

ENVIRONMENTAL AND SOCIAL IMPACT STUDY

Preliminary report UPM pulp mill project

September, 2018

Preliminary report Environmental and Social Impact Study



Content

- Project description
- Potential benefits of the planned pulp mill project
- UPM 2030 global targets
- Impact assessment process
- Main potential impacts and planned solutions
- About Río Negro
- Main conclusions
- Next steps

Project description About the potential pulp mill



The pulp mill would be located in the department of Durazno on the southern side of Rio Negro, 4-5 km downstream from the city of Paso de los Toros and Centenario village

World-class single line pulp mill with **proven environmental performance and Best Available Techniques** (BAT) would have a production capacity of approx. 2 million tonnes of eucalyptus market pulp annually

If the investment preparation phases are concluded successfully, UPM will initiate the company's regular process of analysing and preparing an investment decision regarding a potential pulp mill

This project is subject to the regulatory approvals from the various agencies involved









Photo: UPM Fray Bentos pulp mill

- The existing two world-scale pulp mills operate under one of the strictest environmental regulatory frameworks for the industry worldwide and their impacts are well-known
- Uruguayan environmental authorities have wide experience in assessing and controlling this industry
- The UPM Fray Bentos mill performance after 10 years has been used as a basis to forecast the expected emissions



POTENTIAL BENEFITS OF THE PLANNED PULP MILL PROJECT

Potential benefits of the planned pulp mill project





TO THE STATE

- Permanent +2% GDP growth
- +120 MUSD per year tax collection from the value chain
- +12% exports (1,100 MUSD per year) after this mill, pulp would be the main export product



TO THE BUSINESSES

- Step change in infrastructure improvement by upgrading rail, roads and port
- Similar size to today's supply chain of 600 small and medium-sized local enterprises
- Inland agribusinesses "closer" to Montevideo
 export port due to infrastructure improvement

Potential benefits of the planned pulp mill project





TO THE PEOPLE

- +8,000 permanent jobs created in plantations, harvesting, logistics, industrial and port operations, and services
- +200 MUSD per year in salaries to be paid through the entire value chain
- Better opportunities in life for "Uruguay Profundo"
 - New skills for local workers at inland communities
 - Health and services
 - Connectivity by roads and telecommunications



TO THE ENVIRONMENT

- The possibility to improve the water quality of Río Negro through a implementation of best practices by all relevant stakeholders
- Proven environmental performance with Best Available Techniques (BAT)
- Development of circular economy

Impacting to regional development



The forest basin that will supply raw material to the new plant is located in the central-northeast region. This region is the **relatively least developed in the country** in terms of the proportion of the households below the poverty line and the conditions for regional competitiveness

There are also shortcomings in the **socio-economic dimension and infrastructure conditions**, such as roads and highways

Upgrading the **rail**, **roads and port**, contributes to overall development by proving better access to education, jobs and medical services in rural communities

Also, strengthening capabilities in the areas of **technology**, **innovation and environmental protection** will maximize the positive impact of the planned mill in the country



Image: Departmental Development Indicator (2007-2015) by CINVE



UPM 2030 GLOBAL TARGETS

UPM global targets Our 2030 responsibility targets



United Nations Sustainable Development Goals guide UPM 2030 Targets







Economic

- Profit
- Governance
- Responsible sourcing

Social

- Diversity and inclusion
- Continuous learning and development
- Responsible
 leadership
- Working conditions
- Community
 involvement

Environmental

- Product
- stewardship
- Waste
- Climate
- Water
- Forests and biodiversity



UPM global targets Creating more with less



Less waste

- Waste and sidestream utilisation
- Efficient technologies

Less energy

- Systematic energy management
- Energy efficient processes and technologies
- Less air emissions

Less water usage

- Water management optimisation
- Advanced technologies
- Less effluent

More recycling

- Efficient processes
- Product lifetime optimisation
- End-of-life systems





IMPACT ASSESSMENT PROCESS

Environmental and Social Impact Study Process and methodology



- The submission of the Environmental Impact Study is part of the process required by Uruguayan regulations
- The study has been done by consulting companies EIA-Estudio Ingeniería Ambiental (Uruguay) and Ecometrix (Canada), both having extensive experience in the area
- The study consists of description of
 - the planned pulp mill
 - identification and assessment of the potential environmental and social impacts
 - mitigation measures and conclusions
- The standard process includes questioning and answering between authorities and the company as well as stakeholders hearings
- The process continues as required by Uruguayan regulations to obtain the relevant environmental permits



MAIN POTENTIAL IMPACTS AND PLANNED SOLUTIONS

Main potential impacts and planned solutions References

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- High priority topics are chosen to the presentation based on:
 - Major significance identified in the study and
 - Fray Bentos social monitoring and experience

- Potential impacts are categorized by:
 - **Dimension**: social and environmental
 - Phase: construction and operational
 - **Significance**: high, medium and low



TOPIC: TEMPORARY HOUSING, SERVICES AND SECURITY	Social dimension	Construction phase	High significance

- The peak of manpower is expected to reach over 5,000 persons
- · Social unrest including free time activities
- The need for a significant amount of labor implies the installation of temporary accommodation
- Distribution of workers in temporary housing facilities: Paso de los Toros: 40-50 %; Centenario: 10-20 %; Durazno: 30-40 %
- Services assessed: waste disposal, sanitation, water and electricity supply, health, security, public transportation, education, recreation

Solutions

- · Regional planning and decision making considering all needs of services including security, and quality free time activities
- · Quality standard introduced for workers' housing solutions to avoid concentration, secure functionality and integration to communities
- Housing solutions distributed along different cities based on available infrastructure, services and integration to communities
- · Combination of temporary and permanent housing solution to avoid excess of supply after construction
- UPM will build in the area of influence 60 permanent houses that will be part of the temporary housing supply and will later be transferred to the State*

* Investment Agreement signed between ROU and UPM



TOPIC: TRAFFIC INCREASE	Social and environmental dimension	Construction and operational phase	Medium significance
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- Disturbances to population of nearby localities
- The greatest impact will be concentrated near to the mill due to peaks in staff working in construction
- Increase of the presence of trucks in the area nearby the mill during the operational phase
- · Route capacity will not be significantly affected during operational phase

- · Planning for smooth traffic flow and improved road safety by
 - Flyover construction, organize safe turnings while widening main routes
 - Increase traffic signals and safety awareness through education
- · Reinforcement of route pavements
- Speed awareness education and control
- · New solutions for the transportation volumes through high performance vehicles

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TOPIC: WASTE GENERATION	Environmental dimension	Construction and operational phase	High significance
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- During construction phase urban waste
- During operational phase the largest mill waste component is ash and different sludges
- · Residual inorganic materials is deposited in landfill sites
- Most of the waste generated in the process can be reused

- Application of European Union Best Available Techniques (BAT), in compliance with the national legal framework
- Promoting circular economy (reduce, reuse, and recycle), finding innovative solutions targeting to cero waste by 2030
- Regional planning for waste solutions
- Constructing a landfill to the site based on international standards and local regulation



TOPIC: AIR QUALITY	Social and environmental	Operational phase	Low significance
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- · Single odor events near by the mill could cause nuisance, but not impacts to health
- In Centenario and Paso de los Toros, odors could be noticed during single events with a variable duration estimated from an hour to one day, totally three to four days per year (in about 20 different single events)

- Application of European Union Best Available Techniques (BAT), in compliance with the national legal framework
- · High qualified and experienced international and local team



ABOUT RIO NEGRO



About Rio Negro

Rio Negro is the main river in the interior of Uruguay

Originates in the southern highlands of Brazil and flows west across the entire width of the country

There are three dams operating in the river

- Drainage basin: about 70,700 km²
- Average flow: 650 m³/s at Paso de los Toros and 1,300 m³/s at Mercedes
- Surface area: about 1,100 km²
- Water uses: irrigation, potable water supply, fisheries and tourism

Available data from local environmental studies indicates that nutrient load to the river has grown rapidly and the state of water quality is getting worse



Image: Rio Negro and possible pulp mill location

About Rio Negro Management and use of water



OPIC: MANAGEMENT AND USE OF WATER	Environmental dimension	Operational phase	Low significance
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- The planned pulp mill will take water from the Rio Negro
- The long-term average annual use of water is less than 1% of the river's average flow rate in Paso de los Toros
- The operations require about 1,5 m³ of water per second. Around 80% of that goes back to the river and the rest is evaporated
- · The use of groundwater is mainly restricted to the construction phase to supply workers needs
- Groundwater is not use for pulp production processes of the mill

- Application of European Union Best Available Techniques (BAT), in compliance with the national legal framework
- · Efficient water use with suitable recycling techniques

About Rio Negro Minimum flow





Photo: Rio Negro in Paso de los Toros

* Environmental Impact Assessment

Minimum flow rate for dams will impact positively to Rio Negro and the similar practice has been imposed across the world

There will be a minimum flow downstream of the Rincon del Bonete Reservoir in accordance with the results of the EsIA*

The minimum flow rate would likely

- contribute to the reduction of algal blooms in medium-long term
- positively impacting the water quality and the biology of the river

About Rio Negro Effluent discharge



OPIC: NUTRIENT LOAD	Environmental dimension	Operational phase	Low significance
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- Estimated contribution of the plant:
 - To the phosphorus load: about 2 to 3% of the current load of the river. The remaining 97 to 98% comes from other sources
 - To the nitrogen load: about 1 to 2% of the current load of the river
- The operation of the plant will cause no significant change in the water quality level
- In Paso de los Toros and Centenario, both located upstream of the plant, water quality will not be affected by the mill
- Only 5 km downstream of the discharge, effluent concentration may vary from near zero (during high flow rate periods) to a maximum of 1.6% (low flow rate periods)

- Application of European Union Best Available Techniques (BAT), in compliance with the national legal framework
- · Mechanical, chemical and biological effluent treatment processes
- The government issued a decree in order to improve Rio Negro water quality
- The target is to activate all stakeholders to use best practices within the catchment area of Rio Negro

Main social and environmental conclusions



Main findings relate to

- Temporary housing, services and security
- Traffic increase
- Waste generation
- Air quality
- Water quality and usage

Main conclusion based on the study

- All these potential impacts are acceptable and manageable by implementing identified mitigation measures
- The new mill will not have negative impacts to human health, living conditions, urban structure, and land use, cultural environment, wildlife and conservation sites, soil, bedrocks or groundwater
- The compliance with the BAT ensures the best possible environmental performance

Main social and environmental conclusions



- The water quality of the Rio Negro today is affected by high nutrients levels. Existing eutrophication will continue if no additional measures are taken
- With the planned mill and the minimum flow, the Rio Negro water quality would remain at the existing level
- With the implementation of the Rio Negro initiative and ensuring that best practices are carried out by all relevant stakeholders, water quality could be even improved in medium to long term
- UPM is committed to support **Rio Negro initiative** to improve the water quality in the river, as well as providing financial support to improve effluent treatment in Paso de los Toros and Centenario through a contribution of 10.5 M USD



Image: Potential UPM pulp mill



Next steps



Part of the process is a constant dialogue and exchange of information between DINAMA (National Directorate for Environment) and UPM



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