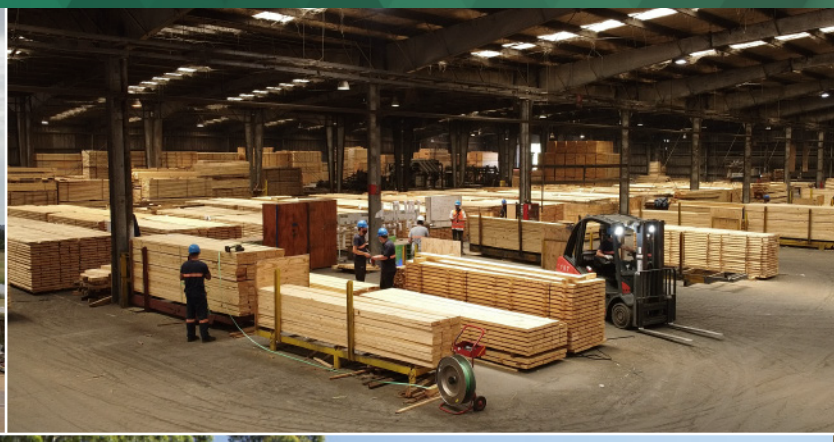
# FORESTRY SECTOR
## IN URUGUAY



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Uruguay XXI
INVESTMENT, EXPORT AND COUNTRY
BRAND PROMOTION AGENCY

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# Why invest in the forestry sector in Uruguay?

- Uruguay is a country with a track record of political, democratic and social stability, and macroeconomic strength, which creates the proper environment for developing successful investments.
- Its strategic location as a gateway to the region offers the perfect springboard to Latin America. Uruguay offers first class logistics infrastructure, state-of-the-art telecommunications technology and the best energy supply in Latin America, based on renewable sources.
- Uruguay has become the "destination" per excellence for international companies seeking quality, efficiency, know-how and new opportunities, as well as the most stable and reliable business environment in Latin America.
- Investment in Uruguay, both domestic and foreign, has been declared of national interest. Foreign and local investors are treated equally and have access to a wide range of incentives adapted to different types of activities, whether industrial, commercial or service-oriented.
- The foreign exchange market in Uruguay is free; there is total freedom to buy and sell foreign currency. It does not require prior authorization, nor does it impose restrictions on the entry or exit of foreign currency or capital, transfer of profits, dividends, interest, etc. In this way, business can be conducted entirely in dollars, so there is no loss of profitability for investors associated with foreign exchange risk.
- Human resources in Uruguay are highly competitive, qualified and multilingual. The government also promotes subsidies to companies for the implementation of customized training programs for staff or new recruits.
- Uruguay is located at the same latitude as the main forestry enterprises in the southern hemisphere. It is located in a climatic zone similar to southern Australia, New Zealand, South Africa and central areas of Argentina and Chile, with climate and soil conditions that ensure very good levels of international competitiveness.
- The country has a stable and favorable legal framework for investment in the forestry sector and a national code of good forestry practices for sustainable production that meets the requirements of international demand.
- There are important opportunities for the installation of industries that add greater value to wood. The large supply of pine timber from managed and certified plantations is a great attraction for the installation of first and second mechanical transformation companies. The annual availability of this wood exceeds three million cubic meters per year, and far exceeds the country's industrial capacity.

For more information, please contact our sector specialists:

https://www.investinuruguay.uy/en/sectors/forestry-timber-1/

# 1. Executive Summary

The Uruguayan forestry sector has been one of the most dynamic sectors of the country´s economy in this century. After the 1987 Forestry Law was passed, forest plantations multiplied in the country and set out the basis for the development of other industries, such as sawmills and pulp mills. Forestry generates synergies with other sectors, since it works in integration with them. Traditionally, forestry has been integrated with extensive livestock farming, which allows for increased production with greater efficiency in the use of natural resources.

Currently, the sector represents about 3% of the country´s GDP, with a marked growth for years, and exports of the forestry complex (wood, pulp and paper) account for nearly one fifth of the country's total exports of goods. The sector directly employs close to 17,000 people[1].

On the other hand, the network of businesses shows some 1,700 companies directly linked to the sector. Domestic companies are largely small-scale enterprises, and some of them are among the 77 sawmills surveyed in the country[2]. Likewise, many foreign companies have chosen Uruguay to set up and develop their activities, which has also significantly boosted the sector due to the demands associated with their scale, and the professional and technical requirements they have brought along. UPM—a company of Finnish capital—settled in Uruguay in 2007, Montes del Plata—of Chilean and Swedish-Finnish capital—has been established in Uruguay since 2009, and Lumin—of American and Brazilian capital—has a long tradition in the country. Likewise, important TIMOs[3], such as GFP, BTG, The Rohatyn Group, Liberty Mutual and Stafford, operate in Uruguay.

In addition, Uruguay has a broad ecosystem linked to the sector, from private associations that bring together forestry producers and industrialists, to academia, technicians, workers and R+D institutions that work in coordination and in pursuit of productive development and sector value addition.

Currently, the strong silvicultural development of previous periods is reaching harvesting shifts, which makes a very important volume of raw material available. In this sense, Uruguay is working on the promotion and development of wood construction, which creates space for new companies aiming to produce inputs for this activity.

[1] Source: General Forestry Directorate - MGAP

[2] Source: Sawmills Survey 2020 - General Forestry Directorate - MGAP. There are other smaller scale sawmills that could not be surveyed.

[3] Timber Investment Management Organization - Forestry sector investment funds.

# 2. The Forestry Sector in Uruguay

## 2.1. Characterization of the Sector

The forestry sector in Uruguay is made up of different activities ranging from the obtention of seeds and plants to the final transportation of processed products.

- The pulp-paper chain (including untreated roundwood, chips, pulp, paper and cardboard, etc.), which is the most important within the sector, and in which world-renowned companies participate.
- Mechanical transformation: processed wood products (treated roundwood, sawn timber, boards, joinery, packaging wood, furniture, moldings, etc.). This chain is identified by the coexistence of foreign and domestic companies.
- Energy (firewood, pellets, electricity generated from biomass, among others).

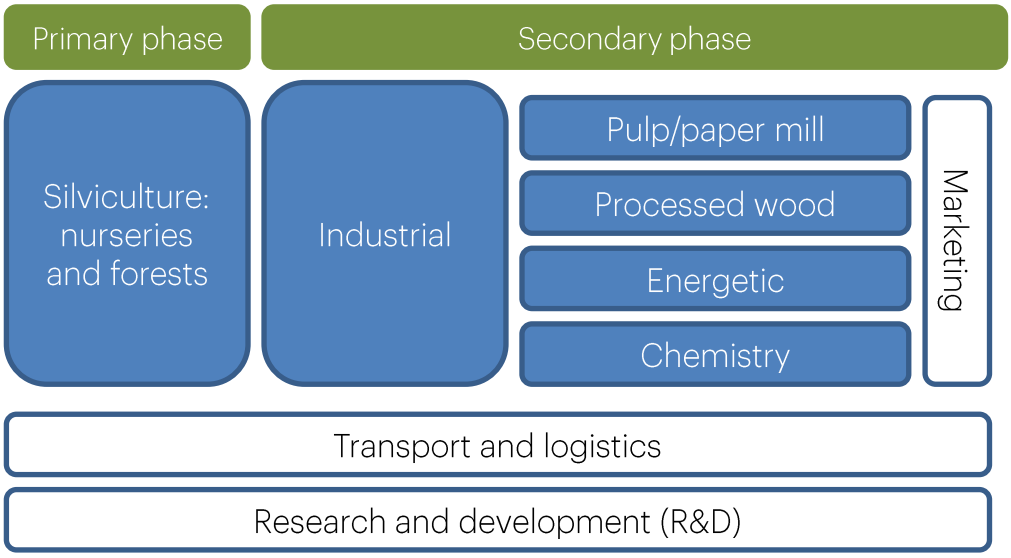
The activities that make up the sector can be grouped into three types:

**Primary phase:** Agricultural, comprising the production of reproductive material and plants in nurseries, implantation and intermediate silvicultural treatments of forests, and harvesting.

**Secondary phase**: Industrial, comprising wood processing activities carried out in various chains, including marketing.

**Logistics, transportation and associated professional services**: Uruguay's forest product industry is made up of large vertically integrated companies that cover the agricultural activity, industrial activity and intermediate processes up to the final marketing of products. In particular, some of the big export companies supply themselves with a large part of the raw material used. In the case of sawmills, the largest and most productive ones use mainly domestic raw material and their production is destined for foreign markets. Smaller companies sell mainly to the domestic market and are not vertically integrated.

Figure Nº 1: Activities related to the forestry sector

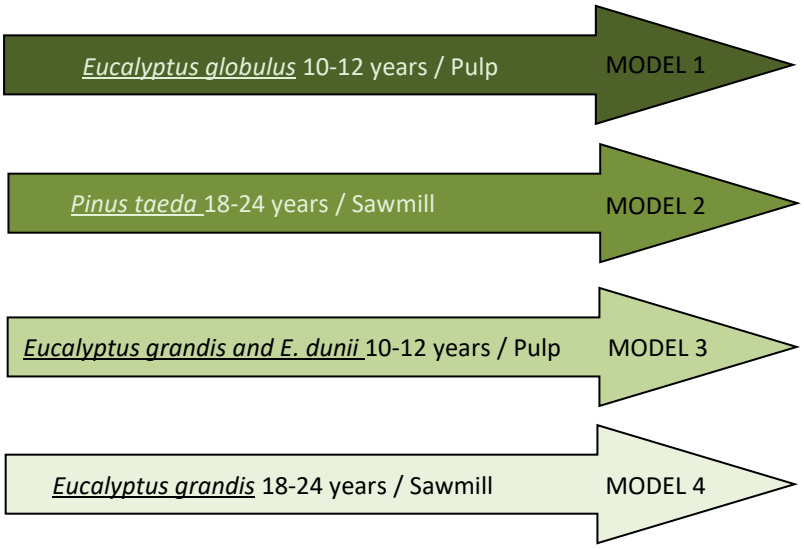



Source: Uruguay XXI based on the document of the Industrial Plan 1 of the Productive Cabinet - Ministry of Industry, Energy and Mining - National Directorate of Industry.

## 2.2. Main Industrial Chains[4]

To complement the information from the second phase, there are two main industrial chains in Uruguay: pulp and mechanical processing (sawmilling and debinding). At the same time, other activities have been developed, such as exports of chips and roundwood, which can also be used for pulp or sawmilling.

**Figure N°2 - Main Uruguayan forestry models**




Source: Uruguay XXI based on private consulting by Estudio Faroppa.

These forestry models emerged as alternative ways to supply the forestry chains that were appearing and changing after the Forestry Law of 1987 (Nº 15,939). Timber exports were the basis and the first way in which the local forestry sector entered the international market for the commercialization of forestry products.

The relative weight of eucalyptus roundwood exports, which were originally aimed for pulpwood (*E. globulus*: model 1), was reduced as local pulpwood projects appeared. Uruguay has the capacity to export almost two million tons of chips per year. In recent years, the usual markets for this commodity have had difficulties, causing demand to remain below one million tons. This has made "chipmakers" or "chippers" refocus in order to provide part of their production to local pulp mills.

Sawtimber (*E. grandis*: model 4) has become a brand that gains access mainly to Southeast Asian markets, as a raw material for local furniture industries that produce with a focus on exporting to Europe. Its annual volume is, however, highly variable, depending on the prices at which it is traded in Asia.

The forestry chain, regardless of its industrial transformation destination at the local level, has a relatively simple scheme involving the following stages:

[4] Source: Uruguay XXI based on consulting by Estudio Faroppa.

- Nurseries: seedling production and genetic improvement
- Silviculture: tillage, planting, forest management (pruning, thinning, etc.)
- Harvesting: cutting and wood collection in the field
- Loading and transportation of timber: to industries by land or water
- Industrial transformation
  - Pulp mills
  - Sawmilling and debinding
- Energy production
  - Generation from burning black liquor (pulp mills)
  - Generation from burning solid biomass (chips and sawdust)
- Exports: from Montevideo, Nueva Palmira or Punta Pereira

As for the process costs (the same for both uses of wood up to each particular industrial transformation), it should be highlighted that 55% of the total cost for a 20-year cycle is generated in "year zero", with the acquisition of land and planting.

It is worth noting, by way of example, that for model 3—the most widespread territorially at this time—the post-tax expected Internal Rate of Return (IRR) is 6.0%.

### 2.2.1 Sawmills

According to the latest survey conducted by the General Forestry Directorate[5], there are about 77 sawmills[6]. The vast majority sawmill a single species or group of species: pine or eucalyptus. The main volume of sawtimber consumption is located in three areas:

1. Tacuarembó-Rivera (877,601 $m^3$)[7]

2. Paysandú (143,965 $m^3$)

3. Metropolitan area (58,557 $m^3$)

The sawmills with the largest capacity are located in the first area, which is also the most dynamic in terms of forestry activity.

The following are among the most important sawmills in the area[8]:

- **Urufor** (325,000 $m^3$/year): Located in Rivera, Urufor and Cofusa are the industrial and forestry unit, respectively, of the same economic group engaged in forestry production, industrialization, and commercialization of high-quality *Eucalyptus grandis* (Red Grandis®) timber, and can therefore be called a vertically integrated unit. Its products are kiln-dried sawn boards, graded according to NHLA standards, and glulam products, both of which are used in the furniture and construction industry. Approximately 90% of its production is destined for the foreign market and 10% is marketed locally.

- **Arboreal/Frutifor** (300,000 $m^3$/year): This sawmill, located in Tacuarembó, uses pine timber and has an important technological development with high automation of its production process. All of its production is exported, mainly to China, and consists of dry boards of different categories.

[5] It is worth mentioning that the Survey does not include the Lumin plant, which produces plywood panels.
[6] General Forestry Directorate – "Sawmills Survey 2020" - The surveyed companies are all those identified as "Wood mechanical transformation industries", specifically sawmill industries, exclusively of primary transformation of wood (excluding carpenter shops, impregnation plants and panel factories). The companies not surveyed are divided into: 1) those small and informal companies that could not be identified and therefore are difficult to reach, 2) companies that did not agree to participate in the survey.
[7] See Note 5.
[8] This includes installed capacity, which may not correspond to actual wood consumption.

Production capacity is expected to double in the short term, plus an additional investment in a solid wood manufacturing plant (CLT and Glulam), which will be the first in the country.

- **Fymnsa** (200,000 $m^3$/year)**:** It is located in the department of Rivera and was one of the forerunners of forestry in the area. The company has a total harvested area of 19,233 ha, of which 11,040 ha are effectively forested. It produces pallet wood, remanufactured wood, engineered wood, and has drying capacity.

- **Forestal Caja Bancaria** (120,000 $m^3$/year): This pension fund is located in the departments of Paysandú and Durazno. It plants pine and eucalyptus, and currently has 8,000 ha of effective forest that feed the sawmill established in Piedras Coloradas (Paysandú). It exports most of its production.

- **IMNSur** (40,000 $m^3$/year): This sawmill cuts both pine (mostly) and eucalyptus wood. Its production is exported mainly to Central America and the Middle East and consists of pallet wood and pallets.

- **Lumin:** The project initiated by Weyerhaeuser in 2006, and which began producing panels in 2008, is powered by its own plantations. The acquisition by BTG Pactual was completed in 2017. The plant consumes about 600,000 cubic meters of wood, corresponding nearly 55% of that volume to pine and the rest to eucalyptus. The plywood panels offered by Lumin have different categories and can have different "faces" or external laminates, either of pine or eucalyptus.

Like other industries in the sector, sawmills have also been challenged by the demand for eucalyptus wood from pulp mills. Many have undergone changes to modernize their processes, while those that remain unchanged are mainly the ones that have their own forests. The large sawmills that process pine have been less challenged because the supply of pine wood is several times greater than the demand and, in addition, many of them are also forest owners.

### Table N°1: Roundwood consumption in cubic meters ($m^3$)[9]

| Department | Consumption *Eucalyptus* | Consumption *Pinus* | Consumption *Salicáceas* | Total | Percentage (%) |
|---|---|---|---|---|---|
| **Rivera** | 323,145 | 262,658 | | 585,803 | 52.4 |
| **Tacuarembó** | 3,380 | 288,418 | | 291,798 | 26.1 |
| **Paysandú** | 17,578 | 122,387 | 4,000 | 143,965 | 12.9 |
| **Canelones** | 31,453 | 7,500 | | 38,953 | 3.5 |
| **Montevideo** | 19,604 | | | 19,604 | 1.8 |
| **Durazno** | 4,280 | 9,970 | | 14,250 | 1.3 |
| **San José** | 3,260 | 4,000 | | 7,260 | 0.6 |
| **Cerro Largo** | 5,770 | 600 | | 6,370 | 0.6 |
| **Salto** | 2,449 | 1,588 | | 4,037 | 0.4 |
| **Colonia** | 1,600 | 800 | | 2,400 | 0.2 |
| **Treinta y Tres** | 1,000 | | | 1,000 | 0.1 |
| **Maldonado** | | 880 | | 880 | 0.1 |
| **Soriano** | 780 | | | 780 | 0.1 |
| **Lavalleja** | 700 | | | 700 | 0.1 |
| Total | 414,999 | 698,801 | 4,000 | 1,117,800 | 100 |

Source: Uruguay XXI based on Sawmills Survey 2020 - General Forestry Directorate - Ministry of Livestock, Agriculture and Fisheries (MGAP)

[9] See Note 5.

In Uruguay, some sawmills are locally classified as large-sized, while in the international context they would be medium-sized sawmills.

The largest sawmills consume between 100,000 and 500,000 cubic meters of roundwood per year, and there are four of them: two that cut exclusively pine wood (mainly *Pinus taeda*), which are Arboreal/Frutifor Lumber Company and FYMNSA, one that cuts exclusively *Eucalyptus grandis* wood, which is URUFOR, and a fourth that manufactures plywood with wood from both species, which is LUMIN (formerly Weyerhaeuser).

Then, there are two others with installed processing capacities of 40,000 to 100,000 cubic meters of roundwood per year. Both (Caja Bancaria and INMSUR) combine pine and eucalyptus in different proportions.

The following is an estimated cost structure for pine sawmilling at the domestic level, which is intended as an indicator to provide information on the relative weight of each phase of the chain. It is also compared with the cost structure for raw exports. Both estimates are based on official data (DGF, DNA) and contributions from various qualified private actors.

**Cost Structure - Forestry Chains**

| Phase | Activity | Sawmilling | Raw export | Reference |
|---|---|---|---|---|
| Primary | Land cost | 2.900 | 2.900 | US$/ha |
| | Planting costs | 1.300 | 1.300 | US$/ha |
| | Standing timber | 12,5 | 10 | US$/m3 |
| | Harvesting + loading | 13 | 13 | US$/m3 |
| | Freight | 6 | - | US$/m3 |
| | Logs at Sawmill | 32 | 23 | US$/m3 |
| Industrial | Base raw material product cost* | 70,9 | - | US$/m3 |
| | Production cost | 60 | - | US$/m3 |
| Transport | Transportation cost (plant/forest to port) Apx. 400 km | 22 | 23 | US$/m3 |
| Other | Administration/export costs | 22 | 18 | US$/m3 |
| Total costs FOB | | 175 | 64 | US$/m3 |
| Minimum FOB US$ export price** | | 220 | 70 | US$/m3 |

| Phase / Activity | Sawmilling | Raw export |
|---|---|---|
| Primary | 41% | 36% |
| Industrial | 34% | 0% |
| Transport | 12% | 36% |
| Administrative costs / export | 13% | 28% |
| Total costs FOB | 175 | 64 |
| Minimum FOB US$ export price** | 220 | 70 |

* For the production of 1m3 of sawn pine lumber, a recovery of 45% of green pine is assumed.

** High variability depending on quality / Example of B grade exported to China, highest volume exported 2020.

Approximate internal estimate based on data from the General Forestry Directorate (DGF), National Customs Directorate (DNA) and qualified informants.

## 2.2.2 Pulp

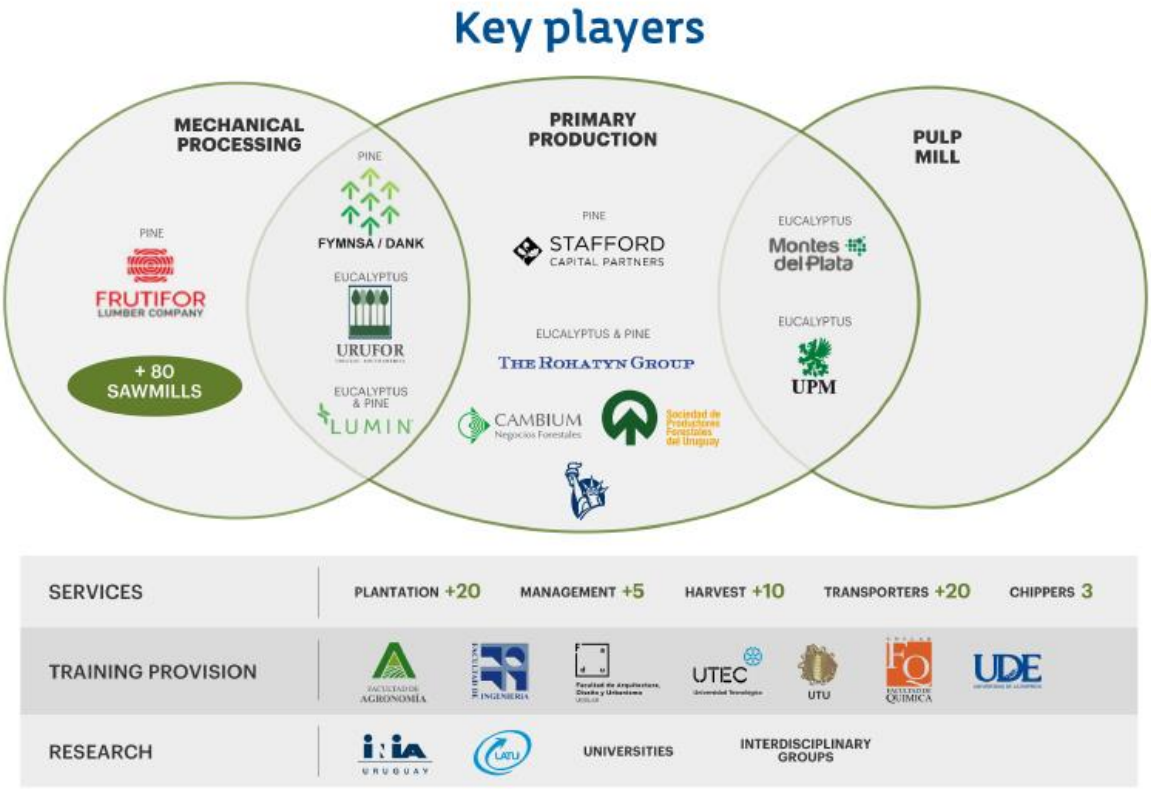
As a direct impact of the forestry sector's growth, a thriving pulp industry emerged. In 2007, Botnia began production and exports. In 2009, UPM acquired Botnia's shares and expanded its production capacity from 1 million tons of pulp to 1.3 million. On the other hand, Montes del Plata started production in 2014, and in 2020 its production level exceeded 1.4 million tons of dry pulp.

With both working at full capacity, they consume almost 9.5 million tons of wood per year, transforming them into 2.6 million tons of pulp. The pulp chain currently accounts for around US$1.1 billion in exports, which in turn represents 75% of the value of exports from the forestry sector.

The installation of UPM's second mill in Uruguay is underway, involving a total investment of US$3 billion. The mill would consume 7.5 million tons of wood per year, producing 2.1 million tons of pulp. Together the pulp mills would consume a total of 17 million tons per year, producing 4.7 million tons of pulp.

This would consolidate pulp as the country's main export product and could make Uruguay the world's second largest supplier of short-fiber pulp.

More information can be found in the Prospects for exports section.



## 2.3. Energy Generation from Forest Resources

Among the activities related to the **industrial phase** is the generation of energy through forest by-products (forest biomass and mechanical and chemical transformation by-products), which has gained relevance and has an important perspective due to the increased supply of raw material and State policies in this area. **In 2020, approximately 8% of the electricity generated to meet the country's demand came from forest biomass residues.**[10]

### 2.3.1. Biomass Energy Generation Plants

Currently in Uruguay there are companies in the sector that have biomass power generation plants:

- **UPM Fray Bentos** has an installed capacity of 161 MW, most of which is consumed by the plant itself. Approximately 20 MW are sold to the state-owned energy company (UTE). The second UPM Paso de los Toros plant, once in operation, will generate a steady, predictable and renewable energy surplus of more than 110 MW.
- **Bioener** is located in the department of Rivera and has a capacity of 12 MW.
- **Lumin,** the plywood plant located in Tacuarembó is self-sufficient in terms of energy, using waste from the industrial process in the plant's boiler and to supply energy (steam) to the industrial process. The installed energy capacity is 12 MW.
- **Liderdat** has a power of 5 MW. It is located in the Azucarlito sugar mill premises, in the department of Paysandú.
- **Montes del Plata** has an installed capacity of 180 MW, of which approximately 80 MW are fed into the UTE grid.
- **Ponlar** is located in the department of Rivera, where it uses by-products from the Dank sawmill. It has an installed capacity of 7.5 MW.

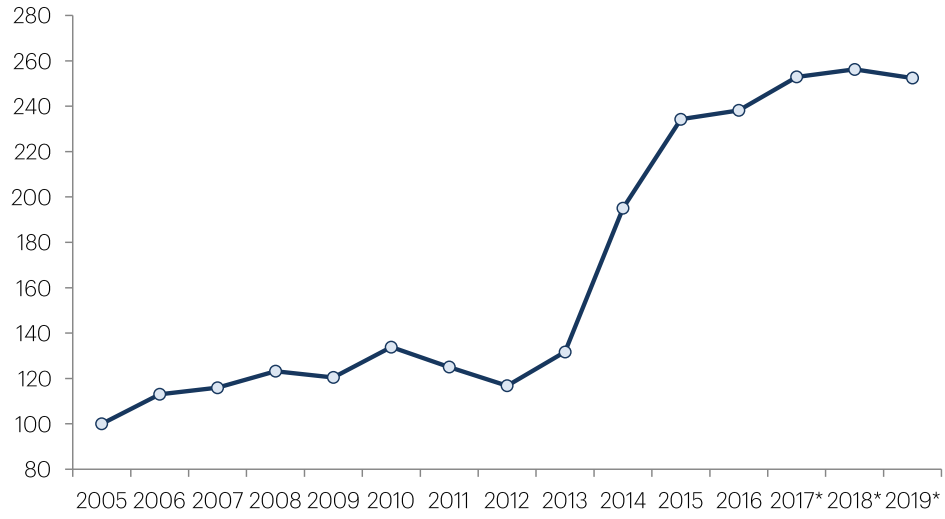
[10] Source: Uruguay XXI based on UTE i. (http://portal.ute.com.uy/institucional/ute-i)

# 3. Economic Importance of the Sector

## 3.1 Sector's share in the economy's GDP

According to data from the Central Bank of Uruguay (BCU), the GDP of the primary phase (silviculture, wood extraction and related services) has shown an upward trend, with an average annual growth rate of 7.7% in the last decade. The share of this phase in the economy's overall GDP remained relatively constant over the period, at around 0.5%.

**Chart Nº1: GDP of first phase (silviculture, wood extraction and related services) (Index 2005=100)**

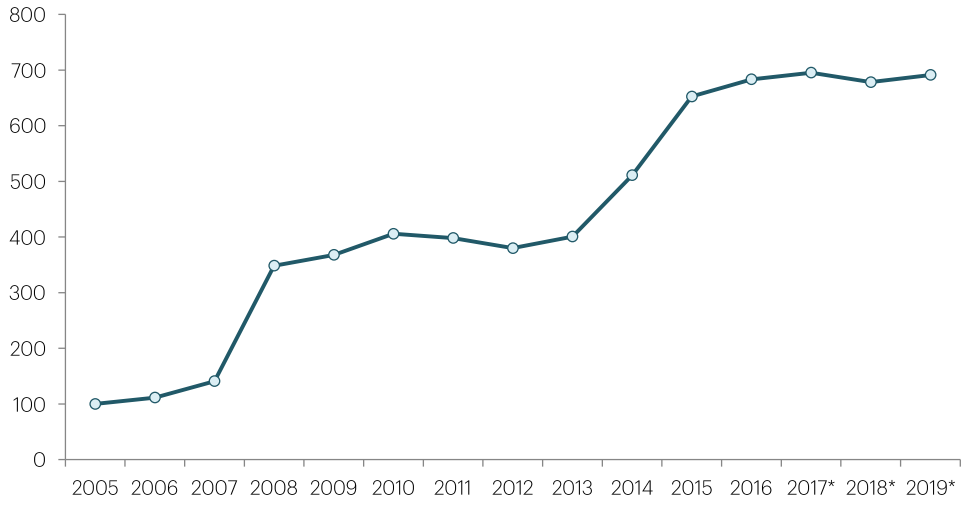



Note (*): Preliminary data.

Source: Uruguay XXI based on Central Bank of Uruguay.

Value added in the industrial phase also showed a strong upward trend (see chart), mainly since the start of operations of UPM's pulp mill in late 2007 and of Montes del Plata in mid-2014. In fact, the industrial phase grew at an average annual rate of 6.5% in the last decade.

**Chart Nº2: GDP of industrial phase forestry complex (Index 2005=100)**




Source: Uruguay XXI based on Central Bank of Uruguay.

## 3.2 Employment

According to data from the General Forestry Directorate, based on the Social Security Administration (BPS), the number of people employed in the sector totals 16,800 workers. **This figure does not include the indirect jobs generated by the sector, including transportation and logistics activities, as well as related services[11].** Fifteen per cent of the country's population lives in the departments with the largest number of hectares of forest[12].

**Table N°2: Jobs in the different forestry sector activities - 2019**

| | |
|---|---|
| **Silvicultural phase** | |
| Silviculture and related activities | 4,408 |
| Wood extraction | 2,527 |
| Harvesting of forest products (e.g. timber) | 40 |
| Forestry support services | 1,568 |
| **Industrial phase** | |
| Splicing, sawing and planing of timber | 2,700 |
| Wood product manufacturing | 1,265 |
| Wood furniture manufacturing | 2,174 |
| **Chemical transformation** | |
| Paper and cardboard manufacturing | 2,118 |
| **Total** | **16,800** |

Source:General Forestry Directorate based on information from BPS.

### 3.2.1 Education

Qualified human resources are a key factor for the sector, given the high technological level they require and the potential improvement in productivity they can bring about. Education at university and technical level seeks to adapt to this dynamic, training chemical engineers in pulp production and architects in wood construction. The Universidad del Trabajo de Uruguay (UTU) is also working on degree programs related to forestry and timber. In Rivera, one of the departments with the greatest forestry activity, there is also a Wood Technologist degree, whose graduate profile is aimed at developing technology-related tasks, forest harvesting and industrial wood engineering[13]. Details about sector-related courses are provided below:

- **Agronomy School of the Universidad de la República**: This is the oldest and most traditional of the training opportunities related to the forestry sector. It offers a degree program in Agronomy (five years) that leads to the degree of Agronomist Engineer. In the fourth year of the degree program, the student has the possibility of choosing between the agriculture and livestock, horticulture and fruit and forestry options. The graduate who chooses the forestry option is called a Forestry Agronomist.

- **Forestry Engineering (Universidad de la República - Agronomy School, Engineering School and Chemistry School):**[14] The profile of graduates of the Forestry Engineering program requires a solid background in the basic and basic-applied sciences necessary for their scientific and professional

[11] In order to have an approximate idea as to the magnitude of these chains, it should be noted that UPM's value chain created 7,000 jobs in 2015. Source: Impacto Socioeconómico de UPM Uruguay en 2015, CPA-Ferrere. June 2016.
[12] Source: National Institute of Statistics (INE) – Statistical Yearbook 2020. The departments of Rivera, Tacuarembó, Cerro Largo, Paysandú, Rio Negro and Lavalleja were taken into account.
[13] https://www.fing.edu.uy/ensenanza/carreras-de-grado/tecn%C3%B3logo-en-madera-rivera
[14] Source: UdelaR

performance, with an in-depth focus on specific forestry areas and industrial processes related to the sector, observing aspects of the environment, especially social, environmental and sustainable management of natural resources, which would favor critical and creative action to identify and solve problems. It is taught at the University Center of Tacuarembó. The first student graduated at the end of 2020.

- **Master's Degree in Pulp and Paper Engineering (School of Engineering - Universidad de la República):**[15] Aims at complementing and strengthening the scientific and technical training of professionals in the area of pulp and paper production engineering, achieving greater specialization than that provided by undergraduate university education. The curriculum of the Master's Degree in Pulp and Paper Engineering is developed over two years and consists of programmed activities and a thesis. For each generation of students, a training plan of programmed activities (refresher and/or postgraduate courses, seminars, etc.) is established. The programmed activity is organized in a set of fundamental subjects to broaden and deepen basic knowledge in the theme area and a second set of specialized technological subjects.

- **Civil Engineering (School of Engineering - Universidad de la República):** This degree program includes a course entitled "Wooden Structures", which is mandatory for the structural profile, in order to train engineers in the use of domestic wood as another structural material. The Master's Degree in Structural Engineering also includes subjects related to structural calculation with wood.

- **Chemical Engineering (School of Engineering - Universidad de la República):** This degree program includes an elective course called "Fundamentals of Pulp and Paper Production", whose objective is to introduce the student to the processes developed in pulp (particularly Kraft) and paper production plants.

- **Forestry Technician (Universidad de la Empresa - UDE):** This degree consists of a two-year program, which was the first alternative to Agronomy offered by a private institution, directly focused on the needs of the forestry sector. If the program is reviewed, it covers all the forestry chain links, except for chemical transformation. UDE also offers a course in Agronomy, but unlike the Universidad de la República, it does not cover subjects directly related to forestry production, although it does cover plant production and protection.

- **Forestry Technician / Wood Technologist (Universidad del Trabajo de Uruguay - UTU):** The first one, with a duration of two years, covers the entire forestry chain, from nursery and field work to forestry industries. The Wood Technologist program is developed in six semesters of related basic sciences, such as physics and mathematics, and a broad spectrum of subjects related to forest harvesting, mechanical wood processing and forest industry management.

- **Diploma of Specialization in Design, Calculation and Construction with Wood (DEEM) (School of Architecture - Universidad ORT + School of Engineering - Universidad de la República):** Although it is not directly linked to the traditional forestry chain, it seems important to mention this degree. It is taught jointly by the Universidad de la República and Universidad ORT. It is a course specifically designed to create knowledge about an underexploited area by the current Uruguayan forestry sector, i.e. using part of the existing raw material to meet the country´s needs in terms of housing, civil construction, bridges, etc., both from solid wood and engineered wood products.

The review of the educational offer related to the forestry sector and chain seems to indicate that, although there is room for improvement, the sector´s expansion has promoted alternative options for technical and tertiary training mainly, and sector-related diplomas.

[15] Source: Facultad de Ingeniería

## 3.3 Private sector

In Uruguay, there are more than 1,700 companies linked to the forestry complex, according to BPS data. Of these, 93% are micro and small enterprises with less than 20 employees[16]. Among the exporting companies, pulp producers UPM and Montes del Plata are the main ones, accounting for 75% of the value exported by the sector in 2020.

**Table Nº3 - Forestry sector companies by segment and size - 2020**

| | Micro and small-sized | Medium-sized | Large-sized | Total |
|---|---|---|---|---|
| Forestry | 782 | 74 | 7 | 863 |
| Production of wood products | 739 | 23 | 4 | 766 |
| Manufacture of paper and paper products (including pulp) | 55 | 14 | 5 | 74 |
| Total | 1,576 | 111 | 16 | 1,703 |

Note: Micro and small-sized (up to 19 employees); Medium-sized (20 to 99 employees); Large-sized (more than 100 employees).

Source: Uruguay XXI based on Social Security Administration (BPS) - August 2020.

### 3.3.1 Major Foreign Investments in the Forestry Sector

#### UPM

The Finnish company UPM is one of the world's largest pulp producers. In 2009, it acquired most of the shares of Botnia S.A. The company has 54 production plants in 12 countries, 18,000 employees and annual sales totaled €8.6 billion in 2020[17]. In Uruguay, UPM employs 590 people directly, more than 3,700 indirectly, and 235 contractors[18]. This staff is involved in all operations of the production cycle: from nurseries and forest plantations to transportation, plant floor work and port.

The company has a subsidiary, UPM Forestal Oriental, which has been operating in the country for over 30 years and supplies wood to the Fray Bentos mill. About 70% of the wood comes from its own plantations and the remaining 30% from more than 700 rural producers associated with its Development Program[19]. The volume of wood shipped from Uruguay to UPM was around 3.5 million tons in 2020.

The industrial complex located in Fray Bentos, department of Río Negro, has a plant with a production capacity of 1.3 million tons of eucalyptus short fiber pulp—which is exported almost entirely—and a biomass-based energy generating unit. The pulp is transported by barge down the Uruguay River to the port of Nueva Palmira, where it is loaded onto transatlantic vessels bound for Europe and Asia[20].

The company confirmed in July 2019 that it will invest in the installation of its second plant in the country, which will be the largest foreign investment Uruguay has ever received. The third plant will have a production capacity of more than 2.1 million tons. The plant is scheduled to start operations in the second half of 2022. More information can be found in the Prospects for exports section.

[16] Source: Uruguay XXI based on BPS.
[17] Source: UPM - www.upm.com/about-us/
[18] Source: UPM – CPA Impact Study 2017
[19] The Development Program promotes partnerships between rural producers and UPM Forestal Oriental, to integrate afforestation to their livestock, agricultural or dairy farms.
[20] Source: http://www.upm.com/uy

## MONTES DEL PLATA

Pulp production company established in Uruguay since 2009. It is formed by the equal participation of two of the world's leading companies in the forestry sector: Arauco, of Chilean capital, and the Swedish-Finnish company Stora Enso.

The company manages some 165,000 hectares of forest in 13 departments of the country, between its own fields and those of third-parties. In addition, 35% of the company's own fields are protected areas for biological conservation, native forests or native species in which the company implements conservation and monitoring plans. Around 3.8 million tons of wood were supplied to the Montes del Plata plant in 2020.

The industrial complex is located in Punta Pereira, department of Colonia. It has a plant with the capacity to produce 1.4 million tons of pulp per year, a biomass energy generation unit, and a port terminal. The company directly employs some 620 people and generates 6,500 jobs throughout the production chain.[21]

## LUMIN

Lumin has been in the Uruguayan market for more than 20 years and is one of the leading companies in forestry and forest products. Its production is focused on plywood made of pine and eucalyptus. The company established in Uruguay in 1996, under the name of Weyerhaeuser. In 2017, it completed the process of selling its operations in Uruguay to a holding company led by Timberland Investment Group (part of the Brazilian BTG group). In Uruguay, the company has forests in the departments of Rivera, Tacuarembó, Cerro Largo and Treinta y Tres, and its total forest holdings are around 120,000 hectares[22], including pine and eucalyptus plantations.

It also has a clonal nursery for the development of trees for afforestation and an energy generation plant, powered by factory waste and biomass. The energy generated is fed into the industrial plant and the power grid.

The company has 715 direct employees working in the five departments in which it operates.

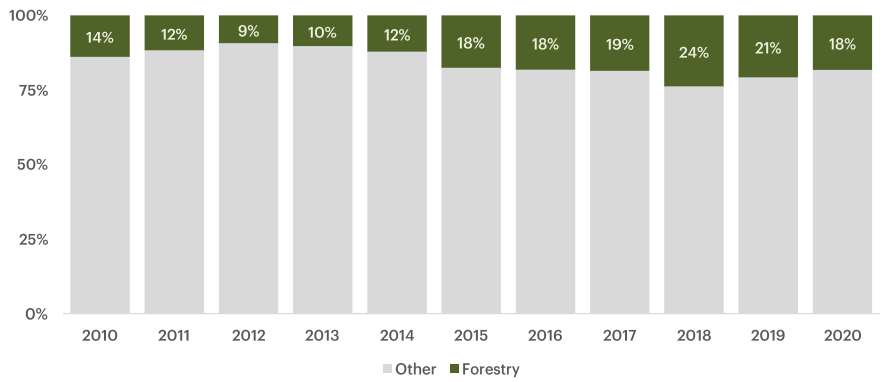
[21] Source: Montes del Plata – Nuestra empresa

[22] Source: https://www.lumin.com/institucional#LuminCifras

## 3.4 External Sector

Exports in the forestry sector showed a remarkable dynamism in the last decade associated with the establishment of the UPM and Montes del Plata pulp mills. This accounted for a significant increase in the sector's added value, resulting in a leap in forestry chain outputs since 2008 with UPM and then in 2014 with Montes del Plata. The above-mentioned impulse, added to sawn timber external sales, and flows for years of chip and raw wood exports, allowed for a gradual increase of the sector's share in total exports. In the last year, the drop in the price of pulp, and the reduced volumes of pulp and other forest products due to lower demand as a result of COVID-19 caused this share to fall back to values similar to those of five years ago.

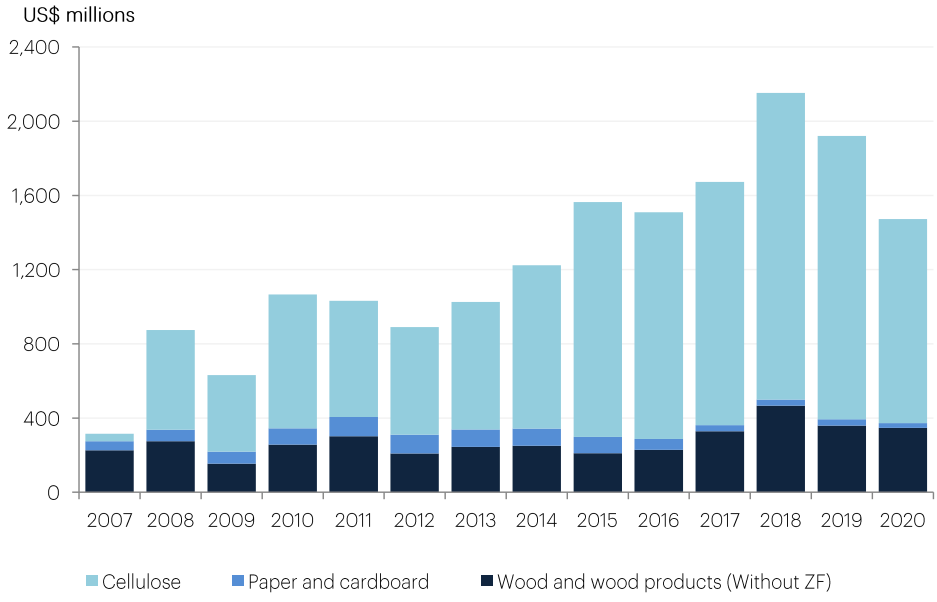
### Chart N°3 - Evolution of the forestry sector's share in total exports




Source: Uruguay XXI based on data from the National Customs Directorate, the Central Bank of Uruguay and Montes del Plata.

In 2020, exports of the forestry complex (wood, wood products, pulp, paper and cardboard) amounted to US$1.473 million, representing 18% of the country's total exports[23]. The forestry complex reaffirms itself as one of the country's most important export items despite the 23% drop in 2020 outputs in the interannual comparison.

### Chart N°4 - Uruguayan Exports - Forestry Sector (US$ Millions)




Source: Uruguay XXI based on National Customs Directorate (DNA) and Montes del Plata.

[23] Note: Total exports include all sales from domestic territory. Therefore, exports of pharmaceutical products, PepsiCO beverage concentrate and pulp from free trade zones are included.

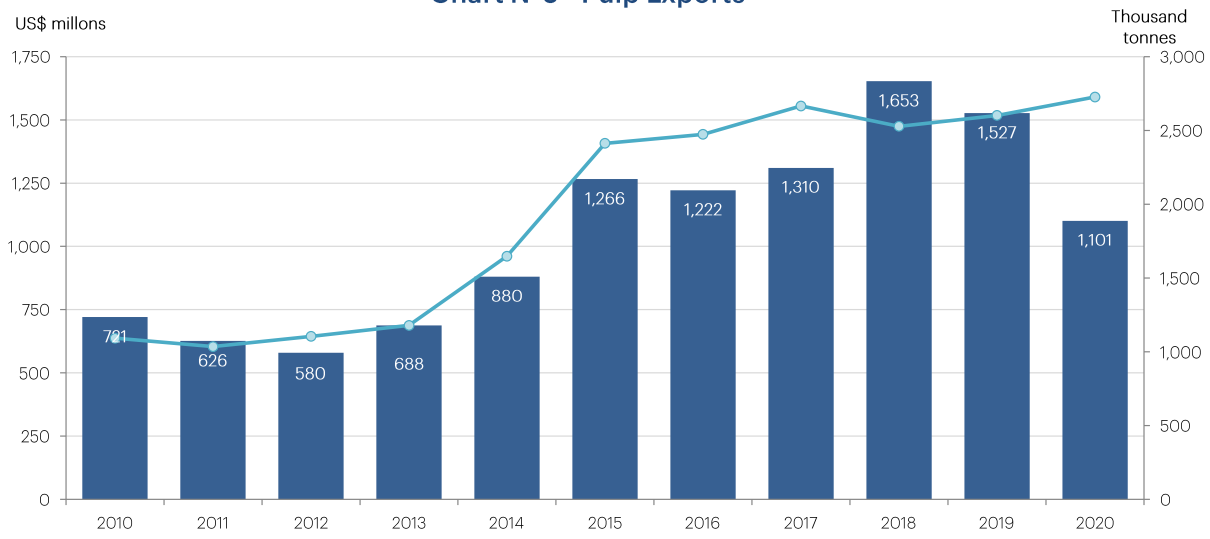
The evolution of the sector's exports in the last year is almost exclusively explained by the lower sales of pulp (-28%), accounting for 75% of total exports in this branch of activity. Wood exports showed a slight decline (-3%) in 2020, while sales of paper and cardboard experienced a retraction similar to pulp (-27%) in the same period, although the latter represent only 1.6% of the forestry complex's external sales.

### 3.4.1 Pulp Exports

Pulp is the main input for the production of paper and cardboard. In 2020, external sales totaled US$ 1,101 billion[24], 28% lower than in 2019. Pulp was Uruguay's second largest export product

Pulp exports are shipped from two free trade zones. One is Zona Franca Punta Pereira, where the Montes del Plata plant is located together with its own port terminal from where the goods are shipped abroad. UPM's production is sent in transit from Zona Franca Fray Bentos (where it is produced) to Zona Franca Nueva Palmira, from where it is finally sent abroad in larger vessels. From both free zones there are also direct departures by road to Argentina, which in recent years has become a more important destination for sales, ranking fourth with 10% of placements, only behind China (41%), Italy (21%) and the Netherlands (18%)[25].

**Chart N°5 - Pulp Exports**



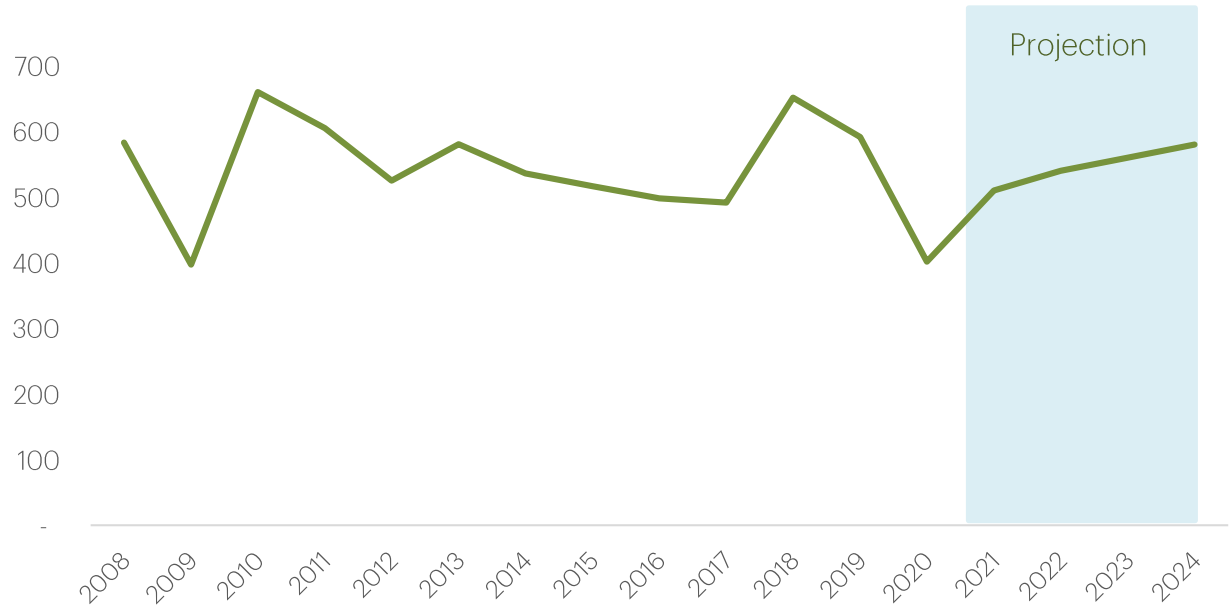

Source: Uruguay XXI based on National Customs Directorate (DNA) and Montes del Plata.

Meanwhile, lower pulp sales in 2020 can be attributed to a retraction in the average export price, a phenomenon that pulp has been experiencing since the last months of 2018. Volume, in turn, remains stable and close to each mill's full production capacity. As can be seen in Chart N°6, a gradual improvement in prices is expected for the coming years. Although the chart includes only the reference price in China—because of available projections—, it serves as an indication, given that this market accounted for over 40% of sales in 2020. Price recovery was expected to occur during 2020, but the pandemic affected international demand and increased global stocks.

[24] Source: Uruguay XXI based on DNA and Montes del Plata.

[25] Estimated by Uruguay XXI based on National Customs Directorate (DNA), Montes del Plata and Nueva Palmira. Given the fact that the Netherlands acts as a distribution center for goods entering Europe, it is likely that a large part of pulp arriving in that country has other final destinations.

Chart N°6 - Price estimates for short-fiber pulp at Chinese ports




Source: Own elaboration based on data from National Customs Directorate, Montes del Plata and JP Morgan.

## 3.4.2 Timber Exports[26] (Excluding Free Trade Zone Shipments)

Although timber exports have fluctuated in recent years, average sales in the last five years were 42% higher than in the previous five-year period. This increase was strongly associated with the increase in the average export volume, which doubled in the same comparison period; in particular, raw wood, although sawn timber and chips also contributed to a lesser extent. In 2020, the total volume of timber exports grew by 5%, totaling 2.7 million tons.

In 2020, exports of timber and by-products reached US$347 million, a 3% drop compared to 2019. Wood chip placements to Portugal were mainly responsible for the decrease in exports that year. Meanwhile, other products such as sawn timber (7%) and wood panels (21%) showed an increase in exported amounts, with the United States being the main export destination for these products.

**Chips**

Chip sales fell sharply in 2020, strongly affected by the COVID-19 pandemic. Placements measured in physical volume fell by 80%, from almost one million tons exported in 2019 to 186,000 tons in 2020. In particular, sales came to a standstill following the April confinement measures in the country. For the year as a whole, chip exports totaled US$21 million and Portugal remains virtually the only export destination with 99% of sales.

The average placement price for the last decade remained around US$100/ton without major variations during said period. In 2020, the average price per ton was US$114, 5% higher on a year-on-year basis.

[26] Pulp mills are located in free trade zones, and according to the Uruguayan Customs Code, sales from Uruguay to these areas are recorded as exports. This section does not take into account timber exports to these areas in order not to duplicate data, since they are presumably incorporated as an input in pulp production.

## Roundwood

Timber foreign sales have grown strongly since 2016 as a result of an increase in demand from China, with Pine generally having the highest share in this flow. In 2020, it accounted for 91% of the volume and the rest corresponded to eucalyptus. Part of these outflows are linked to the harvest cycles of the plantations and the few local alternatives for processing. In this sense, it would be important to advance both in terms of mechanical transformation and in policies for the use of this resource to enhance value addition. Total exports in 2020 amounted to US$153 million, an increase of 50% on a year-on-year basis. The volume placed was 2.2 million tons, the highest volume on record. China remained the main destination with 57% of the total, 59% of pine and 36% of eucalyptus.

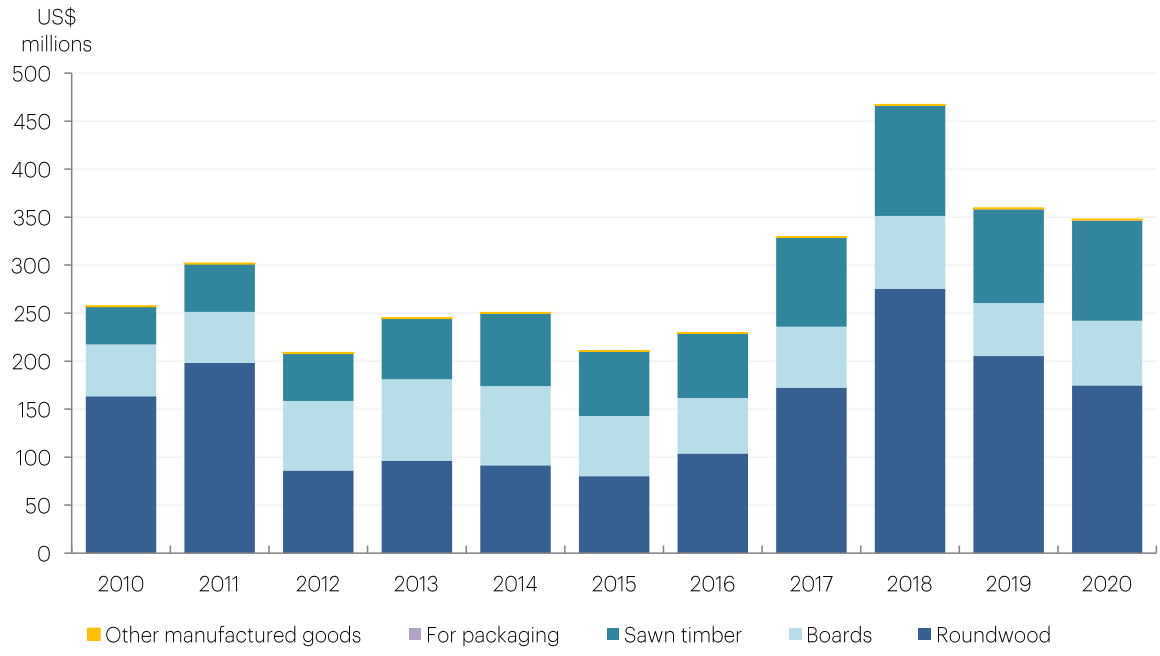
## Sawn timber

Sawn timber is one of the products with the highest value added. In 2020, this product accounted for 30% of Uruguay's timber exports. Exports of these products totaled US$104 million in 2020 and exports exceeded 200 thousand tons. Pine sawn timber accounted for 58% of these exports, mainly to the United States (38%), China (30%) and Vietnam (16%). The remaining 42% accounted for eucalyptus, mainly bound for the United States (15%), China (13%) and Indonesia (13%).

## Boards

Wood-based boards are another of the products with significant value added. In 2020, plywood panel exports totaled US$67 million, 21% higher than the previous year. This increase is explained by both the price factor and the increased volume exported.

### Chart N°7. Timber and timber product exports (excluding free trade zones) - US$ millions




Source: Uruguay XXI based on National Customs Directorate (DNA).

## Table N°4 - Main exporting companies in the Uruguayan forestry sector 2020

| MIEM Classification | Company |
|---|---|
| Wood pulp | UPM |
| | MONTES DEL PLATA |
| Sawn timber, glued solid wood, veneer sheets and moldings | URUFOR S.A. |
| | DANK S.A. |
| | FRUTIFOR LUMBER COMPANY |
| Raw wood | TGL URUGUAY S.A. |
| | IDALEN S.A. |
| | FORESTAL ATLANTICO SUR |
| Boards | LUMIN (URUPLY S.A.) |

Note: This list of companies does not imply any ranking or assessment of their commercial performance.
Source: National Customs Directorate and Montes del Plata

## 3.5 Prospects for Exports

The Finnish company UPM confirmed in July 2019 that it will invest in the installation of its second pulp mill in Uruguay, involving a total investment of US$3 billion (5.4% of GDP). This is the largest foreign investment ever received by Uruguay and also the largest investment by UPM in its more than 100 years of history.

The project will be located on the border between the departments of Durazno and Tacuarembó, more specifically in Pueblo Centenario, promoting local development in the area and surrounding areas. The departments where it will have the greatest impact will be Durazno, Tacuarembó, Cerro Largo and Rivera, which have the country´s lowest employment rates and the worst education and poverty indicators. Thus, it is expected that the installation and subsequent operation of the plant will give greater dynamism to a relevant region.

This third plant in Uruguay will bring a significant increase in exports. It is estimated that UPM's investment will increase annual exports by an average of US$1.155 million, or approximately 12%[27]. Consequently, the new mill would consolidate pulp as the country's main export product in the coming years and Uruguay as the world's second largest exporter of short-fiber pulp[28] with an estimated production of 4.7 million tons per year.

The plant is scheduled to start operations in the second half of 2022. Of the total US$3 billion investment, US$2.7 billion will be for the construction of the mill, US$280 million for the construction of a specialized pulp terminal at the deepwater port of Montevideo, and US$70 million is estimated in investments in premises in Paso de los Toros to provide temporary housing for staff hired during the construction work. The project also involves—in addition to the port terminal—the reconditioning of railways under the "Ferrocarril Central" project and road improvements, to be carried out by the Uruguayan government. These infrastructure investments also imply the development of economic activity in other sectors in Uruguay.

The work schedule is proceeding according to plan, both on the plant floor, in the planned housing solutions, and in the port's specialized terminal[29].

### Table Nº5 -Permanent effects of operations on the chain

| | Current plant * | Second plant of UPM |
|---|---|---|
| **% GDP** | 1.4% | 2.0% |
| **Jobs (direct and indirect)** | 7,000 | 10,000 |
| **Taxes** | US$90 million | US$120 million |

Source: Prepared by Uruguay XXI based on CPA Ferrere.
*Effects measured in 2015

The Finnish company notes that pulp demand has a healthy long-term outlook, particularly in Asia. Strong market growth is based on major global consumer trends driving demand for paper, toilet paper, packaging and specialty papers. Annual trend growth in global market demand for pulp remains at approximately 3%.

[27] Source: Presidency - Evaluación financiera de ingresos y egresos del proyecto UPM2.
[28] Under conditions of market stability.
[29] Source: UPM - Crecimiento.

# 4. Infrastructure

Uruguay has a vast and dense road network, which has about 8,776 km of which 7,977 km are paved[30], resulting in a ratio of 45 km of paved roads per 1,000 km$^2$ of surface area[31]. This road structure connects the main production centers and storage yards with the country's main ports.

There are currently 15 ports, eight of which are commercial and located in different areas of the country: Montevideo, Nueva Palmira, Colonia, Fray Bentos, Paysandú, Juan Lacaze and La Paloma, under a free port regime, and Salto. Among them, the ports of Montevideo, Nueva Palmira and La Paloma have the deepest draft.

Despite the above, the significant growth in production and exports has presented important challenges in terms of infrastructure, mainly roads. In this context, the country is working on relevant projects that will allow it to have first class infrastructure.

### » Forestry products and bulk solids terminal[32]

This specialized terminal is located on a 7.5 hectares site at the northern end of the port of Montevideo. Its operation consists of the storage and shipment of wood chips and bulk products in general, with a stowage area for 7,000 tons. It also has a fully automated grain storage plant. It plans to operate two conveyor belts, three platforms with lifting towers with a loading capacity of 2,400t/hour and a berth for inter-oceanic Panamax vessels.

### » Road corridors[33]

Due to the growing volume of goods transported—as a result of the development of the agricultural and forestry areas—there is a need to provide adequate connectivity between production terminals and production units.

In this sense, the first Public-Private Partnership project in road infrastructure was the layout of Route 21 from the city of Nueva Palmira to Mercedes, and of Route 24 between Route 2 and Route 3. Route 21 is mainly used by bulk trucks going to the port of Nueva Palmira, while Route 24 is mainly used by lumber cargo.

The project involved an investment in reconstruction, rehabilitation and upgrading of 170 km of road. It seeks to improve productivity levels in the area by reducing transportation costs and travel times, thus promoting local development and decentralization. The project's initial investment is US$85 million[34].

### » Railway development

Currently, the main project in the Uruguayan railway sector is the **Ferrocarril Central project[35],** through which **Uruguay's railway network will be heavily renovated**. It consists of the construction and reconditioning of 273 km of railway track between the port of Montevideo and Paso de los Toros (Tacuarembó). Likewise, the restoration of the Rivera line and the Litoral line (linking Piedra Sola and Salto) consolidates the expansion of the rail transport offer, complementing the modes used up to now.

[30] Note: Gravel roads are not considered as paved roads. Source: National Road Directorate - Ministry of Transportation and Public Works (MTOP)
[31] Source: Uruguay XXI based on Inalog.
[32] Source: Inalog.
[33] See: Uruguay XXI – PPP Vial
[34] Source: MEF – Pipeline PPP
[35] Source: Uruguay en Marcha - http://ferrocarrilcentral.mtop.gub.uy/inicio

This project will allow freight trains to run at 80 km/h and with a 22.5 ton/axle load, which will significantly favor agricultural, mining, industrial and forestry enterprises located near the railway lines.

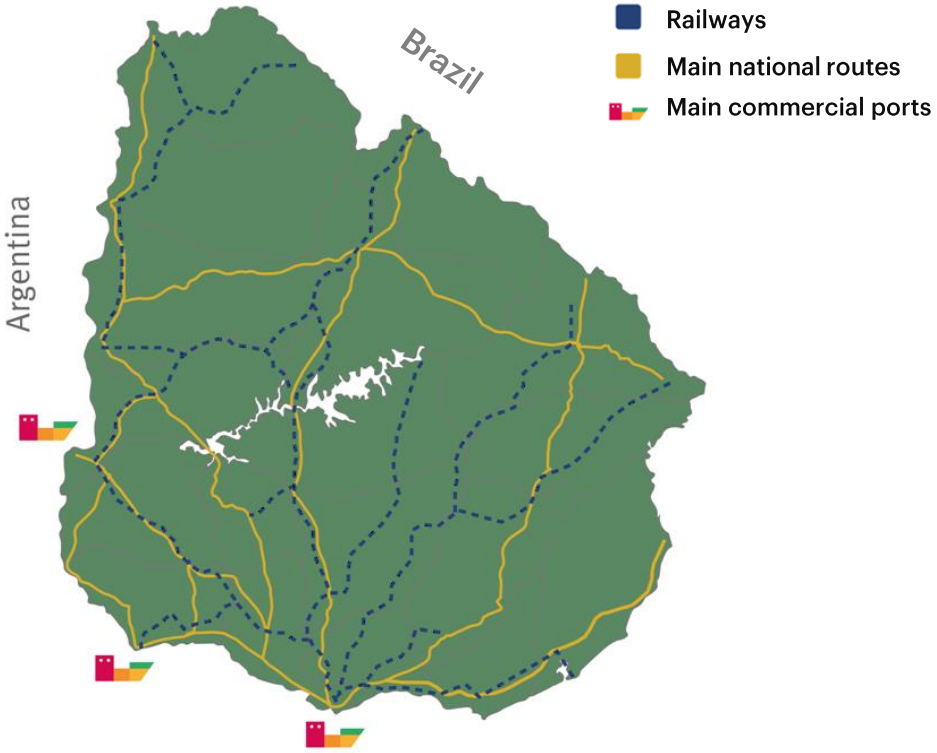
The project includes an initial 26 km double track section, dozens of secondary tracks for train crossings, and more than 40 rail bridges (reinforced and new). There will also be overpasses, given the interaction with several populated areas, so the impact on construction will also be relevant.

**Currently, the railroad network has an extension of 1,652 km in operation** and a fleet of 52 main track locomotives[36] and 764 railcars[37]. It connects with the networks of Argentina through the El Precursor branch line, over the Salto Grande dam, which links the cities of Salto and Concordia with the same gauge in both countries, and with Brazil at the Rivera-Livramento border crossing, with a different gauge, although nowadays this difference in track gauge is solved by technology.

Therefore, the project is a major step forward in promoting a complementary, competitive and sustainable mode of transportation that will have an impact on costs, time and logistics efficiency. The train is expected to be operational by May 2023.

**Figure N°3: Infrastructure map of Uruguay**

Distances and times to the port of Montevideo by truck




In 12 years, from 2003 to 2015, the load in tons of products generated by the forestry, agricultural and livestock chains increased sevenfold.

This growth had significant leaps, for instance in 2008 and 2013 due to the respective start of operations of the pulp mills. There is also a steady growth in agricultural production, which is the item that increased its load in greater magnitude, and in the more traditional production items, such as meat and dairy products.

[36] Source: National Observatory of Infrastructure, Transport and Logistics of Uruguay. Data updated to 2015.
[37] Note: It does not include passenger cars.

## Table N°6: Loads received by Uruguayan roads - 2003 to 2015

| Sector | 2003 | 2010 | 2015 |
|---|---|---|---|
| Forestry | 1,500,000 | 9,950,516 | 13,806,000 |
| Cereals | 300,000 | 4,000,000 | 8,157,800 |
| Dairy products | 1,100,000 | 1,655,000 | 2,182,000 |
| Cattle | 716,432 | 1,034,505 | 1,095,534 |
| Total | 3,616,432 | 16,640,021 | 25,241,334 |

Source: Directorate of Agricultural Statistics (DIEA) Yearbook - 2011 / 2016

Table N°7 gives a relative weight to inland freight, to compare, in the different cases, how much freight weighs on the cost of bringing roundwood to the industry or to stockyards for export.

## Table N°7: Relative weight of the inland freight component

| | Chain | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Pulp | | Sawmill | | | | | |
| | Eucalyptus | | Pinus taeda | | | Eucalyptus grandis | | |
| | Local | Export | Sawmills | Roundwood export | Board export | Sawmills | Export | Board export |
| Freight in prod. cost (%) | 50.70% | 50.70% | 46.7% | 74.2% | | 52.6% | 64% | |
| Freight in local cost (%) | 30.80% | 30.80% | 26.9% | 51.9% | | 36.4% | 37.6% | |
| Freight in prod+export cost (%) | | | | 33.0% | | | 33% | |
| Freight in CIF (%) | | | | 24.2% | 10% | | 20.6% | 10% |

Source: Uruguay XXI based on private consulting by Estudio Faroppa and own updates.

## 4.1 Land Costs

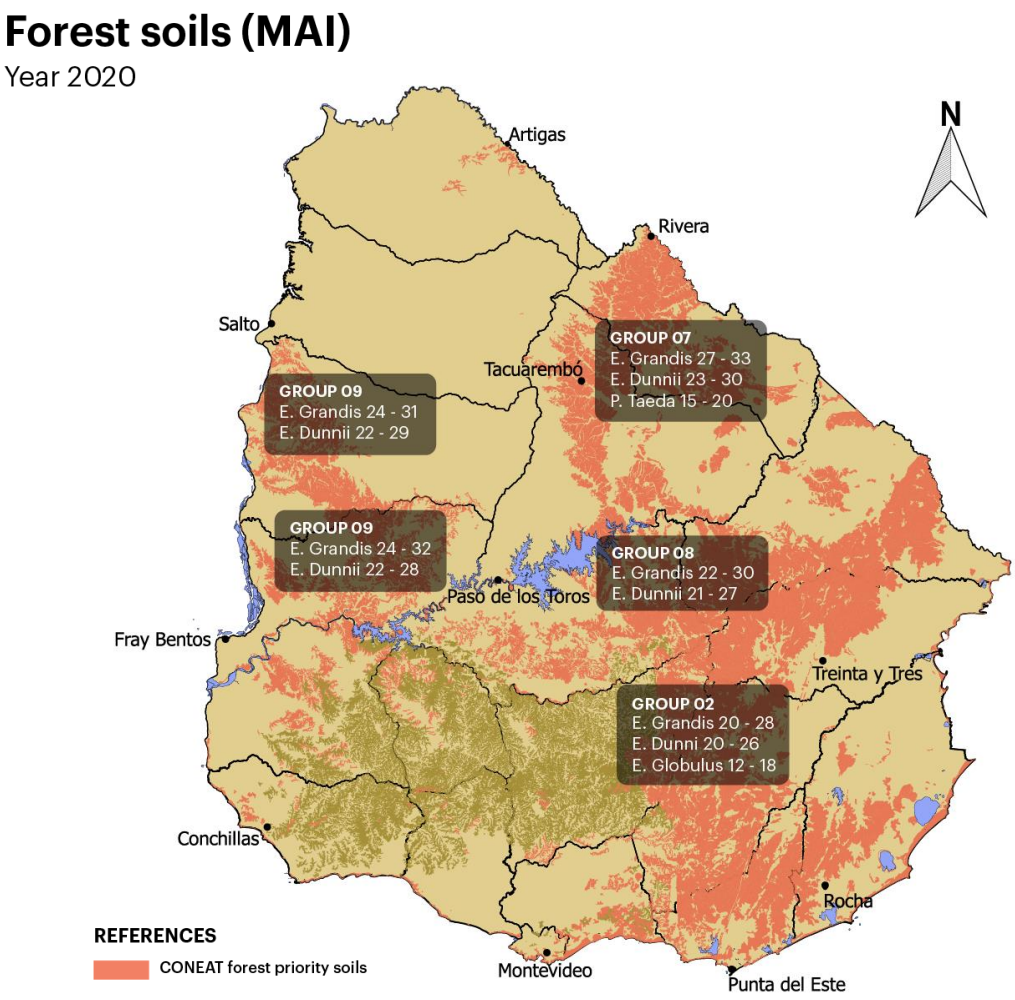
In addition to operating costs, it is worth having an approximate estimation of the cost of land, which would fall, as mentioned above, within the "year 0" costs, i.e. when 55% of the total cost for a 20-year cycle is generated.

Due to the characteristics of soils in Uruguay, forestry is sometimes developed as the main activity and also associated with agriculture or livestock. Most plantations are located in soils declared as forest priority, on various Coneat soils.

The most relevant aspects in determining the value of forest fields are the type of soil, the distance to port or industry and the percentage of the total area that can be planted.

Soil types are diverse and have different growth rates associated with them depending on the species planted. At the technical level, the indicator used to measure tree growth is the mean annual increment (MAI), which represents the increase in volume of trees in a hectare over the year.

Figure N°4: Mean annual increment (MAI) by species and area




Source: Agroclaro based on the Agricultural Planning and Policy Office (OPYPA), UPM, Montes del Plata, MGAP and National Directorate of Environment (DINAMA).

There is a rental market for forestry areas, above a minimum scale, in the areas of influence of pulp mills. This determines that in the coastline, south coastline and center of the country it is possible to lease partial or total areas of the fields to plant eucalyptus.

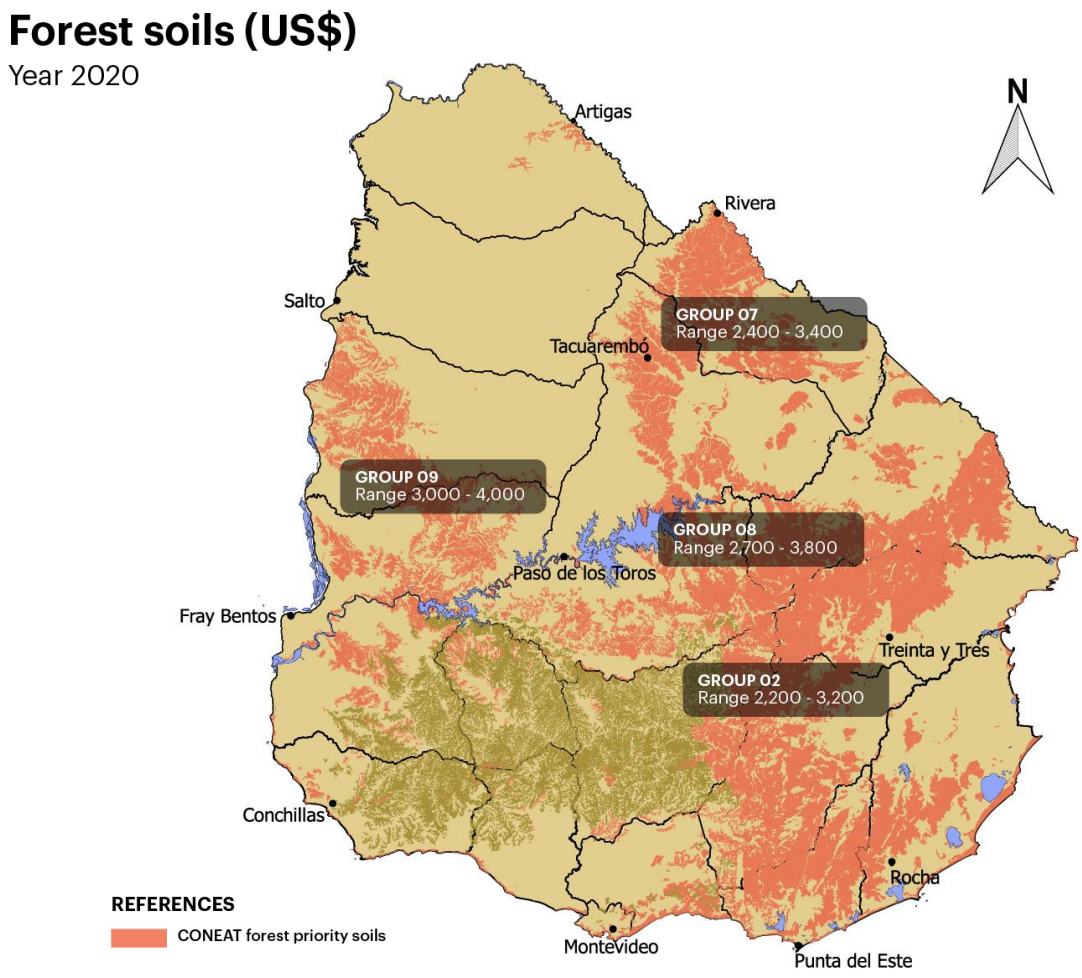
On the other hand, in the east and north, where plantations are generally for quality timber, most of the companies conducting business also own the fields.

Due to the aforementioned aspects, the analysis of the land value of forest fields is complex, since it is necessary to consider several factors. The map below shows reference prices for farms where forestry is the main activity.

It is important to highlight that the price of land in Uruguay, with a strong influence of grains over the 2004-2014 decade, registered peak prices in 2014 and a subsequent fall. Forest fields, on the other hand, had a lower increase during that period and a greater stability in their prices.

Rent income values for Forestry areas published by DIEA/MGAP for the last ten years show an increase in prices, from US$96/ha/year in 2009 to US$162/ha/year according to the report of the first semester of 2020.

**Figure N°5: Coneat forest priority soils and reference prices**
**Price range (US$/ha) for forest fields based on recent sales**




Source: Agroclaro based on metadata from MGAP and the Agency for the Development of Electronic Government and Information Society and Knowledge (AGESIC)/National Institute of Colonization (INC).

# 5. Timber Availability and Value-Adding Opportunities

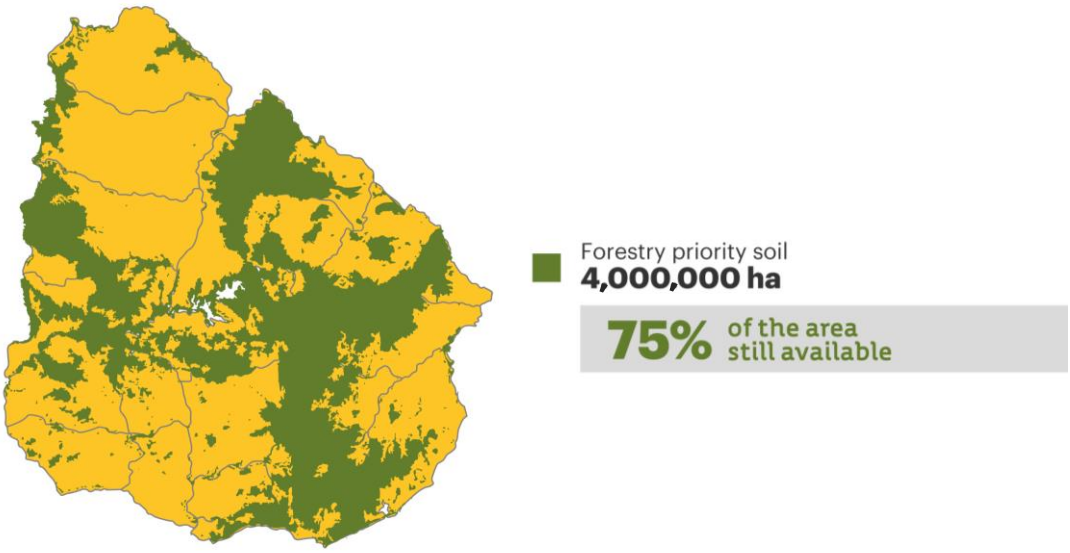
## 5.1. Planted Area

In the 1990s, Uruguay saw an increasing rate of forest plantations, both pine and eucalyptus, driven by the recent Forestry Law that offered investors some tax exemptions. This trend gradually declined towards the 2000s. Between 1990 and 2010 the average planting rate was 28,710 ha/year of eucalyptus and 11,123 ha/year of pine. In the last decade, pulp mills and sawmills drove the demand for forestry, with a strong growth in the area allocated to eucalyptus, and a significant drop in the area of pine.

According to information from the General Forestry Directorate (DGF), the effective area of forest use was 1.03 million hectares in 2019, representing 6% of the country's area.

It should be noted that Uruguay has plans for the responsible use and management of soils, aimed at preventing and controlling soil erosion and degradation[38]. These regulations contribute to Uruguay's objective of having sustainable agricultural and livestock production systems. In this sense, the forestry sector has four million hectares where it is the priority activity. However, approximately 25% is with effective plantations, with ample space for the growth of plantations.

Figure N°6 - Forest Priority Areas




Source: Prepared by Uruguay XXI based on data from the General Forestry Directorate - MGAP

Uruguay also has an additional 835 thousand hectares of native forest, which are protected areas under the law, which prohibits logging, with exceptions, as long as a management plan is submitted to the DGF. These forests have a huge ecosystem value, with increasingly broad possibilities for scientific research that will allow us to learn more and add value to species of the country's flora.

[38] Source: OPYPA Statistical Yearbook 2014.

## 5.2. Future Timber Supply[39]

In order to determine the volumes of eucalyptus and pine timber available in the future, particularly with a view to the year 2050, several aspects must be taken into account regarding the duration of forest cycles in Uruguay, the data currently available and the possible lines of development of the Uruguayan forestry sector.

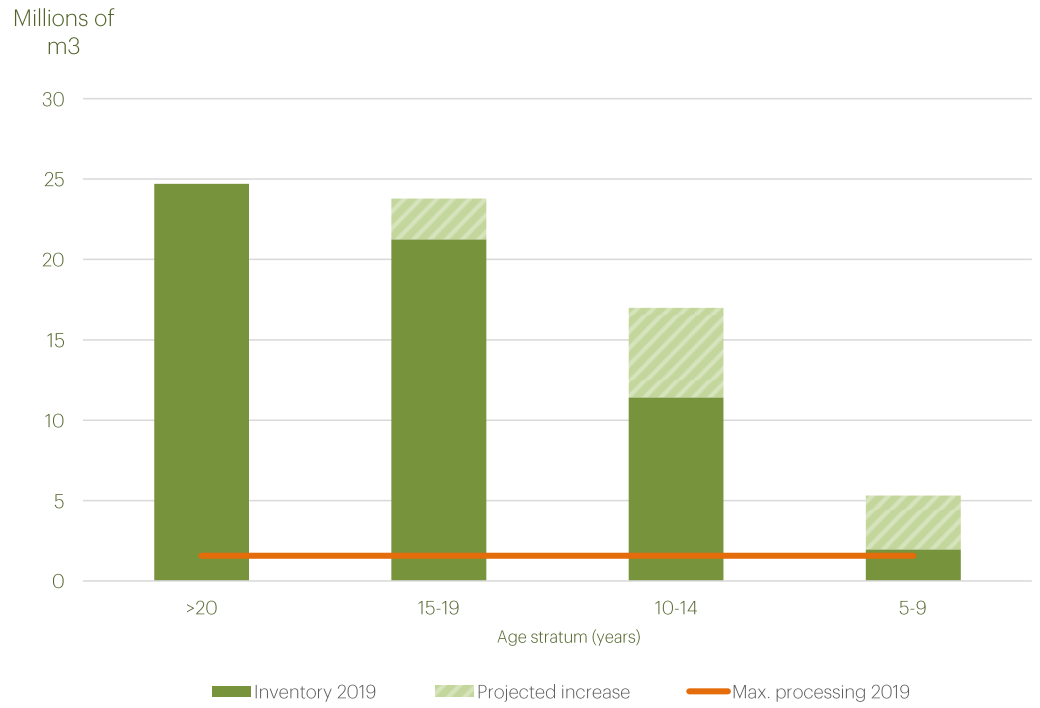
The duration of forest cycles in Uruguay can range, generally, from 10 to 20 years depending on the production objective (pulp or sawmilling). On the other hand, the projection also needs to assume an average annual increase for each species of eucalyptus and pine.

Pine plantation has been gradually decreasing to be of very little importance in recent years. However, what has been planted previously ensures a significant availability over the next 20 years, with very high volume peaks in the near future. An average annual timber availability of over three million cubic meters is well above Uruguay's installed industrial capacity.

The installed capacity of the national pine sawmills allows for the consumption of 3,000 to 4,000 hectares of mature forest (one million $m^3$/year). The area allocated to pine plantations should be between 60,000 and 80,000 total hectares to meet said demand, and today it doubles that number.

This can be clearly seen in the following chart, which shows the volume of pine available for each age range. In 2019, some 25 million $m^3$ were in full shift ready for harvest. Much of this volume was exported raw. On the other hand, the rest of the ranges, although gradually decreasing in terms of planted and projected stock, are much higher than the country's current installed capacity, with a volume that ensures the supply for any industrial enterprise.

**Chart N°8: Pine stock, projected increase and maximum processing - 2019 (m3)**

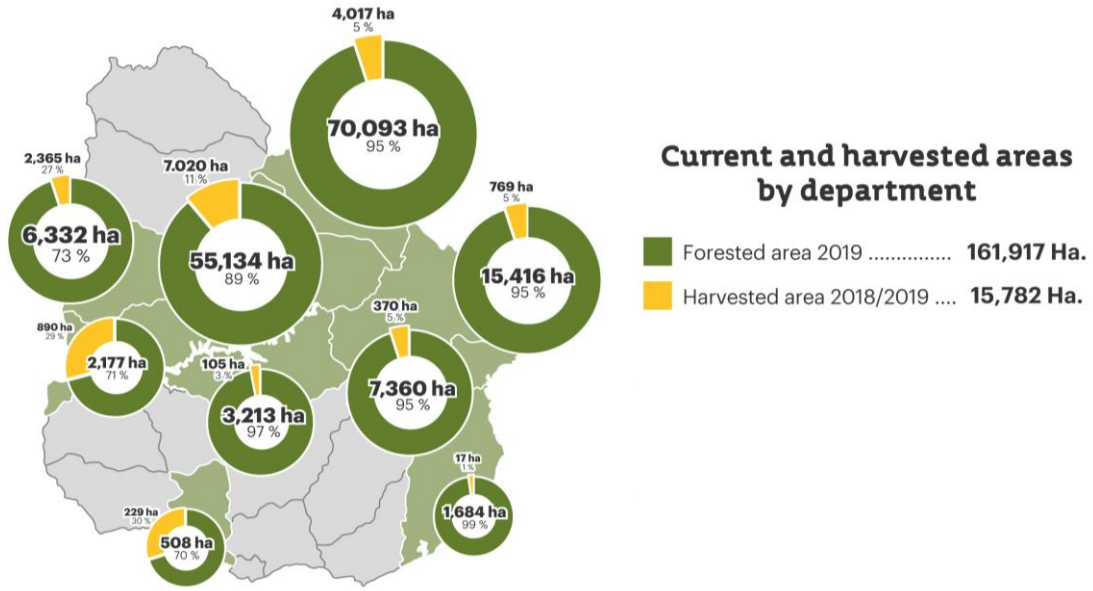



Source: Own elaboration based on National Coniferous Forest Inventory - General Forestry Directorate - MGAP

[39] Source: Uruguay XXI based on consulting by Estudio Faroppa.

It can also be seen in the following figure, which shows the remaining margin between the harvest and the forested area for each department.

Figure N°7: Pine harvested area - January 2018/September 2019




Source: Uruguay XXI based on General Forestry Directorate - MGAP.

As for eucalyptus timber, according to the information gathered, it is estimated that of the 599,954 ha planted, 107,487 ha are managed to obtain sawn timber. Likewise, as a result of the management of a quality timber forest, it produces a third of its volume in sawn timber and/or export timber and two-thirds in pulpwood in its full cycle.

In this case, the average availability until 2030 will be over 20 million cubic meters per year, but as in the case of pine, until the installed capacity is increased, volumes will accumulate to offset the drop in availability over the next two decades.

The challenge will be that with three plants operating at full capacity, 17 million cubic meters would be destined for pulp, and between the 2.8 million of firewood and the million consumed by sawmills, the average volume of demand would be over 21 million cubic meters.

Although the volumes are sufficient to meet the current demand, the chart shows that, with the installation of the third pulp mill, the first years of operation of the three mills together could bring some pressure on other uses of eucalyptus timber.

# 6. Wood Construction[40]

The use of wood as a construction material has been historically relegated in Uruguay, with other construction methods prevailing in recent decades, especially the use of heavy materials. There is a strong cultural barrier that has limited research on this material, and consequently has delayed its development as a basis for construction at the national level.

The growth of the local market is identified as key to the subsequent export of engineered wood products. Both for the potential demand and for enabling a relative adaptation to the demands of other markets, growing internally would enable the generation of economies of scale in an industry that must necessarily be export oriented. The local supply of raw materials, the current development of associated industries and the housing deficit make the present situation an unprecedented one with enormous potential for the country, in terms of investments, exports and local housing.

There are some challenges, such as the harmonization of regulations at the national[41] and departmental levels, the promotion of business and civil use of this material, as well as in public works. It should be noted that several institutions, mainly from academia, with the technical support of other organizations, have been analyzing the potential of this type of construction for years and have also supported the dissemination of the use of this material applied to housing construction.

At the international level, countries with a long tradition in the use of wood for construction have stepped up the pace. Technological innovation in structures has resulted in a succession of structural timber buildings, supported by building codes that have been allowing an increasingly greater number of floors, which does nothing but validate the constructive safety of this material, and overturns an erroneous cultural perception that has limited its development.

Projections show an increase in the use of wood as a building material at a rate of 5% per year globally by 2027, with growth in Latin America, the Middle East, Asia and North America being the most significant.

### Table N°8: Market revenues of engineered wood construction products by region - 2019-2027 (US$ millions)

| Region | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|---|---|---|---|
| North America | 9,898 | 9,018 | 9,333 | 9,934 | 10,444 | 10,938 | 11,410 | 11,855 | 12,269 |
| Europe | 5,981 | 5,403 | 5,545 | 5,850 | 6,097 | 6,328 | 6,541 | 6,733 | 6,902 |
| Asia-Pacific | 52,020 | 47,671 | 49,630 | 53,139 | 56,205 | 59,218 | 62,150 | 64,973 | 67,659 |
| Latin America, Middle East and Africa | 7,241 | 6,695 | 7,033 | 7,596 | 8,105 | 8,615 | 9,120 | 9,617 | 10,100 |
| Total | 75,140 | 68,787 | 71,540 | 76,519 | 80,851 | 85,098 | 89,220 | 93,178 | 96,931 |

Source: AMR Analysis.

The total market for EWP (engineered wood products) was estimated at US$284 billion in 2019 and is expected to reach US$400 billion by 2027. While it consists of several segments, construction is a major one, a trend that was favored by improved building aesthetics and refurbishments of old structures in North America and Europe.

[40] Sources consulted: Matías Marchesoni, Sophia Evans – "La construcción en madera en Uruguay - Una historia en el tintero" || Revista Forestal – "Construcción en madera: retos y oportunidades en Uruguay".
[41] Construction systems are validated through the Technical Aptitude Document (DAT). This document validates the technical aptitude and enables technical and administrative evaluation instruments for these construction systems.

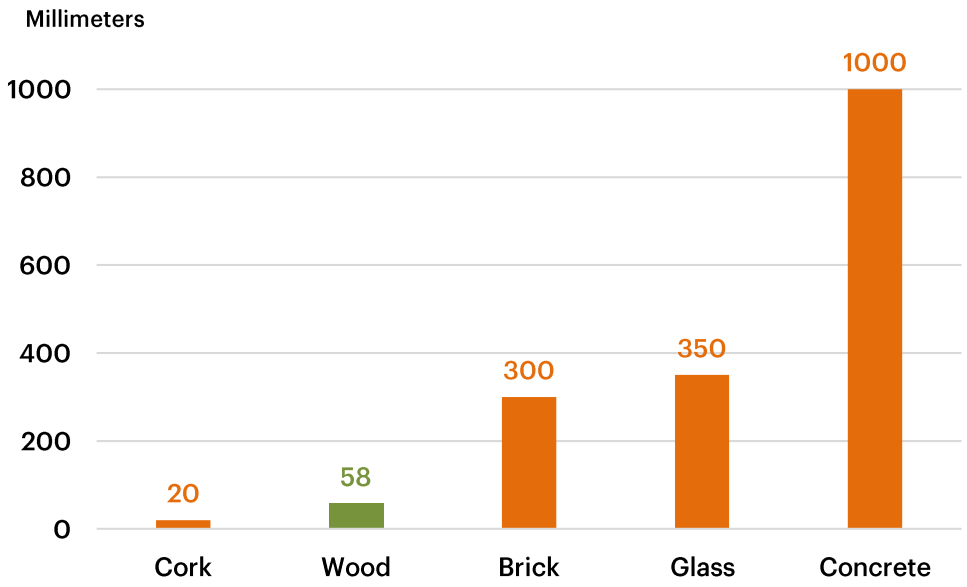
Some of the major companies in the sector are Boise Cascade, Arauco, Huber Engineered Woods, Louisiana-Pacific Corporation, and Weyerhaeuser[42]. There are also other companies such as Stora Enso with initiatives in the market[43] and with exports of CLT in particular[44].

In some countries such as Canada, Norway, Austria, the United States and even China, the trend shows that the use of wood is increasing annually. In the region, Brazil and Chile are the main markets, although they barely meet their local demand for EWP.

There are many benefits driving the "wood revolution". To begin with, it reduces the speed of construction—up to five times faster than "traditional" construction—[45], thereby generating savings on other aspects of the building process, such as man-hours required for construction. The incorporation of technology applied to the construction process has brought time savings and also a more efficient productivity capacity, reducing margins of error with respect to traditional construction, making assembly easier, having clean works (without waste and scrap), among other comparative advantages.

Another performance advantage associated with wood construction systems compared to other systems is thermal insulation. Wood is a material that requires significantly less thickness than other materials to achieve the same insulation, both for cold and warm weather conditions, achieving greater energy efficiency in buildings. Likewise, the history of the use of wood as a construction material is associated with cold climate countries, so thermal insulation is essential. In this sense, Chart N°9 shows the comparison of wood with other materials.

**Chart N°9- Thickness of material required to reach the same thermal insulation value (u-value)**




Source: Jorge Calderón – "Diseño, fabrica y montaje de tableros contralaminados de madera sólida - CRULAMM & JMS" based on Holzbau, Grupo Rubner, Univ. Trento).

[42] Source: AMR Analysis - "Global Engineered Wood Market, 2020-2027".
[43] Source: Stora Enso – Wood Products.
[44] Source: Tardáguila – "El CLT se afirma en el mercado y Stora Enso empieza a exportar a Estados Unidos".
[45] El Observador – "Viviendas en madera: el material "estigmatizado" por el que quiere apostar el gobierno".

Historically, the main voices against the material appealed to the issue of safety compared to other construction methods. Nowadays, fire retardant standards[46] ensure a higher structural resistance than some materials traditionally used in construction.

It is a renewable resource that projects sustainability to construction processes and captures one ton of carbon dioxide in each cubic meter[47]. It also has low energy consumption during the production of the material, as well as throughout its useful life. Compared to other construction inputs that generate significant emissions in the manufacturing process, wood carries out the reverse process, sequestering carbon.

This is in line with the proposals of several ministries, including the objectives of the newly created Ministry of Environment, such as "actively promoting the development of environmentally sustainable production and consumption patterns and practices and incorporating the environmental dimension into current and future socioeconomic activities". In the United States, 47% of greenhouse gas emissions are from construction[48].

It is estimated that Uruguay has a housing deficit of 65,000 homes[49]. Wood appears as a natural alternative —in all respects—to solve this problem. However, there is still a long way to go.

In principle, progress must continue to be made on a structural wood standardization system, which would allow the material to be certified for use in construction, adding value to wood for both domestic consumption and export. Since 2017, the Uruguayan Institute of Technical Standards (UNIT) committee for structural timber has approved five standards and further progress towards standardization is on the agenda.

Likewise, in 2020, the Wood Honorary Commission was created and is already working in this direction and coordinating a plan to promote wood as a construction material in Uruguay[50]. The commission is currently working on a Road Map that will determine the short and medium term objectives.

On the other hand, policies are needed to promote the use of wood as a residential construction material. Although wood is currently used in light constructions—associated with coastal resorts—, it is important to advance in a more massive use and enable its use in, for example, social housing. In this sense, recent progress made by the Ministry of Housing is quite significant. By means of the official approval of regulations from other countries, construction systems that include various uses of wood can be registered in the Record Incorporation Certificate (CIR), which can be authorized in 90 days. These certificates will be of two types and will allow the construction of 100 housing units over two years, or 300 housing units over four years[51].

In Uruguay there are already examples of wood construction that are the clearest evidence of the benefits of this material.

The following are some of the main engineered wood products:

- **Cross Laminated Timber (CLT).** It is a wood construction product that consists of joining together an odd number of panels of dry wood boards, in which each layer of boards is perpendicular to the

[46] Fire resistance is understood as the ability of an element to maintain its structural properties for a given time in the presence of fire.
[47] Source: Michael Green: Why we should build wooden skyscrapers. || Mechanical processing generates products called Harvested Wood Products, which can be included in National Greenhouse Gas Inventories. See National Greenhouse Gas Inventories.
[48] Michael Green: *Why we should build wooden skyscrapers.*
[49] Source: ANV - National Housing Agency.
[50] See: 10.2. Wood Honorary Commission.
[51] Source: El Observador – *"Madera, plástico y hasta barro: el plan "revolucionario" de Vivienda para "abaratar" costos de la construcción"*.

adjacent layer. The boards are glued together laterally at the edges and then glued together with the adjacent layer by applying glue across the width.

- **Laminated Veneer Lumber (LVL).** LVL is manufactured by gluing successive sheets of wood to each other with adhesives of varying strength. The main difference lies in the orientation of the sheets, which in LVL are all parallel to one another, while in plywood they are perpendicular to each other or alternating orientation.

- **Glued-Laminated Timber (Glulam).** An engineered wood product consisting of two or more wood sheets arranged parallel to the grain and glued together on their faces. The lamellae are obtained by gluing shorter pieces of wood together at their ends by means of toothed joints. The advantage of this product is the possibility of obtaining lengths and sections that are not found in sawn timber, as well as manufacturing curved elements.

- **Nail-Laminated Timber (NLT).** This material is manufactured from lumber stacked on edge and fastened with nails. Plywood is also often used to make it into wall panels. It provides a solid and resistant structure and is generally used for floors, terraces, roofs and facades.

- **Dowel-Laminated Timber (DLT).** It is made of several wooden blocks joined by hardwood dowels. It is prefabricated in panels joined by a hydraulic press, which joins the different layers by friction. The planks shrink and the dowels swell. It is used in walls, floors and ceilings.

- **Structural Plywood Panels.** In Uruguay, Lumin produces plywood panels for structural use. They are produced from pine and eucalyptus, and offer a variety of panel grades with different combinations of veneers. These panels are solid, light, resistant and with different finished appearances. They are certified for use in construction in the United States and Europe, and also comply with the environmental standards of several countries.

# 7. The Future of the Forestry Sector

## 7.1. Certification of Forest Products

Forest certification is the independent assessment of an organization's activities against agreed external standards. Forest certification generally acts as an incentive to improve forest management practices. There are international certifying bodies that assess compliance with requirements.

### 7.1.1. Forest Certification

In a global context in which there are still significant deforestation trends in several countries, certification makes it possible to distinguish products from forests harvested within a framework of sustainability and respect for standards. At the same time, certification has been gaining increasing importance as a market tool to differentiate products in the eyes of consumers who are becoming increasingly aware of the sustainability of productive enterprises.

Uruguay's forestry policy for the development of the forestry sector, together with the broad experience of its main companies, has ensured sustainable forest management. In fact, practically all of Uruguay's forestry production and industries have been certified by the two main global certifiers: FSC (Forest Stewardship Council) and PEFC (Program for the Endorsement of Forest Certification).

### 7.1.2. Certification of Wood Products

The Technological Laboratory of Uruguay (LATU) promotes and technologically supports the development of the timber production chain. The organization has a sawmill and laboratory where it conducts studies on the physical, mechanical and chemical characteristics of timber from domestic plantations.

Although it does not currently perform international certifications, it has the capacity to do so as it provides high-level analysis and testing services.

A laboratory was recently incorporated to perform all types of tests on furniture and openings, which has the capacity to certify European standards for this type of products.

For more information: LATU.

## 7.2. Carbon Certificates

Given the international relevance of initiatives to reduce greenhouse gas (GHG) emissions, companies and other entities are increasingly demanding strategies and actions to offset the impact of their activities. In this sense, carbon certificates have gained importance internationally and have become an important component of the forestry business.

In this context, Uruguay has not lagged behind, as there are at least five forestry projects that are issuing carbon certificates. In addition to the participation of forestry projects, companies that provide measurement, comparison and advisory services are being developed[52].

[52] In particular, Carbosur (www.carbosur.com.uy) has been carrying out activities with major companies in the forestry sector.

# 8. Development Prospects for the Forestry Sector[53]

The following are some examples of the potential development of the sector if things were to stay on course:

- **Increased mechanical processing of pine timber**

In the case of pine timber, there is already a significant area of forest stands reaching the end of their felling cycle. It is increasingly evident that the country must add installed capacity in pine wood processing if it wants to obtain the highest profitability from quality timber and not settle for the opportunity cost of exporting.

Beyond the relief that the possibility of exporting roundwood to China has meant for the owners of these forests, final roundwood has not yet been exported. Such wood has a higher value, so being forced to export roundwood from the harvest of the last 150 to 250 quality wood trees would represent a less profitable business.

- **Growth and expansion of wood construction**

In connection with the previous point, the growth of the mechanical transformation sector should have as a natural next stage the growing use of this type of production in the multiple uses it offers. Given the efforts that have been made for years to classify national woods as construction materials, and to regulate wood construction, it is expected that construction with this material will have a greater share in the domestic market in the short or medium term.

The process to achieve involves characterizing domestic wood from a physical and mechanical point of view, determining its suitability as a construction material and creating or adopting a standard for its characterization. With this, the technical standards for its use are then established, which should be taken into account when using wood as a material for the construction of a house or real estate in general.

There is already local knowledge on how to build with wood, in addition to the high availability of information on the design and calculation of structures. Physical and mechanical tests have already been carried out on these woods and other studies on the possibilities of using them in engineered wood products are emerging; therefore, it is very likely that wood construction will gain ground in the coming years.

Furthermore, there is a relative need in the country for housing construction. The promotion of the engineered wood products segment also has great export opportunities.

- **Increased consumption of biomass fuels**

There is currently one pellet plant (in Montevideo) and one briquette plant (in Palo Solo-Paysandú) in Uruguay. Current demand for boilers and heaters is met by imports from Argentina. These biomass fuels represent an energy that is more efficient and easier to handle and transport than firewood, and much cleaner compared to fossil fuels.

When we compare the environmental impact of firewood versus pellets or briquettes, they are equivalent fuels in terms of the environmental impact of their combustion, but the transportation of firewood is 40% greater in volume due to its lower calorific value.

[53] Source: Uruguay XXI based on private consulting by Estudio Faroppa.

- **Other wood-based products**

When analyzing the possibilities for the future development of the Uruguayan forestry sector, it is possible to identify different products made from raw materials similar to those offered by the country, which could be incorporated into the range of products offered by the national forestry sector. The technology used and the production process also seem accessible in many cases, so the most important question is related to the markets to which they could have access.

The great availability of pine timber today and its increase in the short term make it necessary to think of different alternatives for its use. In Mercosur, industrial enterprises offering wood products that until recently were limited to North America and Europe have been gaining ground. At the same time, Uruguay has made a name for itself in the forestry world; thus, introducing a wood product with the "Uruguay" country brand is now much easier than it was two decades ago.

Some of these products would be:

- **Medium Density Fiberboard (MDF)**: A board made from compressed wood fibers and synthetic resins, which gives it a higher density than traditional chipboard or plywood.

- **Structural Laminated Timber:** This product is already manufactured in a Uruguayan sawmill: URUFOR. In fact, there are small sawmills that have the machines to make the finger-joint and the presses to join the pieces longitudinally and then laterally to make tables and boards. There are builders with a very long trajectory in the country that use the laminated beams manufactured in URUFOR for construction under roof or protected from the weather.

- **Oriented Strand Board (OSB):** A board formed by a mattress of wood strands that are dried and aligned, to which adhesives and waxes are applied and then taken to a press that reduces the mattress to a board of a fraction of its initial height. The boards are cut to size and value can be added to them by means of the application of other products depending on their future use in construction, which is their natural area of use.

- **Modified Wood:** The purpose of the modification is to change its properties and make it a more stable material, less susceptible to agents affecting its natural state, and it can even be modified solely for the purpose of changing its appearance. From the point of view of commercial opportunity, these forms of wood modification could add value to remanufactured woods by adding a low-cost technology sawmill (or independent company) to the production process. The products would be ready for use by the end customer and would be easily exportable.

  The modification, in turn, can be thermal[54] or chemical[55].

[54] The modification process involves exposing wood to a high temperature, reaching temperatures between 180ºC and 230ºC in a controlled oxygen atmosphere. Basically, the wood is "cooked", whereby the hemicelluloses in its cells are denatured and condense on the lignin chains, creating chemical bonds between polymer chains. This pseudo-lignin is hydrophobic, which causes wood undergoing this process not to shrink or expand because it does not absorb water, or prone to attack by insects or fungi.

[55] The most common form of chemical modification of wood is acetylation. This process limits the ability of wood to absorb water by reducing its equilibrium moisture content, making it a more durable and dimensionally stable material. The process involves reducing the moisture content of wood by kiln drying, which brings it to an average below 12% on a normal wet basis at which time the wood is considered to be dry. The wood is then taken to a reactor where acetic anhydride is added, submerging the wood and raising the temperature.

On the other hand, the pulp production process generates a by-product called black liquor, which is used for energy generation. This liquid leaves the pulp mill's digester with up to 20% solids, to a recovery system through which chemical products and energy are obtained. Through the evaporation of water, it is concentrated and some components are extracted which, after treatment and condensation, can be sold, such as turpentine, methanol and tall oil.

One possibility would be to "impoverish" the black liquor, extracting components that can then be used to generate new products. There are a variety of products that can be obtained from the different substances that make up black liquor. The possible products are mentioned in each case:

| **Cellulose** | **Lignin** | **Hemicelluloses** | **Extractives** |
|---|---|---|---|
| 1. Fibers;<br>2. Nano-cellulose;<br>3. Biofuels. | 1. Adhesives for the wood industry.<br>2. Dispersants.<br>3. Coatings; carbon fibers. | 1. Xylitol;<br>2. Furfural;<br>3. Biofilms;<br>4. Biogels;<br>5. Prebiotics. | 1. Tannins;<br>2. Adhesives. |

Many of the products mentioned are being thoroughly researched on a pilot scale (in some cases even on a commercial level) in Europe (mainly Scandinavia), the United States and Canada, although they may not be available in the short term in the Uruguayan market.

# 9. Regulatory Framework and Tax Benefits

Uruguay has an adequate regulatory framework that benefits investors. Some regulations are of a general nature for all sectors and others are specific to the forestry sector.

## 9.1. General Investment Promotion Regime (Law 16,906)

Law 16,906 (1998) declares of national interest the promotion and protection of domestic and foreign investments. One of its main features is that foreign investors are granted the same incentives as local investors and there is no tax discrimination or restrictions on the transfer of profits abroad. Decrees 455/007, 002/012, 143/018 and 268/020 updated the rules of this regulation. This regime allows the investor to pay less tax on corporate income and wealth.

That is to say, for all investment projects under this regime and promoted by the Executive Power, it is possible to compute as part of the tax payment (IRAE - Tax on Income from Economic Activities) between 30% and 100% of the amount invested, depending on the type of project and the score obtained based on different indicators present in a matrix. The fixed rate of IRAE at the national level is 25%.

The Wealth Tax on movable fixed assets and civil works is also exempted, and the Value Added Tax (VAT) included in the purchase of materials and services for civil works can be recovered. Also, the law exempts payment of import duties or taxes on movable fixed assets that have been declared non-competitive with the domestic industry.

## 9.2. Forestry Law (15,939)[56]

Plantations and other activities related to forestry are regulated by Law Nº 15,939 of 1987 ("Forestry Law"), regulatory decrees and subsequent amendments. This law declares of national interest the defense, improvement, expansion and creation of forest resources, the development of forestry industries and, in general, of the forestry economy. This regulation establishes that natural and artificial forests in forest priority zones declared as "protective" and forests declared as "yield" that are included in the quality wood projects defined by the Ministry of Livestock, Agriculture and Fisheries (MGAP), will enjoy the following tax benefits:

- The income derived from their exploitation is not computed for IRAE purposes.
- Their respective values or extensions are not computed for the calculation of the taxable amount of Wealth Tax.
- Exemption to the Rural Real Estate Contribution (land property tax).

In order to access the aforementioned tax benefits, the General Forestry Directorate of the Ministry of Livestock, Agriculture and Fisheries must approve the management and planning project for the exploitation and regeneration of forests. Any modification to said management plan must be previously approved by the General Forestry Directorate. It should be noted that short rotation plantations (less than fifteen years) without pruning and thinning management are not tax exempt.

Likewise, Decree 002/012 considers the purchase of seedlings and the cost of planting multiannual fruit trees and shrubs as part of the investment in the promoted activities.

Regulations: Law 15,939, Law 18,245, Title 4 of the Ordered Text, Law 18,083 and Regulatory Decrees.

[56] Law No. 15.939 is available at: https://parlamento.gub.uy

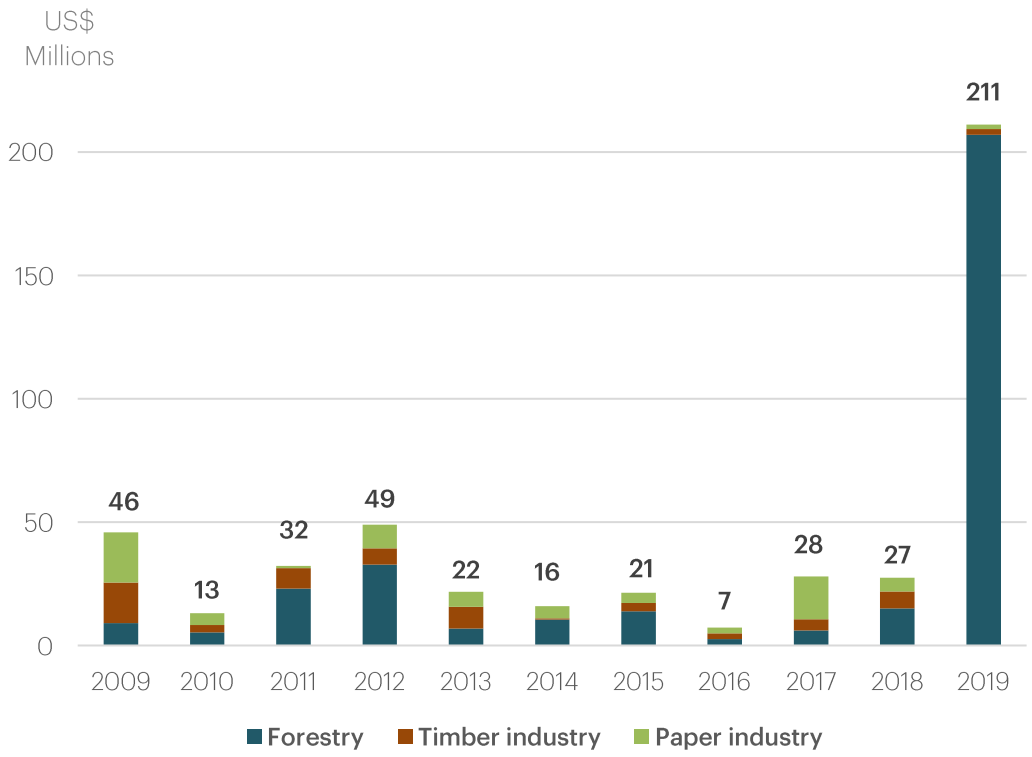
## 9.3. Investments Promoted in the Forestry Sector

Investment projects in the forestry sector submitted to the Commission on the Application of the Investment Law (COMAP) showed an irregular evolution between 2008 and 2015, with peaks associated with large investments by foreign industries operating in the sector a few years ago. These are linked to both timber extraction and the industrial phase (processing of boards, solid wood products, pulp, power generation, etc.).

Following the confirmation of UPM's investment in its second mill in the country, forestry-related projects were boosted and reached US$207 million in 2019.

Between January and June 2020, forestry-related investments maintained their share, with a project for forest tree nurseries, sawmilling, planing and wood machine work being the most important[57].

**Chart Nº10: Projects promoted in the forestry sector - COMAP - US$ Millions**




Source: Yearbook 2020, Agricultural Planning and Policy Office - OPYPA.

## 9.4. General Export Incentives

**Refund of VAT Paid on Input Purchases**

For non-exporting companies, VAT paid on purchases is recovered by deducting it from the VAT invoiced on sales made within the national territory, paying the State only the difference in sales. In the case of exports (of goods and services[58]) the tax is not invoiced, so the VAT included in the purchase of inputs is refunded directly at the company's request. The General Directorate of Taxation (DGI) issues credit certificates that may be used to pay other taxes.

[57] Source: Yearbook 2020, Agricultural Planning and Policy Office - OPYPA.
[58] Decree No. 220/998 lists the operations included in the concept of exports of services.

## 9.5. Free Trade Zone Regime[59]

Free zones are areas determined by the Executive Power where all types of industrial, commercial and service activities may be developed, without any limitation whatsoever and with total exemption of all domestic taxes created or to be created. Likewise, the introduction of goods to the premises is exempted from all taxes. The exemption does not include the social security contributions of Uruguayan staff. The State, by legal mandate, became the guarantor of the rights granted by law to users, responding with damages for the observance of said rights.

The current regime is governed by Law Nº 19,566 since December 2017. Previously it was governed by Law Nº 15,921 with the amendments introduced by Article 65 of Law Nº 17,292, Article 23 of Law Nº 17,781 and indirectly by Law Nº 18,083.

There are three types of subjects that companies may adopt in relation to free zones: operators, direct users and clients.

### Free Zone Operators

An operator is the individual or legal entity that provides the necessary and sufficient infrastructure for the establishment and operation of a free zone. Free zones may be operated by the State or by duly authorized private individuals. Private free zones are administered by individuals and authorized by the Ministry of Economy and Finance, which supervises and controls them through the Free Trade Zone Area of the General Directorate of Commerce[60]. For the installation of a free zone in Uruguay, a governmental resolution is required, detailing information such as: period of authorization of exploitation, surface occupied by the free zone, minimum investment to be made by the operator(s) and the fee to be paid by them, among others.

They can take advantage of the benefits of the Investment Law.

### Free Zone Users

The direct user is the one who contracts with the operator in exchange for a price freely agreed with the latter, and is granted the right to operate in a free zone.

The indirect user is the one who contracts, no longer with the operator, but with the direct user in exchange for a price agreed by the latter, obtaining as consideration the right to operate in the free zone, using its facilities, for instance, making use of its warehouses.

The free zones are conceived so that the companies that want to take advantage of the benefits of being users can develop any type of export-oriented activity, such as:

1. Commercialization, storage, conditioning, classification, fractioning, mixing, assembling, disassembling and other operations not implying the industrialization of goods and raw materials.
2. Installation and operation of manufacturing facilities.
3. Rendering of all kinds of services, including professional, financial, computer, repair and maintenance services.

The following are limitations to this broad range of activities:

- No primary activities (agricultural, extractive, etc.), retail sales or free entry to the non-free territory of goods deposited or industrialized in the free zone shall be permitted.

[59] For more information on the free trade zone regime, see: Free Trade Zones in Uruguay - Uruguay XXI.
[60] Website: http://www.zfrancas.gub.uy/

- Sales from the rest of the country to the free zones are considered exports from Uruguay and sales from the free zones to the rest of the Uruguayan territory are considered imports, subject to the corresponding customs duties and domestic taxes.

- Sales from free zones to Mercosur are subject to the bloc's Common External Tariff (CET), which applies to goods from third countries. This is because goods from free trade zones do not have preferential access, according to Decision Nº. 8/994 of the Common Market Council. Uruguay has agreements with Argentina and Brazil for certain products from the free trade zones of Colonia and Nueva Palmira (including goods produced by PepsiCo, wheat, barley, barley malt, and soybeans)[61]. Sales from the free trade zones are also included in trade agreements with Chile, Israel, Mexico, India, Ecuador, Venezuela and Colombia.

- Free zone users may also provide services within the rest of the national territory[62] to companies that are IRAE taxpayers and also other types of services such as call center, mailboxes, among others[63].

- It is possible to buy and sell goods that enter the free zone with origin and destination in the national territory.

- The main activity of the free zone user must be developed in the free zone. Notwithstanding the foregoing, the law authorizes the collection of delinquent accounts receivable through third parties and exhibition of goods in non-free zone territory, in this case, only for companies with possible location disadvantages.

- With the authorization of the Executive Power, the development of complementary activities to the non-free trade territory is permitted. Likewise, it is contemplated that the users of free zones outside the metropolitan area may develop activities outside the same, in administrative offices provided by free zone developers, as long as these are complementary in nature[64] to the main activity.

The activities of free zone users are exempt from all national taxes, created or to be created; in particular, they have the following benefits:

- Exemption from Tax on Income from Economic Activities (IRAE), Wealth Tax (IP), and any other domestic tax.

- Tax exemption for dividends paid to shareholders with residence abroad.

- Option for foreign staff (up to 25% of the total employed[65]) not to pay social security contributions in Uruguay.

[61] The agreement with Argentina only covers the Colonia free trade zone.
[62] Monopolies, state exclusivities or public concessions must be respected. Services rendered to the rest of the national territory will receive the same tax treatment as services rendered from abroad.
[63] Excluding those whose only or main destination is the rest of the national territory.
[64] Complementary activities: public relations, handling of ancillary documents, invoicing and collection of goods and services. In no case shall sales operations of goods and services be permitted.

[65] In justified cases, the percentage may be increased with prior government authorization.

- Sales and purchases abroad of goods and services are not subject to VAT, nor are sales and services rendered within the free zone.

- The goods exchanged between the free zones and the rest of the world are exempt from customs duties.

The requirements to be a free zone user are as follows:

Regarding contract terms, for industrial companies the maximum term for direct user contract authorizations is set at 15 years, while for service or commercial companies it is set at 10 years. For indirect users, the maximum term is five years for any type of activity. Automatic extensions are not authorized.

### Free Zone Clients

In the free zone operations, there is also the client or depository, which is the one that contracts, both with the direct user and indirect user, the right to deposit certain merchandise in its warehouses.

Regulations: Law Nº 15,921, Law Nº 16,906, Law Nº 17,547, Decree Nº 524/005.

In the case of the forestry sector, two free zones were created for the benefit of the two pulp mills installed in the country, UPM and Montes del Plata, and it is also planned for UPM 2.

## 9.6. Other Relevant Regulations to the Forestry Sector

-Decree 372/99: Regulation on working conditions in the forestry sector.

-Environmental Impact Assessment Law (16,466) and decrees (435/94 and 349/05).

-Decree 848/988: Fire prevention.

# 10. Institutional Framework and Sector Agents

## 10.1. General Forestry Directorate (DGF) - Ministry of Livestock, Agriculture and Fisheries (MGAP)

The DGF is the main reference agency for forestry policy, in accordance with the provisions of Law Nº 15,939. Among other tasks, it is in charge of approving plans for the use and exploitation of forest resources.

It should be noted that the DGF of the MGAP is undergoing a modernization and updating process, with the aim of consolidating its role as an important support in the forestry sector's development process.

Website: https://www.gub.uy/ministerio-ganaderia-agricultura-pesca/direccion-general-forestal

## 10.2. Wood Honorary Commission

Taking into account the impulse to be given to wood construction, the National Budget Law 2020-2024 included the creation of this commission, under the DGF. Its objective is to "elaborate, coordinate and monitor a plan for the promotion and development" of the use of domestic wood for construction purposes, both for housing and furniture, among other uses. This commission is made up of representatives of the MGAP, the Ministry of Housing and Land Management (MVOT), the Ministry of Environment, the Ministry of Industry, Energy and Mining (MIEM), the Congress of Mayors, LATU, the University of the Republic and private universities[66].

## 10.3. Other Institutions

- Society of Forest Producers (SPF): www.spf.com.uy
- Association of Wood and Related Industries (ADIMAU): www.adimau.com.uy
- Chamber of Wood Processing Industries
- National Agricultural Research Institute (INIA) - www.inia.uy
- Technological Laboratory of Uruguay (LATU) - www.latu.org.uy
- Chamber of Industries of Uruguay (CIU) – www.ciu.com.uy
- National Energy Directorate (DNE – MIEM) – www.dne.gub.uy
- Forestry Producers of the East (PROFODES)
- National System of Protected Areas - MVOTMA (SNAP) - http://www.mvotma.gub.uy/snap
- National Agency for Research and Innovation (ANII) - www.anii.org.uy
- National Development Agency (ANDE) - www.ande.org.uy

[66] Source: Revista Forestal – *"A estudiar la madera".*

# Annex 1 - The Uruguayan Forest

Uruguay is located at the same latitude and climatic zone as southern Australia, New Zealand, South Africa and central areas of Argentina and Chile, where the main forestry enterprises in the southern hemisphere are located. These climate and soil conditions ensure very good levels of international competitiveness for those involved in forestry. The wood produced in Uruguay's plantations is of high quality, not only for pulp, but also for the manufacture of solid wood products.

## A 1.1. - Forest Priority Areas

The forestry activity in the country has grown steadily over the last 25 years, during which time the planted area has increased 30-fold. The planted area is around 1,000,000 hectares (affected area[67]). On the other hand, the area of soils declared a forest priority reaches four million hectares[68], 24% of the country's total agricultural area.

The type of soil, the climate and the distance to production outlets have an impact on the characteristics of forest plantations. This divides the country into **three regions** according to the criteria of the General Forestry Directorate:

**Table Nº9 - Forested area and forest priority area by region (Thousands of hectares)**

| Zone | Departments | Native forest | Forested area | Area declared forest priority |
|---|---|---|---|---|
| Central-North | Artigas, Rivera, Tacuarembó, Durazno, Cerro Largo and Treinta y Tres | **354** | **465** | **2,200** |
| Coastline-West | Salto, Paysandú, Río Negro and Soriano | **208** | **297** | **639** |
| South-East | Colonia, Flores, San José, Florida, Canelones, Montevideo, Lavalleja, Maldonado and Rocha | **273** | **273** | **1,351** |
| Total | | **835** | **1,035** | **4,190** |

Source: General Forestry Directorate – MGAP[69]

The **South-East** region is the closest to the port of Montevideo. It is characterized by a strong maritime influence that prevents the existence of extreme temperatures, allowing a better adaptation of species such as *Eucalyptus globulus* and lately *E. dunnii* has been incorporated due to its productivity and adaptation to all soils. The main purpose of plantations in this area is the production of pulp to supply the UPM plant in Fray Bentos and the Montes del Plata plant in Punta Pereira, Colonia, as well as the export of wood chips.

[67] Note: Includes roads and firewalls.
[68] Decree Nº 191/006, available at: http://www.impo.com.uy/bases/decretos/191-2006/1
[69] Native Forest: Source: Based on the 2016 native forest mapping carried out by the REDD+ Uruguay Project (MGAP-MVOTMA), the General Forestry Directorate estimated the area corresponding to each department.
Forested area: Elaborated based on digital processing and interpretation of Sentinel 2 images (2017 and 2018). Information from the Evaluation and Information Division of the General Forestry Directorate - MGAP. Based on forest nursery surveys conducted annually, it is estimated that 33,662 hectares of new plantations may be added in the 2018-2019 period, bringing the area under forest cultivation to 1,068,374. The figures will be updated in 2021.
Forest priority soils: Estimate of the total area disaggregated by departments of forest priority soils established by the regulations in force, Decree Nº 220/10.

The plantations for pulp production have a short production cycle (10 to 12 years). In this region, the departments with the largest forest area are Lavalleja (83,000 ha), Rocha (52,000 ha) and Florida (50,000 ha).

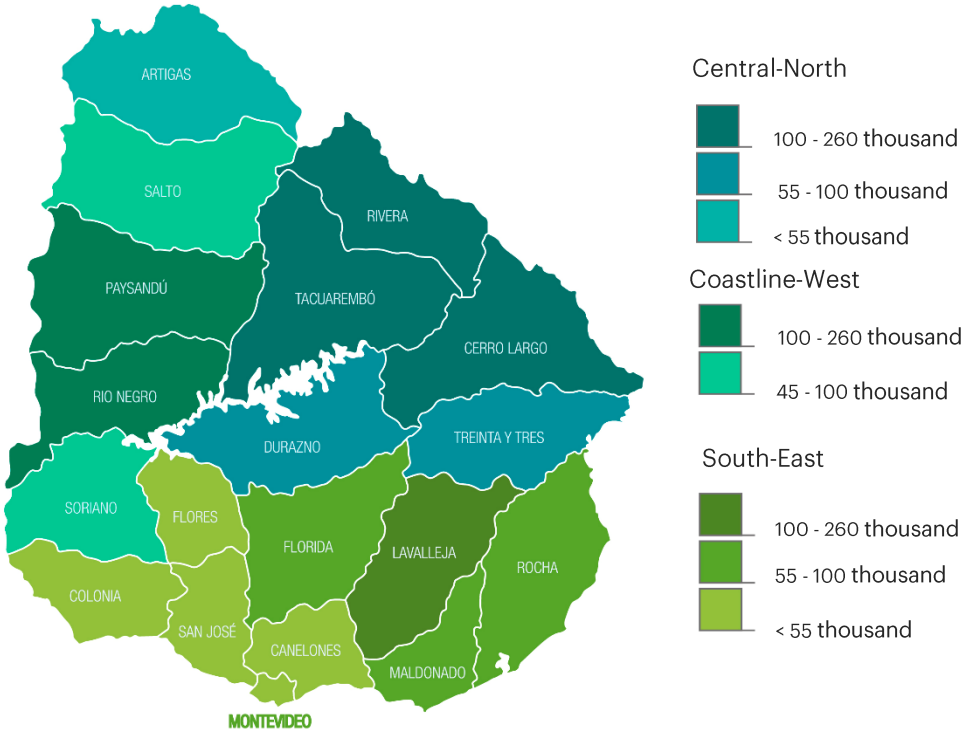
The **Central-North** region is the largest forested area, concentrating 43% of the planted forests in Uruguay. It is characterized by stronger winter frosts and higher temperatures during the summer, and by the predominance of sandy soils, favoring the development of *Eucalyptus grandis* and *Pinus*. The main outlets for timber production in this region are Paysandú, Fray Bentos or Montevideo, depending on the location and type of product. The departments with the largest forested areas in this region are Tacuarembó (123,000 ha), Rivera (137,000 ha) and Cerro Largo (87,000 ha).

The **Coastline-West** region is also characterized by the presence of frost and sandy loam to sandy soils. Different species of *Eucalyptus* and, to a lesser extent, *Pinus* prevail in this region. Both genera have a slightly lower yield in this zone compared to the northern zone.

The ports and bridges used to transport forest products are Fray Bentos, Nueva Palmira and Paysandú. In this region, Río Negro (162,000 ha) and Paysandú (125,000 ha) are the departments with the largest forested area.

Finally, Figure Nº8 shows the country's forested area by region. Excluding native forest, 79% of the total forested area corresponds to the genus *Eucalyptus* (with a majority presence of three of its subspecies), while the genus *Pinus* accounts for 21% of the area.

Figure Nº8: Forest hectares by region




Source: Prepared by Uruguay XXI based on data from the General Forestry Directorate - MGAP.

In this link you can find the forestry Geoportal, developed by the General Forestry Directorate, which geographically locates forest plantations, native forests and industrial facilities related to the sector.

## A 1.2. - Types of Forest

The Forestry Law (Law 15,939) establishes different types of forests:

**Protective forests:** They are mainly aimed at protecting soil, water and other renewable natural resources. The destruction of these forests is prohibited, but not their exploitation. This means that pruning, thinning and replacement of old trees with new ones is allowed, without threatening forest permanence.

**Yield forests:** Those whose main purpose is the economic exploitation of specimens. They can be composed of any species suitable for the production of woody or non-woody material[70].

**Indigenous forests[71]:** Natural forests with native species. Any cutting or other operation that threatens their survival is prohibited.

**General forests:** Those that are not included in the previous categories.

[70] Decree 191/06.

[71] Although they are included within the protection forests, Law Nº 15,939 and Decrees 22/93, 24/93 and 330/93 establish specific regulations on the protection of indigenous forests.

# Uruguay at a glance (2020)

| | |
|---|---|
| **Official Name** | República Oriental del Uruguay |
| **Geographical location** | South America, bordering Argentina and Brazil |
| **Capital** | Montevideo |
| **Area** | 176,215 km$^2$. 95% of the territory is productive land suitable for agriculture and livestock farming. |
| **Population (2019)** | 3.52 million |
| **Population growth (2019)** | 0.3% (annual) |
| **GDP per capita (2019)** | US$15,914 |
| **Currency** | Uruguayan peso ($) |
| **Literacy rate** | 0.98 |
| **Life expectancy at birth** | 77 years |
| **Form of government** | Democratic republic with presidential system |
| **Political division** | 19 departments |
| **Time zone** | GMT - 03:00 |
| **Official language** | Spanish |

## Main economic indicators 2015-2020*

| Indicators | 2015 | 2016 | 2017 | 2018 | 2019 | 2020e |
|---|---|---|---|---|---|---|
| **GDP (Annual % Variation)** | 0.4% | 1.7% | 2.6% | 1.6% | 0.2% | -2.7% |
| **GDP (US$ Millions)** | 53,182 | 52,734 | 59,520 | 59,519 | 55,995 | 49,187 |
| **Population (Millions of people)** | 3.47 | 3.48 | 3.49 | 3.51 | 3.52 | 3.53 |
| **GDP per Capita (US$)** | 15,339 | 15,152 | 17,039 | 16,976 | 15,914 | 13,930 |
| **Unemployment Rate - Annual Average (% EAP)** | 7.5% | 7.8% | 7.9% | 8.3% | 8.9% | 9.2% |
| **Exchange Rate (Pesos per US$, Annual Average)** | 27.4 | 30.1 | 28.7 | 30.8 | 35.3 | 42.7 |
| **Exchange Rate (Annual Average Variation)** | 17.6% | 10.1% | -4.8% | 7.3% | 14.7% | 21.1% |
| **Consumer Prices (Annual Cumulative % Variation)** | 9.4% | 8.1% | 6.6% | 8.0% | 8.8% | 9.3% |
| **Exports of goods and services (US$ Millions)**** | 15,632 | 14,532 | 16,079 | 16,397 | 16,008 | 13,418 |
| **Imports of goods and services (US$ Millions)**** | 13,912 | 11,799 | 12,429 | 13,138 | 12,707 | 9,989 |
| **Trade Surplus / Deficit (US$ Millions)** | 1,720 | 2,733 | 3,651 | 3,259 | 3,301 | 3,429 |
| **Trade Surplus / Deficit (% of GDP)** | 3.2% | 5.2% | 6.1% | 5.5% | 5.9% | 7.0% |
| **Overall Fiscal Balance (% of GDP)** | -3.6% | -3.8% | -3.5% | -4.2% | -4.8% | - |
| **Gross Capital Formation (% of GDP)** | 19.7% | 17.8% | 15.2% | 16.5% | 16.2% | - |
| **Gross Public Sector Debt (% of GDP)** | 59.3% | 63.5% | 65.3% | 64.5% | 66.4% | - |
| **Foreign Direct Investment (US$ Millions) *** ** | 905 | -1,177 | -837 | -487 | 189 | - |
| **Foreign Direct Investment (% of GDP)** | 1.7% | -2.2% | -1.4% | 0.8% | -0.3% | - |

[72] Sources: GDP data were taken from the International Monetary Fund (IMF); data on foreign trade, foreign direct investment (FDI), exchange rate, international reserves, and external debt are from the Central Bank of Uruguay (BCU); population growth, literacy, unemployment and inflation rates are from the National Institute of Statistics (INE). Estimated data for 2018 based on BCU and Deloitte surveys.

** In 2017, the BCU adopted the methodology of the 6th balance of payments manual. Data based on this new methodology include merchandise sales and re-exports, and are available since 2012.

*** In 2017, the BCU adopted the methodology of the 6th balance of payments manual. Data are net flows, so they may take negative values.