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Second Party Opinion

UPM Green Finance Framework

Nov. 6, 2023

Location: Finland **Sector:** Paper and forest products

Alignment With Principles

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

- ✓ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)
- ✓ Green Loan Principles, LMA/LSTA/APLMA, 2023

See [Alignment Assessment](#) for more detail.

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Dark green

Activities that correspond to the long-term vision of a low-carbon climate resilient future.

Our [Shades of Green Analytical Approach](#) >

Strengths

UPM's activities are contributing to an overall reduction of the economy's dependence on fossil fuel and creation of a more circular economy. Through its forestry activities, UPM aims to maintain a net carbon sink. Its biofuels segment contributes to reducing the transport sector's carbon footprint, while the bioproduct segment ensures the use of renewable raw materials and addresses recyclability considerations.

UPM is implementing measures to improve its forests' resilience to physical climate risks. The issuer identifies tree diseases, insect pests, fire, and drought events as the most material physical risks for its forests. Because the nature and intensity of these risks vary based on the forest's location, the adaptation measures differ. An example is adapting forests' species composition. Additionally, UPM monitors its other assets using water risk scenarios.

Weaknesses

Areas to watch

Of the fuel and heat resources that UPM used in 2022, 20% relied on natural gas, while coal represented 8%. While the framework clearly excludes investment related to activities associated with fossil fuels and sites using coal, we note this as a key challenge for the company's decarbonization efforts.

UPM's wood inputs are 100% chain of custody controlled, yet only 86% has FSC or PEFC certifications. The chain of custody certification is less stringent than FSC and PEFC, creating some risks of use of wood with lower credentials for sustainable management for 14% of the wood inputs. Nevertheless, the chain of custody certifications used by UPM have minimum requirements to avoid sourcing of wood and fiber from illegal harvesting, high conservation value forests, forest conversion, and from genetically modified trees. It is also positive that the percentage of FSC or PEFC certified wood has increased every year since 2019; and UPM has a target to reach 100% by 2030.

Eligible Green Projects Assessment Summary

Eligible projects under issuer's green finance framework are assessed based on their environmental benefits and risks, using Shades of Green methodology.

Sustainable forest and plantation management

 Dark green

Financing of assets, acquisitions, R&D, management of forests and plantations, harvesting, and infrastructure

Investment in activities that ensure and increase biodiversity

Climate positive and circular bioeconomy adapted products and solutions

 Dark green

Financing of assets, R&D, and maintenance of production units and facilities related to climate positive or circular bioeconomy-adapted products and solutions that replace fossil raw materials with renewable alternatives

Renewable or CO2-free energy

 Dark green

New investments, modernization, refurbishment, upgrades, and maintenance of existing equipment

Distribution and production of waste-heat or electricity from renewable or CO2-free energy sources

Investment in CO2-free energy boilers; hydro, wind, and solar power; and green hydrogen

Pollution prevention and control, including waste management

 Medium green

Equipment, systems, initiatives, and R&D relevant for the circular bioeconomy

Costs related to waste management in line with the waste hierarchy

Costs related to the reduction and control of pollution to air, water, and soil

Carbon capture and storage technology

Sustainable water and wastewater management

 Medium to Light green

Financing the reduction of water use and management of freshwater and wastewater from UPM's activities

Water-related measures enhancing biodiversity

Energy efficiency initiatives

 Light green

Financing of developments, modernizations and management of renewable energy solutions, improving energy efficiency compared with the previous situation

See [Analysis Of Eligible Projects](#) for more detail.

Issuer Sustainability Context

This section provides an analysis of the issuer's sustainability management and the embeddedness of the financing framework within its overall strategy.

Company Description

UPM is headquartered in Finland. It is one of the largest and most diversified forest and paper products companies in the world, with over €11.7 billion in sales in 2022. UPM's key business segments include pulp, graphic and specialty papers, self-adhesive labels, wood-based renewable diesel and naphtha, electricity, and plywood and timber products. UPM's operations are divided into six business areas: UPM Fibres, comprising the pulp and timber businesses; UPM Energy; UPM Raflatac; UPM Specialty Papers; UPM Communication Papers; and UPM Plywood. In addition, the forest, biofuels, biochemicals, biomedical, and biocomposites businesses are managed under Other operations. UPM is present in 44 countries, where it employs 17,200 people, notably in Finland (36%) and Germany (24%). UPM owned 903,000 hectares of forests in 2022. These are composed of boreal forests in Finland (58% of total owned), eucalyptus plantations in Uruguay (34%), and mixed wood forests in U.S. (8%). The group is listed on the Nasdaq Helsinki stock exchange.

Material Sustainability Factors

Climate transition risks

Forested areas could be increasingly protected in the future, as a major store of carbon, potentially restricting areas that can be used for forest products. The forest sector can provide a range of climate mitigation options, including carbon storage in forests and soils, harvested wood products, and wood-based products replacing fossil-based ones, particularly biofuels. Increasing regulation will likely necessitate increasing energy efficiency measures, alternative fuels for producing heat, and the use of environmentally friendly substitutes for chemicals used in the pulp and paper-making process. Finland's Climate Change Act was updated in July 2022 with a legal obligation to reach carbon neutrality by 2035. As an EU member, Finland is covered by generally ambitious European climate policies, including regulations on land use, which limit the risk of deforestation and illegal land use conversion.

Physical climate risks

Physical climate risks such as wildfires and droughts, as well as greater prevalence of pests and diseases associated with a warming world, are highly relevant to paper and forest product suppliers. These will continue to affect stakeholders as climate change results in more extreme, and often unpredictable, weather patterns. Paper and forest product companies around the world contend with wildfires every year. In the Boreal region, tree loss resulting from drier weather and outbreaks of pests, diseases, and intense wildfires may be balanced by a longer growing season.

Biodiversity and resource use

In addition to being the main source of virgin raw materials for the paper and forest products industry, forests also provide a wide range of benefits, including carbon sequestration, water filtration and storage, pollution capture, soil quality, and habitat for biodiversity. Various stakeholders are engaged in ensuring land, water, and wildlife conservation and a number of regulatory bodies have mandated the setting aside of land to protect biodiversity. Sustainable practices appear to be followed in most developed markets and by large industry players even in emerging markets.

Pollution

The use of chemicals (such as chlorine dioxide, paper dyes, fungicides) in production means the industry must closely monitor water quality. Companies must typically meet air pollution standards, in addition to water discharge and waste management standards, in their production facilities, with potentially significant penalties for any regulatory breaches. The public's increasing awareness of pollution could reduce demand for products and producers that are above-average pollution contributors.

Workforce health and safety

Workers in both timber harvesting and processing of forest products face potential for significant bodily injury and exposure to hazardous materials. The agriculture, forestry, and fishing sector, for instance, had the fourth highest rate of fatal incidents at work in 2020, according to Eurostat. Companies in most developed markets have adopted low- to zero-tolerance for failing to abide by safety requirements, which can limit both litigation and operating disruption risks. In markets with less stringent legal requirements or enforcement capacities and with growing scrutiny of safety practices by stakeholders, legal and reputational risks may increase over time.

Issuer And Context Analysis

The framework's project categories--sustainable forest and plantation management, climate positive and circular bioeconomy adapted products and solutions, energy efficiency and renewable or CO2-free energy--aim to address climate transition risk, which we consider to be a material sustainability factor for UPM. The two remaining categories--pollution prevention and control and sustainable water and wastewater management --also seek to reduce air, soil and water pollution, another material issue for UPM's activities. Biodiversity and physical climate risks are also relevant, particularly considering the framework's sustainable forest category.

UPM's strategy to address climate transition risks relies on the net growth of its forests, the generation of fossil-free energy, and the provision of raw-material alternatives to fossil-based products. The entity aims for its forests to act as carbon sinks, by ensuring that forest growth exceeds harvest. In 2022, UPM's forests grew by 6.7 million cubic meters, while 4.5 million cubic meters were harvested. Pulp and paper processing being an energy-intensive activity, UPM is the largest consumer of electricity in Finland. The entity is also the second-largest producer of electricity in the country. Its generation mix relies significantly on low carbon sources, such as hydropower (23% in 2022) and nuclear (41%), while combined heat power from pulp and paper mills contributes about 33% of electricity generated and thermal power generation less than 4%. UPM also aims to increase its alternative solution to fossil fuels. For example, UPM's BioVerno is a fuel made from crude tall oil, a residue of pulp production. UPM is progressing on its Science-Based Targets initiative (SBTi) validated targets for 2030, including a 65% reduction in scope 1 and 2 greenhouse gas (GHG) emissions versus 2015 (-34% in 2022). UPM has also committed to reduce absolute scope 3 GHG emissions by 30% by 2030 from a 2018 base year and to net zero by 2040.

UPM has evaluated the resilience of its assets to physical climate risks under various climate scenarios and started to implement targeted actions to improve its forests' resilience. The company identified tree diseases, insect pests, fire, and drought as the main risks stemming from the changing climate. UPM also noted that forest growth could further accelerate in Northern Europe in particular, because of warming conditions and increased CO2 concentrations in the air. Due to the high importance of local context regarding physical risks, the entity is taking targeted mitigating actions based on geography. In Finland, for example, UPM aims to double the volume of broadleaf trees to improve forests' ability to deal with issues like drought and pests. In the U.S., UPM launched an adaptation plan in 2021, which allowed it to identify certain recommendations, such as favoring species more adapted to warmer conditions, to improve the resilience of its north-central Minnesota forests.

UPM launched its first biodiversity program in 1998, followed by a forest action program in 2022, incorporating biodiversity-related requirements in Finland, Uruguay, and the U.S. In 2018, the entity set the objective to have a net positive impact on biodiversity and in 2022, 18% of UPM's owned forests were protected. In Finland, net impact is tracked according to three main areas: forest management (e.g., percentage of deadwood and broadleaved trees), conservation (e.g., percentage of protected areas), and restoration projects. Plantations in Uruguay are more exposed to biodiversity risks because eucalyptus is not a native species. The company mitigates this by assessing biodiversity values of the area before establishing plantations and commits to protect biodiversity hotspots including preserving 20% of natural areas. Moreover, we view positively that biodiversity objectives were linked to management's long-term incentive plan in 2022.

UPM's pulp and paper production processes expose the entity to significant risks of wastewater and air pollution. Due to the size of its activities, UPM has a material impact on pollution levels in its local environment. In 2022, the company withdrew a significant 337 million cubic meters of water, although 95% of water use related to pulp and paper production is internally re-circulated. Fossil fuel burning during the pulp and paper manufacturing process is also a key risk for air pollution, but the entity has set a target that helps mitigate this risk. UPM already reached its 2030 target reduce air pollutants (SO₂/NO_x) by 20% from 2015 levels. Additionally, UPM aims to have no process waste sent to landfills or to incineration without

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energy recovery by 2030, helping to limit the impact on soil pollution. In 2022, 90% of its waste was recovered or recycled.

Alignment Assessment

This section provides an analysis of the framework's alignment to Green Bond and Loan principles.

Alignment With Principles

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

- ✓ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)
- ✓ Green Loan Principles, LMA/LSTA/APLMA, 2023

✓ Use of proceeds

All the framework's green project categories are shaded in green, and the issuer commits to allocate the net proceeds issued under the framework exclusively to eligible green projects. While this analysis is limited to the framework itself, we note that the issuer has clearly identified the types of environmental projects as well as each project that provides a clear environmental benefit. Please refer to "Analysis of Eligible Projects" section for more information on our analysis of the environmental benefits of the expected use of proceeds.

UPM commits to allocate an amount equal to the net proceeds of each of green financing issued under its green finance framework to finance projects aimed at sustainable forest and plantation management, climate positive and circular bioeconomy-adapted products and solutions, pollution prevention and control, including waste management, sustainable water and wastewater management, energy efficiency initiatives and renewable or CO2-free energy. UPM commits to finance its assets that are in line with the eligibility criteria for green financing. UPM will exclude investments related directly to activities associated with fossil fuels and site that uses coal as an energy source.

✓ Process for project evaluation and selection

The process for project evaluation and selection is described in the framework. The issuer identifies relevant environmental objectives of all green eligible projects. Potential eligible green projects and assets are identified in connection with the investment planning process and pre-evaluated by UPM's responsibility team and treasury. The pre-evaluated list is validated with the eligibility criteria by UPM's Green Finance Committee, which has members from treasury, responsibility, investor relations, finance, and investment management. UPM identifies and manages potential environmental and social risks as prescribed by its Code of Conduct, Responsibility Statement, and detailed guidelines and instructions.

✓ Management of proceeds

UPM's Treasury is responsible for management of an amount equal to the net proceeds from the issuance of each green financing. The company provides clear commitment of the proceeds to be adjusted to match allocations to eligible projects and assets and aims to fully deploy the proceeds of the financing within 24 months of issuance. The pending full allocation maybe temporarily placed in line with the liquidity reserves taking into consideration the exclusion criteria. UPM's proceeds will be checked at least semi-annually to account for any need to re-allocate proceeds that no longer fulfil the eligibility criteria.

✓ Reporting

UPM commits to transparent allocation and impact reporting until full allocation through its annual Green Finance Report. The allocation report will include a list of all eligible green projects and assets along with the amount invested in each category, description of activities financed, geographical distribution, amount of unallocated proceeds and EU taxonomy eligibility/alignment estimation (if feasible).

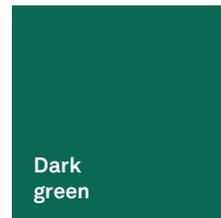
Analysis Of Eligible Projects

This section provides details of our analysis of eligible projects, based on their environmental benefits and risks, using the Shades of Green methodology.

Over the three years following issuance, UPM expects to allocate majority of its proceeds under the framework to the climate positive and circular bioeconomy-adapted products and solutions project category followed by pollution prevention and control project category. The remaining proceeds will be allocated to the other four project categories.

Overall Shades of Green assessment

Based on the project category shades of green detailed below, and consideration of environmental ambitions reflected in UPM's Green Finance Framework, we assess the framework dark green.



Dark green

Activities that correspond to the long-term vision of a low-carbon climate resilient future.

Our [Shades of Green Analytical Approach](#) >

Green project categories

Sustainable forest and plantation management

Assessment

 **Dark green**

Description

Financing of assets, acquisition, R&D, management of forests and plantations, harvesting, and related infrastructure that have a certification (or will have a certification within 12 months) from the Forest Stewardship Council (FSC N003385) or the Programme for the Endorsement of Forest Certification (PEFC/02-44-41) located where UPM is operating. UPM has forest operations in Finland, Uruguay and the U.S. Proceeds can also finance activities that ensure and increase biodiversity. This includes but is not limited to forestry-related measures such as increase of the share of broadleaved trees and deadwood, diversification of forest age and forest structure, protection of certain areas, protection of other vulnerable habitats, habitat restoration, species and habitat projects as well as development of biodiversity measurement.

Analytical considerations

- Sustainable forest and plantation management is an important part of managing GHG emissions and adaptation to climate change. The benefits of growing forests for wood products are twofold: In the growing phase, forests absorb CO₂ and when used for sustainable materials (e.g., as a construction material) the CO₂ is stored and often replaces fossil fuel-intensive products. Proceeds will also be used for biodiversity-related projects that contribute to improving the resilience of forests and protect vulnerable habitats.
- UPM's strategy is to maintain the level of carbon sequestration provided by its forests, by ensuring that growth exceeds harvests. Its average annual carbon sink has fallen from 3.8 million tonnes(mt) CO₂ equivalent to 2.3 mt over the past five years. Our understanding is that this change is primarily due to the updates of calculation methodology. UPM is working on improving the accuracy of carbon accounting, including through cooperation with research institutions.
- UPM's forests are environmentally certified through FSC and PEFC certifications. FSC certification is generally seen as the most robust global standard for forest management, but PEFC has important complementary properties (e.g., greater supply chain scrutiny).
- However, sustainable forestry carries environmental risks: One is the intensive cultivation of a limited number of tree types (spruce, pine), which can be negative for biodiversity and can diminish resiliency to pests and climate change. We understand that about 90% of UPM's Finnish forests are conifers (pine and spruce) and around 10% are broadleaves (birch). One of UPM's commitments is to double the number of broadleaved trees in company-owned forests in Finland. The company is increasing the number of broadleaved trees by changing the company's guidelines for sapling stand management and forest thinning.

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- Costs related to the road development and other infrastructure for the establishment of new plantations may be included under the framework. Maintenance of existing roads could be included as well as certain operating expenditure for forestry management, which may include fossil fuel-powered equipment and machinery used by contractors, which we view as a relative weakness.
- The company has rigorous consideration regarding physical climate change and its impact on forests' resilience, considering geographical specificities, which further supports the dark green shade.
- Felling practices can be another contentious aspect of forestry. We understand that UPM uses different felling practices depending on geography, forest type, and soil. For example, UPM follows continuous cover forestry practices at nutrient-rich spruce mires, avoiding clear cutting at those sites. UPM uses the clear cut method in the eucalyptus plantations in Uruguay. At the same time it leaves branches, leaves, and bark onsite to decompose and recycle nutrients back to the soil, i.e., as natural/bio fertilizers. The company leaves deadwood and retention trees based on locally approved levels which are integrated into FSC/PEFC management systems in Finland and the U.S.
- The use of fertilizers is another environmental impact from planted forests. On the one hand, their use tends to increase tree growth and therefore the absorption of carbon and biomass output. On the other hand, the production of fertilizers is carbon-intensive, and once applied the fertilizers may release nitrous oxides (a potent GHG) into the atmosphere. Fertilizer use in managed forests is an instrument to increase forest growth and carbon sequestration. UPM uses only fertilizers and nutrients that are accepted and regulated by both FSC and PEFC certifications. In Finland UPM applies ash, for example, as a natural/bio solution.
- A significant portion of Finnish forests are planted on peatlands. Historically, these were often drained to maximize forest growth, and we understand draining is still permissible although not common. Draining peatlands can result in significant GHG emissions, as the CO₂ stored in the peat is released when drained, while the drainage also reduces the flood-preventing properties of peatlands. New ditching of peatlands is not allowed under the FSC certifications and will not be financed by the framework.
- The eligible biodiversity measures are coherent with UPM's commitment to having a net positive impact (NPI) on biodiversity. Depending on the geographic area, the company applies different approaches to improve biodiversity, e.g., a nature management method in Finland, maintaining biodiversity around its plantations in Uruguay, and applying mixed wood silviculture in the U.S. We note that the plantations in Uruguay are established on grasslands formerly used for cattle grazing. The company assesses the biodiversity value of the area before the plantation is established and protects biodiversity hotspots and native forests.
- We note that current biodiversity improvements are coming from a low baseline of poor biodiversity in the wake of a history of intensive forest management in Finland. This applies to many northern European countries and is not unique to UPM or Finland.

Climate positive and circular bioeconomy-adapted products and solutions

Assessment

 **Dark green**

Description

Financing of assets, R&D, and maintenance of production units and facilities including equipment, processes and technology related to climate positive or circular bioeconomy-adapted products and solutions that replace fossil raw materials with renewable alternatives. This includes but is not limited to biofuels, biochemicals, packaging materials, biocomposites, and biomedical products that are based on FSC or PEFC certified wood, its residue or RSB (Roundtable on Sustainable Biomaterials) certified plants as the main raw material.

Analytical considerations

- UPM's products in biofuels and biochemicals are direct drop-in substitutes for fossil-based alternatives.
- The framework will finance the biochemical refinery in Leuna, Germany. The refinery, when completed, will produce wood-based alternative to replace fossil-based material in textile, plastics, polyethylene terephthalate (PET) bottles, packaging, and pharma. This category may also finance eligible investments to the biofuels refinery in Lappeenranta, Finland.

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Lappeenranta biorefinery is producing renewable wood-based diesel and naphtha. UPM is also investigating in a potential new biofuels refinery in Rotterdam, the Netherlands.

- Biofuels can replace fossil fuels in many transport applications, but the provenance of the biomaterial is crucial to whether the biofuel can be considered sustainable. Under the framework, biofuels are limited to advanced biofuels in line with the revised EU Renewable Energy Directive, meeting a criteria of 80% reduction compared to fossil fuels. UPM's biofuels are certified with RSB and International Sustainability and Carbon Certification (ISCC). UPM obtained RSB low indirect land use change (ILUC) risk certification for its feedstocks, which demonstrates its commitment to a sustainable supply chain and shows that its biofuels production has a low risk of causing indirect emissions elsewhere. The ISCC certification is a sustainability certification system for bio-based materials and also includes whole lifecycle GHG emission calculations for all refinery streams. General challenges with certifications lie with overall enforceability, as well as with leakage issues, where the actual problem, for example deforestation, is simply shifted to a different producer.
- The wood and residues from UPM's existing wood flows provide feedstock for biorefineries and bio-based products. Wood for the mills is 100% controlled through chains of custody, 86% FSC and PEFC certified, and locally-sourced primarily from Finland and Uruguay, but also Germany, Austria, and other European locations. To control the chain of custody and ensure the traceability of the fiber, UPM uses the chain of custody certifications developed by FSC and PEFC. On sustainable forestry management, the chain of custody certification is less stringent than FSC and PEFC. Nevertheless, the chain of custody certifications used by UPM set minimum requirements to avoid sourcing wood linked to deforestation, excluding wood and fiber sourced from illegal harvesting, high conservation value forests, forest conversion, and from genetically modified trees. To contribute to sustainable sourcing, the chain of custody controls rely on national risk assessments. Risks of indirect land use change are complex to assess, in rapid evolution, and need to be carefully managed. Additional safeguards are in place in UPM's commitments, policies, and supplier engagement, which contribute to the dark green shading. We also view positively that the percentage of FSC or PEFC certified wood has increased every year since 2019; and UPM has a target to reach 100% by 2030.
- UPM's R&D focuses on a sustainable product design approach that considers the entire lifecycle. This means maximizing energy and resource efficiency by using recovered materials from production processes, as well as maximizing recyclability through the value chain.

Renewable or CO2-free energy

Assessment

Description

 Dark green

Financing development, operations, and maintenance of renewable and CO2-free energy solutions. This includes, but is not limited to, new investments, modernization, refurbishment, upgrades, and maintenance of existing equipment, distribution and production of waste-heat or electricity from renewable or CO2-free energy sources, or investment in CO2-free energy boilers, hydro, wind, and solar power as well as green hydrogen.

Analytical considerations

- Renewable energy solutions are crucial in a low-carbon energy sector.
- Note that direct investments or allocation to nuclear energy are not included in this framework, and waste-to-energy projects are not in scope of the framework except for wood waste.
- Investments could be made in renewable boilers using wood waste, e.g., bark, from FSC and/or PEFC certified forests and other mill residues as feedstock. We view waste-based biomass as a sustainable solution as it does not compete for the land use and the certification provides an additional safeguard on different environmental and social issues. Note that due to resource constraints and potential biodiversity concerns, biomass-based electricity is unlikely to represent a significantly scalable solution from a 2050 decarbonized energy perspective.
- Potential projects will likely include modernization and increasing installed capacity and efficiency of existing hydro plants, which we believe typically carry lower environmental risks than new hydro plants.

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- Hydro plants financed will comply with the EU Taxonomy criteria for substantial contribution to climate mitigation, i.e., lifecycle GHG emissions lower than 100g CO2 equivalent per kilowatt or power density above 5 watts per cubic meter, or run-of-river plants without artificial reservoirs, which we view positively in our assessment.
- Green hydrogen is a critical component of a sustainable low-carbon future. Produced green hydrogen might be used in some of UPM's own production facilities. However, given the early stage of related projects, it is difficult to assess the entire environmental value chain of such projects.
- UPM has appropriate policies and procedures in place to ensure responsible sourcing practices, which further supports our dark green assessment.

Pollution prevention and control, including waste management

Assessment

 **Medium green**

Description

Financing the reduction of UPM's environmental impact and improvement of the environmental performance of UPM's operations. This includes but is not limited to equipment, systems, initiatives, and R&D relevant for a circular bioeconomy (e.g. finding recycling solutions for green liquor dregs), costs related to waste management following the waste hierarchy (e.g. costs for recycling and other disposal of waste streams), for the reduction and control of pollution to air, water, and soil (e.g. control of effluent treatment, treatment and control of air emissions from energy generation or production) or for carbon capture and storage technology (a topic under development).

Analytical considerations

- Recycling is part of a low carbon future, while also contributing to reducing waste, and avoiding air, water, and soil pollution. Pulp and paper mills can produce significant water pollution that needs to be managed carefully.
- Wastewater from UPM's pulp and paper mills is cleaned in both mechanical and biological effluent treatment processes.
- An example of a waste management project is refining green liquor dregs (i.e., pulp mill residues, which are usually landfilled) into products with a lower carbon footprint than corresponding construction materials. Annually, UPM's three pulp mills in Finland generate approximately 60,000 tonnes of waste dregs that end up in landfill. UPM has shown through its the Zero Solid Waste project that green liquor dregs can be utilized to produce low carbon cement and additionally lower environmental impacts in the value chain (e.g., prevent CO2 emissions, air pollution, and landfill waste).
- One of the potential projects within the category is biogenic carbon capture, utilization, and storage (CCUS) technology. CCUS is a critical component of a sustainable low carbon future. However, there are some uncertainties throughout the value chain as the potential project is in the very early stages, although we note positively UPM's participation in the Flue2Chem collaboration project.
- All of UPM's European pulp and paper mills (except Caledonian in the U.K.), as well as the Fray Bentos pulp mill in Uruguay are registered with the EU Eco-Management and Audit Scheme (EMAS). EMAS is a voluntary environmental management system established by the European Commission through a dedicated Regulation and is helping organizations enhance their environmental performance, optimize resource usage, and report on their environmental performance on an annual basis.
- According to the water risk analysis carried out by UPM, water scarcity is not a material risk. Its production sites are in areas with low to medium basin risk.

Sustainable water and wastewater management

Assessment

 **Medium to Light green**

Description

Financing the reduction of water use and management of fresh and wastewater from UPM's operations and related activities. This includes but is not limited to equipment and

management related to raw water intake and purification, the wastewater treatment, the circular use of water, nutrients, and residues from water and wastewater treatment or other projects for the protection of soil and groundwater. Proceeds can also finance water-related measures enhancing biodiversity such as creating more spawning areas or freeing waterways for migratory fish as part of UPM’s stream water program.

Analytical considerations

- Pulp and paper mills contribute significantly to water pollution. Therefore, financing of projects such as wastewater treatment, equipment for purification, and efficient water use are beneficial and contribute to the reduction of negative environmental impacts. Part of the proceeds will be dedicated to biodiversity and natural resource conservation such as creating more spawning areas or removing obstacles to fish migration. This may contribute to the restoration of fish stock in Finland.
- All pollution control measures are subject to environmental screening to control for both local and global environmental impacts, such as water pollution. However, we note there are no specific thresholds for water usage or improvement, which contributes to the light green shading of this technology.
- According to the water risk analysis carried out by UPM, water scarcity is not a material risk. Its production sites are in areas with low to medium basin risk. In addition, 95% of the water used is internally recirculated and the majority returned to the same watersheds after purification.
- Investments in pollution control technologies will apply to both natural gas-based facilities, as well as the majority renewable-powered facilities. Note there are no investments in fossil fuel equipment.
- A biodiversity initiative that may be financed under the category is part of UPM’s stream water program implemented since 2016. For example, the company has completed two restoration projects in 2022, Sapsokoski and Arvajankoski. The biodiversity improvements contribute to the medium green shading.

Energy efficiency initiatives

Assessment

 Light green

Description

Financing of developments, modernization and management of renewable energy solutions improving energy efficiency compared with the previous situation and where negative climate impact and potential rebound and lock-in effects are considered with the requirement of a minimum 25% efficiency improvement. This includes but is not limited to projects, initiatives, and processes such as new boiler or heat recovery systems, technologies or equipment, advanced IT solutions or energy management systems. For all energy efficiency initiatives financed under this framework, lock-in and rebound effects will be considered.

Analytical considerations

- The majority of UPM's energy consumption is due to the production processes at the paper and pulp mills, where electricity and heat are needed for mechanical pulping, pumping, and drying. Therefore, energy efficiency improvements in these facilities are beneficial and lead to a reduction in GHG emissions and air pollution.
- This category may include investments directed at equipment or systems running on natural gas. Note that coal powered facilities are excluded.
- For all energy efficiency initiatives financed under this framework, lock-in and rebound effects will be considered. However, the issuer has not specified how it considers risks of locking in emissions, for example for energy efficiency measures on natural gas systems, which is factored into our shading assessment.
- The 25% energy efficiency threshold displays a good level of ambition, contributing to its corporate target of annual 1% improvement of energy efficiency.

S&P Global Ratings' Shades of Green

Assessments						
 Dark green	 Medium green	 Light green	 Yellow	 Orange	 Red	
Description						
Activities that correspond to the long-term vision of an LCCR future.	Activities that represent significant steps toward an LCCR future but will require further improvements to be long-term LCCR solutions.	Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.	Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.	Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.	Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.	
Example projects						
 Solar power plants	 Energy efficient buildings	 Hybrid road vehicles	 Health care services	 Conventional steel production	 New oil exploration	

Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Related Research

- [Analytical Approach: Second Party Opinions: Use of Proceeds](#), July 27, 2023
- [FAQ: Applying Our Integrated Analytical Approach for Use-of-Proceeds Second Party Opinions](#), July 27, 2023
- [Analytical Approach: Shades of Green Assessments](#), July 27, 2023
- [S&P Global Ratings ESG Materiality Maps](#), July 20, 2022

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Second Party Opinion: UPM Green Finance Framework

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