scarcity. Many of our products offer sustainable alternatives to fossil raw materials and energy, for example replacing fossil plastics in consumer products, steel and cement in construction or fossil fuels in traffic, aviation and electricity markets. Furthermore, we provide our customers with entirely new solutions, creating new innovative growth businesses.

Implementing the Biofore strategy continued at full speed in 2023, with production starting on two transformative growth projects. In the first instance, the new and highly competitive UPM Paso de los Toros pulp mill will supply sustainable fibres suitable for a wide range of daily consumer needs, growing our pulp production capacity by more than 50%. Secondly, as a shareholder of the OL3 nuclear power plant unit, we will supply carbon-free electricity to electrify society, growing our energy business by nearly 50%.

At the same time, we are developing new innovation-driven growth businesses. Construction continued at our first-of-its-kind biochemicals refinery in Germany, as did basic engineering of a potential new biofuels refinery in the Netherlands. With our customers also having their own ambitious sustainability targets, such innovations are in high demand.

Sales in 2023

EUR 10,460m

Company ratings

Moody's

Baa1

with stable outlook

Standard & Poor's

BBB+

with positive outlook

THIS IS UPM

Wood-based raw materials

Low-carbon energy

BUSINESS AREAS:

- UPM FIBRES
- UPM ENERGY
- UPM RAFLATAC
- UPM SPECIALTY PAPERS
- UPM COMMUNICATION PAPERS
- UPM PLYWOOD
- UPM BIOREFINING

54
production plants

16,600
employees in 43 countries

RENEWABLE AND RECYCLABLE PRODUCTS FOR:

- PACKAGING
- LABELLING
- TRANSPORTATION
- ELECTRIFICATION
- CONSTRUCTION
- COMMUNICATION
- TISSUE AND HYGIENE END USES
- MANUFACTURING
- BIOPLASTICS
- BIOMEDICALS

11,000
customers

180
million end-users globally

Sustainable choices

We are transforming the world of materials by providing sustainable alternatives to fossil-based products. Sustainable forestry plays a key role here: forests are a source of renewable raw materials for a broad range of products, from everyday necessities to ground-breaking innovations. Growing forests are one of the biggest carbon sinks on the planet, second only to oceans. They are also critical to biodiversity and water systems. In everything we do, we care about the prosperity and wellbeing of people, local communities and the societies around us.

ENABLING SUSTAINABLE CHOICES

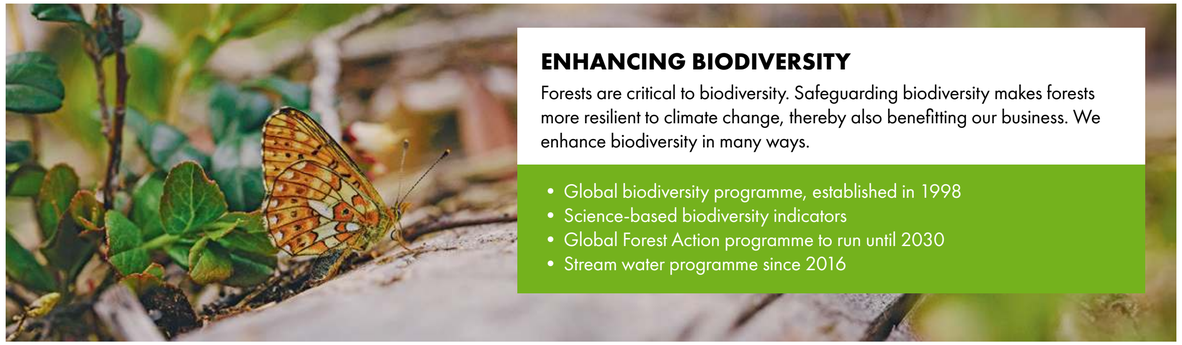
People make important purchasing decisions and we offer products that are better for society. Credible product information supports the decision-making. We provide sustainable solutions and create a future beyond fossils.

- Renewable and recyclable materials
- Responsible supply chain
- Sustainable product design concept
- Eco-labelled products
- Responsibility across product lifecycle

TAKING CLIMATE ACTION

We're committed to the UN's 1.5°C climate target and to science-based measures to mitigate climate change. We're also committed to being net zero by 2040, ten years ahead of the Paris Agreement. We engage in climate-positive forestry wherever we operate.

- Our forests absorb CO_2 from the air as they grow
- We aim to reduce our own emissions by 65% and supply chain emissions by 30% by 2030
- Our products replace fossils in various end-uses



ENHANCING BIODIVERSITY

Forests are critical to biodiversity. Safeguarding biodiversity makes forests more resilient to climate change, thereby also benefitting our business. We enhance biodiversity in many ways.

- Global biodiversity programme, established in 1998
- Science-based biodiversity indicators
- Global Forest Action programme to run until 2030
- Stream water programme since 2016

ADVANCING A CIRCULAR BIOECONOMY

We use all raw material streams efficiently and reduce, reuse and recycle whenever possible. Cross-industry collaboration provides a greater impact.

- Products made from side streams, residues and recovered materials
- Recyclability integrated in sustainable product design concept
- Efficient use of resources
- Circular use of materials, nutrients, and water

BUILDING THRIVING COMMUNITIES

We are committed to developing the vitality of the communities around us. We invite an active and open dialogue, anticipate and manage the impacts of our operations and contribute to the sustainable development of the communities.

- Financial and social impact on communities
- Transparency of impacts
- Promoting diversity and inclusiveness
- The Biofore Share and Care programme

Allocated categories

Sustainable forest management

Our business is based on sustainable forest management. We grow and harvest wood to produce renewable and recyclable materials and products.

Climate-positive products and solutions

We are developing innovative, high-quality products from wood-based biomass. Many of our products offer sustainable alternatives for fossil-based raw materials and energy, for example replacing fossil plastics in consumer products, steel and cement in construction or fossil fuels in traffic, aviation and electricity markets.

Hydropower

We produce CO_2 free hydropower to meet the growing demand for renewable energy. We are seeking new solutions and optimising energy sources and generation methods.

Sustainable forest management

ICMA CATEGORY
Environmentally sustainable management of living natural resources and land use

Our business is based on sustainable forest management. We grow and harvest wood to produce renewable and sustainable materials and products.

Use of proceeds – EUR 500 million Green Bond issued in May 2022

Sustainable forest management includes the acquisition, maintenance and management of forest certified under the FSC™ (Forest Stewardship Council™, FSC N003385) and the PEFC (the Programme for the Endorsement of Forest Certification, PEFC/02-44-41).

The total amount used for this category was EUR 137 million in 2021–2023. EUR 98 million was allocated to sustainable forest management costs. These include, but are not limited to, sub-contracted activities, such as land preparation, planting, fertilising, as well as costs related to leased plantation areas and the operation of nurseries. This category also includes biodiversity activities such as maintaining the conservation areas as well as controlling and decreasing the invasion of exotic woody species population in the conservation areas in Uruguay and increasing the amount of deadwood in forests in Finland. The main part of sustainable forest management costs are related to plantations in Uruguay.

EUR 34 million was allocated to the acquisition of new forest assests and land in Finland and EUR 6 million was allocated to new plantation acquisitions in Uruguay.

Commitments and targets

By managing our forests sustainably, we safeguard the availability of wood, protect biodiversity and mitigate and adapt to climate change. We take a holistic approach to sustainable forestry wherever we operate, adhering to the following commitments:

- Third-party verified and credible certification systems for all our forests
- Third-party verified and certified chain of custody systems to ensure 100% wood traceability
- No wood from tropical rainforests or from forest plantations that have been established by converting natural forests
- No operations in areas where the rights of indigenous peoples are endangered
- No plantation operations in water-stressed areas
- Strong stakeholder engagement
- Focus on UPM's 2030 responsibility targets: Climate-positive land use and positive impact on biodiversity

Our impacts

Forest certification

Finland and Uruguay are our main wood sourcing regions. At the end of 2023, we owned 827,000 hectares of forest land in Finland and Uruguay of which 825,000 is certified. 2,000 hectares are in the process of certification as the land was acquired recently. Most of the forest land is in Finland, totalling 523,000 hectares. In Uruguay, we have about 304,000 hectares of eucalyptus plantations, grasslands and conservation areas. We lease about 170,000 hectares in Uruguay and manage about 1.5 million hectares of private forest in Finland.

We also promote forest certification to private forest owners and our other customers. We have established the FSC group certification scheme which covered approximately 570,000 hectares in Finland and over 13,000 hectares in Uruguay in 2023.

Forest carbon sink

We are committed to climate-positive forestry. To ensure that our forests remain carbon sinks, they need to grow more than we use them. We are improving the health, growth and carbon sequestration of our forests. The annual carbon sink from owned and leased forests in Finland and Uruguay has averaged 4.7 million tonnes of CO_2 equivalent over the past five years.

There is ongoing work to harmonise methodologies and make calculations more accurate. The previous year's figure is therefore not fully comparable.

We aim to constantly improve our understanding of carbon. In 2022, we started a project with the Natural Resources Institute Finland (Luke) to improve soil carbon models for Uruguay with actual measurements on the ground. Field measurements in eucalyptus plantations began in 2023 and will continue for one year. An improved model for carbon calculations will be used for our 2024 carbon calculations.

Role of plantations and improving biodiversity in Uruguay

Uruguay's native forests are all protected. The country is located within a temperate climate zone with no rainforests. Plantations are established on former grazing lands classified for commercial forests. The Uruguay Forestry Act sets strict rules for plantation design and structure. These include rules on location, tree types and identifying suitable forestry soils for plantation development, as well as safe zones around roads, native forests and waterways.

825,000 hectares certified forest land

Five years annual average carbon sink of 4.7 million tonnes of CO_2 equivalents

We act through forests

Eucalyptus availability for the new pulp mill in Uruguay is secured through our own and leased plantations, as well as through wood sourcing agreements with private partners. Our plantation areas in Uruguay cover 474,000 hectares of UPM's own and leased land.

The biodiversity values of the area are assessed before the plantation is established, and all valuable biodiversity hotspots and native forests are protected. Our work focuses on the active management of protected habitats and the control of invasive species. In Uruguay, the area where we take some form of conservation measures covers altogether 75,000 hectares. This includes a network of 33 biodiversity reserves, covering 14,500 hectares. Each biodiversity reserve has specific management and monitoring plans.

Our biodiversity programme has been implemented at plantations since the early 1990s, and since 2020 we have used three key indicators to measure our impact on biodiversity:

1. Developing the nature conservation area network
2. Maintaining and enhancing endemic and threatened species populations in conservation areas
3. Controlling and decreasing the invasion of exotic woody species populations in conservation areas

In 2023, the majority of species indicators from the last five years showed a positive trend of occurrence compared to the last 15 years.

Plantations are a significant carbon sink, the size of which is calculated annually by the Natural Resources Institute Finland. They do not compete with food production or affect natural forests.

UPM's first forestry research centre specialising in eucalyptus plantations began operations in Paysandú, Uruguay in May 2022. The centre is also part of several research streams related to the sustainability of eucalyptus production including, for example, water usage on plantations and biodiversity surveys.

Our plantation operations are also strengthening rural regions and communities through increased opportunities for education and employment, as well as through developing services and infrastructure.

Enhancing biodiversity in Finland

We are continuously working to enhance biodiversity in our forests. We promote biodiversity as part of our everyday forest management and through conservation and collaborative stakeholder projects. We monitor our biodiversity development, based on indicators developed in cooperation with researchers.

In 2019, we set a target of having a net-positive impact on the biodiversity in our own forests in Finland with dedicated key performance indicators to measure the progress. At present we have nine indicators:

- Share of broad-leaved trees
- Forest age
- Forest structure
- Protected areas
- Valuable habitats
- Habitation restoration
- Species and habitat projects
- Amount of deadwood
- Indicator development

In 2023, all quantitative indicators showed a positive trend. The share of broadleaved trees increased, and the protected area continued to grow. New data on the amount of deadwood will be available in 2024 in connection with the national forest inventory. The increased amount of deadwood in our forests had a direct link to the increased number of species dependent on deadwood.

Forest Action: the forest responsibility programme

The global Forest Action programme, launched in 2022, encompasses responsibility actions under five primary pillars: climate, biodiversity, water, soil, and social contribution.

As an example, we use many solutions for managing the impact of forestry on water resources. Our main harvesting approach is to leave untouched buffer zones along watercourses and aquatic habitats. Healthy forests are an essential asset to clean water throughout a country. Our forest inventory system is updated annually on the location of important habitats and waterbodies in relation to timber harvesting activities.

› More about UPM Forest Action programme

Case examples

Protecting biodiversity in Uruguay

The three kilometres of footpaths on two trails in the Esteros y Algarrobales del Río Uruguay (EARU) biodiversity reserve allow you to see many native plant and animal species and ecosystems. More than 900 species have been identified in the area during the monitoring sessions UPM carries out annually.

As the landowner of this reserve and the surrounding forest plantations, UPM actively promotes the protection of the wildlife living in this area. This reserve located in the Río Negro province has four different environments: the Chaco open forest, sandbanks, wetlands and the riverine forest, each with its unique group of species generating a considerable biodiversity richness.

We aim to protect the most important species and ecosystems in the areas through the global biodiversity programme. In Uruguay, we have a network of 33 biodiversity reserves aimed at preserving sensitive ecosystems including grasslands, native forests, wetlands and other natural ecosystems. These areas cover 14,500 hectares. Each reserve has its own management and monitoring plan, drawn up in collaboration with the Uruguayan NGO Vida Silvestre.

In 2023, we opened a new visitor centre in the biodiversity reserve, including facilities and equipment for researchers. The visitor centre plays a major role in teaching children and young people about Uruguayan nature.

Study on the biodiversity of clearcut areas

The study by the Natural Resources Institute Finland (Luke) aimed to investigate how the amount and quality of retained deadwood and retention trees and the time elapsed since a felling affect the diversity of polypore and saproxylic beetle species in the regeneration areas. The presence of rare and threatened species in the areas was of particular interest.

The study was carried out in UPM's forests in southern Finland. The study compared fellings carried out in three different periods, as the recommendations and guidelines for retention trees have varied over time.

The UPM regeneration areas were found to be inhabited by a vast range of polypore and saproxylic beetle species. The study shows that leaving decayed wood and retention trees has a positive effect on forest biodiversity. Regeneration areas can provide habitats for rare and threatened species that depend on decaying wood, and the prevalence of the species can be increased via ecological forest management measures. In UPM-owned forest regeneration areas, the amount of coarse decaying wood has clearly increased in recent decades, supporting the diversity of decaying wood-dependent species.

› www.upm.com/responsibility/forests

Climate-positive products and solutions

ICMA CATEGORY
Eco-efficient and/or circular economy adapted products, production technologies and processes

We are developing innovative, high-quality products from wood-based biomass. Many of our products offer sustainable alternatives for fossil raw materials and energy, for example replacing fossil plastics in consumer products, steel and cement in construction or fossil fuels in traffic, aviation and electricity.

Use of proceeds – EUR 500 million Green Bond issued in May 2022

Climate-positive products and solutions include financing the development, operations, maintenance and expansion of the production of climate-positive products and solutions.

The total amount used for this category was EUR 340 million in 2021–2023. EUR 229 million were allocated to the biochemicals refinery investment in Leuna, Germany. The facility is currently under construction and is expected to start-up by the end of 2024. Leuna biochemicals refinery will enable a switch from fossil-based raw materials to wood-based sustainable alternatives in textiles, PET bottles, packaging, cosmetics and pharmaceuticals products, for example.

EUR 53 million was allocated to the 2022 R&D costs of UPM Biochemicals, UPM Biofuels, UPM Biomedicals and UPM Biocomposites businesses. In total, EUR 59 million was allocated to Lappeenranta biofuels refinery. This includes EUR 15 million capital expenses related to feedstock expansion and raw material handling, for example, as well as EUR 43 million operating expenses.

Commitments and targets

UPM's three Biofore Base research centres in Germany, Finland and Uruguay accelerate the development of bio-based products. The Leuna Biofore Base in Germany works in connection with the upcoming biochemicals refinery and specialises in developing new molecular bioproducts.

The centres focus on research, piloting and analytics, enabling seamless collaboration with customers, value chain partners and research organisations such as universities. They work closely with UPM's mills, businesses and business-specific research centres in various countries.

Our 2030 responsibility targets and our contribution to the UN Sustainable Development Goals are integrated into our R&D activities and product development. We want our products to create value for our stakeholders during the entire product lifecycle. Our Sustainable Product Design concept implementation continued in 2023.

› More information on our website

Our impacts

Biochemicals

The ongoing new-to-the-world biorefinery investment in Leuna, Germany, will open completely new markets for us, with large growth potential. The biorefinery will convert solid wood into next-generation biochemicals: bio-monoethylene glycol (BioMEG) and Renewable Functional Fillers (RFF). The biorefinery will also produce bio-monopropylene glycols (BioMPG) and industrial sugars. The total annual capacity of the biorefinery will be 220,000 tonnes.

UPM Biochemicals will be well positioned to provide renewable chemicals made from sustainable wood with a CO_2 product footprint that is considerably below that of fossil-based chemical products and credibly documented by our third-party-reviewed Life Cycle Assessment (LCA). Our proposition to help brands defossilise their products has gained further traction in the market and has triggered widespread support across our key markets.

The main civil works of the new biorefinery in Leuna, Germany were completed in 2023 and commissioning will be gradually concluded during 2024. The total cost of the biochemicals investment project is estimated at EUR 1,180 million.

Biofuels

Our products meet the need to reduce transport emissions and find renewable alternatives to the production of various fossil-based plastics. Our renewable and sustainable biofuels help to mitigate climate change. Advanced biofuels reduce greenhouse gas emissions by more than 80% compared to fossil fuels.

Bio-businesses IPR portfolio: 1,632 patents and patent applications, 183 active trademarks

792,000 tCO_2 saved emissions from biofuels production in 2022–2023

We act through products

In addition to decarbonising road transportation, we help to defossilise various other industries by offering wood-based naphtha. Naphtha is the major raw material for most chemicals and plastics. UPM BioVerno™ naphtha is a drop-in solution for replacing fossil-based naphtha allowing the production of sustainable chemicals and plastics. Our strategy is based on proprietary technology and UPM's integrated feedstocks.

We are currently conducting the commercial and basic engineering study for a next-generation biofuels refinery in Rotterdam, the Netherlands. The new potential biorefinery would produce high quality renewable fuels, including sustainable aviation fuels, and raw materials for the petrochemical sector, for example in bioplastic applications. In 2023, UPM Biofuels initiated proceedings to qualify its renewable fuels as sustainable aviation fuel.

Our current feedstock for biofuels in the UPM Lappeenranta Biorefinery is crude tall oil, which is a residue from pulp production. In our plans to increase production of advanced biofuels, we are also considering other residue streams and by-products of the forest industry. The planned biorefinery in Rotterdam would enhance material efficiency without compromising global food production. In the future, the path to defossilisation in different transport sectors will increasingly rely on renewable synthetic fuels. Our extensive know-how and experience in biorefinery operations not only gives us a competitive edge but also opens up growth opportunities in the realm of green hydrogen solutions.

Biomedicals

UPM Biomedicals develops and supplies innovative and sustainable wood-based biomedical products for medical and life science applications. The main component in our products is high-quality nanocellulose, refined from birch wood. All products are animal-free.

We actively collaborate with universities, research centres and key industrial partners in the fields of high-throughput drug screening, personalised medicine, cell therapies, 3D bioprinting, tissue engineering and advanced wound care.

Biocomposites

UPM Biocomposites is creating circular economy solutions through the manufacture of innovative composite materials and decking products.

UPM ProFi utilises European post-consumer plastic waste and post-industrial label waste to manufacture high-quality composite decking. The label production side streams come from UPM Raflatac and its customers, with the waste being collected and delivered to Germany where the composite decking is manufactured. The UPM ProFi Piazza product range is made with up to 75% recycled materials. UPM Formi creates and manufactures wood-based biocomposites, enabling a reduction in the carbon footprint of the end product by up to 80% when compared to similar products made from fossil-based materials. The composite materials are suitable for various end uses, including kitchenware, personal care and acoustic devices.

Case examples

Beauty inside out

Finnish cosmetics company LUMENE has launched a moisturiser packaged in a bio-attributed* jar. The jar utilises UPM Biofuels' wood-based plastic raw material made from crude tall oil, a residue from pulp production. It is reportedly the first cosmetics jar that contains renewable materials in both the packaging and the label.

The new jar reduces the use of fossil-based plastics by more than 60 tonnes a year and lowers the product's CO_2 emissions. The 50 ml jar is the company's most used packaging, with 1.5 million units sold annually.

LUMENE's recyclable moisturiser jars contain wood-residue-based UPM BioVerno™ naphtha, which is further processed by the chemical company SABIC. The labels are made from UPM Raflatac Forest Film™ label material. All parties in the supply chain have ISCC PLUS sustainability certification.

One of the best ways to reduce the use of fossil materials is to work together in the value chain. The new 97% bio-attributed LUMENE jar, based on a mass balance approach*, is one way to reduce the use of fossil-based plastics.

* Mass balance accounting is used to trace the flow of materials through a complex value chain. It provides a set of rules for allocating the bio-based content to different products in order to claim the content as "bio-attributed".

The future of fabrics

UPM Biochemicals and German outdoor apparel supplier VAUDE jointly launched the world's first polyester fleece jacket, containing 30% renewable content.

The textile industry has long been looking for more sustainable solutions for producing polyester and polyurethane, as around 60% of all materials used in the fashion industry are made from fossil-based polymers. Polyester is the world's most widely used fibre. Yet only 15% is currently derived from recycled feedstock.

In the partnership, the fossil-based MEG component of the resin used to make polyester is replaced with UPM BioPura™ bio-monoethylene glycol. The material can be used directly in the existing production process.

Sustainable innovations require collaboration across the value chain. In Germany, chemical company Indorama Ventures first polymerises and spins the polyester yarn, then in Prato, Italy, textile manufacturer Pontetorto processes the yarn into a new polyester fabric that VAUDE uses to make the final garment.

Hydropower

We produce CO_2 free hydropower to meet the growing demand for renewable energy. We are seeking new solutions and optimising energy sources and generation methods.

ICMA CATEGORY
Renewable energy

7 AFFORDABLE AND CLEAN ENERGY

13 CLIMATE ACTION

Use of proceeds – EUR 500 million Green Bond issued in May 2022

This category includes the acquisition, maintenance and refurbishment of hydropower plants owned and operated by UPM Energy.

The total amount used for this category was EUR 22 million, of which 53% was used in 2021 and 47% in 2022. EUR 12 million was used mainly for the operating and maintenance of hydropower plants. EUR 10 million was used for the Kuusankoski hydropower plant renovation and modernisation, including new turbines.

Commitment and targets

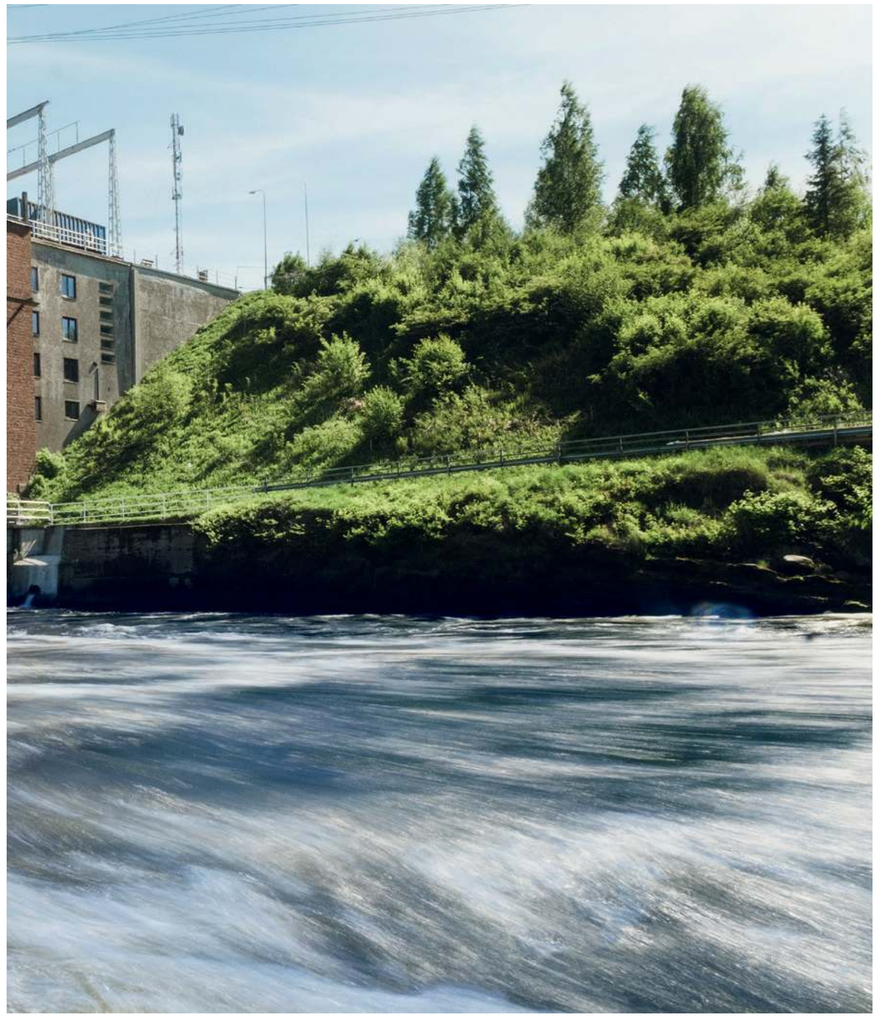
We are committed to delivering continuous improvements in energy efficiency and to an increased share of renewable and low-emission energy. We are seeking new solutions and optimising energy sources and generation methods. Our energy portfolio consists mostly of energy sources that do not cause fossil CO_2 emissions.

Our impacts

UPM Energy has eight hydropower plants. Most of UPM's hydropower plants were built between the 1930s and 1950s and extensive renovations have been realised in the past few years. In spring 2023, we completed the extensive renovation and modernisation of the Kuusankoski hydropower plant. The plant's average annual energy production increased from 180 GWh to 195 GWh, producing more electricity with the same amount of water.

Renewable hydropower generates flexible power

Weather-independent hydropower provides quick balancing power for an electricity system that is growing more and more on intermittent solar and wind power. Hydropower plant production can be started, adjusted and stopped quickly and used to balance production and consumption. Furthermore, hydropower is a cost-effective way to produce electricity. Hydropower plants have a long service life with low operating costs.



In 2023, we generated 1,029 GWh hydropower through our own hydropower plants.

Governance

UPM Green Finance Committee–internal governance

Independent auditor –external review and assurance

Governance

We established a Green Finance Framework in November 2020. The framework was developed in accordance with the 2018 version of the Green Bond Principles published by the International Capital Markets Association (ICMA) and the 2020 version of the Green Loan Principles, published by the Loan Market Association (LMA), the Asia Pacific Loan Market Association (APLMA) and the Loan Syndications and Trading Association (LSTA), respectively.

The framework was reviewed by the second-party verifier CICERO and received the best possible rating, CICERO Dark Green. The review also included an assessment of the governance structure of the framework, which was rated to be excellent. We have designed and implemented a process to ensure that only projects aligned with the criteria set out in the Framework will be selected for Green Finance Instruments. We have also established a Green Finance Committee, including members from Treasury, Responsibility, Investor relations and Finance. We have a Green Finance Register for Green Finance Instruments issued by UPM for the purpose of monitoring the Eligible Assets and Projects and the allocation of net proceeds from Green Finance Instruments. The Green Finance Register forms the basis for impact reporting.

The Green Finance Committee has approved the final allocation of Eligible Assets and Projects and the impact reporting for the issued Green Bonds. We published previous Green Bond Reports in April 2021, April 2022 and April 2023.

In 2023, we updated our Green Finance Framework and the related Second Party Opinion. The framework received the highest Dark Green rating from S&P Global Ratings, in line with the framework established in 2020. The new framework has the same six Use of Proceeds categories as previously, but we have updated it to further align with our sustainability strategy, objectives and targets and to align with the ICMA Green Bond Principles 2021 (2022 Appendix) and to meet the latest market practises. We have also refined and further clarified what investment and projects to include and have provided more examples with each category. The framework is also more explicit about the climate, environmental and responsibility contributions of each category.

- UPM as an investment/Debt
- Green Finance Framework November 2020
- CICERO Second Party Opinion November 2020
- Green Finance Framework November 2023
- S&P Global Ratings Second Party Opinion November 2023
- Green Bond Report 2020
- Green Bond Report 2021
- Green Bond Report 2022

GREEN FINANCE FRAMEWORK

Use of Proceeds

- Sustainable forest management
- Climate-positive products & solutions
- Pollution prevention & control including waste management
- Waste & wastewater management
- Energy efficiency initiatives
- Renewable energy

Project Evaluation and Selection

Process designed and implemented to ensure Eligible Assets and Projects are aligned with eligibility criteria

Green Finance Committee

- Treasury
- Responsibility
- Finance
- IR

Management of Proceeds

Green Bond Register monitoring the Eligible Assets and Projects and allocation of net proceeds from Green Bonds. Excess proceeds to be held in accordance with UPM's liquidity management policy, which ensures that proceeds are not used for fossil fuel-related investments.

Reporting

UPM will annually publish a report on the allocation and impacts of Green Bonds issued under this framework

Allocation report

- List of Eligible Assets and Projects
- Case studies and descriptions
- Amounts invested in each category

CICERO Dark Green

Independent Practitioner's Limited Assurance Report

To the Management of UPM-Kymmene Corporation

We have been engaged by the Management of UPM-Kymmene Corporation (hereinafter also the "Company") to perform a limited assurance engagement on selected information described below for the reporting period ended 31 December 2023, disclosed in the UPM-Kymmene Corporation's Green Bond Report 2023 (hereinafter also the Selected Information).

Limited Assurance Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Selected Information for the reporting period ended 31 December 2023 has not been prepared, in all material aspects, in accordance with the UPM-Kymmene Corporation's Green Finance Framework.

When reading our assurance report, the inherent limitations to the accuracy and completeness of the Selected Information should be taken into consideration.

Our assurance report has been prepared in accordance with the terms of our engagement. We do not accept, or assume responsibility to anyone else, except to UPM-Kymmene Corporation for our work, for this report, or for the conclusions that we have reached.

Selected Information

The scope of our work was limited to assurance over the information presented in UPM-Kymmene Corporation's Green Bond Report 2023 on page 5 table 'Green Bond Summary' covering under it the use of proceeds in section 'Categories used' and the impacts in section 'Impact indicators' (the Selected Information) as of 31.12.2023 in accordance with the UPM Green Finance Framework.

Practitioner's independence and quality management

We have complied with the independence and other ethical requirements of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (IESBA Code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

PricewaterhouseCoopers Oy applies International Standard on Quality Management (ISQM) 1, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Management's responsibility

The Management of UPM-Kymmene Corporation is responsible for preparing the Green Bond Report 2023 in accordance with the Reporting criteria as set out in the Company's Green Finance Framework. The Management of UPM-Kymmene Corporation is also responsible for such internal control as the management determines is necessary to enable the preparation of the Green Bond Report 2023 that is free from material misstatement, whether due to fraud or error.

Practitioner's responsibility

Our responsibility is to express a limited assurance conclusion on the Selected Information in the Green Bond Report 2023 based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised) "Assurance Engagements Other than Audits

pwc

or Reviews of Historical Financial Information". That Standard requires that we plan and perform the engagement to obtain limited assurance about whether the Selected Information is free from material misstatement.

In a limited assurance engagement the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement. An assurance engagement involves performing procedures to obtain evidence about the amounts and other disclosures on the Selected Information in the Green Bond Report 2023. The procedures selected depend on the practitioner's judgement, including an assessment of the risks of material misstatement of the Selected Information.

Our work consisted of, amongst others, the following procedures:

- Making enquiries of relevant UPM-Kymmene Corporation management to assess to whether the reporting has been prepared in accordance with the UPM Green Finance Framework;
- Assessed the design of the processes and internal controls for managing, recording and reporting the Selected Information;
- Inspected minutes of the Green Finance Committee to confirm that the allocation of proceeds to eligible assets had been considered and approved according to the process described in the Green Finance Framework;
- Making enquiries of employees from various organisational levels of the Company with regards to whether the reporting has been prepared in accordance with the UPM-Kymmene Corporation Green Finance Framework;
- Performed substantive testing on a sample basis from original documents and systems to test the existence and accurate allocation of green bond proceeds per eligible assets as disclosed in the table Allocated Proceed and Impact of the Green Bond Report 2023;
- Evaluating the evidence obtained.

This report, including our conclusions, has been prepared solely for the Board of Directors of UPM-Kymmene Corporation and the green bond investors in accordance with the agreement between us, to assist the Board of Directors in reporting on UPM's green bond performance and activities. We permit this report to be disclosed in the UPM-Kymmene Corporation's Green Bond Report 2023 in respect of the reporting period ended 31 December 2023, to assist UPM-Kymmene Corporation in responding to their governance responsibilities by obtaining an independent assurance report in connection with the Selected Information.

Helsinki 28 March 2024

PricewaterhouseCoopers Oy

Tiina Puukkoniemi
Partner, Authorised Public Accountant (KHT)
Sustainability Reporting and Assurance

Appendix 1: Impact calculation methodology

Accounting of impacts

More detailed information about all our responsibility indicators are disclosed in our Annual Report 2023 and in our GRI content index which are available on our website.

We follow sustainability reporting standards published by the Global Reporting Initiative (GRI) to measure and report on corporate responsibility at the Group level. Our corporate responsibility reporting in 2023 has been prepared in accordance with the GRI Standards. To better prepare ourselves for the future assurance processes, the assurance for our fossil CO_2 emissions (Scope 1, Scope 2 and Scope 3's maritime logistics) has already been changed from limited to reasonable assurance.

In addition to GRI Standards, we have included a few additional indicators to the assurance scope, such as UPM biodiversity indicators.

Standard disclosures for 2023 in English with a reference to external assurance in the GRI content index have been externally assured by an independent third party, PricewaterhouseCoopers Oy. Furthermore, we are committed to the principles of inclusivity, materiality and responsiveness, as defined in the AA1000 AccountAbility Principles Standard (2018).

Forest indicators

The sustainability forest management indicator is based on hectares certified by the PEFC and/or by the FSC™ by third-party auditors. Certificates can be downloaded from UPM Certificate finder.

UPM has commissioned carbon calculations of its own and leased forests in Finland and Uruguay. The calculations are based on internationally approved calculation models, and they are executed by the Natural Resources Institute Finland (Luke). The same methods are used in international greenhouse gas inventories. However, they contain uncertainties and are developed further.

The calculations include the carbon balance of both trees and soil and cover the protected areas. In Finland, tree carbon balance is calculated as increment minus drain. In Uruguay, tree carbon balance is calculated as the difference in carbon stored in growing stock between two years. Soil CO_2 balance is calculated in both countries with the Yasso07 model. The model uses litter fall quantity and quality, weather data and initial soil carbon stock as input values.

Climate science develops fast, and we are actively supporting the work to create more reliable and accurate methods to calculate the carbon impact of forestry together with climate science experts.

› Luke

The indicator on carbon sink per EUR 1 million has been calculated based on the results of the carbon sink calculations for Uruguay and Finland (five years annual average carbon sink of 4.7 million tonnes CO_2 equivalents) for the year 2023 divided by the proceeds of all three bonds allocated to sustainable forest management (EUR 1,031 million).

For the year 2022, carbon accounting for forests, the 5-year annual average tree carbon sink for Uruguay, was miscalculated. The reported figures for 2022 and 2023 figures are not fully comparable as the methodology developed and is including also soil carbon for Uruguay in 2023. The methodology development and harmonising will continue so that both accuracy and comparability can be improved over time.

Restatements of information have been done and assured according to GRI 2-4.

Biodiversity indicators have been developed by UPM in cooperation with various third parties. More about indicators here:

› UPM Biodiversity indicators

Indicator for climate-positive products and solutions

A solid patent portfolio boosts our competitive edge. The number of patents and trademarks which generated costs during a certain time period and for certain businesses is used as an indicator. The number is reported by UPM IPR.

We are committed to a climate-positive product portfolio. Many of our products are already proven to be climate positive. In the future, we aim to scientifically verify the climate impacts of all our products. We initiated a study on climate-related substitution and the carbon storage effects of our products with two research institutes, the German IFEU and the Finnish Environment Institute (SYKE), which was finalised and published in 2022.

To assess the environmental performance of products of the future biorefinery in Leuna, Germany, a Life Cycle Assessment (LCA) study has been carried out. The LCA study conducted by UPM covers all the products from the biorefinery and enables UPM to provide environmental footprint data for the customers of the biorefinery, and to further develop the products and processes. LCA is a scientific method for analysing the environmental impacts of products. The LCA study was carried out in accordance with ISO standard 14040 and 14044, and the latest CML impact assessment methods were applied. A cradle-to-gate system boundary has been applied. The data collection is based on supplier design, process simulation and pre-commercial trials data and represent current best knowledge of the UPM's biorefinery process. Part of the production process is the uptake of biogenic carbon during growth of the feedstock beech wood. This removal is taken into account in the CO_2 footprint calculation including biogenic carbon. A critical review with independent party DEKRA Assurance Services GmbH, has been conducted.

› IFEU/SYKE study

UPM Biofuels assesses and quantifies the lifecycle GHG emission savings according to the mandatory methodology set out in Article 29 and Annex V & VI RED, EU 2018/2001 for all diesel produced. As required by RED, EU 2008/2001, UPM Biofuels' data, methodology and GHG calculation results are reviewed and verified annually as part of the external certification process of UPM's ISCC EU certificate. The current valid certificate number is EU-ISCC-Cert-US201-43812024. The GHG savings of bio-naphtha are based on LCA methodology according to ISO 14040 and ISO 14044, taking into account a cradle-to-gate system boundary and the biogenic carbon uptake of the feedstock.

Appendix 2: Updated Green Finance Framework

Updated Green Finance Framework published in November 2023
Second Party Opinion by S&P Global Ratings
Framework overall rating Dark Green

› Green Finance Framework November 2023
› S&P Global Ratings Second Party Opinion November 2023

Use of Proceeds categories	Sustainable forest and plantation management	Climate positive and circular bioeconomy adapted products and solutions	Renewable or CO_2-free energy	Pollution prevention and control, including waste management	Sustainable water and wastewater management	Energy efficiency initiatives
Description of projects	Sustainably managed certified forests and activities that ensure and increase biodiversity	Climate positive or circular bioeconomy adapted products and solutions that replace fossil raw materials with renewable alternatives	Development, operations and maintenance of renewable and CO_2 -free energy solutions	Reduction of environmental impact, and improvement of the environmental performance	Reduction of water use and management of fresh and wastewater. Water-related measures to enhance biodiversity	Developments, modernisations and management of renewable energy solutions
Examples	• Assets, acquisitions, R&D and management of forests and plantations with FSC and PEFC certification (or to be certified within 12 months) • Forestry-related measures that lead to an improvement in the chosen biodiversity indicators • Development of biodiversity measurement and indicators	• Assets, R&D and maintenance of production units and facilities • Biofuels, biochemicals, packaging materials, biocomposites and biomedicals that are based on FSC- or PEFC-certified wood, its residue or RSB certified plants as the main raw material	• Investments related to distribution and production of waste-heat or electricity from renewable or CO_2 -free energy sources • Investments in CO_2 -free energy boilers, hydro, wind and solar power, and green hydrogen	• Equipment, systems, initiatives and R&D relevant for circular bioeconomy • Costs related to waste management following the waste hierarchy • Reduction and control of pollution to air, water and soil • Carbon capture and storage technology	• Equipment and management of raw water intake and purification, wastewater treatment, the circular use of water, nutrients and residues from water and wastewater treatment or projects for the protection of soil and groundwater • Creating spawning areas or waterways for migratory fish	• Improving energy efficiency, with the requirement of a minimum 25% efficiency improvement • New boiler or heat recovery systems, technologies or equipment, advanced IT solutions or energy management systems
Significant contribution to GBP Environmental objectives	Climate change mitigation Climate change adaptation Natural resource conservation Biodiversity conservation	Climate change mitigation	Climate change mitigation	Climate change mitigation Pollution prevention and control	Climate change mitigation Pollution prevention and control Natural resource conservation Biodiversity conservation	Climate change mitigation Climate change adaptation
UN SDG Mapping	13 CLIMATE ACTION, 15 LIFE ON LAND Targets 13.1 and 15.2	13 CLIMATE ACTION Target 13.1	7 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION Targets 7.3 and 13.1	12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION Targets 12.2, 12.4, 12.5 and 13.1	6 CLEAN WATER AND SANITATION Target 6.3	7 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION Targets 7.3 and 13.1

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