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EMERGING RISKS

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INDUSTRIALIZATION OF SUBSTITUTES FOR PRODUCTS MARKETED BY SUBSIDIARIES

Description

There is an increasing interest in the market in paper and paper products made out of non-wood fibre, sourced from the agricultural and textile sectors. This shift is driven by several factors, including sustainability concerns, resource scarcity, and the desire to reduce environmental impact. For example, synthetic pulp is a material manufactured through chemical processes to mimic the properties of natural wood pulp.

Innovation in wood-free pulp technologies could change market dynamics and pose challenges to companies that rely on wood as a raw material. Some of products that already using wood-free pulp are tissue, hygiene, printing, cigarette, technical, security and speciality paper, as well as board, including for food packaging, and the list could keep growing.

As technology advances and awareness of environmental impact grows, this trend is likely to continue to accelerate and expand.

Category: Economic

Impact/Opportunities: New materials could change market demands and affect the competitive position of traditional pulp companies, such as subsidiary ARAUCO.

Mitigating actions

For more than 30 years ARAUCO has been researching, developing and applying the best technologies to maximize the productivity of the forest and

industrial resources. To this end, the company works intensively to analyze processes for the Forestry, Pulp and Wood areas in the different countries where it operate.

In this context, where research and development are essential to ensure long-term sustainability, ARAUCO has a Research Centre of Excellence called Bioforest. Today it has a team of more than 30 people, mainly dedicated to the research of new technologies and products derived from the pulp process and forest improvements.

ARAUCO continuously collaborates with technological partners and invests in R&D as a key strategy to remain competitive and respond to changing market demands and environmental expectations. In this regard, the company plans an investment in R&D of US\$ 100 million by 2030.

For example, in 2020, ARAUCO produced dissolving pulp for the first time in Chile. This pioneering project required an investment of approximately US\$ 190 million and involved converting the Valdivia Mill into a reversible facility, capable of producing paper and dissolving pulp. Dissolving pulp, produced from eucalyptus, has environmental and production advantages over cotton, is marketed mainly in Asia and is used as a raw material in the manufacture of viscose or rayon fabrics. In 2023, the product reached a production of 296,000 tons (Adt), with a market share of 5.8%.

During 2023, the company has joined the Emission Free Pulping Program, a partnership between leading companies in the industry, promoted by VTT Technical Research Centre of Finland and RISE (Research Institutes of Sweden). Its main objectives are to increase the efficiency of wood use in the conversion to products, achieve emission-free pulp (especially CO₂) and significantly reduce water consumption.



INCREASE IN WATER TEMPERATURE

Description

The ocean has absorbed 90% of the heat caused by anthropogenic greenhouse gases, which raises water temperature.

Recent studies show historical and recent observations showing that ocean heat uptake has accelerated dramatically since the 1990s, nearly doubling during 2010–2020 relative to 1990–2000. Of the total ocean heat uptake over 2005–2020, about 89% can be found in global mode and intermediate water layers.

The increase in water temperature can cause the displacement and alteration of species, and variations in ocean circulation. If the water cycle accelerates with global warming, it could have profound impacts on modern society, driving drought and water shortages, as well as greater storms and flooding.

Climate change accelerates the water cycle by increasing the rate of evaporation. This affects the amount of water available for human consumption, agriculture, ecosystems and other uses.

Category: Environmental

Impact/Opportunities

- High temperatures can increase soil erosion after wildfires, affecting productivity and soil quality.
- Heat can alter the chemical composition of soil, decreasing the availability of nutrients for trees.
- Warmer waters can create metabolic stress in fish, affecting fish reproduction and foraging.

Mitigating actions

The subsidiary ARAUCO implements water management practices that promote conservation and efficient use of water resources within forestry operations and in surrounding communities.

For example, it maintains a constant commitment to hydrological monitoring, focusing on the development of knowledge for sustainable water resource management and ensuring compliance with emission limits in order to respect the quality of water bodies, both associated with effluent discharges and for the safe supply of plants and the conservation of water bodies.

For a decade, ARAUCO has developed the Water Challenge management strategy in Chile. This can include techniques such as rainwater collection and storage, the construction of small reservoirs and the implementation of efficient irrigation practices.

Through Bioforest, during 2023, ARAUCO was awarded the CORFO subsidy for an innovative water treatment project: PEDRO (Pulsed Electrolysis Reversal Optimized), which will allow the optimization of desalination plants based on electrolysis, through artificial intelligence.

In Chile, the International Congress "Mega Fires: Multiple dimensions of the effects of fire on forests and the territory" was participated in, with the work "Planning of ecological infrastructure explicitly considering the risk of fires in Central Chile", which allows updating priority sites for restoration.

For its part, Orizon is committed to the ocean, which is why its ships are equipped with advanced echo sounder and sonar technology. This technological infrastructure is added to the experience of the captains and crew, which allows them to detect whether the fishing area has the fish they wish to catch. This way, they ensure that they do not harm other species and go beyond compliance with Chilean regulations, whose fishing discard law controls and oversees that ships do not discard marine species when fishing.



BIODIVERSITY LOSS

Description

Biodiversity loss refers to the decline or extinction of different species, as well as the local reduction or loss of species in a specific habitat. The main causes of biodiversity loss include overexploitation of the natural environment, habitat loss, environmental pollution, the introduction of invasive species and the effects of climate change.

Category: Environmental, economic

Impact/Opportunities

- Less biodiversity means fewer ecosystem services, such as pollination, water purification and climate regulation, which could impact the efficiency of forest plantations.
- Environmental degradation can lead to tensions with local communities and affect the company's reputation.
- Overfishing can lead to the depletion of certain species, affecting resource availability and ecosystem functioning. The loss of species affects the food chain and can lead to imbalances.

Mitigating actions

ARAUCO, through its Biodiversity and Ecosystem Services policy, ratifies its commitment not to substitute native forest and not to encourage substitution by third parties. In addition, it has 65 Biological HCVA's and established a commitment to count and inventory the natural capital found within Chile's forest heritage by 2024. It has FSC certification, which promotes environmentally appropriate forest management, ensuring that the

production of timber and non-timber products maintains the forest's biodiversity, productivity and ecological processes.

Since 2021, ARAUCO has opened access to part of its forest assets so that communities can develop activities that promote the care and conservation of nature, enjoying the environmental, social and cultural values that forests provide.

Copec's goal is to protect a total of 39 ecosystems by 2034, including the La Chimba, El Bato and Vientos del Chelenko wetlands.

Orizon within its policy of Compliance with the Fisheries Law declares to comply strictly with the regulations contained in the General Law of Fisheries and Aquaculture, its regulations and resolutions. The law establishes the mechanisms for the administration of hydrobiological resources.

In addition, Orizon is part of the MSC certification for sustainable fisheries, which contains a principle of "Sustainable Fish Stocks" that seeks to ensure that fish stocks remain productive and prosperous.

Empresas Copec participates in the Biodiversity group of Acción Empresas, with the aim of building capacity within the group on biodiversity issues, keeping up to date with knowledge and regulations on the subject, and creating alliances with other entities.

As of 2024, the subsidiaries Copec, ARAUCO and Orizon participate in the Strategic Committee of the Business Action Plan on Biodiversity, promoted by the Ministry of the Environment and Acción Empresas, contributing to the updating of the country's strategy in this area.

Within the companies there are environmental teams dedicated to monitoring environmental impact.

ACCELERATION OF THE DECARBONIZATION PROCESS

Description

It refers to the increase and intensification of the speed with which the transition to a low-carbon economy is taking place. This could involve taking faster and more effective measures to reduce dependence on energy sources and industrial practices that generate high carbon emissions.

Although the transition to electromobility in Chile is in an initial stage, it is expected to significantly reduce the demand for fossil fuels in the country. This impact is the result of changes in the composition of the vehicle fleet and in prices during the transition period. Electromobility and other sustainable fuels will have positive prospects in transition.

Category: Economic

Impact/Opportunities

- Investments in fossil fuel-related assets could face significant financial risks as pressure to reduce dependence on these resources increases. Companies that do not adapt quickly could face asset write-downs and financial losses. Given its dependence on fuel trading, Copec's revenues would be mostly exposed to this risk.
- The company could face disruptions in its supply chains as regulations and consumer preferences change. This could affect the availability and cost of key inputs.

- Decarbonization often involves the adoption of new technologies. Companies that are unable to adapt or adopt emerging technologies could be left behind in terms of competitiveness.

Mitigating actions

Subsidiaries in the energy sector are constantly seeking to invest in renewable energy and clean technologies to reduce dependence on fossil fuels, as well as to generate alliances with different relevant actors along their supply chain to facilitate the transition to a low-carbon economy.

Subsidiaries seek to implement practices to reduce emissions in current operations. For example, Orizon established the goal of using 100% renewable energy by 2024.

Empresas Copec and its subsidiaries communicate efforts towards decarbonization in a transparent manner to investors, collaborators and other stakeholders.

Copec and Roda-e are part of the Public-Private Electromobility Agreement 2023-2024.



WATER SCARCITY

Description

Water scarcity refers to the lack of sufficient water in an area or region to meet consumption demand. Chile is a water-rich country compared to the OECD average, but faces difficulties due to climatic, regulatory and management factors. Water insecurity hinders economic recovery and jeopardizes sustainable development goals such as access to clean water and food security. Climate change, decreasing rainfall and rising temperatures aggravate this crisis, affecting access to drinking water, agriculture and other productive activities.

In August 2023, the pulp manufacturing process at the Licancel pulp mill in Chile was suspended indefinitely. The reasons for this measure consider the extreme climatic variability, with consecutive flooding of the river, extreme periods of drought that caused repeated stoppages and high impact forest fires that have generated a significant drop in the availability of wood at the industrial level.

At the consolidated level, in 2023, 29% of the water withdrawn came from areas with high and/or extremely high baseline water stress.

Category: Environmental.

Impact/Opportunities

- Lack of water can affect the growth and productivity of forest plantations.
- Plantations stressed by water shortages are more susceptible to infestations and diseases.
- Lack of water can affect marine habitats and the availability of food for species, which decreases fish populations.
- Reputational impact

Mitigating actions

ARAUCO maintains a constant commitment to hydrological monitoring, focusing on the development of knowledge for the sustainable management of water resources and ensuring compliance with emission limits. ARAUCO's objective is to conserve the quality of bodies of water, both those into which effluents are discharged and those associated with supplying the Company's plants.

For a decade, they have been developing the Desafío Agua management strategy in Chile, which accelerates Rural Drinking Water projects in collaboration with the community and authorities, benefiting more than 40,000 people in 38 communes.

In 2023 Bioforest was awarded a CORFO grant for a new water treatment project: PEDRO (Pulsed Electrodialysis Reversal Optimized), which will optimize electrodialysis-based desalination plants through artificial intelligence.

ARAUCO prepared a prioritization and action plan for supply basins affected by fires in the 2023 season.

ARAUCO adheres to the FSC principles and criteria, of which Principle 6.7 establishes that organizations shall protect or restore natural streams and bodies of water, riparian zones and their connectivity. In addition, they shall avoid negative impacts on water quality and quantity and mitigate and repair those that do occur.

ARAUCO's Safety, Occupational Health, Environment and Quality Policy establishes the responsible use of raw materials and inputs, such as wood, water, air, soil, among others. In addition, ARAUCO monitors its operations and their impacts on water, air, soil, among others, and through its policy is committed to protecting the environment.

