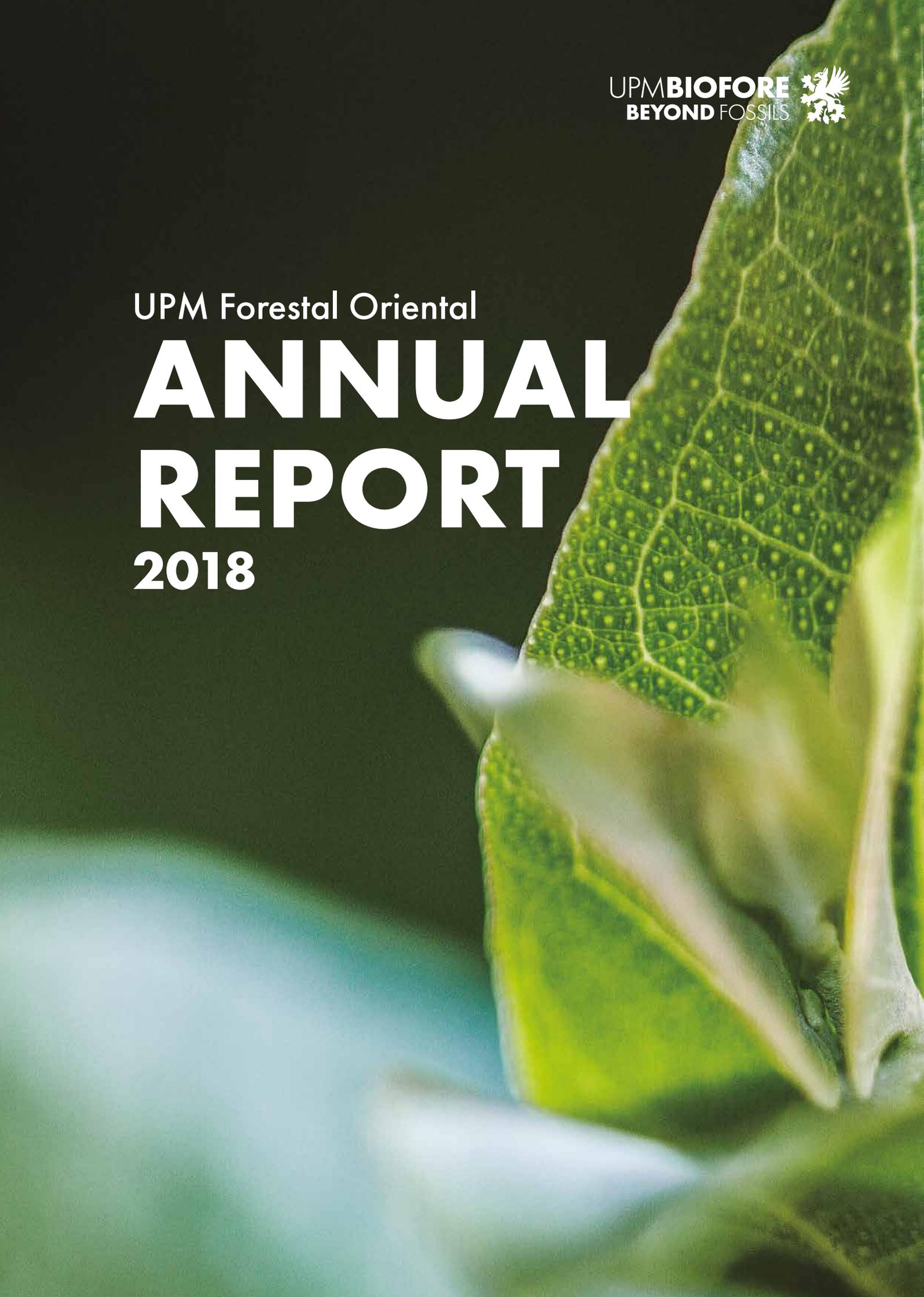


UPM Forestal Oriental

# ANNUAL REPORT 2018



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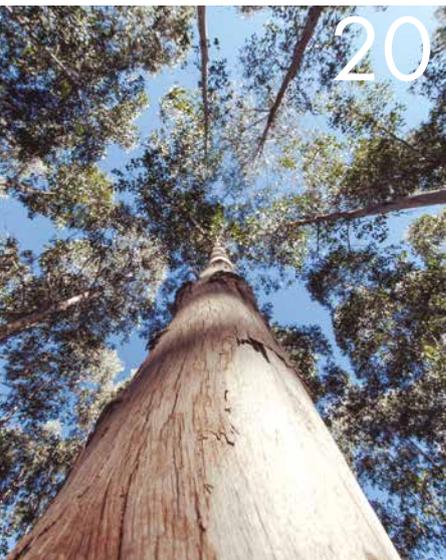
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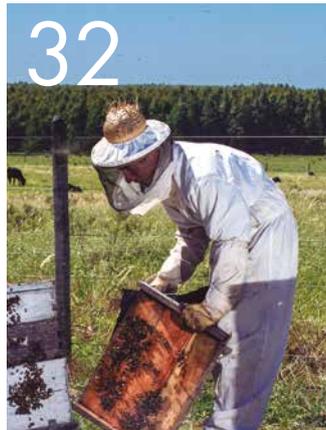
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**This report is a summary of UPM Forestal Oriental's forest management plan, which is made available to the public with the operational results and the company's monitoring activities.**

# CHAPTERS

- 1 INTRODUCTION**

General information about UPM on a global and local level, its history in Uruguay and, specifically, information about UPM Forestal Oriental.
- 2 COMPANY**

Description of the integrated management system, information on the environment where forestry operations are carried out and the company's assets.
- 3 PRODUCTION**

Description of the production processes in UPM Forestal Oriental's value chain, including the Development Programme for private producers.
- 4 ENVIRONMENT**

Information on human resources, occupational health and safety, community links and the UPM Foundation.
- 5 PEOPLE**

Certifications, programmes for environmental management, conservation and monitoring, protection measures and network of conservation areas.
- 6 RESULTS**

QR codes are used to access the annual figures and results of each area or process.
- 7 CONTACT**

Information on how to contact the company and its offices throughout the country.



## UPM BIOFORE

UPM leads the forest-based bioindustry towards a sustainable and innovation-oriented future through six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Paper, UPM Communication Papers and UPM Plywood. UPM offers reliable, sustainable solutions to meet the growing global consumer demand. Our products are produced from renewable raw materials and are recyclable. The company employs approximately 19,100 people around the world, and its annual sales amount to around EUR 10 billion. UPM's shares are listed on the Helsinki Stock Exchange (NASDAQ OMX).

## UPM URUGUAY

UPM's operations in Uruguay include the pulp mill in Fray Bentos, the forestry and timber supply company UPM Forestal Oriental, with its two nurseries, and the UPM Foundation. Through the Development Programme, UPM Forestal Oriental manages around 280,000 hectares of plantable land, including its own land and that of third parties. UPM plantations are certified under the international FSC® and PEFC™ sustainable forest management standards.

The pulp mill at Fray Bentos began its operations in 2007 and continues to be one of the most modern and efficient factories in the world. Its annual production capacity is 1.3 million tonnes of Eucalyptus pulp.

In addition to producing pulp, the UPM Fray Bentos mill produces energy using biomass, supplying 8% of Uruguay's power grid. The mill's raw materials come from national plantations that are sustainably managed.

Founded in 2006, the UPM Foundation works in co-ordination with local stakeholders to promote the development of rural communities through education, training, and entrepreneurship, promoting a healthy lifestyle.

UPM employs approximately 7,000 people in Uruguay, directly and indirectly, and contributes 1.4% of the national GDP. [www.upm.uy](http://www.upm.uy)



# UPM'S HISTORY IN URUGUAY

## UPM Forestal Oriental

### 1990

Kymmene (UPM since 2009) and Shell create the Compañía Forestal Oriental S.A. Plantations and the genetic improvement programme begin.

### 2005

The Development Programme and the Botnia Foundation (now the UPM Foundation) are created.

### 2003

Botnia purchases the Shell shareholding.

### 2007

The pulp mill at Fray Bentos begins its operations.





## 2009

UPM purchases the Botnia shareholding.



## 2015

The Food and Agriculture Organization (FAO) of the United Nations recognises UPM as an exemplary case due to its sustainability criteria at plantations.

## 2012

Inauguration of the second nursery at Paysandú and the Research and Development Centre in the Fray Bentos mill.



## 2016

The Esteros y Algarrobales del Río Uruguay area is added to the National System of Protected Areas.



## 2017

UPM and the Uruguayan Government sign an investment contract establishing local requirements for potential investment in a new pulp mill.



## UPM FORESTAL ORIENTAL

The main forestry management objective is the production of timber to manufacture pulp, primarily meeting the demand of the Fray Bentos mill with timber from the company's own plots and those of third parties.

### Mission

To ensure the sustainable supply of timber for pulp through good customer relationships at a competitive cost.

### Commitment

UPM Forestal Oriental respects people and the environment, and aims to build long-term, mutually beneficial relationships with communities.

Social development forms part of all of its actions, aiming to contribute towards the growth and development of the communities within its sphere of influence.

### Values

UPM Forestal Oriental's attitude towards work and people is defined by its values as a company:

- Trust and be trusted
- Achieve together
- Renew with courage



# INTEGRATED MANAGEMENT SYSTEM

UPM Forestal Oriental operates using an integrated management system (IMS), which organises internal processes and creates a decision-making model based on records and measurements, and supplier integration. In this way, a continuous improvement system can be implemented.

The IMS includes and consolidates the plans, methods, actions and inspections for the following systems in a single work flow:

- Quality Management Systems (ISO 9001:2008).
- Environmental Management Systems (ISO 14001:2004).
- Occupational Health and Safety Management Systems (OHSAS 18001:2007).
- Forest Management (FSC® and PEFC™).
- Chain of custody (FSC® and PEFC™).

This ensures compliance with the highest quality, safety and occupational health, and environmental standards.

Forestry operations are governed by three main processes:



# ENVIRONMENT

## BIOLOGICAL DATA

### Environments

The natural environments in a region or site are the result of the interaction of various factors, such as climate, geology, soil, flora and vegetation, and vary based on these factors.

In order to classify them, UPM Forestal Oriental uses a methodology based on satellite imaging, information about soil groups and digital terrain models.

Environments are classified according to their degree of vulnerability, facilitating their management and conservation. The internal and external connectivity between environments are analysed more naturally, as are the location and size of the company's reserve areas.

### Fauna

Field surveys determine the composition of wildlife on company property. Tetrapods from the following zoological classes have been identified: amphibians, reptiles, birds and mammals.



ENVIRONMENT  
STATISTICS  
Types of environments  
Species detected  
Watercourses

### Flora

The main types of natural vegetation in the company's fields are: natural grasslands, sandbank vegetation, alkaline soils, general riparian forests, Chaco park forests, flat-topped hill forests, *Butia yatay* and *Trithrinax campestris* palm groves, scrubland, wetlands and stubble.

Some of these types of vegetation are subject to special considerations, either because they represent species that are in decline or endangered, or because they are home to rare species or species with restricted distribution in Uruguay.

Approximately half of all species that make up the country's flora are present in UPM Forestal Oriental fields.

The species *Chloraea bella* (*Orquidaceae*), *Conyza lorentzii* (*Asteraceae*), *Leptochloa chloridiformis* (*Poaceae*) and *Ipheion tweedianum* (*Alliaceae*), recorded for the first time in Uruguay, can be found on UPM Forestal Oriental land.

Species new to science were also recorded, such as *Cereus sp.* (*Cactaceae*) and the presence of rare, threatened, and endemic species was also confirmed.



## GEOCLIMATIC DATA

### Geology

The plantations are located primarily on the following geological formations: Guichón, Mercedes, Asencio, Fray Bentos, Aluviones and Salto along the coast, as well as San Gregorio, Melo, Yaguarí, Cuchilla del Ombú, Tacuarembó, Rivera, San Gregorio, Tres Islas and the Crystalline Basement.

### Hydrology

According to the current predominant classification (Decree 253/79), the company's forest management unit watercourses are Class 3: "water intended for the preservation of fish in general and other water flora and fauna, or the irrigation of crops whose product is not consumed in natural form or, in cases where it is consumed in natural form, the irrigation system does not water the product".

### Soil

The plantations fall mainly into the following groups and soil types (according to the classification by the National Commission for the Agronomic Study of the Earth (CONEAT)):

- 9.1 (Argisols)
- 9.3 (Argisols and Planosols)
- 09.3 (Argisols and Brunosols)
- 7.32 (Luvisols)



#### AVERAGE DAILY

temperature:  
**12–25 °C**



#### AVERAGE

annual precipitation  
**1,300–1,400 mm**  
depending on the area



## SOCIAL DATA

UPM Forestal Oriental operates in five regions spread across the departments of Río Negro, Paysandú, Soriano, Salto, Colonia, Tacuarembó, Rivera, Durazno, Rocha, Treinta y Tres, Cerro Largo, Lavalleja, Flores and Florida.

We work with communities within our sphere of influence in each region. In other words, we work with the communities that are connected to the company's activities in some operative or environmental way.

## Communities are classified according to their size and nearby forestry activity

### Depending on size

<b>4.</b> < 500 inhabitants	<b>3.</b> 500–1,000 inhabitants	<b>2.</b> 1,000–5,000 inhabitants	<b>1.</b> 5,000–10,000 inhabitants
--------------------------------	------------------------------------	--------------------------------------	---------------------------------------

### Depending on forestry activity

**Permanent:** communities less than 5 kilometres from land with a forest mass greater than 500 hectares that UPM has owned or managed for more than 15 years; or communities that are affected by more than two activities at a time.

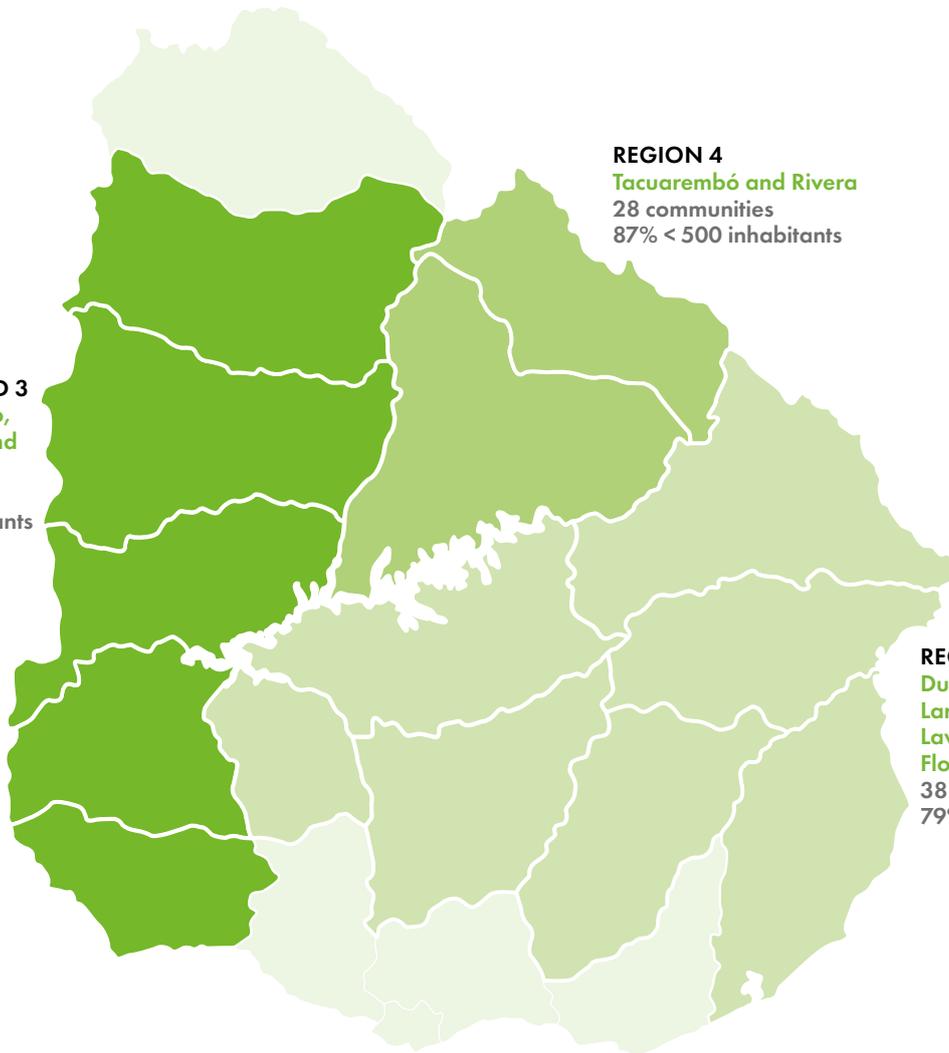
**Occasional:** communities affected by one or two forestry activities at the same time.

## COMPANY REGIONS

**REGIONS 1, 2 AND 3**  
Soriano, Río Negro, Paysandú, Salto and Colonia  
78 communities  
85% < 500 inhabitants

**REGION 4**  
Tacuarembó and Rivera  
28 communities  
87% < 500 inhabitants

**REGION 5**  
Durazno, Rocha, Cerro Largo, Treinta y Tres, Lavalleja, Flores and Florida  
38 communities  
79% < 500 inhabitants





# ASSETS

Forestry assets are the basis for the sustainability and competitiveness of our activities, on which the supply strategy for the Fray Bentos pulp mill is planned.

## Land use

Prior to each intervention, company specialists study the biophysical environment, as well as social and cultural resources in the immediate surroundings. This allows them to assess the effect that the intervention may have and plan activities that respect and preserve environmental conditions.

The primary objective of this planning is to identify the most appropriate use of the land, and to preserve biodiversity, soil and water quality, which are vital for the sustainability of long-term forestry activities.



LAND HERITAGE  
AND LAND USE  
FIGURES



### Plantable areas

Suitable for the growth of Eucalyptus plantations in line with land management criteria as determined by regional and national legal regulations.



### Plantable areas intended for conservation

Potentially plantable areas that the company decides not to forest, as they have native ecosystems that are relevant to the conservation of environments or species (e.g. palm groves, sandbanks, grasslands and areas occupied by populations of endemic species such as the Río Negro tuco-tuco — *Ctenomys rionegrensis*). This also includes quarries, sites of archaeological or historical-cultural value, visual basins and highly erodible soils.



### Unplantable areas

Not suitable for forestation, due to legal restrictions or the conservation of natural resources, or because they are not appropriate for Eucalyptus species. They are categorised according to their potential use (grazing, conservation or biological corridors, amongst others) and according to the type of environment (natural drainage, low areas or other riparian areas, gullies, escarpments, buffer zones, stony cornices, low hills and all areas covered by natural forests).



## MAIN SPECIES FOR PLANTATIONS

The species *Eucalyptus grandis* and *E. dunnii* have shown greater adaptability to local conditions.

There are also areas that are planted with *Pinus*, *Salix*, and *Populus*. They are mostly plantations from previous owners prior to the company's acquisition of the property. Although they are marginal species in terms of the area that they occupy, they are included in the company's operational plans.

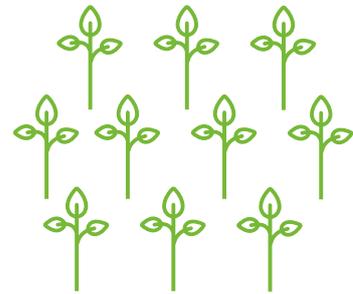
# PRODUCTION PROCESS

## PLANNING

Assessing the land to be forested, establishing the route of roadways and conservation areas.

## GENETIC IMPROVEMENT PROGRAMME

In the almost 30 years since it began, this programme has made it possible to double the volume of pulp obtained per hectare of plantation.



PLANTS BETWEEN 3 AND 6 MONTHS

## NURSERIES

Production of seedlings from seeds or vegetative propagation.

## FORESTRY

Planting in areas defined by planning and environmental processes.

## MONITORING GROWTH

Obtaining data to update timber stocks in plantations and to evaluate the yield of species and genotypes.



10-YEAR-OLD TREES

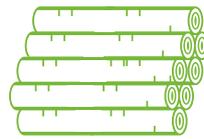


## TRANSPORT

Companies specialising in forestry loading and transport take timber to customers.

### ROADS

EVERY YEAR INTERNAL AND NEIGHBOURING ROADWAYS ARE IMPROVED.



## HARVESTING

Forestry machinery fells, trims, strips and cuts up the tree, leaving it by the side of the road to be transported.



# 1.

## Genetic improvement programme

The purpose of this programme is to provide the company with the best trees, i.e. trees with a better timber yield, fibre quality and adaptation to forest sites. This essentially 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 to continue improving each species and to choose trees that will be confirmed as new clones. This is how the most productive materials are obtained, with the best adaptation to the soil and climate, as well as the necessary characteristics to meet the demands of the pulp and paper industry.

# 2.

## Nurseries

The San Francisco and Santana nurseries, in Paysandú Department, comprise more than 9.5 hectares of greenhouses and produce 32 million seedlings per year. They have the best technology available for the production of Eucalyptus plants, such as the latest-generation of greenhouses, computerised environment control and highly accurate irrigation systems.



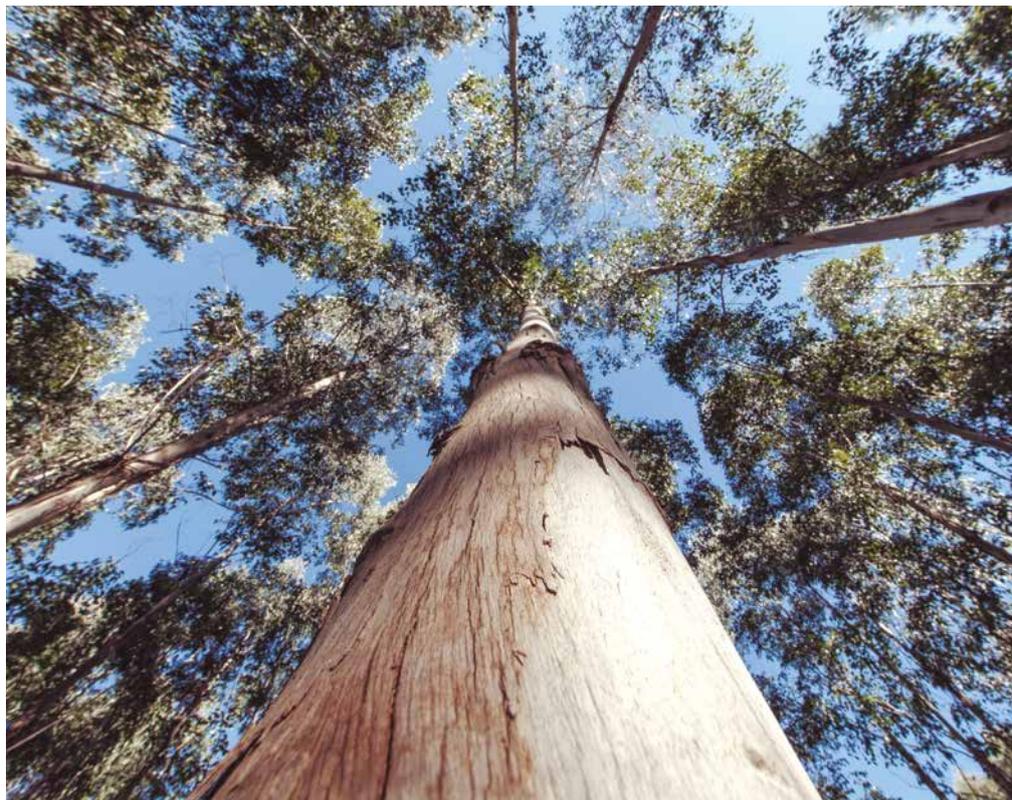


### 3. Forestry

In order to achieve the objective of sustainable timber supply, a stable forest base is needed to ensure a suitable site-species relationship. For this purpose, the company uses the *Eucalyptus grandis*, *E. dunnii* and their hybrid species, and incorporates latest-generation machinery making it possible to simplify operations and increase efficiency in the forestry process. The completion of work by service providers (SPs) in an appropriate and timely manner is key for stable and reliable production. UPM Forestal Oriental provides training to optimise SP operations and continue to improve the implementation of weed control strategy, amongst other aspects.

### 4. Monitoring growth

Growth is monitored through permanent plots that are measured annually from their first year of planting. They are then evaluated at five and ten years, i.e., before harvesting. The basic indicators obtained include trees/hectare, average diameter, average height, dominant height, basal area, volume/hectare, average annual increase, current annual increase and average tree volume.



## 5.

### Harvesting

In addition to the pulp mill's demand, the species, distance from the mill, age structure of the plantations and growth curves are taken into account when planning the harvest. The characteristics of the area to be harvested, the presence of flora or fauna species with special conservation status, and proximity to riverbanks or areas close to waterways are also considered. The harvest is 100% mechanised. This guarantees safer working conditions, whilst improving productive efficiency and competitiveness.

**Harvester or forest harvester:** felling, trimming, stripping and cutting up the tree. Yield: approx. 70 trees/hour, i.e., 21 m<sup>3</sup>/hour.

**Forwarder or forest loader:** loading logs and transporting them to the roadsides to be loaded onto timber lorries. Yield: approx. 35 m<sup>3</sup>/hour.



## 6.

### Transport

In order to transport the timber to the mill, the company hires timber transport companies that use both conventional lorries and road trains. These vehicles have a special configuration that makes it possible to transport a larger number of tonnes per journey and reduces the impact on the roads. It is therefore possible to reduce the number of journeys and decrease carbon emissions.



## Road safety programme

Promotes responsible handling, safety and knowledge of transit standards. It is intended for all individuals who maintain relationships with the company, mainly forestry transport business owners and their drivers, but also rural communities and public and private institutions, as well as our own employees.

### Actions promoted:

- Transport unit scoring system. Every month, each unit begins with a maximum score that varies according to its compliance with traffic rules and company road safety standards.
- Unit checklist.
- GPS tracking: speed control and traffic zones.
- Inspections, accident rate reports, and monthly road safety recommendations from the Centre for Accident Prevention (CEPA).
- Quarterly road safety talks for drivers.
- Psychotechnical tests (HGV driving courses and en-route tracking).
- Biannual meetings with transport companies.
- Quarterly safety newsletters.
- "How is my driving?" 24-hour telephone line (+598 4562 7710).



OPERATIONAL RESULTS  
OF EACH PROCESS

# SUPPORT PROCESSES

## Planning

The planning process evaluates the land to be forested and plans its use, optimising natural resources. In turn, it prepares and co-ordinates the company's timber supply plans.

RESULTS  
OF THE SUPPORT  
PROCESSES





## Responsible fire management

Each year, UPM Forestal Oriental participates in the Uruguay Forestry Producers Partnership's (SPF, *Sociedad de Productores Forestales*) national forest fire prevention plan, which includes the majority of the country's forestry companies. The plan is focused on aspects of fire detection and firefighting, and is implemented during the high-risk period (December to March). It covers over 760,000 hectares owned by more than 50 partner companies, representing 90% of all forest plantations in the country.

This system has six planes that carry out regular rounds to facilitate early detection of fire outbreaks. It also has three helicopters that mobilise rapid-response combat teams. The

helicopters and operating bases that control and monitor the process are located at Tacuarembó airport in José Pedro Varela city and at Paraje Andresito on Route 3. Each unit has a 170-kilometre radius of action, covering almost the entire country.

At the same time, a fire prevention campaign is implemented throughout the season on national and local radio stations. This promotes preventative behaviour, emphasises the prohibition of field burning and provides emergency telephone numbers.



# DEVELOPMENT PROGRAMME

The Development Programme seeks to generate long-term agreements with private producers to manage Eucalyptus plantations and forestry services in their fields. The programme offers rural producers an alternative for the diversification of their business and promotes integration between different agricultural sectors.

Associate producers may include individuals, institutions or investment funds (e.g.: *Caja de Jubilaciones y Pensiones Bancarias de Profesionales Universitarios* (Bank retirement and pension fund for university professionals), *Caja de Jubilaciones y Pensiones Bancarias* (Bank retirement and pension fund), *Asociación Rural de Soriano* (Soriano Rural Association), *Sociedad de Fomento de Flores* (Flores Development Partnership) etc.).

The objective of the programme is to contribute to the supply of the Fray Bentos mill with 30% timber from Associate Producers' plantations.

## Forestry synergy

This has been implemented since 2017 between UPM and the Producers Associated with the Development Programme that have breeding livestock.

It seeks to generate synergies amongst Associate Producers, as well as to continue the integration between livestock, forestry and communities.

### How does it work?

- 1 During the sale of bulls, UPM attends the auctions of its Associate Producers' livestock.
- 2 Participating herds offer special conditions and benefits to other producers in the Development Programme at the time of purchase.
- 3 As part of the agreement, UPM disseminates information about the auctions and the genetics of the herds to its associated producers. Furthermore, it contributes to an educational or social institution chosen by each vendor.



## BENEFITS FOR PRODUCERS



### Improved yield

Access to genetic material of highly productive potential.



### Priority

Putting grazing livestock on UPM's unplanted areas allows the stock to be maintained and capitalises on the shade and shelter benefits of forests.



### Profitability

Secured by income diversification.



### Guarantee

Certification assistance under FSC® (Forest Stewardship Council®) standards.



### Stability

Purchase of all timber produced with pre-established prices.



### Social impact

Through Forest Synergy initiatives.

Would you like to know more about the Development Programme?

Tel: (+598) 4724 8760 - [fomento@upm.com](mailto:fomento@upm.com)



RESULTS OF THE  
DEVELOPMENT  
PROGRAMME

# HUMAN RESOURCES

The development of people and their skills form the basis for achieving company objectives. To this end, tools are implemented to identify development needs in human resources, taking into account financial, operational and social sustainability. These tools are intended for the company's own staff and those of contractors, as well as for neighbours from rural communities.

## Forestry Academy

This is an internal training programme for new employees that provides a global view of the business and promotes a culture of continuous improvement, innovation and process work.

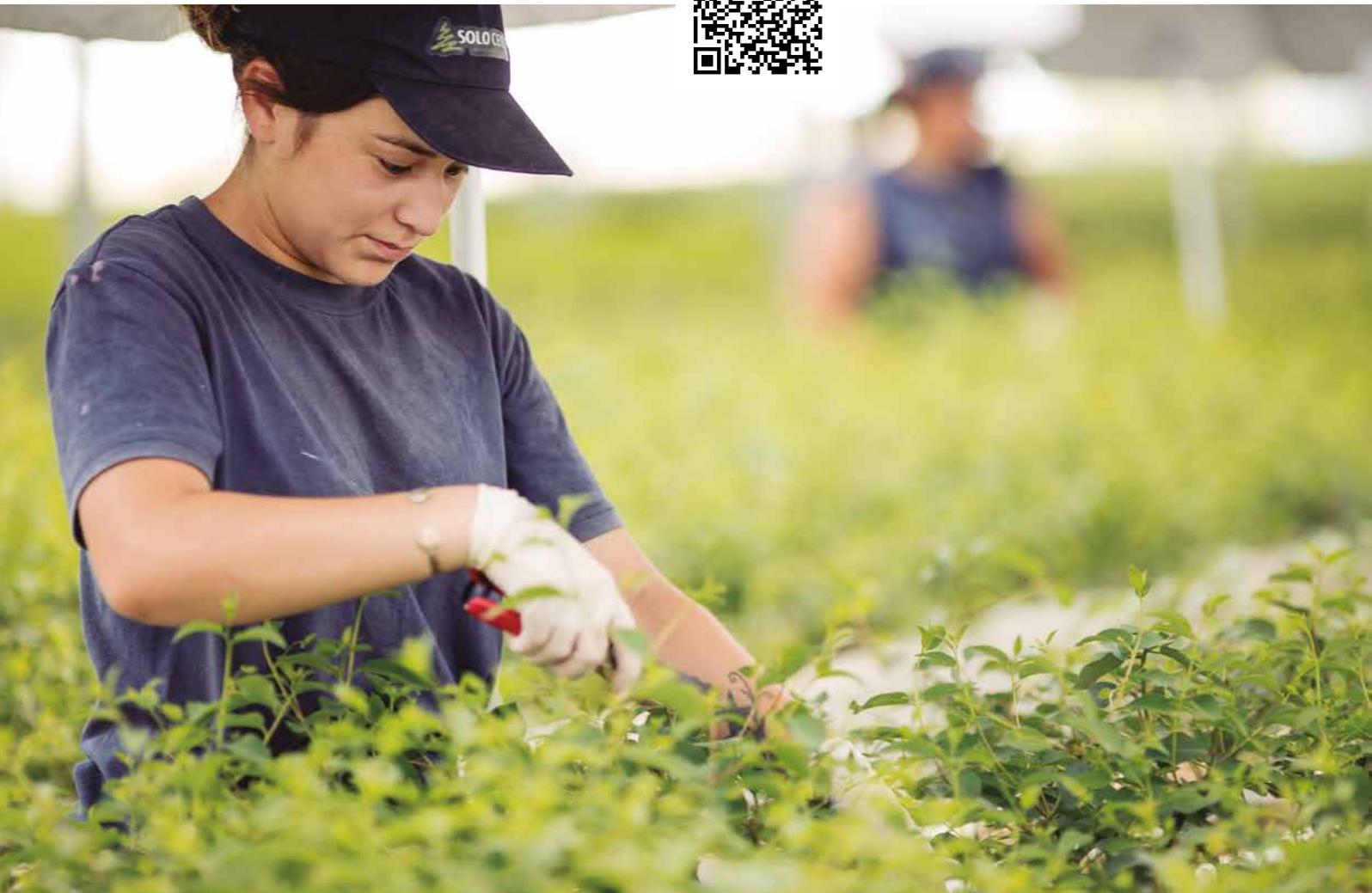
## Relationship with service providers

The long-term relationship with these companies enables improvement of efficiency levels and the quality of operations, as well as the development of competencies in those communities within the sphere of influence.

We work together with service providers and carry out systematic monitoring in accordance with quality standards. UPM Forestal Oriental has an internal auditing department that evaluates and monitors contractors. We check that they are meeting their work, fiscal and social security obligations, and ensure that they possess the certifications required by their respective activity type.



HUMAN  
RESOURCES  
RESULTS





# SAFETY AS A CORE VALUE

**The company's strategic vision reaffirms its commitment to occupational health and safety in all operations. Through senior management's leadership, participation and visibility in safety matters, UPM is strengthening the principle of safety as a core value in each process.**

The focus is on increasing the awareness of our employees and of our contractors with regard to safety, creating a sense of belonging, encouraging teamwork and commitment, and acknowledging employees and companies for noteworthy performance in terms of safety.

Health and safety at work is efficiently managed by strengthening communication and developing solid skills between UPM and its contractors. This allows for notable performance levels to be achieved in all operations.

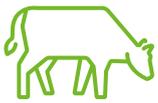
Continuous improvement is a fundamental pillar in UPM processes. In this regard, the management system is kept up to date and constantly improved, developing preventative safety tools (operational standards, risk assessment, safety rounds, safety meetings etc.) that make it possible to operate with the highest standards and results in terms of accident rates.



SAFETY  
RESULTS

# COMPLEMENTARY FORESTRY PRODUCTS

In order to carry out a comprehensive use of plantations, the company promotes multiple uses of resources in co-ordination with the area's communities.



## Grazing

This is carried out by third parties and makes it possible to integrate the region's traditional productive activities with forestry.

The company reduces combustible material and therefore the risk of fire, whilst, at the same time, allowing producers in the region to make productive use of the pastures, and the shade and shelter of the forests.



## Mushroom collection

This is carried out in autumn and spring by neighbours trained in identifying mushrooms and who meet all the established standards.

Along this same line, the company has implemented the following actions:

- Training in mushroom identification.
- Dissemination of regulations and laws.
- Implementation of safety rules.
- Systematisation of information (record of collectors, activity and end uses).



## Beekeeping

Institutions and private beekeepers throughout the country manage hives in the company's forest plantations, an ideal certified environment for this activity thanks to the flowering period of Eucalyptus.

All beekeepers who harvest honey in company fields must apply the Best Beekeeping Practice of the Ministry of Livestock, Agriculture and Fisheries (MGAP). By professionalising the sector, beekeepers are able to maximise the use of the potential productive area and increase productivity.

This work method aims to drive community development and strengthen local institutions through active participation in honey production. These same institutions are responsible for managing and allocating hive locations in UPM forests.

### Mushroom collection system



RESULTS OF  
COMPLEMENTARY  
PRODUCTS



# COMMUNITY RELATIONS



## Open days

Opportunities to meet with local representatives of new communities or of places where company operations are not yet known.



## Meetings with stakeholders

Working teams are established to analyse the realities of communities and to create local projects.



## Informative technical talks

The contents vary depending on the specific concerns of the communities.



## Operational visits

Tour of the company's facilities.



## Social monitoring

Periodic study to monitor the impact of operations in the area and how neighbours perceive this.



RESULTS OF ACTIVITIES



# UPM FOUNDATION

The UPM Foundation promotes projects that inspire, transcend and generate positive changes in the country. The Foundation's work seeks to improve access to education, stimulate entrepreneurship and enhance networking in the communities where the company operates.

Interaction with local players and working together enriches and fuels long-term work, whilst enabling deeper and more significant social transformations.

This translates into activities that promote the development of capabilities amongst people and organisations in order for these to strengthen the necessary abilities and skills for sustainable development. The development of capabilities is understood in its broadest sense, from training to the potential to influence one's surroundings, intervene in community issues and propose projects.



Follow the **UPM Foundation** on Facebook and find out about all its activities



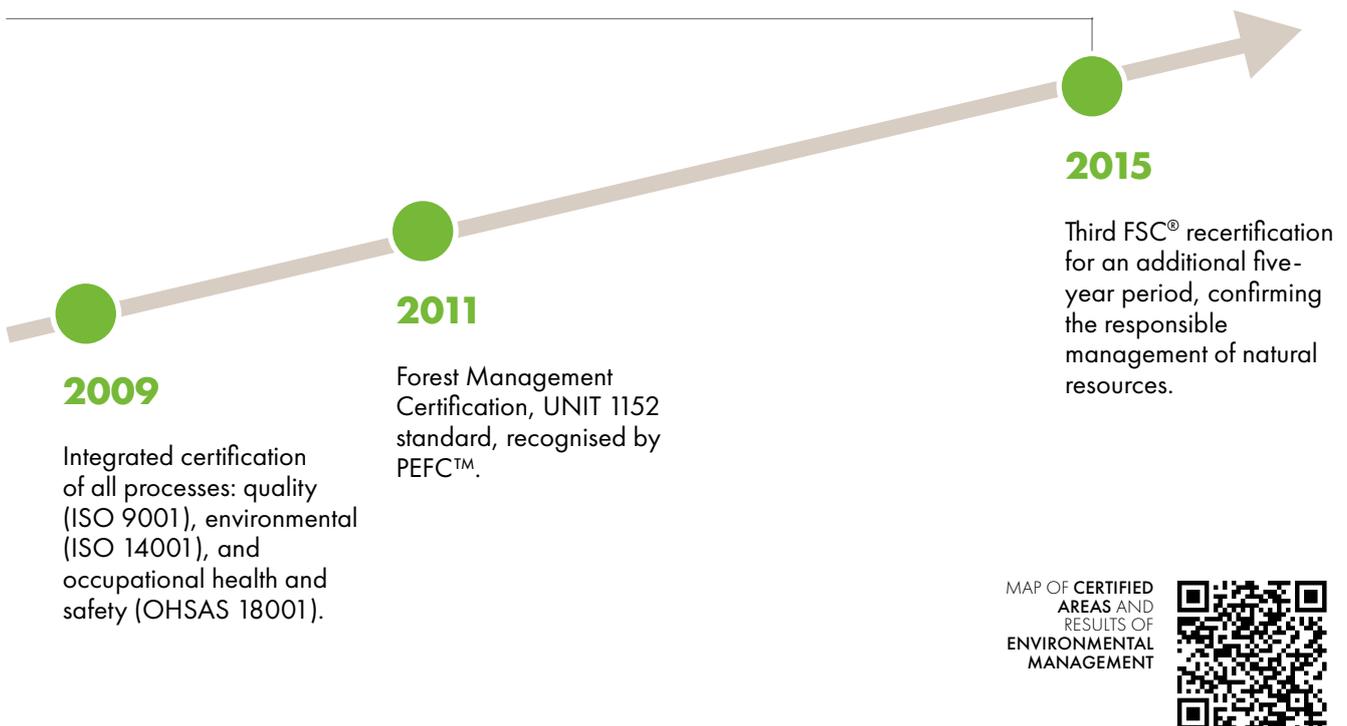
NOTEWORTHY  
PROJECTS



# CERTIFICATIONS

Achieving and maintaining certification involves applying policies, standards and working procedures that enable the protection, monitoring and maintenance of all of the company's resources as well as the operations it carries out.

UPM Forestal Oriental manages a group certification scheme (UPM Forestal Oriental Certification Group, SGS-FM/COC-002240) that includes small- and medium-sized producers from Paysandú, Maldonado, Rocha, Lavalleja, Río Negro, Durazno and Treinta y Tres.



The Forest Stewardship Council® is an international organisation whose aim is to promote responsible, socially beneficial and economically viable environmental management of the world's forests by establishing a global set of recognised and respected principles and criteria. Through its working methods and in accordance with FSC® principles and criteria, UPM Forestal Oriental favours the maintenance of ecosystem and biodiversity functions, contributes to the country's scientific expertise and provides education on environmental conservation.



The Programme for the Endorsement of Forest Certification (PEFC™) is an international non-governmental organisation dedicated to the promotion of sustainable forest management through independent certification of the implementation of stringent environmental, social and ethical standards. The PEFC™ is a certification scheme that, rather than having a single standard for sustainable forest management applicable to all countries or regions, recognises and validates the standards developed by each country. To do this, it has a series of requirements regarding how the standard should be developed, the central aspects that must be taken into account, and the environmental, social and legal compliance parameters that must be considered.



Efforts are constantly being made to minimise the potential impacts of operations on the environment. To this end, activities that may cause an impact are identified and the potential risk is assessed. Based on assessments, measures are developed to safeguard the main attributes of the environment, whilst also considering productivity and efficiency in operations. The environmental requirements of legal regulations are also applied.

Environmental safeguards are established for the application of preventative, mitigation and compensation measures, if applicable, in the working standards, guidelines and best operational practice recommendations. These documents are periodically updated and address issues such as soil tillage, the application of agrochemicals, weed control and road construction, amongst others. For higher-impact activities, site-level planning is conducted.

# RESPONSIBLE ENVIRONMENTAL MANAGEMENT

# MAIN ENVIRONMENTAL PROTECTION MEASURES

## Soil

### Techniques to minimise erosion:

- Tillage only in the plantation strip, on level curves or in straight lines by cutting the slope, or a combination of both. In special situations (e.g. steeper slopes) strips are left filled, cutting the slope.
- Shorter time between harvesting and reforestation in order to reduce exposure of the bare soil to rain.
- Identifying situations to be corrected before reforestation on acquired land that is already planted (e.g. tillage direction, buffering distances and increasing the unplanted area).
- The burning of forest waste is restricted exclusively to special situations.
- Designing roads taking into account watersheds and avoiding roads that take the direction of the slope. Where necessary, mechanisms are used to reduce water energy, the risk of drag and erosion formation.
- Identifying areas of erosion, especially gullies, and establishing management and monitoring plans.

### Techniques to minimise compaction:

- Reduction of the use of machinery during the planting phase.
- Harvesting system with trimming, stripping and cutting up in situ, allowing machines to transit over plant material.
- Vertical tillage to reverse prior compaction.

### Nutrient recycling:

- All forest waste remains on-site, including stumps, enabling the nutrients that were extracted by plants during growth to be recycled.



## Water resources

- Protecting water system and riparian areas. Buffer distances between these and plantations.
- Maintaining low areas of run-off and riparian areas in natural conditions. Natural drainage systems are not tilled or forested (they remain covered to prevent erosion and favour water run-off towards low-lying areas).
- Plantation percentages in sub-basins and micro-watersheds according to the Uruguay Forestry Management Plans of the National Environmental Department (DINAMA).
- Age varieties in the basins to avoid affecting the run-off towards watercourses.
- Herbicide products and applications are prepared exclusively in the effective planting area, and strategies are implemented to minimise the use of herbicides.
- All strategies to reduce soil erosion help prevent impact on surface water quality.



## Biodiversity

- Managing unplanted areas and establishing a network of conservation areas.
- Monitoring and control of invasive exotic woody species, especially regenerations of species planted outside the productive areas and invasive species such as *Glitorizia triacanthos*, *Ligustrum lucidum*, *Melia azedarach* etc., in conservation areas or other sensitive areas.
- Maintaining native tree species that appear, provided that they do not interfere with the plantation (e.g. fire buffer zones, drainage, divisions of areas, low-lying areas and buildings).
- Timely assessments for conservation of isolated individuals in plantable areas (by size, age, species, presence of other specimens in the vicinity, perch tree function etc.).

## Techniques to minimise potential impacts on operations

- Identifying scenic points of interest, especially on national routes and departmental roads, and respecting visual basins when designing plantations.
- Careful planning when carrying out activities such as quarries, levees, bridges, burning and roads in sensitive areas.
- Reducing travel through sensitive areas such as drainage systems, low-lying areas, ravines, flood zones, and species' habitats.
- Management procedures in case of spillages.
- Use of pesticides restricted to nurseries and within a year and a half of planting, every 10 years of rotation. The use of highly hazardous agrochemicals is prohibited by FSC® internal and Responsible Management standards.
- Measures to prevent agrochemicals from affecting sensitive areas such as waterways, native vegetation, surrounding properties and crops, as well as to protect people.
- Contaminated and non-biodegradable waste management with specialised companies authorised by government authorities.
- To this end, the cleaning of machinery, work clothes and other equipment is carried out in established locations.

# BIODIVERSITY CONSERVATION

The network of natural areas makes an important contribution to the conservation of biodiversity of the landscape, the ecosystem and species. There are internal standards and work primers for the protection of native species and ecosystems, particularly those that are threatened or at risk.

## Species

The company works with the official Sistema Nacional de Áreas Protegidas (SNAP) categorisation for flora and tetrapod vertebrate groups (amphibians, reptiles, mammals and birds). In the event that experts consider it necessary, specific conservation measures are implemented with regard to priority species, as is the case with the Río Negro tuco-tuco (*Ctenomys rionegrensis*), chestnut seedeater (*Sporophila cinnamomea*), straight-billed reedhaunter (*Limnocittes rectirostris*), and yatay palm (*Butia yatay*), amongst others.

## Conservation areas

The company defined four categories of area dedicated to conservation, based on their attributes:

- High Conservation Value Areas (HCVAs).
- Conservation Areas (CAs).
- Representative Sampling Areas (RSAs) for the various ecosystems.
- Connectivity Areas (COAs) between the other areas.

All conservation areas (CAs) and high conservation value areas (HCVAs) have physical boundaries, defined conservation attributes, and management and monitoring plans. Within these, biodiversity monitoring is conducted with a focus on the presence/absence of SNAP priority species and their environments.

HCVAs are defined according to the guidelines and requirements of the Forest Stewardship Council®, and taking into account the advice of external experts and local interests.

In other areas (connectivity and representative sample), other productive activities can be carried out parallel to conservation, following the defined management recommendations.



## INCORPORATION OF NEW AREAS INTO THE NETWORK



Analysis of the territory occupied by the company.



Working together with experts from the *Vida Silvestre Uruguay* (Uruguay Wildlife) organisation.



Defining representativeness and complementarity targets for environments and species, in areas in the company's network, and in areas in the Uruguay National System of Protected Areas (SNAP, *Sistema Nacional de Áreas Protegidas*).



CONSERVATION AREAS NETWORK, MAPS AND CONTRIBUTION TO BIODIVERSITY



LIST OF HCVAS AND MANAGEMENT MEASURES IMPLEMENTED



UPM became the first private company to manage an area of the SNAP.

In October 2016, through an agreement between UPM and the Ministry of housing, territorial planning and environment (MVOTMA, *Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente*), UPM Forestal Oriental was designated as the administrator of the *Esteros y Algarrobales del Río Uruguay* (EARU) protected area, located in the "Mafalda" plot (Río Negro department), which has formed part of the SNAP system since December 2015.

In 2017, together with the *Organización Vida Silvestre Uruguay* (Uruguay Wildlife Organization), work began to update the area's management plan.

# ENVIRONMENTAL MONITORING

## Soil

By monitoring the physicochemical properties of soil in planted areas, the soil groups in the most frequently used soil productivity index (CONEAT) are covered, including the most representative 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 (approximately twice per forest cycle) each sampling site is measured again.

## Transactions

The company constantly assesses and monitors the impacts generated by its operations, implementing the best management practice with a view to reducing them as much as possible. The lessons learnt from these assessments translate into improvements in working procedures.

Compliance with these procedures is overseen in the management monitoring performed by supervisors during or after each activity.

In the event of an incident, supervisors should report it immediately and apply the corresponding mitigation measures to avoid a possible environmental impact.

## Water resources

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 standards for which the company is certified and which correspond to the commitment of UPM Forestal Oriental to the long-term sustainability of its operations.

## Biodiversity

The assessment of biodiversity values and their monitoring is carried out based on the latest information available in the country about the presence and distribution of flora and tetrapod vertebrate species in the plots managed by UPM Forestal Oriental.

Flora and/or fauna surveys are carried out in CAs and HCVAs, especially for the species included on the SNAP list of priority species for conservation. These surveys make it possible to establish the presence of priority species in general, and to detect others that have not previously been recorded. In particular, the *Trichomanes crispum* L. fern species was recorded for the first time in Uruguay, as well as a new tree species in Uruguay, *Ficus* sp. (*af. calyptroceras*).

In turn, the monitoring and tracking of the presence of environmental quality indicator species, rare species, or charismatic species continues.



MONITORING PROGRAMMES

## Other HCVA monitoring and management

- Control of natural regeneration and plantations of pine on continental dunes in the La Rinconada establishment (in Region 5).
- Establishing a new area for the conservation of chestnut seedeaters in El Retiro, Region 3, and monitoring its presence during the 2016–2017 mating season.
- Monitoring the conservation status of the Puente de las Cadenas, and maintenance and renovation actions in the Estancia Arteaga historical area in Region 5.

### Species that are rare, charismatic or indicate environmental quality

#### Birds

- *Anhinga anhinga* - snake bird
- *Lochmias nematura* - sharp-tailed streamcreeper
- *Pseudoseisura lophotes* - brown cacholote
- *Limnocittes rectirostris* - straight-billed reedhaunter
- *Sporophila cinnamomea* - chestnut seedeater
- *Sporophila ruficollis* - dark-throated seedeater

#### Mammals

- *Ctenomys rionegrensis* - Río Negro tuco-tuco
- *Desmodus rotundus* - common vampire bat

#### Vascular plants

- *Butia yatay* - yatay palm
- *Chloraea bella*

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