Investment opportunities

FORESTRY SECTOR

August 2019

Uruguay XXI
INVESTMENT, EXPORT AND COUNTRY BRAND PROMOTION AGENCY
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1 Why invest in Uruguay's forestry sector?

- The Uruguayan economy has gone through 16 years of uninterrupted growth, being also the most equitable country with the highest per capita income in Latin America.

- Uruguay has a consolidated democratic system, by which the three main parties in the Government have alternated, maintaining the commitment of respect for the business climate and the investor and strong corporate responsibility.

- The exchange market in Uruguay is free, and there is total freedom to buy and sell foreign currency. No prior authorization is required for the entry or exit of foreign currency, nor are there restrictions for the entry and exit of capital, transfer of profits, dividends, interests, etc.

- In this way, businesses can be managed entirely in dollars, so there is no loss of profitability for investors associated with exchange risk.

- Several foreign companies chose Uruguay to set up and develop their activities. In 2007, UPM - a Finnish capital company -, Montes del Plata - with Chilean and Swedish-Finnish capital - installed in Uruguay since 2009, and Lumin - with Brazilian capital - among others, were installed. Likewise, important TIMOs\(^1\), such as GFP, BTG, The Rohatyn Group, Liberty Mutual and Stafford operate in Uruguay.

- Geographical location: 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 that of 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.

- Our country has a stable legal framework conducive to investment in the forestry sector and a national code of good forestry practices to achieve sustainable production, meeting the requirements of international demand.\(^2\).

- Exports of the forest complex (wood, cellulose and paper) represented 24% of the country's total exports of goods in 2018. Within this sector, pulp accounted for 77% of the total, while wood and paper accounted for 22% and 2%, respectively.

- Uruguay points to a greater integration of forestry activities with extensive livestock -two of the country's main activities-, which makes it possible to increase production while contemplating greater efficiency in the use of natural resources.

- In Uruguay there are important opportunities for the installation of industries that achieve a greater added value to wood. The great offer of pine wood, coming 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 3 million cubic meters per year, far surpassing the industrial capacity of the country.

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\(^1\) Timber Investment Management Organization – Forest sector investment funds.

\(^2\) In 2004, the National Code of Good Forest Practices was approved, prepared by a working group made up of the General Forestry Directorate, the General Inspection of Labour and Social Security, the National Directorate of the Environment, the National Institute of Agricultural Research, the Forestry Department of the Faculty of Agronomy, the Association of Agricultural Engineers of Uruguay, the Association of Uruguayan Forest Contractors and the Society of Forest Producers. Available at [link](#).
Uruguay is working on the promotion and development of wood construction, which generates space for new companies that aim to produce inputs for this activity. In this sense, current efforts are focused on the characterization of wood for use in construction.

The Forest-Wood Sector Council (CSFM), made up of businessmen, workers and technicians from the public and private sectors, is the institutional forum for articulating the sector’s activity.

The sector has a Roadmap within the framework of Transforma Uruguay. Its objective is to structure and implement an articulated set of concrete projects for the competitive and innovative development of the sector.

UPM confirmed this year the construction of its second pulp mill in Uruguay. With a total investment of US$ 3 billion, the plant, which is scheduled to start operations in the second half of 2022, will have a production capacity of 2.1 million tons, similar to the sum of the two plants already installed. Consequently, it would consolidate pulp as the country’s main export product, and Uruguay as the world’s second largest exporter of short-fiber pulp.

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3 Under stable market conditions.
2. Economic importance of the forestry sector in Uruguay

2.1 Characterization of the sector

The forestry sector in Uruguay is made up of different activities that range from obtaining seeds and plants to the final transport of processed products.

- The cellulose-paper chain (including untreated round wood, chips, pulp, paper and cardboard, etc.), which is the heaviest in the sector and in which world-renowned companies participate.
- Mechanical transformation: processed wood products (treated round wood, sawn wood, boards, carpentry, packing wood, furniture, mouldings, etc.). This chain is identified by the coexistence of foreign and national companies.
- Energy (firewood, pellets, electricity produced from biomass, among others.).

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

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

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

Logistics, transport and associated professional services: The Uruguayan forest products industry is made up of large, vertically integrated companies, covering agricultural activity, industrial activity and intermediate processes up to the final marketing of the products. In particular, some of the major exporters supply themselves with much of the raw material used. In the case of sawmills, the largest and most productive use mainly domestic raw materials and their production is destined for external markets. Smaller companies sell their production mainly to the domestic market and are not vertically integrated.

Figure 1: Activities related to the forest sector

2.2. Main Industrial Chains

Complementing the information of the second stage, there are two main industrial chains in Uruguay: cellulose and sawmills. At the same time, other activities have been developed such as exports of chips and wood in rolls, which can also be used for pulp or sawmill.

*Figure N° 2 - Main Uruguayan forest models*

These forest models emerged as alternatives to supply the forest chains that appeared and changed since the 1987 Forest Law (N°15.939). The export of wood was the basis and the first way in which the local forest sector entered the international market for the commercialization of forest products.

The relative weight of the export of eucalyptus roundwood, which was originally for cellulose (E. globulus: Model 1) was reduced as local cellulose projects appeared. Uruguay has the capacity to export almost 2 million tons of chips per year. In recent years, the usual markets for this commodity have had difficulties, which has caused demand to remain below one million tons. This has caused the "chippers" to refocus to provide part of their production to local pulp mills.

Lumber (E. grandis: Modelo 4) has become a brand that gains access to South East Asian markets as a raw material for the local furniture industries that produce focused on exporting to Europe. Its annual volume is however very variable, dependent on the prices at which it is marketed in Asia.

The forest chain, regardless of its local industrial transformation destination, has a relatively simple scheme involving the following phases:

- Nurseries: seedling production and genetic improvement
- Forestry: tillage, plantations, forest management (pruning, thinning, etc.).
- Harvest: cutting and storing wood in the field
- Loading and transportation of wood: to industries by land or river.
- Industrial Transformation
  - Cellulose plants
  - Sawmills and plywood
- Energy production
  - Generation by burning black liquor (cellulose plants)

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4 Source: Uruguay XXI based on consultancy provided by Estudio Faroppa.
- Generation based on burning solid biomass (chips and sawdust).

- Export: from Montevideo, Nueva Palmira or Punta Pereira

As for the costs of the process, (equal for both uses of wood until each particular industrial transformation) the most important thing is to emphasize that 55% of the total cost for a cycle of 20 years is generated in the "year 0", with the acquisition of the land and plantation. It is worth noting that the result of the year shows an Internal Rate of Return (IRR) post tax of 6.0%.

### 2.2.1 Sawmills

The mechanical processing industry consists almost exclusively of sawmills. The vast majority saw a single species or group of species: pines or eucalyptus. According to the latest survey carried out by the General Forestry Directorate, there are about 62 sawmills. The main volume of lumber consumption is located in three zones:

1. Tacuarembó-Rivera (574.065m³)
2. Paysandú (135.567m³)
3. Zona metropolitana (66.420m³)

Sawmills with the highest capacity are located in the first zone, which in turn is the most dynamic for forestry activity.

Among the most important sawmills in the area are the following 5:

- **Urufor** (325,000m³/year): Located in Rivera, Urufor and Cofusa are the industrial and forestry units, respectively, of the same economic group dedicated to forest production, industrialization and commercialization of quality Eucalyptus grandis wood for the international market, so it can be denominated as a vertically integrated unit. Its products range from pallet boards, classified dry boards, re-manufactured products and engineered wood for construction. Most of its production is exported and no more than a tenth goes to the local market.

- **Frutifor** (300,000m³/year): This sawmill, located in Tacuarembó, uses pine wood and has an important technological development with a high automation of its productive process. The totality of its production is exported, mainly to China, and consists of dry slabs of different categories.

- **Fymnsa** (200,000m³/year): is located in the department of Rivera and was one of the precursors of forestry in the area. The company has a total exploited area of 19,233ha of which 11,040ha are effectively occupied by forests. It produces pallet wood, re-manufactured wood, engineered wood, and has drying capacity.

- **Tingelsur** (100,000m³/year) This sawmill, located in Rivera, cuts pine wood (elliotti taeda). Its production process reaches 3,000 m³/month, which implies a potential consumption of 8,000 to 9,000 tons of roundwood per month. All its production of dry slabs of different dimensions is exported.

- **JCE** (95,000m³/year): the sawmill is located in Tranqueras (Rivera) and has been operating since 2012 cutting loblolly pine, producing dry slabs for the international pallet slabs market, mainly.

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5 This includes installed capacity, which may not correspond to actual wood consumption.
- **Forestal Caja Bancaria** (80,000m3/year) This pension fund is in the Department of Paysandú and plants pines and eucalyptus, today has 8,000 effective hectares of forests that feed the sawmill established in Piedras Coloradas (Paysandú). It exports most of its production.

- **IMNSur** (40,000m3/year): This sawmill cuts wood from both pine (mostly) and eucalyptus. Its production is exported mainly to Central America and the Middle East and consists of wood for pallets and pallets.

- **Lumin** The project initiated by Weyerhaeuser in 2006, which started to produce boards in 2008, is fed from its own plantations. In 2017 the acquisition by BTG Pactual was completed. The plant consumes 600,000 cubic meters of wood, about 55% of which is pine, and the rest eucalyptus. The plywood boards offered by Lumin have different categories and in turn can have different “faces” or external sheets, either pine or eucalyptus.

Like other industries in the sector, sawmills have also been challenged by the demand for eucalyptus wood from cellulose plants. Many have undergone changes to modernize their processes and those that persist are mainly those that have their own forests. Large sawmills that process pine have had fewer challenges because the supply of pine wood is several times greater than demand and, in addition to this, many of them are also forest owners.

### Table N°1: Consumption of round wood in cubic meters (m3)

<table>
<thead>
<tr>
<th>Department</th>
<th>Pinus consumption</th>
<th>Eucalyptus consumption</th>
<th>Blend consumption</th>
<th>Other</th>
<th>Total Consumption</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerro Largo</td>
<td>0</td>
<td>2.800</td>
<td>1.200</td>
<td>0</td>
<td>4.000</td>
<td>0.3%</td>
</tr>
<tr>
<td>Canelones</td>
<td>8.680</td>
<td>40.640</td>
<td>3.600</td>
<td>0</td>
<td>52.920</td>
<td>3.8%</td>
</tr>
<tr>
<td>Colonia</td>
<td>900</td>
<td>880</td>
<td>0</td>
<td>0</td>
<td>1.780</td>
<td>0.1%</td>
</tr>
<tr>
<td>Durazno</td>
<td>2.016</td>
<td>3.024</td>
<td>0</td>
<td>0</td>
<td>5.040</td>
<td>0.4%</td>
</tr>
<tr>
<td>Lavalleja</td>
<td>0</td>
<td>360</td>
<td>360</td>
<td>0</td>
<td>720</td>
<td>0.1%</td>
</tr>
<tr>
<td>Montevideo</td>
<td>0</td>
<td>13.520</td>
<td>0</td>
<td>0</td>
<td>13.520</td>
<td>1.0%</td>
</tr>
<tr>
<td>Paysandú</td>
<td>95.723</td>
<td>30.844</td>
<td>0</td>
<td>9.000</td>
<td>135.567</td>
<td>9.7%</td>
</tr>
<tr>
<td>Rivera</td>
<td>255.089</td>
<td>265.596</td>
<td>2.880</td>
<td>0</td>
<td>523.565</td>
<td>37.3%</td>
</tr>
<tr>
<td>San José</td>
<td>720</td>
<td>5.760</td>
<td>0</td>
<td>0</td>
<td>6.480</td>
<td>0.5%</td>
</tr>
<tr>
<td>Soriano</td>
<td>0</td>
<td>1.440</td>
<td>0</td>
<td>0</td>
<td>1.440</td>
<td>0.1%</td>
</tr>
<tr>
<td>Tacuarembó</td>
<td>387.124</td>
<td>263.376</td>
<td>0</td>
<td>0</td>
<td>650.500</td>
<td>46.3%</td>
</tr>
<tr>
<td>Treinta y Tres</td>
<td>0</td>
<td>8.550</td>
<td>0</td>
<td>0</td>
<td>8.550</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1.404.082</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1.404.082</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Uruguay XXI based on Sawmills Survey of the General Forestry Directorate – 2017

In Uruguay there are sawmills that are locally classified as large, but in the international context would be medium.

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

Then there are four others with installed processing capacities of 40,000 to 100,000 cubic meters of round wood per year. Of these, two cut exclusively pine wood (Tingelsur and JCE), and the other two (Caja Bancaria and INMSUR) combine pine and eucalyptus in different proportions.
2.2.2 Cellulose pulp

As a direct impact of the growth of the forestry sector, a thriving pulp industry emerged. In 2007 Botnia started to produce and export. In 2009 UPM acquired Botnia’s shares, and expanded its production capacity from 1.1 million tons of pulp to 1.2 million tons in 2013 and 1.3 million tons in 2014. On the other hand, Montes del Plata started production in 2014, reaching its project production level of 1.3 million cubic meters in 2015.

With both working at maximum 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$ 1.65 billion of exports, which in turn represents 77% of the value of forest sector exports.

UPM confirmed the installation of its second pulp mill in Uruguay, which will involve a total investment of US$ 3 billion. The plant would consume 7.5 million tons of wood per year, producing 2.1 million tons of pulp. Together the pulp plants would consume a total of 17 million tons per year and produce 4.7 million tons of pulp.

More information can be found in the Export Outlook section.

2.3 Participation of the sector in the GDP of the economy

According to BCU data, the GDP of the primary phase (forestry, timber extraction and related services) has shown an increasing trajectory, exhibiting an average annual growth rate of 7.6% in the last decade. The share of this phase in the overall GDP of the economy has remained relatively constant over the period, at around 0.5%.

![Figure 1: GDP first phase (forestry, wood extraction and related services)
(Index 2005=100)](image)

Note (*) Preliminary data
Source Uruguay XXI based on Central Bank of Uruguay.

For its part, the value added in the industrial phase has also shown a strongly increasing trajectory (see graph), fundamentally from the beginning of activities of the cellulose plant of UPM at the end of 2007 and of Montes del Plata in mid 2014. In fact, the industrial phase has had an average annual growth of 7% in the last decade.
2.3. Generation of energy from forest resources

Among the activities related to the industrial phase is the generation of energy through forest by-products (forest biomass and by-products of mechanical and chemical transformation), which has become relevant and has an important perspective due to the increase in the supply of raw material and State policies on the matter. In 2018, approximately 6% of the electrical energy generated to satisfy the country’s demand came from forest biomass waste.

It is also worth mentioning that the installed capacity of non-traditional renewable sources (excluding hydropower) went from 10% of the total in 2013 to 51% in 2018.

2.3.1. Biomass power generation plants

Currently in Uruguay there are companies in the sector that have plants for generating electricity from biomass:

- **UPM**, has an installed capacity of 161 MW, most of which is consumed by the plant itself. Approximately 40 MW are marketed as joint ventures.
- **Bioener** is located in the department of Rivera and has a capacity of 12 MW.
- **Fenirol** has a power of 10 MW. The company is located in Tacuarembó, and obtains biomass both from forest industry activities and from rice mills.
- **Liderdat** has a power of 5 MW. It is located in the property of Azucarlito sugar factory, department of Paysandú.
- **Montes del Plata** has an installed capacity of 180 MW of which approximately 80 MW are discharged into the UTE network.
- **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.

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7 Ibidem
2.4. Staff Occupied

According to data provided by the Banco de Previsión Social (BPS), the personnel employed in the sector totals slightly more than 17,000 workers. This figure does not include the indirect jobs generated by the sector, which include transport and logistics activities, as well as related services. 15% of the country’s population lives in the departments with the largest number of hectares of forest.

Table N°2: Jobs in the different activities of the forest sector - 2018

<table>
<thead>
<tr>
<th>Forestry phase</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry and related activities</td>
<td>4,512</td>
</tr>
<tr>
<td>Wood extraction</td>
<td>2,552</td>
</tr>
<tr>
<td>Harvesting of forest products</td>
<td>30</td>
</tr>
<tr>
<td>Afforestation support services</td>
<td>1,411</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industrial Phase</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chipping, sawing and planing of wood</td>
<td>2,894</td>
</tr>
<tr>
<td>Manufacture of wood products</td>
<td>1,279</td>
</tr>
<tr>
<td>Wooden furniture manufacturing</td>
<td>2,206</td>
</tr>
<tr>
<td>Chemical transformation</td>
<td></td>
</tr>
<tr>
<td>Manufacture of paper and cardboard</td>
<td>2,113</td>
</tr>
</tbody>
</table>

Total 16,996

Source: General Forestry Directorate based on BPS information.

2.5 Training

Qualified human resources are a key factor for the sector given the high technological level they demand, and the potential improvement in productivity they can generate. University and technical training seeks to adapt to this dynamic, training chemical engineers in the production of cellulose, and architects in wood construction. Universidad del Trabajo del Uruguay (UTU), the Uruguayan University of Labour, also works on careers related to forestry and wood. In Rivera, one of the departments with the greatest forestry activity, there is also a career as a Wood Technologist, whose graduate profile seeks to develop tasks related to technologies, forest harvesting and industrial wood engineering. The details of the careers linked to the sector can be found below:

- **Facultad de Agronomía de la Universidad de la República (FAGRO-UdeLaR):** is the most traditional and oldest of the training possibilities related to the forestry sector. It offers the career of Agronomy (5 years), which culminates with the title of Agronomist Engineer. In the fourth year of this career, the student has the opportunity to choose between the mentions of Agriculture Livestock, Horticulture Fruit and Forestry. The graduate who has opted for the forestry mention is called Forest Agricultural Engineer.

- **Forestry Engineering (Universidad de la República – FAGRO, FING, FQIM):** The profile of the forest engineering graduates will include a solid formation in the basic and basic-applied sciences necessary for their scientific and professional performance, with a deep focus on specific forest

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8 To approximate the magnitude of these linkages, the UPM value chain generated 7,000 jobs in 2015. Source: Socioeconomic Impact of UPM Uruguay in 2015, CPA-Ferrere. June 2016.
9 Source: INE, estimates as of June 2016. The departments of Rivera, Tacuarembó, Cerro Largo, Paysandú, Rio Negro and Lavalleja were taken over.
10 https://www.fing.edu.uy/ensenanza/carreras-de-grado/tecn%C3%B3logo-en-madera-rivera
11 Source: UdelaR
areas and industrial processes related to the sector, observing aspects of the environment, especially social, environmental and sustainable management of natural resources, in a way that will allow a critical and creative action in the identification and solution of problems. It is given at the University Center of Tacuarembó.

- **Master's Degree in Pulp and Paper Engineering (FING-UdeLaR)** Its objective is to complement and deepen the scientific and technical training of professionals in the area of pulp and paper production engineering, achieving a greater specialization than that provided by university degree training. The Plan of Studies of the Master’s Degree in Pulp and Paper Engineering is developed during 2 years and is constituted by programmed activities and a Thesis work. For each generation of students, a Training Plan is established for the programmed activities (refresher and/or postgraduate courses, seminars, etc.). The programmed activity is organized in a set of fundamental subjects to broaden and deepen basic knowledge in the thematic area and a second set of specialized technological subjects.

- **Civil Engineering (FING-UdeLaR)** In this course there is a subject entitled “Wood Structures”, of compulsory course for the structural profile, in order to train engineers in the use of national wood as a structural material. Also in the “Master of Structural Engineering” are taught subjects related to structural calculation with wood.

- **Chemical Engineering (FING-UdeLaR)** In this course, there is an optional 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 career offers a two-year program, which was the first alternative to Agronomy dictated by a private institution, directly focused on the needs of the forest sector. If the program is revised, it covers all the links in the forest chain, except for chemical transformation. The UDE also offers an agronomy course, but unlike the UdeLaR, it does not cover subjects directly related to forest production, although it does cover plant production and protection.

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

- **Diploma of Specialization in Design, Calculation and Construction with Wood (DEEM) Universidad ORT (Facultad de Arquitectura) + FING-UdeLaR** although not directly linked to the traditional forest chain, it seems important to mention this race. Its teaching is shared between FING-UdeLaR and the Faculty of Architecture of ORT University. It is a training specifically designed to generate knowledge about an area little exploited by the current Uruguayan forestry sector, such as the dumping of part of the existing raw material to cover the needs of housing, civil construction, bridges, etc. in the country, both from solid wood and wood engineering 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 expansion of the sector has promoted the generation of alternatives for technical and tertiary education, mainly, and of diplomas related to the sector.

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12 Source: [Facultad de Ingeniería](#)
2.6. Companies in the sector

In Uruguay there are more than 1,760 companies linked to the forest complex, according to BPS data. Of these, 93% are micro and small enterprises with fewer than 20 employees. Among the exporting companies, the pulp producers UPM and Montes del Plata are the main ones, between them they represent 84% of the value exported by the sector in 2018.

<table>
<thead>
<tr>
<th></th>
<th>Micro and small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry</td>
<td>828</td>
<td>74</td>
<td>7</td>
<td>909</td>
</tr>
<tr>
<td>Production of wood products</td>
<td>746</td>
<td>28</td>
<td>3</td>
<td>777</td>
</tr>
<tr>
<td>Manufacture of paper and paper products (including cellulose)</td>
<td>59</td>
<td>14</td>
<td>6</td>
<td>79</td>
</tr>
<tr>
<td>Total</td>
<td>1,633</td>
<td>116</td>
<td>16</td>
<td>1,765</td>
</tr>
</tbody>
</table>

Note: Micro and small (up to 19 occupied); Medium (20 to 99 occupied); Large (more than 100 occupied).
Source: Uruguay XXI based on Banco de Previsión Social - December 2018.

Outstanding foreign investments in the forestry sector

UPM

The Finnish company UPM is one of the largest pulp producers in the world. In 2009 it acquired most of the shares of Botnia S.A. The company has 54 production plants in 12 countries, 19,000 employees and its annual sales totaled € 10,483 million in 2018. In Uruguay, UPM employs 383 people directly, more than 2,500 indirectly, and more than 200 contractor companies. This staff is in charge of all operations in the production cycle: from nurseries, forest plantations, to transportation, plant work and port.

The company has a subsidiary, UPM Forestal Oriental, which has been operating in the country for more than 25 years and supplies wood to the Fray Bentos plant. About 70% of the wood comes from its own plantations and the remaining 30% from more than 550 rural producers associated with its Development Program. The volume of wood shipped from Uruguay to UPM was around 3.3 million tons in 2018.

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 cellulose -which is exported practically in its entirety- and the unit that generates energy from biomass. The cellulose is sent in barges along the Uruguay River to the port of Nueva Palmira, where it is loaded on transatlantic ships bound for Europe and Asia.

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 received. The third plant will have a production capacity of 2.1 million tons, production similar to the sum of the two plants already installed. The start of operations of the plant is scheduled for the second half of 2022. More information can be found in the Exports outlook section.

14 Fuente: UPM – Reporte 2018 - Recursos Humanos
15 El Programa de Fomento promueve la asociación entre productores rurales y UPM Forestal Oriental, para integrar la forestación a sus predios ganaderos, agrícolas o lecheros.
16 Fuente: http://www.upm.com/uy
MONTES DEL PLATA

Cellulose producer company installed in Uruguay since 2009. It is made up of the participation in equal parts of two of the most outstanding companies in the forestry sector in the world: Arauco, with Chilean capital, and the Swedish-Finnish Stora Enso.

The company manages 145,000 hectares of forested land 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 biological conservation areas, native forests or autochthonous species in which the company implements conservation and monitoring plans. About 3.6 million tons of wood were shipped from Uruguay to Montes del Plata in 2018.

The industrial complex is located in Punta Pereira, department of Colonia. It has a plant with the capacity to produce 1.3 million tons of cellulose per year, the unit that generates energy from biomass and a port terminal. The company directly employs 630 people, and throughout the production chain it is estimated that approximately 6,500 people work.

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 boards -plywood- of pine and eucalyptus. The company established its presence in Uruguay in 1996 under the name of Weyerhaeuser. In 2017, it completed the process of selling its operations in Uruguay to 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 patrimony was around 120,000 hectares, including pine and eucalyptus plantations.

It also has a clonal nursery, for the development of trees oriented to forestry, and a power generation plant, fed with factory waste and biomass. The generation of energy is dumped to the industrial plant, and to the electrical network.

The company has 750 direct employees working in the 5 departments where the company is present.

17 Source: Montes del Plata – Nuestra empresa
18 Source: http://weyerhaeuser.com
2.8. External

Exports from the forestry sector have shown remarkable dynamism in recent years. This increase was strongly associated with the installation of the UPM and Montes del Plata pulp mills, which allowed an important value addition, which introduced a jump in the sector’s placements since 2008.

In 2018 the exports of the forest complex (wood, wood products, cellulose, paper and cardboard) reached US$ 2,157 million, which represented 24% of the total goods exported by the country\(^{19}\), and represents a year-on-year growth of 29% compared to the previous year.

Exports of pulp (+26%) and wood (+42%) significantly boosted the sector’s placements in 2018, while sales of paper and cardboard shrank slightly (-2%) in the same period.

In the first half of 2019, forest exports were around US$ 1,056 million. The share by product remained relatively stable with respect to the previous year: pulp represented 78% of the sector’s exports, wood represented 20% of the total, and the remaining 2% corresponded to paper and cardboard exports.

Graph Nº3- Uruguayan Exports - Forestry Sector (US$ Millions)

Source: Uruguay XXI based on Dirección Nacional de Aduanas (DNA) and Montes del Plata.

\(^{19}\) Note: The total exported includes all sales from domestic territory. Therefore, exports from Free Zones of: pharmaceutical products, PepsiCO beverage concentrate and cellulose are included.
2.8.1 Exports of Cellulose Pulp

Cellulose pulp is the main input to produce papers and cartons. In 2018, external sales totaled US$ 1,653 million, 26% higher than in 2017. Cellulose was Uruguay’s main export product.

Exports of cellulose pulp are made from two free zones. One is Zona Franca Punta Pereira, where the Montes del Plata plant is located and also the port from where the merchandise is sent abroad. On the other hand, UPM 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. The main destinations for this product in 2018 were China (35%), the Netherlands (25%) and Italy (17%)\(^\text{20}\).

Meanwhile, in the first half of 2019, pulp sales reached US$ 822 million, slightly lower than the same period of the previous year. This drop can be attributed to a retraction in the average export price that pulp has been experiencing since the last months of 2018. China maintained a stable participation with respect to 2018, while Italy (23%) and the Netherlands (18%) were the second and third destination in the semester.

Graph No. 4. Exports of cellulose

Source: Uruguay XXI based on Dirección Nacional de Aduanas (DNA) and Montes del Plata.

\(^{20}\) Source: Uruguay XXI based on DNA and Montes del Plata.

\(^{21}\) Estimate of Uruguay XXI based on National Customs Directorate (DNA), Montes del Plata and Nueva Palmira. Given that the Netherlands functions as a distribution center for goods entering Europe, it is likely that much of the pulp that reaches that country has other final destinations.
2.8.2 Wood exports (not including shipments to FZ)

Although wood exports showed an oscillating behavior in recent years, the value of sales in 2018 was 70% higher than ten years ago. This increase was strongly associated with the increase in the average export price of products such as raw wood, sawn wood, and chips. In recent years, volume increased its importance as a factor in the growth of placements. In 2018 the exported volume grew 56%, totaling 3.4 million tons.

In 2018, exports of wood and by-products showed a growth of 42% compared to 2017. Although raw wood to China was the main flow, other products such as sawn wood, packaging wood and wood panels also increased their exports.

This dynamic growth in exports did not remain stable in the first half of 2019, when timber sales declined 14%. Shipments of crude pine to China were the most negatively impacted on exports, affected by market problems due to price and growing stocks in China.

Chips

Chip sales averaged one million tons per year over the last decade. In particular, last year chip exports totaled US$ 98 million, 54% more than in 2017. Portugal was the main destination for exports in the year.

The average placement price of the last decade remained at around US$ 100/tonne without major variations during the period. In 2018, the average price per ton was US$ 99.65.

In the first half of 2019, exports of eucalyptus chips and chips reached US$ 55 million, 15% higher than the same period last year. Both volume and price grew with respect to the comparison period.

Wood in roll

Overseas sales of roundwood showed a significant decline from 2007 when a large portion of production was redirected to UPM’s pulp mill. Since 2016, however, the flow of exports of this product to China has grown, leading to a greater share of pine (81%) than eucalyptus (19%). The total exported in 2018 was US$ 178 million, and the volume placed exceeded 2 million tons. China remained the main destination, with 90% of the total.

Despite peaks in January and April 2019, exports of roundwood showed a downward trend in the first half of the year. In the first 6 months of the year, sales totaled US$ 82 million and exceeded one million tons exported.

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22 The cellulose plants are located in Free Zones, and according to the Uruguayan Customs Code, sales from Uruguay to these facilities are recorded as exports. This section does not take into account exports of wood to these facilities, so as not to duplicate data, as they are presumed to be incorporated as input in the production of cellulose.
Sawn timber

Sawn timber is one of the most value-added products. In 2018, this product accounted for a quarter of Uruguayan timber exports. Exports of these products totaled US$ 115 million in 2018, and exports exceeded 214 thousand tons. China, the United States and Vietnam were the main destinations, with respective shares of 36%, 20%, and 8%. In the first 6 months of 2019, the volume exported fell 13%.

Boards

Wooden panels which constitute another of the products with significant added value. In 2018, plywood exports amounted to US$ 76 million, 20% higher than the previous year. This increase is explained both by the price factor and by an increase in the volume exported. The sales volume of this product was reduced in the first half of the year by 27%, as a result of lower sales in the Mexican market.

Graph No. 5. Exports of wood and wood products (without FTZ) - US$ million

Source: Uruguay XXI based on National Customs Directorate (DNA).
2.8.3 Exports of paper and cardboard

Between 2010 and 2015 exports of paper and cardboard exceeded US$ 90 million. However, as can be seen in the following graph, the sector’s foreign sales had a marked reduction since 2016. The total exported in 2018 was US$ 36 million, with a volume close to 39 thousand tons. The context in recent years showed difficulties to place production in Argentina, the main export destination of the branch.

Graph No. 6: Exports of paper and cardboard

![Graph](image)

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

Table N°4 - Main exporting companies of the Uruguayan forestry sector 2018

<table>
<thead>
<tr>
<th>MIEM Classification</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>UPM</td>
</tr>
<tr>
<td></td>
<td>MONTES DEL PLATA</td>
</tr>
<tr>
<td>Sawn timber, glued solid wood, veneers and mouldings</td>
<td>URUFOR S.A.</td>
</tr>
<tr>
<td></td>
<td>DANK S.A.</td>
</tr>
<tr>
<td></td>
<td>TIGORAL S.A.</td>
</tr>
<tr>
<td>Raw wood</td>
<td>FORESTAL ATLANTICO SUR SOC. AG</td>
</tr>
<tr>
<td></td>
<td>MURADIR S.A.</td>
</tr>
<tr>
<td></td>
<td>TGL URUGUAY SOCIEDAD ANONIMA</td>
</tr>
<tr>
<td>Wood for packaging</td>
<td>FERNANDEZ Y CIA LTDA.</td>
</tr>
<tr>
<td></td>
<td>IMNSUR LTDA.</td>
</tr>
<tr>
<td></td>
<td>ISG S.A.</td>
</tr>
<tr>
<td>Other articles of wood</td>
<td>PERINDES SOCIEDAD ANONIMA</td>
</tr>
<tr>
<td></td>
<td>FEDERICO CIA</td>
</tr>
<tr>
<td></td>
<td>KEIMER S.A.</td>
</tr>
<tr>
<td>Paper and cardboard</td>
<td>INDUSTRIA PAPELERA URUGUAYA S.A.</td>
</tr>
<tr>
<td></td>
<td>CAS.A.BO S.A.</td>
</tr>
<tr>
<td>Boards</td>
<td>URUPLY S.A.</td>
</tr>
</tbody>
</table>

Note: This list of companies does not imply any ranking or assessment of their commercial behaviour.
Source: National Customs Directorate
2.9 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, which will involve a total investment of US$ 3 billion (5.4% of GDP). This is the most important foreign investment that Uruguay has received and also UPM’s largest investment abroad.

The project will be located on the border between the departments of Durazno and Tacuarembó, more specifically in Pueblo Centenario, promoting local development in and around the area. The departments in which it will have the greatest impact are Durazno, Tacuarembó, Cerro Largo and Rivera, which have the lowest employment rates in the country, the worst education and poverty indicators. In this way, it is expected that the installation and subsequent operation of the plant will produce greater dynamism in a relevant region.

The third plant will have a production capacity of 2.1 million tons, production similar to the sum of the two plants already installed. As a result, the third plant will generate a significant increase in exports. It is estimated that UPM’s investment will increase annual exports by an average of US$ 1,155 million, approximately 12%. Consequently, the new plant would consolidate cellulose as the country’s main export product in the coming years, and Uruguay as the world’s second largest exporter of short-fiber cellulose, with an approximate production of 4.7 million tonnes.

Plant operations are scheduled to commence in the second half of 2022. Of the total investment of US$ 3,000, US$ 2,700 million will correspond to the construction of the plant, US$ 280 million to the construction of a terminal specialized in cellulose in the deep water port of Montevideo and US$ 70 million are estimated in local investments in Pasos de los Toros to provide temporary housing for personnel hired during the work. The project also involves - in addition to the port terminal - the reconditioning of railways under the "Ferrocarril Central" project and route improvements, at the expense of the Uruguayan state. These investments in infrastructure also imply the development of the economic activity of other sectors in Uruguay.

<table>
<thead>
<tr>
<th>Table N°5 - Permanent effects in the chain by operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current plant</strong></td>
</tr>
<tr>
<td><strong>GDP</strong></td>
</tr>
<tr>
<td><strong>Jobs (direct and indirect)</strong></td>
</tr>
<tr>
<td><strong>Tax</strong></td>
</tr>
</tbody>
</table>

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

The Finnish company points out that, demand for pulp has a healthy long-term outlook, especially in Asia. The strong market growth is based on major global consumer trends that drive demand for paper, toilet paper, packaging and specialty papers. The annual growth trend in pulp demand in the global market remains around 3%.

Source Presidency – Financial evaluation of income and expenses of the UPM 2 proyect

Under stable market conditions.
3. Infrastructure

Uruguay has a vast and dense road network, which is about 8,776 km of which 7,977 km are paved, which gives a ratio of 45 km of paved roads for every 1,000 km² of surface area. This structure of highways allows the connection of the main production centers and collection beaches with the main ports of the country.

| Table No. 6: Infrastructure Ranking - World Economic Forum 2018 |
|-------------------|-------------------|-------------------|
|                  | Latin America     | World            |
| Chile            | 1                 | 33               |
| México           | 2                 | 46               |
| Uruguay          | 3                 | 53               |
| Costa Rica       | 4                 | 55               |
| Colombia         | 5                 | 60               |

In this sense, Uruguay ranks second in South America in terms of the quality of port infrastructure. Currently, there are 15 ports, of which 8 are commercial ports located in various areas of the country: Montevideo, Nueva Palmira, Colonia, Fray Bentos, Paysandú, Juan Lacaze and La Paloma, are governed by a free port regime, and Salto. Among them, the ports of Montevideo, Nueva Palmira and La Paloma are the deepest.

In spite of the above, significant growth in production and exports have generated major infrastructure challenges, mainly roads. In this context, the country has been working on relevant projects that will provide first-rate infrastructure.

- **Terminal for forest products and solid bulks**

  This specialized terminal is framed in a 7.5 ha lot located at the northern end of the Port of Montevideo, and is planned for the collection and shipment of wood chips with a stowage area for 7,000 tons. It has a fully automated grain collection plant. It foresees the operation of two conveyor belts, three platforms with lifting towers with a load capacity of 2,400 t/hour, a berth for Panamax interoceanic vessels.

- **Road corridors**

  As a result of the growing volume of goods transported - a product of the development of agricultural and forestry areas - there is a need to provide adequate connectivity between production output terminals and production units.

  In this sense, the first project in Public-Private Participation modality in road infrastructure corresponded to the route 21 from the city of Nueva Palmira to Mercedes, and route 24 between route 2 and route 3. Route 21 is mainly used by bulk trucks that go to the port of Nueva Palmira, while in route 24 wood cargo predominates.

  The project involves an investment in reconstruction, rehabilitation and fine-tuning of 170 km of route. The work seeks to improve productivity levels in the area by lowering transportation costs and travel times, promoting local development and decentralization. The initial investment of the project is US$ 85 million.

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25 Note: Coarse pavements are not considered as pavements. Source: National Highway Administration - MTOP - 2015.
26 Source: Uruguay XXI based on Inalog.
27 Source: Uruguay XXI based on Inalog.
28 World Economic Forum - 2018
29 Source Investment Opportunities in the Logistics Sector, Inalog, Uruguay XXI.
30 Source Inalog.
31 See: Uruguay XXI – PPP Road
**Railway development**

Currently, the main project of the Uruguayan railway sector is the **Central Railway project**, through which Uruguay’s railway network will be heavily renovated. It consists of the construction and reconditioning of 273 km of tracks between the port of Montevideo and Paso de los Toros (Tacuarembó). Likewise, the rehabilitation of the Rivera line and the Litoral line (which joins Piedra Sola and Salto), consolidates the expansion of the railway transport offer, complementing the modes used until now.

This project will allow the circulation of freight trains at 80 km/h and with a load of 22.5 ton / axle, which will significantly benefit agricultural, mining, industrial and forestry enterprises near the location of the railway lines.

The project includes an initial 26 km section of double track, dozens of secondary tracks for train crossings and more than 40 railway bridges (between reinforced and new). There will also be uneven passages due to the interaction with different populated areas, with which the impact on the construction will also be relevant.

**Currently, the railway network has an extension of 1,652 km in operation**, and a park of 52 locomotives of main track and 764 wagons. It is connected to the networks of Argentina through the El Precursor branch, on the Salto Grande Dam, which links the city of Salto and Concordia with the same gauge in both countries, and with Brazil in the Rivera-Livramento Border Crossing, with a different gauge, although today the technology allows to solve this difference in the width of the track.

Therefore, the project represents a great advance to promote a complementary, competitive and sustainable mode of transportation that will have an impact on costs, times and logistical efficiency.

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31 Source: **MEF – Pipeline PPP**
32 Source PPP Report, Uruguay XXI - June 16 - [Link](#).
33 Uruguay on the March - [http://ferrocarrilcentral.mtop.gub.uy/inicio](http://ferrocarrilcentral.mtop.gub.uy/inicio)
35 Note: Does not include passenger carriages.
In 12 years, from 2003 to 2015, the tons of products generated by the forest, agricultural and livestock chains multiplied sevenfold.

This growth has had important leaps, as for example in 2008 and 2013 because of the respective beginnings of operation of cellulose plants that are operating today also shows a steady growth of agricultural production, which is the item that has increased its burden in greater magnitude, and more traditional productions, such as meat and dairy.

Table No. 7: Loads received by Uruguayan highways - 2003 to 2015

<table>
<thead>
<tr>
<th>Sector</th>
<th>2003</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry</td>
<td>1,500,000</td>
<td>9,950,516</td>
<td>13,806,000</td>
</tr>
<tr>
<td>Cereal</td>
<td>300</td>
<td>4,000,000</td>
<td>8,157,800</td>
</tr>
<tr>
<td>Diary</td>
<td>1,100,000</td>
<td>1,655,000</td>
<td>2,182,000</td>
</tr>
<tr>
<td>Livestock</td>
<td>716,432</td>
<td>1,034,505</td>
<td>1,095,534</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,616,432</strong></td>
<td><strong>16,640,021</strong></td>
<td><strong>25,241,334</strong></td>
</tr>
</tbody>
</table>

Source DIEA Yearbook - 2011 / 2016

Table 8 shows average values for freight, harvest and prices for the different destinations of wood products in Uruguay. In production costs are included only the harvest and land freight, to compare in the different cases, how much the freight weighs on the cost of taking round wood to industry or yards for export.
3.1 Land costs

In addition to operating costs, it is relevant to have an approximation of the estimated cost of land, which, as mentioned above, would fall within the "year 0" costs, which is when 55% of the total cost is generated for a 20-year cycle.

Due to the characteristics of soils in Uruguay, afforestation is sometimes developed as the main item and also associated with agriculture or livestock. Most of the plantations are located in soils declared of forest priority, on diverse Coneat soils. However, in the south and center of the country, with an important presence of soils of the Coneat 5 group, afforestation has also had a notable growth in recent years.

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 associated growth rates depending on the species planted. At the technical level, the indicator used to measure tree growth is the IMA (average annual increase) which represents the increase in volume of trees in one hectare throughout the year.

There is an income market for forest areas, above a minimum scale, in the areas of influence of cellulose plants. This makes it possible to lease part or all of the fields for planting Eucalyptus on the coast, south coast and central part of the country.

On the other hand, in the east and north where plantations are generally for quality wood, most of the companies that develop the business are also owners of the fields.

Due to the above-mentioned aspects, the analysis of the value of forest field land is complex, as several factors need to be considered. The map below shows reference prices for establishments where afforestation represents the main item.

It is important to point out that the price of land in Uruguay, with a strong influence of grains during the decade from 2004 to 2014, registered a price peak in 2014 and a subsequent fall. Forest fields, on the other hand, had a smaller increase during this period and a greater stability in their prices.
The values of forest income published by DIEA/MGAP for the last ten years indicate an increase in prices, starting from 96 US$/ha/year in 2009 to 162 US$/ha/year in 2018.

Figure N°4: Coneat soils of forest priority and reference prices.

Price range (US$/ha) for forest fields, based on recent sales.

Source: Agroclaro based on MGAP and AGESIC/INC metadata.
4. Wood availability and value-added opportunities

4.1 Area planted

As can be seen in the following graph, the 1990s saw a growing rate of pine and eucalyptus plantations, which declined towards the year 2000. Between 1990 and 2010, the average planting rate was 28,710 ha/year of eucalyptus and 11,123 ha/year of pine.

Starting in 2017, the Office of Agricultural Statistics (DIEA) includes in its yearbook an estimate of the planted area. The data correspond to 2016 and 2017, and show levels higher than those of the 90’s, with an area of around 70 thousand hectares, and with eucalyptus as the main plantation.

4.2. Wood supply for the future

In order to determine the volumes of eucalyptus and pine wood available in the future, and particularly with a view to the year 2050, it is necessary to take into account a series of aspects that refer both to the length of forest cycles in Uruguay, to the data currently available, and to the possible lines of development of the Uruguayan forestry sector.

The duration of forest cycles in Uruguay can, broadly speaking, go from 10 to 20 years depending on the productive objective (pulp or sawmill).

Also, the projection 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, the previously planted ensures a very important availability during the next 20 years, with very large volume peaks in the near future. An average annual wood availability of more than 3 million cubic meters exceeds by far the installed industrial capacity of Uruguay.

37 DIEA 2017 and 2018 Yearbooks.
It is estimated that at some point the trend will reverse, and pine planting will begin again to maintain the supply needed for the installed capacity of the national pine sawmills, which have the capacity to consume between 3,000 and 4,000 hectares of mature forest (1 million m3/year). The area destined for pine plantations should be between 60,000 and 80,000 total hectares to meet this demand, and today is twice that number.

Chart No. 8 - Supply of roundwood volumes from Eucalyptus and Pinus (m3 million)

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

As for eucalyptus wood, according to the information gathered, it is estimated that of the 599,954 hectares planted, 107,487 have been managed to obtain lumber. Similarly, because of the management that a quality wood forest receives, it produces in its complete cycle, one third of its volume in sawnwood and/or export, and two thirds of wood for pulp.

In this case, the average until 2030 will be more than 20 million cubic meters per year of availability, but as for pine, until installed capacity increases, volumes will accumulate to compensate for declines in availability over the next two decades.

The challenge will be that with three plants operating at full capacity, 17 million m3 would be destined for pulp, and between the 2.8-million firewood and the million consumed by sawmills, the average volume of demand would be over 21 million m3.

While the volumes are sufficient for current demand, the graph would be showing that with the installation of the third cellulose plant, the first years of operation of the three plants together could generate some pressure on other uses of eucalyptus wood.
5. The future of the forestry sector

5.1 Certification of forest products

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

5.1.1 Forest certification

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

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

5.1.2 Certification of wood products

For its part, the Technological Laboratory of Uruguay (LATU), promotes and technologically supports the development of the wood production chain. In this sense, the organization has a sawmill and laboratory, where studies of the physical, mechanical and chemical characteristics of wood from national plantations are carried out.

Although it does not currently carry out certifications of international scope, it has all the capacity to do so by providing high level analysis and testing services.

Recently, a laboratory was incorporated to perform all types of tests on furniture and openings. It has the capacity to certify European standards in this type of products.

For more information: LATU

5.2 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 become important at an international level and have become an important component of the forestry business.

In this context, Uruguay has not been left behind, as there are at least five forestry projects that are issuing carbon certificates. In addition to the participation of forestry projects, companies providing measurement, comparison and advisory services are being developed\[^{38}\].

5.3 Timber construction

A window of opportunity for Uruguay may be associated with further development of timber construction. Although currently the construction of wooden houses for national demand will not provide a solution to

\[^{38}\] In particular, Carbosur (www.carbosur.com.uy) has been carrying out activities with the main companies in the forestry sector.
the supply of forest resources, the development of the construction industry in wood for civil works, particularly industrial, commercial and sports buildings is presented as an interesting alternative.  

In this sense, the need to incorporate manufacturing standards, quality control and structural timber calculation to promote local and international sales of higher value-added products is presented as a challenge for the sector. In particular, given that the species cultivated in Uruguay are of low natural durability for outdoor use, the introduction and development of new technologies aimed at increasing the durability of wood (drying, protection by design, impregnation in depth and modification) is recommended.

With the objective of contributing to the development of the construction of wooden structures, a team made up of several institutions and educational centers in our country published: "Basic technical documents for the standardization of wooden structures and constructions".

Some of the specific objectives of the project are:

- To have information on characteristic values and means of physical and mechanical properties of wood, to propose a system of resistant classes based on a structural visual classification for Uruguayan pine wood.
- To recommend a method of structure calculation, appropriate for woods of species cultivated in the country and to identify the research needs in structural wood to define the safety coefficients applicable to the national wood.
- Propose the formation of a UNIT standardization committee, covering structural timber standards, from characterization to calculation.

6. Development perspectives for the forest sector

The following are some examples of the possible development of the sector, if everything continues with the course of the sector today:

- **Increased mechanical processing of pine wood**
  The case of the pine wood already there is an important surface of wooded masses arriving at the end of its cycle of cut. It is increasingly evident that the country must add installed capacity in pine wood processing if it wants to make the most of quality wood, and not be satisfied with the opportunity cost of export.

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. That wood has a higher value being forced to export roundwood product of the harvest of the last 150 to 250 quality timber trees would represent a less profitable business.

- **Increased consumption of biomass fuels**
  There is currently a pellet factory in Uruguay (in Montevideo) and a briquette factory (in Palo Solo-Paysandú). The current demand for boilers and heaters is met by imports from Argentina. These biomass fuels represent a more efficient and easier energy to handle and transport than firewood, and much cleaner compared to fossil fuels.

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39 Source: MGAP 2012, in First Report on the Program to Promote Exports of Wood Products - Consejo Sectorial Forestal Madera - DNI.
40 Faculty of Engineering, UDELAR; Institute of Structures and Transport; ORT University; Faculty of Architecture, UDELAR; LATU. For more information see: https://www.fing.edu.uy/node/24271
41 Source: Uruguay XXI based on private consulting by Estudio Faroppa.
When we compare the ecological impact of firewood against pellets or briquettes, they are equivalent fuels in terms of the ecological impact of their combustion, but the transport of firewood is 40% greater in volume due to its lower caloric power.

- **Increase and expansion of timber construction**

Given the efforts that have been made for years to classify national woods as building materials, and to regulate construction with wood, it is expected that wood construction will have greater participation in the national market in the short or medium term. The process to achieve this is to carry out a characterization of the national wood from the physical and mechanical point of view, the determination of its aptitude as constructive material and the creation or adoption of a norm for its characterization. This then establishes the technical standards for its use, which should be taken into account to use wood as a material, for the construction of a home or real estate in general.

There is already local knowledge of how to build with wood, in addition to the wide availability of information regarding design and calculation of structures. The physical-mechanical tests of these woods have already been done and other studies are emerging about the possibilities of use in engineered wood products, so it is very foreseeable that wood construction will gain ground in the coming years.

- **Other wood-based products**

When analyzing the possibilities of future development of the Uruguayan forestry sector, it is possible to identify different products made from raw materials similar to those offered by Uruguay, which could be incorporated into the range 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 current pine wood and its increase in the short term make it necessary to think of different alternatives for its use. In MERCOSUR, industrial enterprises that offer wood products that until recently were limited to North America and Europe have been gaining space. At the same time, Uruguay has been making a name for itself in the forest world, so introducing a wood product with the country brand "Uruguay" is already much simpler than it would have been two decades ago.

Some of these products would be:

- **Medium Density Fiber (MDF)** is a board made from compressed synthetic resins and wood fibers, giving it a higher density than traditional agglomerates or plywood.

- **Cross Laminated Timber (CLT)** is a construction timber product consisting of an uneven number of dry wood plank panels joined together, in which one layer of plank is perpendicular to the next. The boards are glued laterally along the edges and then joined with the next layer by applying glue to the width of the boards.

- **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 mesons and tables. There are builders with a very wide trajectory in the country who use laminated beams manufactured in URUFOR for construction under roof, or protected from the elements.

- **Oriented Strand Board (OSB)** is a board formed by a mattress of wood chips that are dried and aligned, and to which adhesives and waxes are applied and then carried to a press, which reduces that mattress to a board of a fraction of the initial height of the mattress. The boards are cut to size and can be added value through the application of other products depending on their future use in construction, which is its natural area of use.
• **Laminated Venner Lumber (LVL)** The LVL is manufactured by gluing successive sheets of wood together with adhesives of varying strength. The main difference lies in the orientation of the sheets, which in the LVL are all parallel, while in the plywood is perpendicular to the next or alternating orientation.

• **Modified wood** The purpose of its modification is to change its properties and make it a more stable material and less susceptible to agents that affect 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 wood through the addition to the production process of a sawmill (or an independent enterprise) of a technology that does not have a high cost. The products would be ready for use by the end customer, and would be easily exportable.

The modification in turn can be thermal 42 or chemical43.

Additionally, the cellulose production process generates a by-product that is used to generate energy, called Black Liquor. This liquid leaves the digester of the cellulose plant with up to 20% solids to a recovery system, through which chemicals and energy are obtained. Through the evaporation of water, it concentrates and extracts some components that, 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 is a variety of products that can be obtained from the different substances that make up black liquor. In each case the possible products are mentioned:

<table>
<thead>
<tr>
<th>Cellulose</th>
<th>Lignin</th>
<th>Hemicelluloses</th>
<th>Extractive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fibres;</td>
<td>1. Adhesives for the wood industry</td>
<td>1. Xylotol;</td>
<td>1. Tannins;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Biogels;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Prebiotics</td>
<td></td>
</tr>
</tbody>
</table>

Many of the products mentioned are being intensively investigated on a pilot scale (in some cases even on a commercial level) in Europe (mainly Scandinavia), the USA and Canada, although it is likely that they will not be available in the short term in the Uruguayan market.

42 The modification process consists of subjecting the wood to a high temperature, up to temperatures between 180ºC and 230ºC in a controlled oxygen atmosphere. Basically the wood is “cooked”, with which the hemicelluloses of its cells are denatured and condense on the lignin chains, creating chemical unions between polymer chains. This pseudo-lignin is hydrophobic, which causes the wood that goes through this process not to contract or expand by not absorbing water, or is susceptible to the action of insects or fungi.

43 The most common form of chemical modification of wood is acetylation. In this process, the wood’s water absorption capacity is limited by reducing its equilibrium moisture content, making it a more durable and dimensionally stable material. The process involves reducing the moisture content of the wood by kiln drying, which brings it to an average below 12% on a normal wet basis with which the wood is considered dry. The wood is then taken to a reactor where acetic anhydride is introduced, submerging the wood and raising the temperature.
6. Regulatory framework and tax benefits

In Uruguay there is an adequate regulatory framework that benefits the investor; some rules are general for all sectors and others are specific to the forest sector.

6.1 General regime for the promotion of investments (Law 16.906)

The main investment promotion regime is framed in Law No. 16,906, which declares of national interest the promotion and protection of investments made by national and foreign investors in the national territory. The Law is regulated by a series of decrees. This law classifies two groups of fiscal incentives: general investment incentives and incentives for specific investments.

General investment incentives

The beneficiaries of these tax incentives are all taxpayers of the Corporate Income Tax (IRAЕ) and the Tax on the Disposal of Agricultural Goods (IMEBA), who carry out industrial or agricultural activities and Cooperatives.

For these subjects, the Investment Law establishes the granting of some benefits, automatically, to movable goods directly destined to the productive cycle (industrial machines, industrial facilities, agricultural machinery, utility vehicles and equipment for electronic data processing and other capital goods). These are:

- **Exemption from Net-Worth Tax (IP)** for the aforementioned assets, which are considered as taxed assets for the purpose of deducting liabilities for the calculation of the tax.
- **Exoneration of VAT on importation and refund of VAT included in acquisitions of these goods in the market.**
- **Exoneration of Excise Tax (IMESI)** for the importation of the aforementioned goods.

Additionally, the Executive Power is empowered to grant the following tax benefits to intangible assets (trademarks, patents, industrial models, copyrights, etc.), concessions granted for prospecting, cultivation, extraction or exploitation of natural resources, other assets, procedures, inventions or creations that incorporate technological innovation and involve technology transfer:

- **Exoneration of Net-Worth Tax (IP)** for fixed improvements, intangible goods and other goods. These assets are considered as taxable assets for the purpose of deducting liabilities.
- An accelerated depreciation regime for the purposes of IRAЕ and IP, for movable goods intended directly for the production cycle, equipment for electronic data processing and intangible goods.
- The reduction of employer contributions for special social security contributions of up to three points; for companies in the manufacturing industry.
Stimulus for specific investments

Those companies of any sector of activity that present an investment project promoted by the Executive Branch will have the possibility of accessing a series of additional benefits.

The granting of the benefit is subject to the score obtained in the matrix of objectives and indicators developed by COMAP based on information provided by the investor. The indicators that compose the matrix of these projects and their weighting coefficients are the following:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Weighting Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation of employment</td>
<td>40%</td>
</tr>
<tr>
<td>Decentralization</td>
<td>10%</td>
</tr>
<tr>
<td>Increase in exports</td>
<td>15%</td>
</tr>
<tr>
<td>Cleaner production</td>
<td>20%</td>
</tr>
<tr>
<td>Investment in research and development</td>
<td>25%</td>
</tr>
<tr>
<td>Sectoral indicator</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>130%</td>
</tr>
</tbody>
</table>

Each indicator is computed as an integer ranging from 0 to 10, the final matrix score being obtained as the weighted sum of each of the indicators.

These benefits are:

Corporate Income Tax (IRAE)

Exoneration:

- The exonerated tax can reach between 20% and 100% of the amount effectively invested in the assets detailed in the project, depending on the score obtained.
- In each fiscal year, the exonerated IRAE may not exceed 60% (sixty percent) of the tax payable. In the case of new companies, this percentage will be 80%.
- The period in which the company may benefit from the IRAE exemption is established according to a pre-established formula and may not be less than 3 years.
- The investment execution schedule is limited to five years with the possibility of an extension of up to 10 years with a well-founded request.
- As an additional benefit, companies categorized as micro and small according to decree no. 504/007 that present investment projects within the fiscal year for a total of up to RU 3.5 million will receive an incentive of 20% additional IRAE benefit.

Eligible investment:

- Movable property intended directly for the activity of the undertaking, provided that it has an individual minimum value of UI 500 (five hundred Indexed Units).
- Construction of real estate or fixed improvements (excluding those destined for housing). At the same time, fixed improvements in real estate owned by third parties are eligible, provided that there is a contract with a residual term of 5 years.
- Incorpalor property, determined by the Executive Power. Includes investments made by the owners of wind energy generation projects destined to the connection of the National Interconnected System.
- Seedlings and the costs of planting multi-year fruit trees and shrubs, as long as they are incurred in the first year of the investment schedule.
- Electric passenger vehicles presented between May 1, 2018 and April 30, 2021, are eligible provided they go directly to the activity of the company with a cap of US$ 70,000 CIF.
Past investments made in the 6 months prior to the date of submission of the application that do not exceed 20% of the total eligible investment are considered eligible.

Investments that receive subsidies from public bodies, by the part directly subsidized, will not be eligible.

**Net-Worth Tax (IP)**

- **Movable fixed assets**: exoneration for the entire useful life of these assets provided that they cannot be exonerated under the cover of other benefits.
- **Civil works**: exoneration for up to 8 years if the project is located in Montevideo and 10 years if it is located in the interior of the country.

**Import duties and taxes**

Exemption from import taxes and duties, including VAT, on movable goods for fixed assets that cannot be exempted under the protection of other benefits, declared non-competitive of the national industry.

**Value Added Tax (VAT)**

Refund of VAT on the purchase on site of materials and services intended for civil works.

In the case of investment projects of great economic significance for amounts equal to or greater than U.I. 7,000 million, the regulations establish the possibility of requesting the Executive Branch to obtain higher tax benefits.

### 6.2. Forestry Law (15.939)

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 the defence, improvement, expansion, and creation of forest resources, development of forest industries and, in general, of the forest economy to be of national interest. This regulation establishes that natural and artificial forests in priority forest areas declared "protective" and forests declared as "yield" that are included in quality timber projects defined by the Ministry of Livestock, Agriculture and Fisheries ("MGAP"), will enjoy the following tax benefits:

- The income derived from its exploitation is not computed for the purposes of the IRAE.
- Their respective values or extensions are not computed for the determination of the taxable amount of the Wealth Tax.
- Exoneration of rural real estate contribution (land property tax).

In order to access the above-mentioned tax benefits, the General Forestry Directorate ("DGF") of the MGAP must approve the management project for the exploitation and regeneration of forests. Any modification to the aforementioned must be previously approved by the DGF. It should be noted that short-shift plantations (less than 15 years old) without pruning and thinning do not have tax exemptions.

Also, Decree 002/012 considers as part of the investment within promoted activities, the acquisition of seedlings and costs of implantation of fruit trees and shrubs for several years.


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44 Approximately USD 835 million at May 2019 values

45 Law Nº 15.939 is available at: [https://parlamento.gub.uy](https://parlamento.gub.uy)
6.3. Promoted Investments in the Forest Sector

Forest sector investment projects presented to the Commission on the Application of the Investment Law (COMAP) showed an uneven evolution between 2008 and 2015, with peaks associated with the large amounts invested by foreign industries operating in the sector a few years ago. Investments in the sector are linked both to wood extraction and to the industrial phase (processing of boards, solid wood products, cellulose pulp, energy generation, etc.).

Graph Nº9: Projects promoted in the forestry sector - COMAP - Millions of US$

Note (*): Data January - September
Source: Yearbook 2018, Office of Agricultural Programming and Policy - OPYPA.

6.4. General export incentives

Refund of VAT paid on purchases of inputs

The recovery of VAT paid on purchases is made, for non-exporting companies, by deducting it from the VAT invoiced on sales made within the national territory, paying only the difference to the State. In the case of exports (of goods and services), this tax is not invoiced, which authorizes the refund of VAT included in purchases of inputs, directly at the request of the company. The Dirección General Impositiva (DGI) issues credit certificates that can be used in the payment of other taxes.

6.5. Free Zone Regime

The Free Zones ("ZZ.FF.") are areas determined by the Executive Power where all types of industrial, commercial and service activities can be developed, without any limitation and with total exoneration of any national tax, created or to be created. Likewise, the introduction of goods to said premises is exempt from any encumbrance. This exoneration does not apply to the social security contributions of Uruguayan personnel. The State, by legal mandate, was constituted as guarantor of the rights that the law grants to the users, answering with damages, for the respect of the same.

The current regime has been governed by Law No. 19,566 since December 2017. Previously it was governed by Law 15.921 with the modifications introduced by Article 65 of Law 17.292, Article 23 of Law 17.781 and indirectly by Law 18.083.

For more information on the Free Zone regime see: Free Trade Zones in Uruguay – Uruguay XXI.
There are three types of subjects that can be adopted by companies in relation to Free Trade Zones: operators, direct user and clients.

**Free Zone Operators**

An operator is the natural or legal person that provides the necessary and sufficient infrastructure for the establishment and operation of a Free Trade Zone. The ZZ.FF. can be operated by the State or by duly authorized individuals. Private Zones are administered by individuals and authorized by the Ministry of Economy and Finance, which supervises and controls them through the Free Zone Area of the General Directorate of Commerce. For the installation of an FMZ in Uruguay, a governmental resolution is necessary in which data such as: period of exploitation authorization, area occupied by the FMZ, the minimum investment that the operator(s) undertakes to make and the royalty that they must pay, among others, are detailed.

The following may benefit from the Investment Law.

**Users of Free Zones**

The direct user is the one who contracts with the Operator in exchange for a price freely agreed with the Operator, and obtains the right to trade in a ZZ.FF.

The indirect user is the one who hires, 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 ZZ.FF using its facilities, such as for example making use of its deposits.

The Free Zones are conceived so that 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, fractionation, mixing, assembly, disassembly and other operations that do not involve the industrialization of goods and raw materials.
2. Installation and operation of manufacturing establishments.
3. Provision of all types of services, including professional services, financial services, computer services, and repairs and maintenance.

This breadth of activities has some limitations:

- No primary activities (agricultural, extractive, etc.), retail sales, or free entry of goods deposited or industrialized in the ZZ.FF. into the non-free territory may be carried out.

- Sales from the rest of the country to the ZZ.FF. are considered Uruguayan exports and sales from the ZZ.FF. to the rest of the Uruguayan territory are considered imports, subject to the corresponding customs duties and national taxes.

- Sales from FFZs to MERCOSUR are subject to the Common External Tariff (CET) of the block governing goods from third countries. This is due to the fact that goods coming from ZF do not have preferential access, according to Decision N° 8/994 of the Common Market Council. Uruguay has agreements with Argentina and Brazil for certain products from the ZF of Colonia and Nueva Palmira (including goods produced by the company PepsiCo, wheat, barley, barley malt and

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soybean). Also sales from ZZ.FF. are included in trade agreements with Chile, Israel, Mexico, India, Ecuador, Venezuela and Colombia.

- Free zone users will also be able to provide services within the rest of the national territory to companies that are taxpayers of IRAE; and also other types of services such as call center, mailboxes, among others.

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

- The substantial activity of the user of the free zone must take place in the free zone. Notwithstanding the foregoing, the Law authorizes to develop, in non-free territory, collections of delinquent portfolios through third parties and exhibition of goods - in this case, only for companies with possible disadvantages of location.

- With the authorization of the Executive Branch, the development of auxiliary activities towards the non-franc national territory is made possible. Likewise, it is foreseen that users of free zones outside the authorized Metropolitan Area may carry out activities outside of them, in administrative offices provided by free zone developers, as long as these are complementary in nature of substantive activity.

The activities of the users of ZZ.FF. are exempt from any national tax, created or to be created, in particular have the following benefits:

- Exemption from Corporate Income Tax (IRAE), Net-worth Tax (IP), and any other national tax.

- Tax exemption for dividends paid to shareholders domiciled abroad.

- Option by foreign personnel (up to 25% of the total employed) not to contribute to social security in Uruguay.

- Sales and purchases abroad of goods and services are not subject to Value Added Tax (VAT), nor are sales and services within the ZF.

- Goods exchanged between the ZZ.FF. and the rest of the world are exempt from customs duties.

The requirements to be a ZZ.FF. user are:

With regard to contract terms, for industrial companies, the maximum term of authorisations for direct user contracts is set at 15 years, while for services or commercial contracts the term was set at 10 years. For indirect users, the maximum term is 5 years for carrying out any type of activity. Automatic extensions are not allowed.

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48 The agreement with Argentina only covers ZF Colonia.
49 Monopolies, state exclusivity or public concessions must be respected. Services provided to the rest of the national territory will receive the same tax treatment as services provided from abroad.
50 Excluding those whose only or main destination is the rest of the national territory.
51 Complementary activities: public relations, management of auxiliary documentation, invoicing and collection of goods and services. In no case will operations of sale of goods and services be admitted.
52 In justified cases, this percentage may be increased, with the prior authorization of the government.
Free Zone Clients

In the operation of Zona Franca we also find the client or depositary who is the one who contracts, both with the direct user and the indirect user, the right to deposit certain merchandise within their deposits.

Regulations: Law N° 15.921, Law N° 16.906, Law N° 17.547, Decree N° 524/005

In the case of the forestry sector, two Free Zones were created to benefit the two cellulose plants installed in the country, UPM and Montes del Plata, and is also planned for UPM 2.

6.6. Other standards of relevance to the forest sector

To access a summary of the relevant regulations for the forest sector, you can access the sites of:


Other regulations:

- 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.

7. Institutionality and agents of the sector

7.1 General Forestry Directorate (DGF)-MGAP

The DGF is the main reference body for forest policy, in accordance with the provisions of Law 15.939. Among other tasks, it is responsible for approving plans for the use and exploitation of forest resources.

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

Website: http://www.mgap.gub.uy/portal/hgxpp001.aspx?7,20,410,O,S,0,MNU;;MNU

7.2. Forestry-Wood Sectoral Council

In the second half of 2010, the Foresta Madera Sectoral Council (CSFM) was launched as a tool for articulating and generating inputs for sectoral policy. This sectoral council is made up of businessmen, workers and technicians from the public and private sectors.

The main objectives that were raised by the council are organized on the basis of two strategic axes:

**Sustainable and productive development:**

Encourage investments that promote the production of wood products and deepen productive diversification.

Improve the business climate while maintaining the framework of sustainable development.

Develop quality service providers (transportation and logistics, communications, energy, among others).

53 Source: Own elaboration based on the document of the Industrial Plan 1 of the Productive Cabinet - MIEM, DNI.

54 Its vision is: “to be the industry leader in the incorporation of innovative technologies and processes, which maximizes the use of resources through diversified production, contributes to economic growth and decentralized social development while maintaining environmental sustainability”.


**Human development:**

Increase the number of personnel employed in qualified jobs

**Website:** [http://www.miem.gub.uy/consejos-sectoriales/madera](http://www.miem.gub.uy/consejos-sectoriales/madera)

### Consejo Sectorial Forestal Madera - Actores

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<th>Sector Privado</th>
<th>Trabajadores</th>
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<td>Cámaras: SPF, CIPROMA, ADIMAU</td>
<td>Sindicatos: Soima PIT-CNT</td>
</tr>
<tr>
<td>Conglomerado Tacuarembó - Rivera</td>
<td></td>
</tr>
<tr>
<td>Empresas Forestales y de la Industria de la Madera</td>
<td></td>
</tr>
</tbody>
</table>

**Sector Público**

<table>
<thead>
<tr>
<th>Ministerio de Ganadería, Agricultura y Pesca</th>
<th>MTOP: Ministerio de Transporte y Obras Públicas</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIEM: Ministerio de Industria, Energía y Minería</td>
<td>MTSS: Ministerio de Trabajo y Seguridad Social</td>
</tr>
<tr>
<td>Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente (DINAVI;DINAMA;DINOT)</td>
<td>OPP: Oficina de Planeamiento y Presupuesto</td>
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</tr>
</tbody>
</table>

**Instituciones académicas**

<table>
<thead>
<tr>
<th>UTU: Universidad del Tabajo</th>
<th>UTEC: Universidad Tecnológica</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAGRO: Facultad de Agronomía</td>
<td>EUCD: Escuela de Diseño</td>
</tr>
<tr>
<td>FING: Facultad de Ingeniería</td>
<td>ORT: Universidad Privada</td>
</tr>
<tr>
<td>FARQ: Facultad de Arquitectura</td>
<td></td>
</tr>
</tbody>
</table>

**Centros de Investigación**

| INIA: Instituto Nacional de Investigación Agropecuaria | LATU: Laboratorio Tecnológico del Uruguay |
7.3. Other institutions

- Forum of Competitiveness of Wood and Furniture in the national and MERCOSUR scope, which operates in the orbit of the respective industry directorates.
- Eastern Forest Producers (PROFODES)
- National System of Protected Areas - MVOTMA (SNAP): [http://www.mvotma.gub.uy/snap](http://www.mvotma.gub.uy/snap)
- Transforma Uruguay
- National Research and Innovation Agency (ANII)
- National Development Agency (ANDE)

Annex 1- The Uruguayan Forest

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

A 11 - Priority forest areas

Forestry activity in the country has grown steadily over the past 25 years, a period in which the area planted has increased 30-fold. In 2013, the planted area reached 1,000,000 hectares (affected area). On the other hand, the area of soils declared a forest priority reaches 4 million hectares, 24% of the country’s total agricultural area.

The type of soil, the climate and the distance to production exit points have an impact on the characteristics of forest plantations. This divides the country into 3 regions according to the criteria of the General Forestry Directorate (DGF):

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55 Within this framework, the forestry and wood sector has a sectoral Roadmap. The objective is to structure and implement a set of concrete projects for the competitive and innovative development of the sector. The main strategic lines include Advancing in the value chain of the mechanical transformation industry, through the promotion of construction with wood; Promoting and diversifying the exports of the sector, Fostering associative processes that allow viable investments in new phases of the chain, increasing the R+D+i carried out in the country, through the creation of a Forestry Wood Technology Center, and training HR for the adoption of automation technologies.

56 Note: Includes roads and firewalls.

The South-East region is the closest to the port of Montevideo. It is characterized by a strong maritime influence that avoids the existence of extreme temperatures, determining a better adaptation of species such as Eucalyptus globulus and lately E. dunnii has been incorporated for its productivity and adaptation to all soils. The main purpose of the plantations of this zone is the production of pulp, to provide the UPM plant in Fray Bentos and the Montes del Plata plant in Punta Pereira, Colonia, as well as the export of wood chips. The plantations destined to the production of cellulose have a short productive cycle (8 to 10 years). In this region, the departments with the largest forest area are Lavalleja (206,000 ha), Rocha (97,000 ha) and Maldonado (97,000 ha).

The Center-North region is the largest forested area, concentrating 42% of Uruguay's artificial forests. It is characterized by higher frosts in winter and higher temperatures during the summer, and by the predominance of sandy soils, being propitious for the development of Eucalyptus grandis and Pinus. The main destination of wood production is mechanical transformation. The main points of exit of the wood production of this region are Paysandú, Fray Bentos or Montevideo depending on the location and type of product. The departments with the largest forested area of this region are Tacuarembó (230,000 ha), Rivera (225,000 ha) and Cerro Largo (125,000 ha).

Note: This responds primarily to the commercial strategy of the main companies in the region, such as Weyerhaeuser Productos S.A., GFP, FYMNSA, GMO and URUFOR.
The West Coast region is also characterized by the presence of frost and sandy to sandy loam soils. Different species of Eucalyptus and to a lesser extent Pinus predominate in this area. Both genera have a slightly lower yield in this area compared to the north.

The main destination of the wood is the production of cellulose pulp and secondly the mechanical transformation industries. The ports and exit bridges used to transport forest products are Fray Bentos, Nueva Palmira and Paysandú. In this region, Paysandú (193,000 ha) and Río Negro (161,000 ha) stand out as the departments with the largest forested area.
Finally, Table 6 presents the distribution of the native forest and the forested area of the country by region. Excluding the native forest, 73% of the total forested area corresponds to the genus Eucalyptus (with a majority presence of three of its subspecies), while the genus Pinus explains 26% of this area.

Figure N°6: Hectares forested by region

Source Prepared by Uruguay XXI on the basis of data from the General Forestry Directorate - MGAP.
A 12. - Types of forest

The Forestry Law (Law 15.939) establishes different types of forest:

**Protective forests**: their main purpose is the protection of soil, water and other renewable natural resources. The destruction of these forests is prohibited, but not their exploitation. This implies that pruning, thinning, replacing old specimens with new ones is allowed, without threatening the permanence of the forest.

**Performance forests**: those whose main purpose is the economic exploitation of the specimens. They can be composed of any species suitable for the production of woody or aleñosa matter.⁵⁹

**Indigenous forests**⁶⁰: natural forests with native species. Any felling or other operation that threatens their survival is forbidden.

**General forests**: those not included in the above categories.

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⁵⁹ Decree 191/06.

⁶⁰ Although they are included within protection forests, Law 15.939 and Decrees 22/93, 24/93 and 330/93 establish specific regulations on the protection of indigenous forests.
Official name: Republica Oriental del Uruguay
Geographical location: South America. bordered by Argentina and Brazil
Capital City: Montevideo
Area: 176,215 sq mts. 95% of its territory is productive land apt for farming exploitation
Population growth (2018): 0.6% (annual)
Currency: Uruguayan Peso ($)
Literacy index: 0.98
Life expectancy at birth: 77 years
Form of Government: Democratic republic with presidential system
Political Division: 19 provinces or departments
Time Zone: GMT - 03:00
Official Language: Spanish

Main Economic Indicators 2014-2019*

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<tbody>
<tr>
<td>GDP (Var % per year)</td>
<td>3.2%</td>
<td>0.4%</td>
<td>1.7%</td>
<td>2.6%</td>
<td>1.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>GDP (US$ Million)</td>
<td>57,180</td>
<td>53,182</td>
<td>52,734</td>
<td>59,170</td>
<td>60,415</td>
<td>55,585</td>
</tr>
<tr>
<td>Population ( Millions of people)</td>
<td>3.45</td>
<td>3.47</td>
<td>3.48</td>
<td>3.49</td>
<td>3.51</td>
<td>3.52</td>
</tr>
<tr>
<td>GDP per Capita (US$)</td>
<td>16,556</td>
<td>15,339</td>
<td>15,152</td>
<td>16,939</td>
<td>17,232</td>
<td>15,798</td>
</tr>
<tr>
<td>Unemployment rate – Annual Average (% EAP)</td>
<td>6.6%</td>
<td>7.5%</td>
<td>7.8%</td>
<td>7.9%</td>
<td>8.3%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Exchange rate (Pesos per US$. Annual Average)</td>
<td>23.3</td>
<td>27.4</td>
<td>30.1</td>
<td>28.7</td>
<td>30.8</td>
<td>36.3</td>
</tr>
<tr>
<td>Exchange rate (Annual Average Variation)</td>
<td>13.4%</td>
<td>17.6%</td>
<td>10.1%</td>
<td>-4.8%</td>
<td>7.4%</td>
<td>17.9%</td>
</tr>
<tr>
<td>Consumer Prices (Var % annually accumulated)</td>
<td>8.3%</td>
<td>9.4%</td>
<td>8.1%</td>
<td>6.6%</td>
<td>8.0%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Exports of goods and services (US$ millions)**</td>
<td>18,380</td>
<td>15,591</td>
<td>14,649</td>
<td>16,329</td>
<td>16,406</td>
<td>16,091</td>
</tr>
<tr>
<td>Imports of goods and services (US$ millions)**</td>
<td>16,767</td>
<td>13,912</td>
<td>11,810</td>
<td>12,271</td>
<td>12,863</td>
<td>12,450</td>
</tr>
<tr>
<td>Commercial Surplus/Deficit (US$ millions)</td>
<td>1,613</td>
<td>1,679</td>
<td>2,839</td>
<td>4,059</td>
<td>3,543</td>
<td>3,641</td>
</tr>
<tr>
<td>Commercial Surplus/Deficit (% of GDP)</td>
<td>2.8%</td>
<td>3.2%</td>
<td>5.4%</td>
<td>6.9%</td>
<td>5.9%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Overall Fiscal Balance (% of GDP)</td>
<td>-3.5%</td>
<td>-3.3%</td>
<td>-3.8%</td>
<td>-3.5%</td>
<td>-3.8%</td>
<td>-3.3%</td>
</tr>
<tr>
<td>Gross capital formation (% of GDP)</td>
<td>21.2%</td>
<td>19.7%</td>
<td>17.8%</td>
<td>18.7%</td>
<td>16.5%</td>
<td>-</td>
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<tr>
<td>Gross Debt of Public Sector (% of GDP)</td>
<td>58.6%</td>
<td>59.1%</td>
<td>63.2%</td>
<td>65.4%</td>
<td>63.4%</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Direct Investment (US$ millions)***</td>
<td>2,328</td>
<td>917</td>
<td>-1,181</td>
<td>-911</td>
<td>-626</td>
<td>-</td>
</tr>
<tr>
<td>Foreign Direct Investment (% of GDP)</td>
<td>4.1%</td>
<td>1.7%</td>
<td>-2.2%</td>
<td>-1.5%</td>
<td>-1.0%</td>
<td>-</td>
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</tbody>
</table>

61 Source: GDP data were taken from the IMF. foreign trade data from IED. foreign exchange rates. international reserves. and foreign debt come from the BCU; the population growth rate. literacy. unemployment and inflation come from the INE (Statistics National Bureau). Estimated data for 2018 based on BCU surveys and Deloitte.

** In 2017, the BCU adopted the methodology of the 6th balance of payments manual. The data based on this new methodology includes purchase of merchandise and re-exports and is available since 2012.

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