

UPM
**FOREST
ACTION**

Growing responsibility in
climate, biodiversity, water,
soil, and social contribution



Table of contents

Foreword	2
1. Forests and responsibility	3
2. What is the UPM Forest Action Programme?	5
CLIMATE.....	7
BIODIVERSITY.....	11
WATER.....	16
SOIL.....	20
SOCIAL CONTRIBUTION.....	23
3. Stakeholder views	28
4. Frequently asked questions	31

FOREWORD

Forests sustain life. They provide shelter, clean water, oxygen, livelihoods, and income. The world's forests are the second largest carbon sink after the oceans. It is essential therefore that we take good care of them. The decisions and actions we take today will impact the forests of future generations, since changes in forests take a long time to occur.

Healthy forests and sustainable forest management are at the core of our business, and it is imperative for us in UPM to make sure that forests will continue to thrive in a changing climate. The forest area in Europe is increasing, but globally, deforestation still takes place in Africa and South America, even though the rate of forest loss has decreased in most regions. Climate change, biodiversity loss, water scarcity, land degradation and social cohesion will be among the top drivers of change until 2030, all connected to the UPM Forest Action programme themes, which are guiding our work on the ground.

As one of the largest private forest owners in Europe and a global forest products company, we need to be in the forefront of responsible wood sourcing, and in introducing new, locally adapted solutions for forestry.



1. Forests and responsibility

UPM is one of the largest private forest owners in Europe and holds significant land holdings in the United States (US) and Uruguay. UPM owns 516,000 ha of forests in Finland; 305,000 ha of land, including eucalyptus plantations, grasslands and conservation areas in Uruguay, and 76,000 ha of forests in the US. In addition, UPM leases 160,000 ha of land in Uruguay, and manages about 1.3 million ha of private forests in Finland. About 180,000 ha (20%) of the UPM land globally is protected. In Finland, 16% of the UPM forests are protected or in restricted use. In Uruguay, approximately 40% of UPM land maintains the native vegetation, creating a significant opportunity for biodiversity conservation; almost half of these areas are protected (19%). In the US, 27% of UPM land is in reserve status, including

wetlands and other ecotypes which are not manageable. About 10% of the manageable UPM land in the US is in reserve status. Protected areas include valuable habitats, natural forests, and other valuable areas

In addition to own forests or plantations, UPM sources wood from four regions: North Europe, Central Europe, Great Lakes Region of the US and Canada, and Uruguay. Sourcing of wood from Russia ended in 2022 due to the war in Ukraine. All UPM owned forests are certified or in the process to be certified with FSC™ (Forest Stewardship Council™, FSC N003385), PEFC (Programme for the Endorsement of Forest Certification, PEFC/02-44-41) and/or SFI® (Sustainable Forestry Initiative) certification. 84% of wood sourced globally comes from certified forests, and 100% comes through a certified chain of custody system. Forest certification standards have criteria and indicators that support the Forest Action programme's aim to maximise the positive impact of our forestry operations by the end of the decade, and we see these systems as an important tool to gain third party verification for our sustainable management practices.

FACTS & FIGURES

About
180,000 ha
of UPM land
globally is protected.

84%
of wood is sourced
from certified forests

100%
comes through
a certified chain of
custody system

UPM owns
516,000 ha
of forests in Finland

All UPM owned forests are certified or in the process to be certified with FSC™, PEFC and/or SFI® certification.



UPM does not cause deforestation anywhere in the world; forests are always regrown after harvesting according to principles of sustainable forest management. New trees can be encouraged to regenerate naturally, or nature can be helped along by sowing seeds or planting seedlings. UPM has four nurseries that produce about 55 million seedlings annually. One nursery is located in Joroinen, Finland, and three in Paysandú, Guichón and Sarandí del Yí in Uruguay. These strong, healthy seedlings can grow twice as fast as a naturally generated seed. The faster they grow, the faster they absorb carbon dioxide from the atmosphere.

After planting of new seedlings in Finland, forests are managed with thinning: some trees are selectively harvested from an area, allowing more light and space to the remaining trees. They, in turn, are healthier and grow faster. Actively thinned forests can sequester more carbon than unmanaged forests, which may be unhealthy due to damage. Timely forest management can add up to 30% growth of the trees compared to non-managed forest.

At the end of the rotation time of boreal or temperate forest (60-100 years), the majority of Finnish forests are harvested with a regeneration felling, removing most of the trees but leaving some retention trees and deadwood on the site. This creates open, light spaces and allows species dependent on light to thrive. In the US, silvicultural treatments ranging from continuous cover to clear-felling are employed to imitate the natural disturbance dynamics of the forest and promote diverse tree mixtures. Central European forest management depends on forest type and the main tree species: for example in beech forests, continuous cover forestry and selective cutting (thinning) is used. Continuous cover forestry favours shade tolerant tree species. Plantation management in Uruguay is fitted to the shorter rotation cycle of fast-growing eucalyptus trees.

FACTS & FIGURES

UPM nurseries produces about
55 million
seedlings annually



Actively thinned forests can sequester more carbon than unmanaged forests

Timely forest management can add up to
+30%
growth compared to non-managed forest.





2. What is the UPM Forest Action Programme?

UPM launched the Forest Action programme, which is a comprehensive global forest responsibility programme, in March 2022. The objective of the programme is to operate as an umbrella for forest responsibility actions, encourage increasing number of activities in all UPM wood sourcing regions globally, as well as to build knowledge and awareness related to the five programme themes. These are: **climate**, **biodiversity**, **water**, **soil**, and **social contribution**.

CLIMATE

The climate theme is distributed into three focus areas: reducing emissions from forestry, strengthening forest carbon storage and sinks, and improving climate change adaptation of forests. UPM is committed to the UN's Business Ambition for 1.5°C climate target and net zero by 2040. This means that UPM is committed to decrease 65% of CO₂ emissions from its own operations, and 30% emission reduction in the supply chain. In addition, UPM's climate-positive forest management increases forest growth and provides sustainable raw material for bio-based innovations replacing fossil materials and products.

BIODIVERSITY

The biodiversity theme targets enhancing biodiversity with protection, commercial forestry and plantation actions, and biodiversity projects. In 2018, UPM has set a target for having a net positive impact (NPI) on biodiversity, with the aim to increase biodiversity in the company's forests in Finland. The Forest Action programme extends this aim to the Uruguayan plantations, where biodiversity indicators have been developed to reflect local conditions and context.

Forest biodiversity is directly linked to management remuneration: a positive impact on forest biodiversity in the company's own forests in Finland is included in UPM's long-term incentive plan.

Our climate commitment

- 65%** Reduction of our own CO₂ emissions
- 30%** Reduction of our supply chain CO₂ emissions
-  Pioneer climate-positive products
-  Keep forests as carbon sinks

Our biodiversity commitment

- 2x** Double the number of broad-leaved trees in company owned forests in Finland
- +++** Generate positive impact on biodiversity





WATER

The water theme includes focus areas on surface water, ground water and aquatic habitats. Water scarcity and access to clean water pose global challenges, and UPM is determined to take action to improve water protection in forestry, and improve the status with restoration, minimising the use of fertilisers or chemical products, or avoiding water pollution from forest sites or tree nurseries.

Our water commitment



Responsible use of fertilisers



Protect ground water quality

SOIL

The soil theme is distributed into focus areas on productivity, pollution prevention and erosion control. Agriculture, forestry, construction, and infrastructure compete in land use, and since the global land area is not growing, it is crucially important to maintain the soil in good condition. Soil forms the basis of most ecosystems; UPM is committed to minimise negative effects of forestry on soil by preventing or controlling erosion, avoiding harmful use of soil and maintaining forests for the next generation.

Our soil commitment



Safeguard healthy soils



Pioneer innovative forestry practices to promote good soil conditions and prevent damage.

SOCIAL CONTRIBUTION

The social contribution theme includes focus areas on responsible supply chains, local communities, and citizenship, which refers to how UPM is influencing the society in each country of forestry and wood sourcing operations. UPM has 150 years of history in Finland with remarkable societal and economic impacts, active community work in the United States and Uruguay, and targets to real impacts of development together with local communities. Responsible supply chains are an essential part of UPM's social responsibility, including respect for minimum wage, social security, and possibility to join unions.

Our social contribution commitment



Engage local communities and create a positive impact on societies



Ensure safe working conditions throughout our supply chain



Generate value through responsible sourcing and business practices





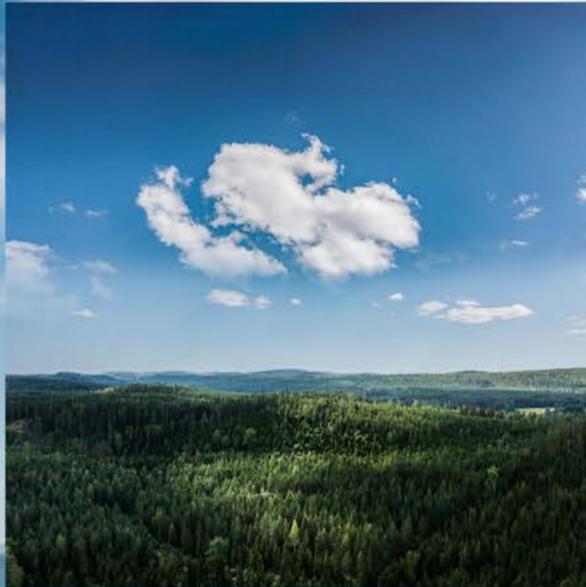
CLIMATE

Climate change is the most pressing challenge of the current era, and the role of forests in developing solutions is essential. As we look for solutions to this challenge, forests are seen as one of many essential components for a prosperous future. Growing forests actively pull carbon dioxide from the atmosphere making them the original carbon capture technology, a true natural climate solution. The forest and biobased industries can further utilise wood products to store carbon in products and replace fossil intensive products.

While forests are an essential element to mitigate the climate challenge, we must also ensure that forests remain healthy into an uncertain future. Climate change is one of the largest forces acting upon our forests. Globally, forest managers are seeking opportunities to assess how climate change may affect forest ecosystems. There is substantial evidence that forests will change in response to climate change. The exact magnitude and nature of impacts is unknown; however, a growing body of knowledge exists which can assist forest managers in assessing the best options. UPM is committed to ensuring the long-term health and productivity of its forests and so assessing the potential risks of climate change along

with developing and implementing a plan to ensure resilience is essential. In addition, UPM is proposing climate-positive options to private forest owners as part of forest management services.

In Finland we have seen the concrete positive impact of modern, sustainable forest management methods. In the past 50 years, forest growth in Finland has doubled despite the increased production of wood-based products and increased forest conservation network.



CLIMATE ACTION: FINLAND

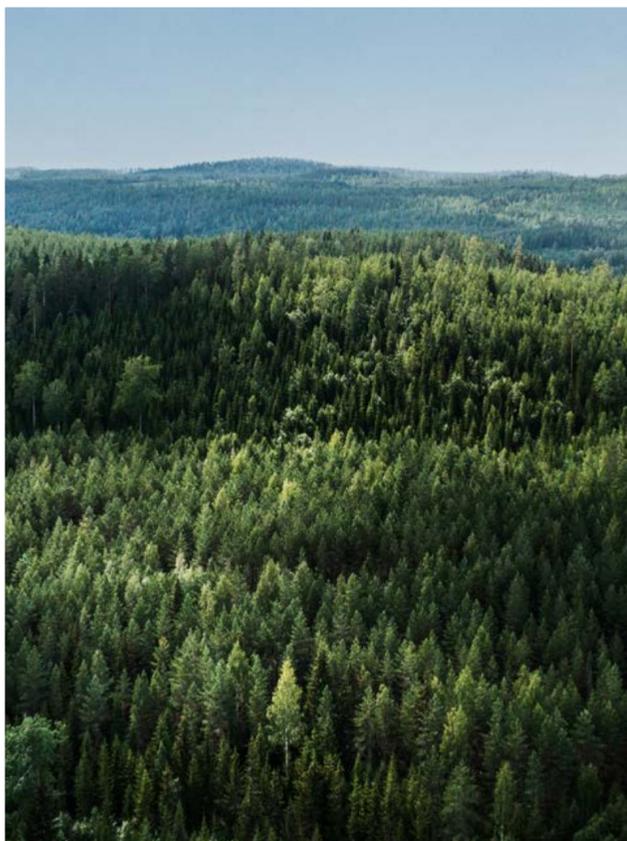
Emission data from suppliers for carbon footprint calculation

In addition to reducing emissions from its own operations, UPM extends its climate commitments through the minus 30 by 30 programme as part of reducing 30% CO₂ emissions across the value chain by 2030.

Calculating the carbon footprint of a UPM product can take anywhere from a couple of weeks to several months. For many companies, up to 70% of their carbon footprint is generated in the supply chain. The more complex the product, the more information is needed to understand all its environmental impacts. UPM has started systematic collection of emissions data from over 20,000 suppliers that UPM purchases goods and services from. This is a major effort considering the variety of business activities and sizes represented by UPM's partners globally.



UPM has started systematic collection of emissions data from over 20,000 suppliers



CLIMATE ACTION: FINLAND

Carbon sink calculations in UPM forests in Finland

UPM has carried out forest carbon sink calculations with the Natural Resources Institute Finland since 2019. The results are reported publicly and allow frequent follow-up of carbon sinks and sources in UPM owned forests in Finland, United States as well as the plantations in Uruguay. UPM is committed to harvest less than the forests grow. Annual calculations provide information on trends and help to follow if applied forestry measures are effective, keeping in mind that changes in forests take time.

UPM forests are a carbon sink

The Institute's calculations use national forest inventory data for Finland for tree growth and removals, which includes both logging as reported by UPM and natural mortality as national data. Soil carbon calculations are based on modelling and data from literature. In Finland, the 5-year average for a carbon sink in trees is -842 (1000 Mg CO₂) with annual fluctuation from -1174 to -204. The carbon sink in upland soils is -241 (1000 Mg CO₂) and greenhouse



gas emissions from peat soils 141 (1000 Mg CO₂ eq). This means that peatland itself is a carbon source. In total trees and soils in Finland give a 5-year average of -1021 (1000 Mg CO₂), a negative number, which means that UPM forests are a carbon sink.



CLIMATE ACTION: GLOBAL

Analysing future climate conditions and implications to forestry

UPM is using a science-based approach to be well prepared for changing climate conditions. To have a sound understanding, UPM has funded a study on climate change adaptation by the Finnish Meteorological Institute, which has published the results as a report on “Projections of future climate for Europe, Uruguay and China” in 2019.

The study investigates projected climatic changes including four areas of operation of the UPM company: Finland, southern Germany, Uruguay, and eastern China (UPM has no wood sourcing in China). The report, which is publicly available, suggests implications of the changes for forestry, including forest growth and productivity and possible climate change-induced disturbances. Mean precipitation is more likely to increase than decrease, except for southern Germany in summer and early autumn, and Uruguay in the Southern Hemisphere winter and spring. However, rising temperatures enhance evaporation and increase drought risks despite these modest increases in precipitation. In some seasons, both the intense rainfall events and dry periods are projected to become more severe.

The study summarises, that forest resources have been increasing in Europe in recent decades. Especially in Northern Europe, forests have benefitted from the warmer climate and increased CO₂ concentration in the atmosphere. In the future, this positive development may at least partly suffer due to potentially increasing disturbances in forest growth. Drought, fire, and insect pests may cause forest damage. Changing climate reduces soil frost, which is expected to hamper wintertime logging in Finland, where birch is benefiting most from changing conditions, and spruce suffering most seriously. Overall, the role of forests as a carbon sink in climate change mitigation is important, and discussion on the most beneficial and sustainable use of forest resources is expected to continue.



CLIMATE ACTION: USA

Development of a Forest Climate Adaptation Plan in the US

Beginning in 2021, Blandin’s Forest Ecologist began to develop a climate adaptation plan for the 76,000 ha of UPM owned forest lands. The plan approaches climate planning using a 3-step approach: **1)** assess past, current, and expected climate trends; **2)** predict expected impacts to forests based on the best available scientific information; and **3)** identify opportunities for action to improve resilience and adaptation outcomes.

Assessing the regional climate, including past, current, and future trends, becomes the foundation of planning. Climate change is expected to be highly dynamic, with changes in temperature and precipitation varying spatially and temporally.

In north-central Minnesota where Blandin’s forestlands are situated, annual temperatures have been steadily increasing over the past century and are expected to continue in the coming decades. Additionally, the region has experienced changing patterns of precipitation, which are also expected to continue changing. Extensive research has been conducted to understand and predict the impacts that chang-

ing climate will have on forests, along with a variety of tools to help foresters manage. In particular, the Northern Institute of Applied Climate Science (NIACS) has developed a system of assessments and frameworks to assist land managers understand and strategically plan for change. Blandin reviewed its existing forest management practices in relation to these resources to assess its preparedness for climate change. In many ways, the company’s SmartForestrySM methods along with other important best management practices were adding climate resilience to the forest, while in other areas the company was able to identify areas where improvement could be made.

Altogether, eight major recommendations for UPM to implement in the coming decade to improve resilience and adaptation of the forest were identified. Recommendations include ensuring adequate areas are protected to ensure conservation of rare species, actively favouring climate adapted species which are expected to thrive in warmer conditions and exploring the use of seed/seedlings from warmer and drier conditions to ensure trees are adapted to future climatic conditions.

CLIMATE ACTION: URUGUAY

Improving forest plantation resilience in Uruguay

In response to changing climatic conditions and in line with increasing our efficiency in the use of wood, we are adapting our activities and raw material to improve plantations' long-term carbon sequestration in Uruguay. Eucalyptus trees grow fast, and seedlings will provide wood within 10 to 12 years. These trees adapt easily to different climates and soils, and they are very efficient users of nutrients and water. But keeping up the same momentum in the future will be a challenge, as climate change is having a significant impact on growth conditions.

UPM has been conducting research activities in Uruguay for over 30 years. From the beginning, we have followed a clear vision and strategy on how to establish, develop and manage eucalyptus plantations sustainably.

UPM invests approximately USD 2 million per year in R&D activities in Uruguay, mainly focused on continuously developing eucalyptus clones that adapt better to changing climate conditions. Furthermore, in May 2022, the company inaugurated its first Forestry Research Centre specialised in eucalyptus plantations in Uruguay.



UPM invests approximately USD 2 million per year in R&D activities in Uruguay

The investment of approximately USD 5 million in the new centre demonstrates UPM's strong commitment to continue research and development of technologies for sustainable forestry.

The research work is focused on developing genetic materials with high productivity, wood quality and good adaptation to local conditions and climatic changes. To this end, the centre has state-of-the-art laboratories and equipment, as well as specific greenhouses for various research and development purposes.

The genetic improvement programme is based on traditional breeding techniques to enhance wood yield and fibre quality. We also ensure that trees adapt to different forestry sites and changing climate conditions. The purpose of this programme is to provide the company with the best trees. This means that the best trees from each species are selected, and controlled crossbreeding is carried out. The resulting seeds are used to produce seedlings that are put into field trials and to iteratively choose trees with the desired characteristics that will be confirmed as new clones after a careful and lengthy evaluation process. This is how the most productive trees are obtained, with the best adaptation to the local conditions, soil, and climate, as well as the necessary characteristics to meet the demands of the pulp and paper industry.

The knowledge acquired and developed has a positive impact on Uruguayan forest producers associated with UPM. The same goes with academic and research institutions in the sector with whom UPM constantly develops different projects in the interior of the country.



+30 years
research activities
in Uruguay



10-12 years
from eucalyptus
seedlings to
harvestable wood





BIODIVERSITY

UPM established a biodiversity programme in Finland in 1998, which broadened to all wood sourcing regions in 2006, indicating our long term commitment for improving biodiversity. In 2018, UPM made a commitment to having a net positive impact (NPI) on biodiversity. UPM currently has eight biodiversity indicators in Finland, which are monitored and publicly reported annually. The indicators are: share of deciduous trees (tree species), forest age classes, forest structural variation, protected areas, valuable habitats, habitat restoration, species and habitat projects and indicator development.

In the US, UPM Blandin has been recognised as a leader in the implementation of ecological forestry through their SmartForestrySM methods for over 20 years. Together, Blandin's Foresters and Forest Ecologist utilise a system of forestry which emphasises using the science of forest ecology to drive forest management decisions. By examining all aspects of the forest, including not only the trees, but also the plants, soils, and microclimate, Blandin foresters are able to implement silvicultural systems which are tailored to each particular ecosystem.

Managing using these SmartForestrySM methods encourages the development of forests with more diversity including more

diverse tree species composition and habitat structures. Silvicultural treatments ranging from continuous cover to clear-felling are employed to imitate the natural disturbance dynamics of the forest and promote diverse tree mixtures. By fostering high levels of functional diversity in the forests, biodiversity is conserved through a course-filter approach. Managing forests as a complex system using SmartForestrySM is a key strategy for ensuring Blandin's forests continue to promote and conserve biodiversity in the long-term.

In Uruguay, the conservation of biodiversity is key to UPM's strategy, and is mainstreamed in four key dimensions:



(1) Management of diverse landscapes, with provision of multiple ecosystem services, **(2)** Identification and conservation of valuable habitats, **(3)** Identification and conservation of flora and fauna priority species for conservation, focusing on endangered species and on those that are not represented in the National System of Protected Areas (SNAP), and **(4)** Control of the invasion of natural ecosystems by exotic species, particularly woody species, to maintain the environmental value of these ecosystems.

Since 1991, UPM in Uruguay has identified those areas that, due to their ecological, biological (or similar) values, need to be preserved. Some examples of important ecosystems for biodiversity conservation are grasslands, native forests, wetlands, continental dunes, and unique areas for protecting species of the native flora and fauna. Some of them are consid-

ered in a distinct way, either because they are examples of declining ecosystems, they are relict, or they harbour rare species or species with restricted distribution. Each year new sites are identified as new eco-regions and incorporated into the Network of Naturally Conserved Areas. UPM maintains this network with verifiable management goals and objectives for the network as such, and for each of the areas individually. During the last 30 years, the number of endangered species present in the company's farms have remained stable, increased, or showed a fluctuating behaviour.

BIODIVERSITY ACTION: FINLAND

Improving biodiversity with nature management methods in forestry in Finland

In Finland over 20% of forest species are dependent on deadwood, and according to research the amount of deadwood is one of the clearest differences between natural forests and managed forests. Increasing the amount of deadwood in forests enhances biodiversity.

In Finland over 20% of forest species are dependent on deadwood

UPM is working in cooperation with the Natural Resources Institute Finland to monitor and identify the positive impacts of so-called nature management methods in UPM forests. These nature management actions in Finland include leaving retention trees (living trees) and deadwood trees in the forest during the harvest. Other nature management methods, which are outside the scope of this study, include leaving buffer zones close to water bodies, protecting valuable habitats, leaving game reserves, having

prescribed burning (i.e. controlled burning) and ensuring a mix of tree species.

These actions have been a long-term part of everyday sustainable forest management and have grown more ambitious with forest certification requirements. The Natural Resources Institute Finland initiated this study in 2021, and the target is to complete inventories on 30-50 sites in Southern Finland, which have been harvested during 2000-2018. This study aims to verify, how nature management methods have succeeded in increasing structural features beneficial to biodiversity as well as dependent species.



BIODIVERSITY ACTION: FINLAND

Doubling the share of broadleaved trees in Finland

UPM has set a target to double the number of broadleaved trees in its forests in Finland. Broadleaved trees improve forest growth and yield and increase the diversity of forest species, supporting adaptation due to changing climate conditions and resistance to pests and diseases.

Broadleaved trees improve forest growth and increase the diversity of forest species

The number of broadleaved trees will be increased by changing the guidelines for sapling stand management and forest thinning (already in implementation). UPM's own nursery in Joroinen has been preparing for this change – especially the increase in silver birch sapling production – for several years. In addition to birch, the nursery has been growing a small amount of oak and black alder saplings to increase the biodiversity of UPM's forests. In addition to UPM forests, this practice is recommended for private forest owners.



2x

Double the number of broadleaved trees in company-owned forests in Finland

+++

Generate positive impact on biodiversity



BIODIVERSITY ACTION: URUGUAY

UPM as forerunner within the National System of Protected Areas in Uruguay

UPM started its forestry operations in Uruguay nearly 30 years ago. Since the very beginning the company has systematically developed methods for maintaining biodiversity around its eucalyptus plantations. In the first phase, UPM conducted baseline biodiversity surveys at the beginning of the 1990s to discover and classify species in the regions where it was going to operate an initiative that continues today.

In these initial surveys, a particular farm named Mafalda, located in western Uruguay, presented special characteristics of flora and fauna, as well as some special ecosystems. Therefore, UPM maintained a significant part of the farm without forest plantations and since then, this area has been an important conservation site in for UPM in Uruguay.

In Mafalda, the size of the protected area has grown steadily, rising from 1,000 hectares up to 1,550 hectares today. Since 2016, the area has been part of Uruguay's National System of Protected Areas (SNAP) and was officially renamed as Esteros y Algarrobales del Río Uruguay (EARU). UPM became the first private

company to manage an area of the SNAP and, so far, this is the only SNAP conservation area owned and managed by a private owner. Mafalda is an important showcase that demonstrates that it is possible to protect nature and to run successful forest operations for wood production in the same area.

UPM has systematically developed methods for maintaining biodiversity around its plantations

There are approximately 700 species of flora (i.e., plants) living in EARU, which represent around 25% of the native species found in the whole country. This is a remarkably high percentage accumulated in a small area. Similar values are also detected for other groups such as birds or mammals. Two new species of flora for Uruguay were identified in 2020 in the area. All these indicators highlight the value of the protected area.

UPM collaborates with stakeholders and NGOs to professionally manage the conservation areas with the contribution of experts on the subject linked to these organisations, such as Vida Silvestre Uruguay.

BIODIVERSITY ACTION: URUGUAY

UPM biodiversity monitoring programme with remarkable discoveries in Uruguay

UPM Uruguay has detected both nationally and worldwide unknown species, identified sites of high conservation value, enriched national biological collections, contributed to valuable information used by the Uruguayan National System of Protected Areas (SNAP), and collected extensive amounts of nature-related information over time. This information is collected and made publicly available in the document "Contributions of UPM to the knowledge and conservation of Uruguay's native flora".

A total of 33 species were identified for the first time in Uruguay's flora by UPM

Significant concentrations of biodiversity were recorded in environmental studies, including relevant species at the regional and national levels, whether endemic (i.e., native only to Uruguay), rare, threatened, or endangered. Particularly noteworthy are the findings of species that were

unknown in the Uruguayan flora until then, and that were identified at UPM properties.

A total of 33 species were identified for the first time in Uruguay's flora by UPM. At the same time, a worldwide unknown species was detected, which was published in a specialised scientific magazine under the scientific name *Antyphythum charruasorum*. The UPM biodiversity monitoring programme has supported the update of old records or those with very inaccurate information on location or environment. As an example of the current lists of vascular plants for conservation, 140 species are included for



which precise population location data were not available. Thanks to the greater amount of field work undertaken by UPM 23 of those species now have georeferenced populations.

About 100,000 ha of UPM owned land remain in their natural state in Uruguay

As a result of the increased intensity of sampling and collection, the list of native species of the Uruguayan flora has been considerably increased. It includes species with diverse types of growth, such as woody plants, herbaceous plants, cacti, ferns, and the like. The work carried out by UPM also contributed to the enrichment of the collections deposited in national herbaria (scientific collections of dried plant specimens). The number of specimens obtained from UPM's properties that have enriched the herbarium collections of the Faculty of Agronomy and the Botanical Garden of Montevideo exceeds 6,000.

About 100,000 ha of UPM owned land remain in their natural state in Uruguay as grasslands, shrublands, wetlands, native forests, palm groves, and sandbanks and dunes. These house flora and fauna species typical of each of these ecosystems and include many of their eco-regional variations thanks to the dispersion of the UPM sites in the country.

In addition to monitoring biodiversity, UPM Uruguay is looking into restoration: management and recovery of areas, including identifying certain areas within multiple degraded ecosystems existing in the country. Some cases include, for example, the recovery of the Yatay palm (*Butia yatay*) population in northwest Uruguay (Paysandú department) and of the carob forests and alkaline areas that are currently part of the protected area Esteros y Algarrobales del Río Uruguay.

BIODIVERSITY ACTION: USA

Blandin SmartForestrySM and the development of Mixedwood Silviculture

Beginning approximately 20 years ago, UPM Blandin began recognising the unique challenges of growing spruce in their region. While intensive conifer production can be incredibly efficient and ecologically appropriate in some regions (e.g. Finland), in Minnesota the conventional spruce plantations continually resulted in poor outcomes including regeneration failures, forest health issues, and poor yields. In the late 1990's ecological forestry methods caught the attention of Blandin and offered an alternative style and philosophy for forest management. UPM embarked on a mission to understand and implement ecological forestry on their lands.

The first step in the journey toward ecological forestry is to understand the forests within the region and how they function: the role of natural disturbances, interactions amongst species, and the natural succession within the forest are the foundation for implementing ecological silviculture. Using a system of ecological classification, forest stands were assessed to understand their unique ecology based on the soils, topography, microclimate, and a full accounting of all plant species on site. Each of these communities have

a unique natural species assemblage and successional process which serves as the basis for developing silvicultural prescriptions. It becomes the goal of the forest manager to replicate and imitate those natural processes through management including harvesting, thinning, and planting. This system as implemented by Blandin is known as SmartForestrySM.

UPM has successfully restored mixedwood conditions in at least 11,000 ha of forests

As UPM Blandin began to better understand the ecology of the forests they managed, it became apparent that managing spruce as a monoculture in the region was not compatible with the local ecology. In Minnesota, spruce tended to occur in diverse and complex forests made up of several other tree species including both conifers and hardwoods. These forests, collectively known as mixedwoods became the focus of the attention to increase forest diversity and secure spruce fibre supply in the long-term.

UPM Blandin has developed silvicultural methods which help to restore spruce and other long-lived conifers in the landscape. Through

thoughtfully implemented harvests and planting of over 500,000 trees annually, UPM has successfully restored mixedwood conditions in at least 11,000 ha of forests. This work continues, and the plan is to restore hundreds of hectares annually for the next decade or more.



500,000
trees planted annually

UPM works to share our experience with other land managers in the region to promote this ecologically superior form of forest management across the region. Each year Blandin shares their experience with landowners, forest managers, and

policy makers across the region through workshops, tours, and presentations. Beginning in 2022, Blandin has initiated a cooperative research project with the University of Minnesota, the Minnesota Department of Natural Resources, and the Minnesota Forest Resources Council to quantify the benefits of this type of management in relation to productivity and carbon sequestration.





WATER

As part of a complex hydrological cycle, forests play an integral role in purifying water and regulating its movement. At UPM, our sustainable forest management practices prevent negative impacts on water systems and maintain the important role of forests for water-regulation.

UPM uses a broad array of solutions for managing the impact of forestry on water resources. Our main harvesting approach is to leave untouched buffer zones along water courses and aquatic habitats. Excavation breaks and infiltration fields are among the structural solutions we apply in soil preparation and drainage. The main idea is to prevent leaching from the harvest area and to purify solid particles and nutrients before runoff enters any water system. We minimise runoffs by utilising the vegetation's own ability to absorb water and, where needed, we add any necessary buffering constructions. We follow separate guidelines for ground-water areas, which include restrictions on fertilising and ditching.

UPM is shifting to continuous cover forestry in nutrient-rich spruce mires in Finland. Groundwater areas are taken into special

consideration, and water protection planning in moist soils is part of routine forest management planning.

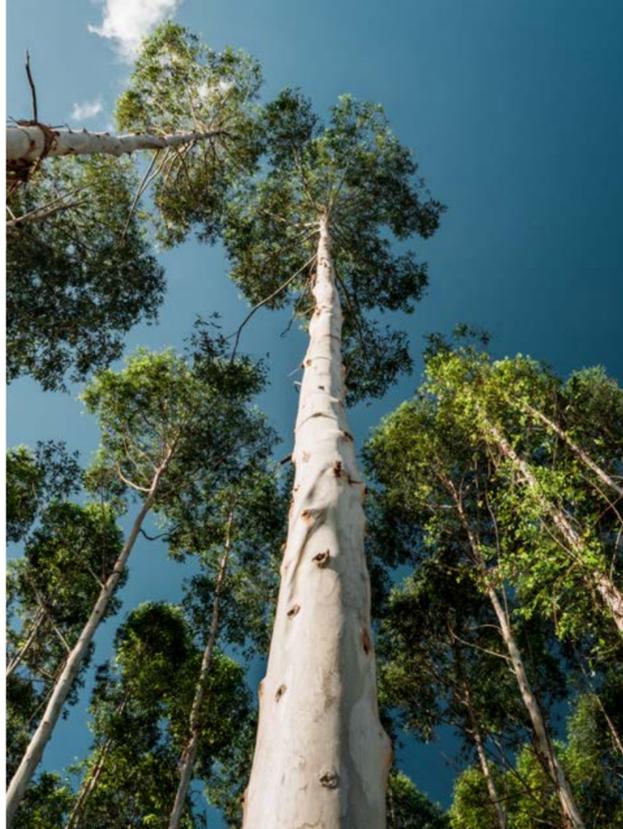
Minnesota's forests are a water rich landscape. The state boasts nearly 12,000 lakes and over 110,000 miles of natural rivers and streams along with millions of hectares of wetland habitats. The Blandin Forestlands are no different. Company owned lands protect approximately 450 kilometres of shoreline and 25,000 hectares of wetland habitats. The forest lands are considered a crucial conservation tool in protecting the iconic Mississippi River which serves as an essential water supply to millions of people in Minnesota, including the St. Paul and Minneapolis metropolitan area. In Minnesota, it is well recognised that working forests are an essential asset to clean water state-wide.



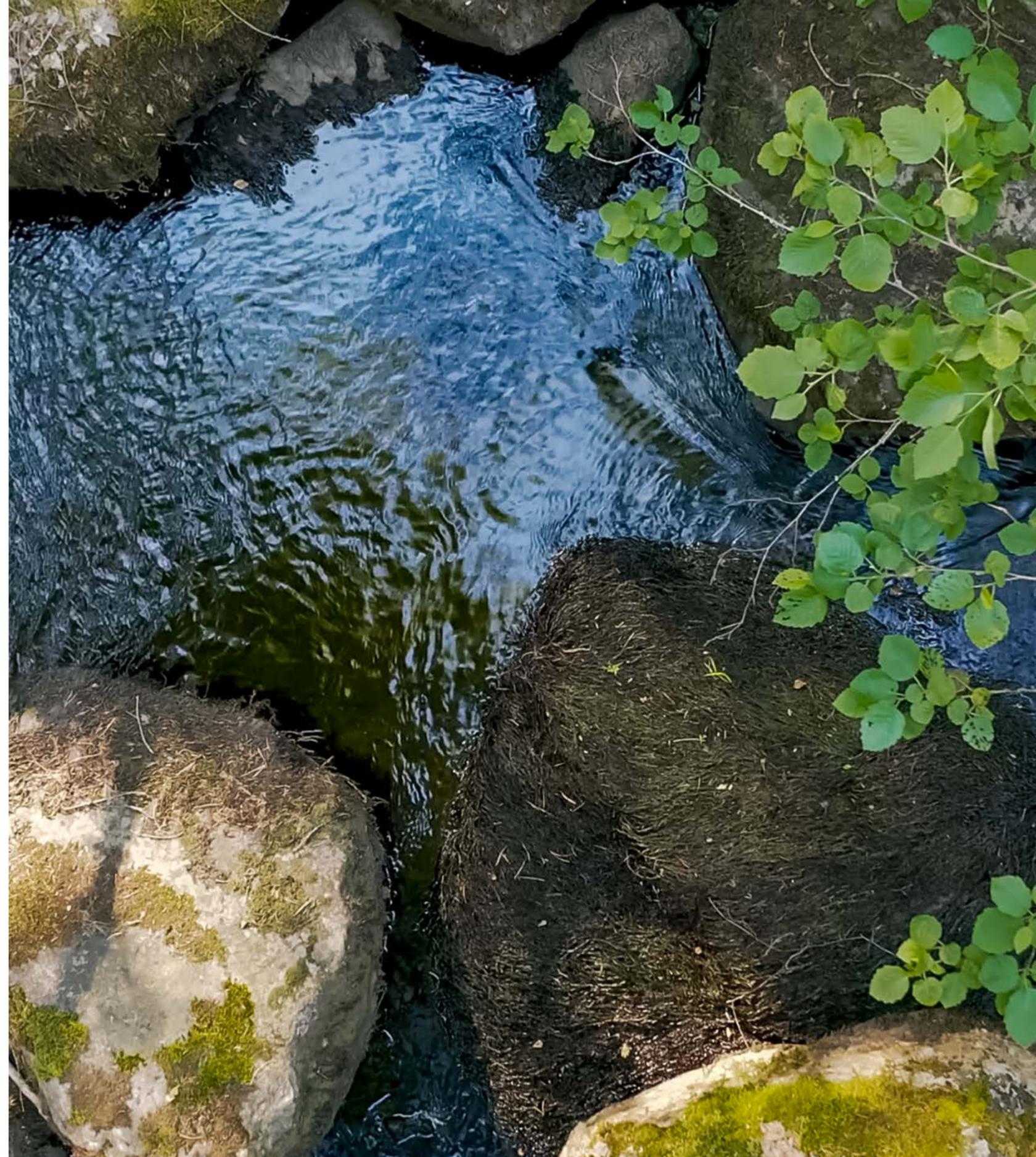
In Uruguay, water usage by eucalyptus plantations has been studied and monitored for decades by an institutional network. Planted eucalyptus species are very efficient in terms of biomass production per water unit usage. Studies from Brazil show that tree plantations and natural forests use similar amounts of water. Tree plantations reduce rapid run-off through the soil surface thus minimising soil erosion.

Planted eucalyptus species are very efficient in terms of water usage

During periods of severe drought, not common in Uruguay, eucalyptus trees stop growing and recycle the water inside their own biomass. They can even start dropping leaves to keep their water needs for survival at a very minimum level if the drought extends. Eucalyptus do not use groundwater or reduce groundwater recharge as their roots never reach the aquifers. Soils used for eucalyptus plantations in Uruguay are relatively shallow, either because of a clay-rich layer that prevents root development or because of



a rocky layer. In most cases the effective rooting depth does not exceed the first metre. Changes in precipitation and water availability have always been one of the key considerations in planning of any industrial operations including plantations by UPM.



WATER ACTION: FINLAND

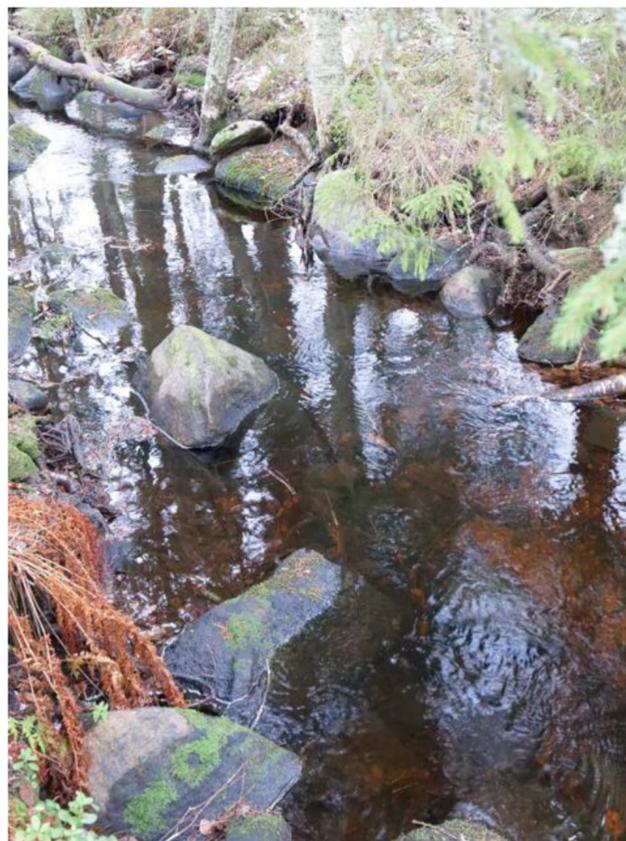
Restoration of small inland waters in Finland

UPM is one of several funding partners in a national restoration project related to small inland waters including springs, ponds, or streams, during 2022-2023. The project is part of national protection and restoration programme called HELMI, coordinated by the Ministry of the Environment in Finland. The project aims (1) to increase the diversity of small waters and riparian habitats by restoring different types of small waters across Finland; (2) to improve the conditions for small water restoration activities by raising awareness of small waters and their improvement and (3) to increase the number of participants involved in small water restoration by strengthening cooperation and expertise. The project is implemented by several local associations and NGOs.

According to the national assessment of endangered species, small water bodies and their species are threatened throughout Finland, and in many areas the trend is worsening. Drainage of peatlands, logging, hydraulic engineering, and eutrophication are among the factors that have led to the decline. Small waters are also threatened by climate change and invasive species. Restoration is a way to slow down biodiversity loss and re-establish endangered habitats.



Restoration is a way to slow down biodiversity loss and re-establish endangered habitats

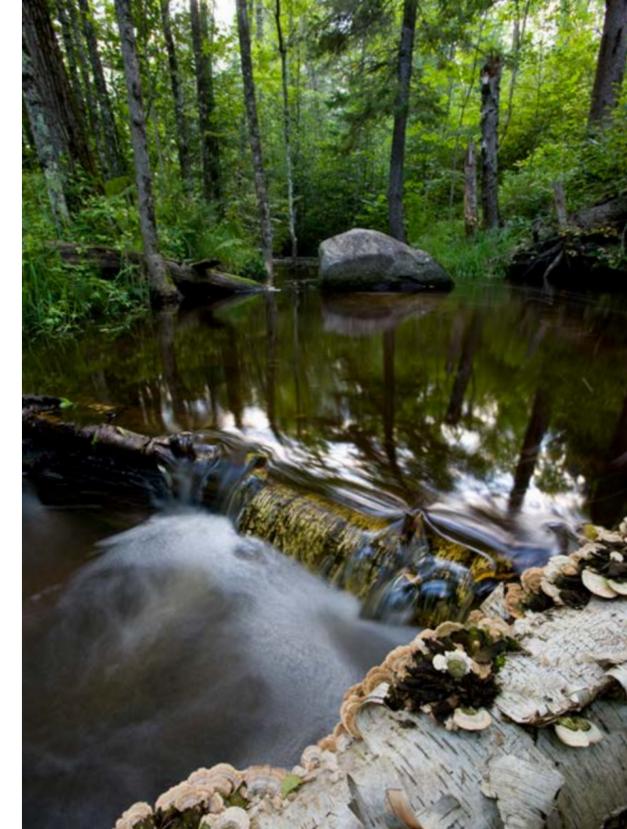


WATER ACTION: USA

Updating inventories for precision implementation of Best Management Practices in the US

UPM Blandin is committed to promoting clean water through its forest land operations. While much of this work is done through protection and conservation of wetland habitats and waterbodies, the company also relies on implementing Minnesota's Forest Management Guidelines to ensure clean water and healthy wetlands. The state of Minnesota first released their Forest Management Guidelines in 1999 and have continually updated them over the past 23 years. The guidelines include a variety of tactics which can be applied to ensure protection of wetlands habitats and water bodies. Practices such as erosion control, maintaining forest cover in riparian areas, and maintenance of vegetation for filtering water adjacent to wetlands are some examples of actions commonly implemented.

In order to effectively implement these practices, it is essential that the company knows where important habitats and waterbodies are in relation to timber harvesting activities. UPM annually updates its forest inventory system using a variety of information sources including satellite



UPM maintains geospatial inventories to map and document the presence of lakes, streams and ponds

imagery, LiDAR, drone imagery, and on-the-ground inspection. In 2021, the current inventory identifies nearly 25,000 ha of wetland habitats across the forest. In addition, UPM maintains geo-spatial inventories to map and document the presence of lakes, streams, and ponds which may require special protection measures.

WATER ACTION: URUGUAY

Hydrological monitoring programme for over 15 years in Uruguay

Water is an abundant resource in Uruguay. UPM's plantations in Uruguay are located within a temperate zone with a humid subtropical climate. The average annual rainfall varies between 1,200 and 1,500 mm from southwest to northeast, and it is well distributed during the year without a regular dry season. UPM identifies and manages the environmental aspects of its operations, to minimise possible negative environmental impacts in relation to water resources. Measures include:

- *Protecting riparian areas, by respecting buffer distances between water streams and plantations*
- *Maintaining low lying riparian areas and natural drainage areas with their natural vegetation. Natural drainage systems are not tilled or forested (they remain covered to prevent erosion and favour water run-off towards low-lying areas)*
- *The percentage of area covered by eucalyptus plantations in sub- and micro-basins is in accordance with the Uruguay Forestry Environmental Management Plans of the environmental authority*



UPM manages its operations to minimise possible negative environmental impacts in relation to water resources

- *Within each basin, plantations with different age classes are kept, to avoid fluctuations in the water flows*
- *Strategies have been implemented to minimise the use of herbicides, prevent soil erosion, and other processes that impact on water quality.*

UPM Uruguay has been implementing for over 15 years a hydrological monitoring programme and various research projects, in collaboration

with different governmental institutions, private companies and academic organisations. The aim of the hydrological monitoring programme is to understand and quantify the influence of forest plantations on water dynamics, and to assess the components of the hydrological cycle and water quality. Hydrological monitoring is part of the commitment of UPM to the long-term sustainability of its operations.

Hydrological monitoring is part of the commitment of UPM to the long-term sustainability of its operations

A long-term study in paired basins was started in 2007 targeting to understand the influence of eucalyptus plantations on the water balance at a local and regional scale, as well as on surface water quality. It is part of a joint research programme between UPM, the Faculty of Engineering and the Faculty of Agronomy of the University of the Republic, and two other forestry companies. It is partially funded by the National Agency for Research and Innovation (ANII). Technical assistance is also received from external specialists from the Brazilian Instituto de Pesquisas Florestais (IPEF).

During this project, progress has been made in the creation of a national network of experimental micro-watersheds in the western zone of

the country, which made it possible to compare the impacts of forestry activity with those produced by the natural grassland for livestock raising activities. Likewise, monitoring protocols were developed, and hydrological and edaphic indicators were defined, as tools for sustainable forest management and decision-making by companies and national authorities.

A study on water quality in surface flows, another long-term project, started in 2012, with the objective of evaluating variations in the physicochemical properties in watercourses of basins influenced by eucalyptus plantations. It is being implemented through a collaboration with the Faculty of Engineering of the University of the Republic of Uruguay.

These and other research projects, specific to responsible forest management have been implemented in coordination with other companies in the forestry sector, government agencies and academic institutions. The results are publicly available and through these collaborations UPM has contributed to the generation of new knowledge and information, as well as the improvement of forest environmental management and the conservation or enhancement of water resources in Uruguay.



SOIL

Soils are an extremely valuable resource and are the key to long-term prosperity of a forest. Ensuring the long-term conservation of soil resources is essential to ensuring that forest productivity is maintained, and that forests can adapt to future climate change. Forest management has the potential to impact forest soils, both positively and negatively. Without healthy soils, sustainable forestry is not possible, making it of the utmost importance to ensure that foresters understand potential impacts and how to mitigate them.

UPM is using national best practice guidelines for forest management as a starting point. These guidelines include actions to protect soils and water, conserve biodiversity, and protect culturally important sites. Guidelines are incorporated into the management systems and have been implemented over decades. The best available techniques are applied in all operations (planting, harvesting, road construction) to minimise soil erosion and compaction, and to maximise nutrient cycling.

In Uruguay, soil conservation is at the core of the planning process of plantations. To maintain the productivity of the forest plantations for the next 50 years or more, we strive to ensure that the soils where

plantations are established are well conserved. With this goal in mind, soil conservation starts in the planning phase of the plantations and continues during the execution of all forestry operations.

UPM plantations in Uruguay are mostly established on forest priority soils (FPS) as defined by the Uruguayan State. The definition of FPS in the late 1980s represents a particularly good case of modern territorial planning. FPS have low productivity for traditional land uses in Uruguay such as beef and wool production from cattle and sheep grazing on open grasslands, but at the same time they have particularly good productivity for forest plantations. All projects of more than 40 ha go through an Environmental Impact Assessment process





by the environmental authorities, and must be approved before work begins.

Eucalyptus plantations require low amounts of nutrients to grow and are very efficient in using the available nutrients. This is supported by the harvesting method used by UPM where leaves, branches and bark are left on the site to decompose and recycle nutrients back to the soil. To achieve our main strategic environmental goals, we implement a set of specific actions, including the implementation of monitoring plans for the main environmental values (biodiversity, soil, and water), and considering landscape values, ecosystem services, and climate change mitigation and adaptation.

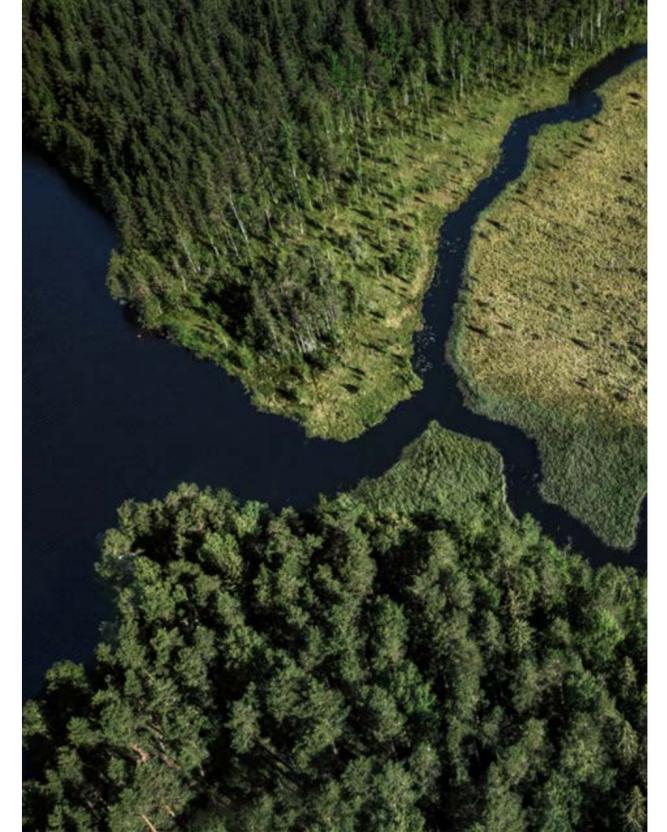
SOIL ACTION: FINLAND

Forest management planning in Finland

In Finland UPM is choosing forest management practices which disturb soils as little as possible on a harvest site. About one third of the land area in Finland is peatlands. UPM criteria for following soil damage are stricter than required by law or certification, and systematic monitoring and reporting is conducted by all operators. Groundwater areas are taken into special consideration, and water protection planning in moist soils is part of routine forest management planning to avoid surface water contamination with soil fine particles after harvest.

~28% of the land area in Finland is peatlands

Peatlands, which are in natural condition, are left undisturbed, which means that no new pitching takes place to dry the soils for better forest growth. Soils can be protected also with the right timing of forest harvest: soft soils are harvested during wintertime, when the ground is frozen, to minimise the damage from logging machinery.



Groundwater areas are taken into special consideration



SOIL ACTION: USA

Implementation and monitoring of harvesting best management practices in the US

Soil protection methods implemented through the use of the Minnesota Forest Management Guidelines are diverse and include actions to maintain the long-term productivity of soils. Specific actions are often tailored to each specific harvest site based on the soils and topography present. In some cases, timber harvesting is restricted to the winter season when soils are frozen and less likely to be impacted, in other areas UPM may prescribe the use of low impact machinery such as cut-to-length harvesters.

Timber harvesting is restricted to the winter season when soils are frozen and less likely to be impacted

Foresters use available resource inventories, on-site investigation, and professional judgement to ensure that the correct soil protection guidelines are implemented to avoid or mitigate negative impacts to soils.



Each year, UPM Blandin utilises a verifiable monitoring system to ensure that these guidelines are implemented correctly. This monitoring effort is utilised to track compliance to reduce negative impacts. Over 40 indicators are reviewed in the field to ensure proper implementation of all forest management guidelines using a smartphone enabled survey tool. Results are recorded and integrated with the company's geographic information systems where they can be further analysed. At least annually, results are compiled to analyse trends in the data. In 2021, 65 harvest sites were visited in this monitoring effort and revealed continued excellent performance. Results of monitoring are reviewed by staff and communicated with timber harvesting contractors so that attention can be given to correcting any issues through identifying opportunities for overall improvement.

SOIL ACTION: URUGUAY

Soil monitoring programme for 12 years in Uruguay

Implemented in coordination and collaboration with third parties, the soil monitoring programme measures nutrients, pH, and organic matter, and is also relevant for carbon estimation in soil. It allows the creation of a structured database, with consistency checks every time new measurements are entered.

The soil monitoring programme covers the most common soil types

The main goal is to support the management team on decision making based on high quality data. It also allows us to identify changes in the physicochemical properties and level of organic matter of the soils when changing its use. At the same time, the programme enables the assessment of corrective measures to maintain productivity by assessing and reviewing silviculture and harvesting procedures.

The soil monitoring programme covers the most common soil types. New monitoring sites are incorporated annually to cover all soil groups and types. At each site, samples are taken from a planted area and another adjacent non-planted area. Every five years (twice per forest cycle, which is 10-12 years) each sampling site is measured again. By 2022, the programme has more than 90 sampling sites, 60 of which already have two or more measurements.

During 2022, Natural Resources Institute Finland has collaborated with UPM to improve the procedures for the soil monitoring programme, particularly to allow better estimations of soil organic carbon, which is especially important to account carbon sequestration done by plantations. Also in 2022, UPM signed an agreement with Uruguay's National Society of Forestry Producers (SPF) to integrate other forestry companies into UPM's soil monitoring programme, using the same methodology and thus broadening its coverage, which will allow more robust analyses to be done in the future.



SOCIAL CONTRIBUTION

In Finland, the forest sector is one of the important cornerstones of the economy, especially in the rural regions. According to Natural Resources Institute, the forest sector directly employed 61,000 people in Finland in 2021. Almost one fifth (17%) of Finland's commodities export revenues consisted of forest industry products (EUR 18 billion). The contribution of the forest sector to GDP was 4.5% in 2018. 45% of this was originated from forestry, 16% from the wood products industry and 39% from the pulp and paper industry. In 2020, the revenue from wood sales to forest owners was about EUR 1.8 billion in Finland. Including state and industry owned forests, the full revenue from wood was EUR 2.14 billion. The main tree species to create income for Finnish forest owners is spruce. On average, family forest owners earn 130-140 EUR per ha of forest when selling the wood for harvest



In the US, indigenous peoples have played an important role in Minnesota and the surrounding states and provinces for centuries. Archaeological records indicate a history dating back at least 9,000-12,000. Much of the state was originally inhabited by the Dakota peoples who have a long history and relationship with Minnesota going back directly to their creation story. Ojibwe peoples, originally from the North-eastern US along the Atlantic coast, began arriving in Minnesota 300-400 years ago following a centuries long migration from their

ancestral homelands that began approximately 1,500 years ago. Ojibwe peoples arrived over the course of many years in small groups as their society moved west in search for "land where food grows on water", a cultural prophesy referencing the region's robust wild rice resource.

When the first Euro-Americans arrived in the region they found Ojibwe peoples firmly established. As the push for the expansion of settlement reached the state, the US Federal Government began actions to open the lands for settlement of Euro-Americans. Decades of conflict, negotia-

tions, disputes, and agreements eventually led to a period of Treaty building and Land Cessions in the mid-1800s. This period resulted in the transfer of the vast majority of lands from indigenous peoples to the US Government where it was distributed to settlers of the region. While land title was transferred, indigenous peoples retained important rights related to cultural practices, hunting, fishing, and gathering which are upheld to this day.

In Uruguay, UPM social contribution work is mainly guided through the UPM Foundation. Established in 2006, the UPM Foundation works in coordination with local stakeholders to promote the develop-

ment of rural communities through projects related to education, training, and entrepreneurship. It has been working with more than 150 communities in the interior of the country. Special focus is put on communities smaller than 5,000 inhabitants.

The aim of the Foundation is to promote the genuine development of these communities in the long term, by aligning projects with social organisations with the aid of community leaders. The focus of the projects is to improve access to training, to boost entrepreneurial spirit and to enhance networking in the communities.

SOCIAL ACTION: GLOBAL

Supplier audits to ensure decent working conditions

UPM Forest's supply chain includes dozens of different service providers, from raw material procurement and forest management services to transport. UPM has developed an auditing method for its supply chain and initiated audits to ensure that suppliers comply with UPM requirements.

As UPM Forest's supply chain becomes more international, UPM aims to gain greater visibility on recruitment, employment contracts, working

hours, payment practices, travel and accommodation of employees and to ensure that they comply with the UPM Code of Conduct. To this end, UPM launched a supply chain supplier audit project in 2020 by training auditors, and developing audit questionnaires and self-assessment forms for contractors. In 2022 the project progressed to the actual audits.

UPM has developed an auditing method to ensure that suppliers comply with UPM requirements



SOCIAL ACTION: FINLAND

Guides and Scouts and other youth associations in Finland

Cooperation with youth associations provides fresh, new insights, and highlights forest related questions relevant for our future decision makers. UPM has had corporate wide cooperation with the Guides and Scouts of Finland since 2020, and the aim is to build understanding and dialogue of youth and other stakeholders on responsibility and climate change. Cooperation has included a climate campaign with the collection of messages from young people to the Prime Minister of Finland.

The aim is to build understanding and dialogue of youth and other stakeholders on responsibility and climate change

Value Based Leadership Course 2022 by the Guides and Scouts of Finland engaged young people to have discussions with UPM on corporate responsibility, human resources and the Forest Action programme. Course participants represented views of various youth associations

such as Federations of Green Youth and Students, Social Democratic Students and the Youth of the National Coalition Party (youth arms of three of Finland's political parties), the Red Cross, and multiple student associations of universities. Course participants assessed the content of the UPM Forest Action programme, and recommended UPM to engage in cooperation with NGOs and to engage in dialogue with youth associations on a regular basis to allow open and public participation. Participants called for increased transparency in target setting and acknowledging challenges. Feedback helps UPM to develop Forest Action programme activities further.

Cooperation culminated in July 2022, when UPM was supporting Finnjamboree Kajo in Evo, Hämeenlinna, where over 12 000 scouts and guides gathered from Finland and abroad. UPM provided wood for the camp construction and contributed to the camp programme content and discussions with UPM experts.

+12,000 scouts and guides gathered to Hämeenlinna, Finland



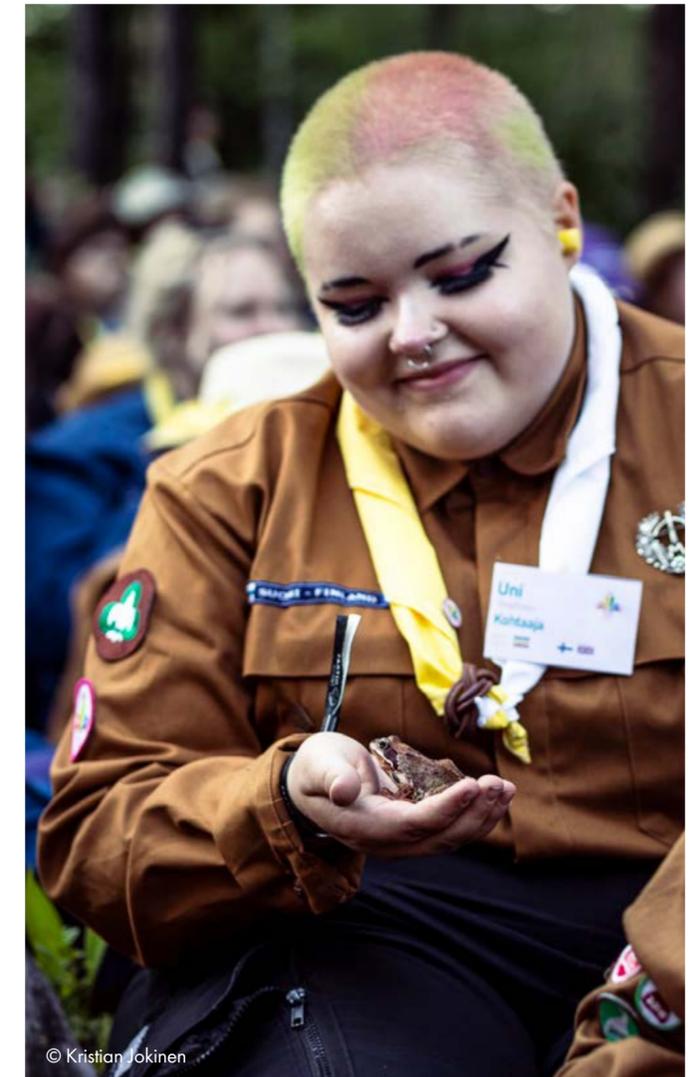
UPM provided wood for the camp construction



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SOCIAL ACTION: USA

Recognising the rights of Indigenous Peoples in the US

Positively contributing to the community is central to UPM. Given the rich history of indigenous peoples in Minnesota, and proximity to tribal communities, UPM has identified relationship building with tribal partners as a goal for the coming decade. This work is very much in its infancy, however the first step in this journey was to publicly recognise the rights of indigenous peoples in the region.

UPM has identified relationship building with tribal partners as a goal for the coming decade

In signing the land cession treaties, the tribal nations generally passed title of land to the state. It is generally agreed upon and legally upheld, that the tribes retain certain use rights or usufructuary rights to the ceded lands. In effect, indigenous peoples retain rights to hunt, fish, and gather on ceded lands that accessible to them. UPM Blandin recognises these rights and wishes to conduct all operations in a manner



which upholds and respects those rights. The first step in this process is to formally and publicly recognise and acknowledge these rights. In 2021, UPM began the development of a public statement, which is now available on the UPM Blandin Forestry webpage, and which acknowledges the historical context and importance of these rights.

While this is only a first step, UPM intends to continue working toward building positive relationships with the local Indigenous Communities. Building effective communication channels, understanding history, and learning about Ojibwe culture will be invaluable next steps in this process.

SOCIAL ACTION: URUGUAY

Focus on education, young people, women, and entrepreneurship in Uruguay

UPM Foundation is especially keen on supporting young people, women, and fledgling entrepreneurs. In 2021, the UPM Foundation supported 25 different projects in Uruguay. In 2022, the Foundation is supporting 20 projects run by 14 different organisations.

In addition to developing the communities, the other strong focus area is supporting education via various training programmes. One example of a successful education collaboration kicked off in 2016 is the Postgraduate Programme for Junior High School Teachers in the interior of the country.

This project was implemented after several exchanges with local education leaders and local education community in Fray Bentos, where the UPM first pulp mill in Uruguay is located. Local leaders brought their concern about professional growth and training opportunities for teachers outside of Montevideo (Uruguay's capital city). This is how the UPM Foundation asked the Education Department of the Catholic University of Uruguay (UCU) to design a proposal for further cooperation.

The UCU Education Department responded an idea for the postgraduate programme for teachers to innovate their classroom practices, focused on improving student learning, and introducing new practices, and teaching methodologies. The programme was then implemented in Fray Bentos – and beyond. UCU has run the programme from 2016 onwards in Fray Bentos (2016-2017), Sarandí del Yí (2017-2018), Guichón (2018-2019) and Tacuarembó (2020-2021).



SOCIAL ACTION: URUGUAY

Job generation in rural areas of Uruguay

Generation of jobs in rural areas is one of the main impacts of plantation forestry in Uruguay. Besides job opportunities, it is necessary to maintain and develop services and infrastructure in these rural areas to keep them populated. Most of the forestry operations are subcontracted, which creates the opportunity for many entrepreneurs and small and medium enterprises to develop. Nowadays there are around 250 contractors providing services in UPM's plantations. Besides them, more than 600 other companies provide goods and services throughout UPM Uruguay value chain. These numbers are expected to increase with the start-up of the UPM Paso de los Toros pulp mill.



~250 contractors
providing services in UPM's
plantations in Uruguay



+600 companies
provide goods and services
throughout the UPM value chain





3. Stakeholder views

UPM has a long history of working together with a diverse group of stakeholders to develop the sustainability of forestry operations. We recognise that to achieve the targets in all the five focus areas of the Forest Action programme, we must further strengthen this collaboration and seek new partnerships. UPM aims to have open dialogue with stakeholders and to establish partnerships that are based on mutual benefits.

Baltic Sea Action Group and Forest Action in Finland

UPM has made its latest commitment to Baltic Sea Action Group in July 2022 related to diverting ship-generated wastewater discharge from sea to land. With regards to forestry, UPM and Baltic Sea Action Group have organised multiple expert dialogues over the Forest Action programme content and brainstormed on the possible actions related to water theme in Finland. The aim of the cooperation is to find new approaches, test ideas, combine networks and in the end reach wider impact and awareness with chosen activities.

Baltic Sea Action Group (BSAG, Foundation for a Living Baltic Sea) is a non-profit foundation founded in 2008 in Finland. BSAG works to restore the good ecological balance of the Baltic Sea in changing climate conditions. BSAG focuses on projects with the greatest impact and longevity on land, on the sea and underwater. As an independent foundation BSAG acts as a catalyst and a matchmaker accelerating rescue efforts to save the Baltic Sea. In extensive collaboration with companies, researchers, civil servants, decision makers, landowners, and other stakeholders BSAG facilitates solving problems that no one can solve alone.

BSAG challenges UPM and other partners to use their core expertise for the benefit of the Baltic Sea and helps to achieve sustainable development goals. Having worked closely with UPM for over 10 years, BSAG sees the freshly launched UPM Forest Action programme “as a companywide comprehensive framework for identifying, adopting, and scaling up concrete forest management practices with multi-benefits for ecosystems. Holistic approach to intertwined global challenges, like eutrophication in waterbodies, soil degradation, climate change and biodiversity loss, is an essential strength of UPM Forest Action programme.”





Northern Institute of Applied Climate Science in the US

Ensuring that our forests remain healthy and productive in the face of an uncertain future is a critical aspect of UPM Blandin's forest management strategy. Climate change in particular represents a challenge, and something that must be planned for in a thoughtful way. Blandin initiated this process by developing a climate adaptation plan with tools, resources and assistance developed by the Northern Institute of Applied Climate Science (NIACS, www.NIACS.org), a collaborative effort among the United States Forest Service, universities, conservation organisations, and the forest industry. In the words of **Stephen Handler**, a Climate Change Specialist with the organisation, the mission of NIACS is to

"build partnerships, facilitate research, and synthesize information to bridge the gap between carbon and climate science research and the information and management needs of natural resource professionals, woodland owners, policymakers, and members of the public". Below Stephen answers some questions relevant to the Blandin's work in developing the plan:

What is your overall impression of the UPM Blandin Climate Adaptation Plan?

"I think it's great! The Blandin Climate Adaptation Plan does a good job providing the overall context and rationale for why Blandin is taking action. I also really appreciated the step-by-step sections of the plan that describe how Blandin's management actions already contribute to climate adaptation. I think that's not a

conversation forest managers are used to having, but it's helpful to understand that in many cases, forest management is already well suited for climate adaptation. And finally, the Climate Adaptation Plan points out some clear and achievable ways that Blandin can raise the bar and pursue more proactive climate adaptation actions. "

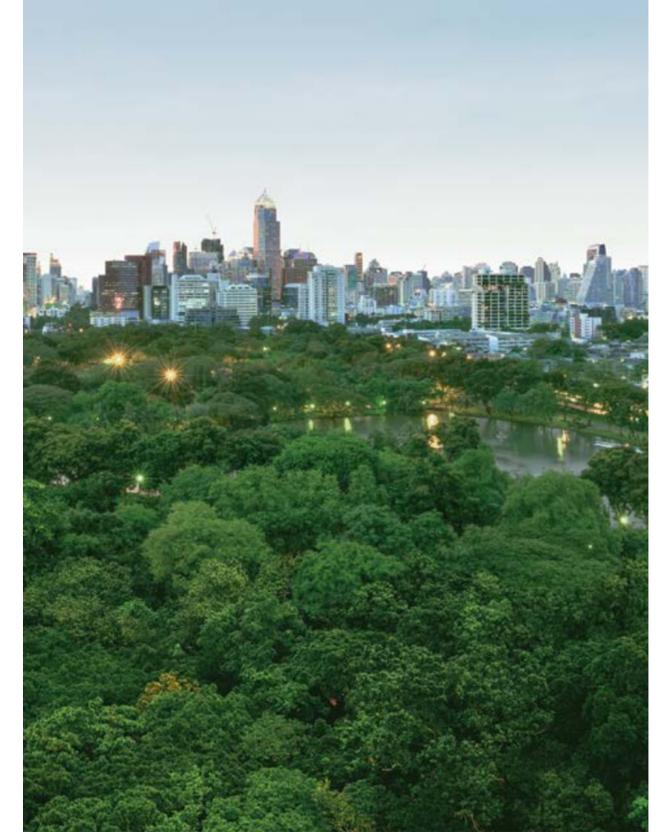
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Forest industry has a critical role to play in our shared response to climate change.

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What is the role of the forest industry in the context of climate change?

"Forest industry has a critical role to play in our shared response to climate change. In many situations, climate change adaptation will require more frequent or intensive management. Forest managers will also be proposing some new or unconventional practices to help forests cope with change. All of this is only going to be possible if we have a healthy and competitive forest industry in the region. Forest management doesn't just happen by accident, and it won't be viable to carry out all our adaptation ideas if forest industry falters. Additionally, forest industry can really shape how adaptation plays out on the landscape. Procurement foresters can begin talking with clients about potential climate



risks and how to adapt. Companies that manage their own lands can incorporate adaptation ideas to help address climate risks and keep their woods healthy and diverse as we head into an uncertain future. "

Programme in Educational Leadership and Innovation in Uruguay

The programme in Educational Leadership and Innovation, led by the Varkey Foundation, consists of training opportunities for principals and teachers of formal education centres in Fray Bentos, and is funded and supported by the UPM Foundation. The aim is to provide new tools while enhancing management skills. The project promotes a favourable impact on student learning by emphasising the role of teachers and the quality of the institution. Varkey Foundation, which designs and implements the training programme, has been running this programme for four years and it was taken as a case study by Harvard University and highlighted by the World Bank case study example, the OAS and CAF. In the programme supported by UPM Foundation, 36 directors and teachers

from 19 institutions of all educational levels in the Río Negro department were trained in the programme.

“ I found the programme interesting and useful as we worked the methodology based on projects

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"I found the programme interesting and useful as we worked the methodology based on projects, and in a collaborative way" commented **Sofía Vasella**, Director of a primary school in Fray Bentos. "I incorporated everything related to ICTs, but also to involve families as co-educators, giving them more prominence", she added. To conclude, she emphasised that the programme "opened our eyes to new teaching and learning scenarios, since it allows the school to reinvent itself according to new theories in education."

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



4. Frequently asked questions

What does forest certification mean in practice?

Forest certification sets practical management requirements with clear instructions such as leaving minimum amount of living retention trees per hectare during harvest, not removing or relocate dead wood, saving habitat trees, leaving minimum metres of buffer zones close to lakes or streams, keeping listed valuable habitats, or avoiding harvest during bird nesting period. Exact details and numbers are set and audited according to national standards.

Why are clear-cuts used in wood harvest?

Clear-cut (or regeneration felling as part of even aged forest management) is still a standard method of forest management in boreal and temperate zones. In Finland, only a few percent of the total forest area is harvested as clear-cut annually. This means that majority of forests are in different stages of growth and development, forming a mosaic structure. In Central Europe selective harvesting is more common (i.e. uneven aged forest manage-

ment or continuous cover forestry), which favours species that are shade-tolerant. In Minnesota a mix of both clear-cut and selection methods is used: about 30% of harvesting is considered non-clear-cut, and harvesting decisions are based on natural disturbance ecology of the area.

Why don't we protect all forests to safeguard biodiversity and carbon sinks? Is forest harvest really needed?

Forests provide us with sustainable, renewable resource wood, when sourced from sustainably managed forests. Wood is needed to replace fossils and is a remarkable source of income and livelihoods especially in rural areas. Forest management and harvest increase the growth of forests. Protecting part of the forest area is one option in the toolbox for sustainable forest management, but certainly not the only one.

Does sustainable forest management cause deforestation?

Sustainable forestry and sustainable forest management include a principle to safeguard

the forests for future generations – they do not cause deforestation. The main cause of global deforestation is agricultural expansion. Deforestation means permanent land use change and should not be confused with forest harvest. UPM is producing 55 million tree seedlings per year. After wood harvest, new forest is planted, unless the site is preferred for natural regeneration, e.g. beech forests in Central Europe or Minnesota.

Sustainable forestry safeguards the forest for future generations and does not cause deforestation

How is sustainability of wood assessed and monitored in UPM?

We source wood from our own forests, from private forest owners and from B2B partners such as governments and other forest industry companies. All wood used by UPM is 100% traceable. We do not source wood from protected areas or from areas where the rights of indigenous people are threatened. We monitor and verify the origin of all raw materials in our wood supply chains. In addition to continuous compliance monitoring, guidelines and forest certification systems support sustainability.

Why do we need plantations?

In the US there is growing recognition that plantations and other intensively managed areas allow for other areas to be set aside or protected. A combination of reserves, extensively managed areas, and intensively managed plantations across the landscape can be called the landscape "triad" and is a recognised approach to protecting biodiversity.

Plantations provide us sustainable, renewable resource wood in areas, where there is no higher value use for the land, such as old grazing lands in Uruguay. UPM does not convert natural forests into plantations. UPM land areas in Uruguay form a combination of plantations, set aside areas and protected areas. Wood is needed to replace fossils and is part of the solution towards a fossil free future. Plantations provide us additional wood material, which is needed to meet the growing demand for wood and wood pulp in global markets.

How does eucalyptus plantations affect water balance in Uruguay?

Our plantations in Uruguay are established in areas where sufficient water supply is available. We do not establish plantations in water stressed regions. Our impacts on water resources are constantly monitored at selected measurement points and supported by long term research.

UPM **BIOFORE**
BEYOND FOSSILS

