

## Circular (bio) economy of Brazilian planted-forest based industry: a successful case towards a sustainable, inclusive and innovative green path

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### INTRODUCTION

Climate change has gained emergency status and requires concrete transformations, since there is no more room for the linear economy. Resources need to be intelligently used to minimize pressure on natural capital. The use of fossil and non-renewable sources must be reduced as much as possible; while biomaterials and renewable sources need to be stimulated. Both ways are need and complementary to each other.

### SCOPE AND MAIN OBJECTIVES

In forest based industry, the circularity of resources is taken seriously. This paper aims to show sectorial data on water; energy and recycling; as well as the impact of new products from circular economy at companies and their value chain.

#### ENERGY

Energy is fundamental resource for people and several industries. Although the forest based industry is energy-consume-intensive, the sector is also a big producer.

- In the last 6 years, the production of bioelectricity of this sector increased 25%, and its sales increased 39%. It makes biomass an important energy security agent in Brazil, contributing to a renewable energy matrix.
- In 2020, the increase in bioelectricity production was 2%. 80.4 mi GJ were produced, representing 77.4% of the 104 mi GJ consumed by the sector, which ensured an important rate of energy self-sufficiency. In 2019, this rate was 69%. Part of this improvement comes from the 8.7% reduction in consumption, meaning an improvement in energy efficiency.
- There was also a drop of 28.6% (16.0 mil GJ).in energy purchases. This is a result of investments in circular bioeconomy which transform residue in renewable bioenergy, as well as energy efficiency.
- 73% of the sector has its energy matrix based on black liquor and 16% on forest biomass, which means an 89% renewable matrix.



#### WATER

Recently, Ibá has published the “**Performance Report on Water Management in the Planted Tree Industry**”, which aims at providing governance and transparency through the continuous monitoring of the main water management practices in the companies. The monitoring is based on KPIs that cover forests, industry and the corporate environment. The report shows for instance that:

- 100% of the companies that participate in monitoring adopt practices that conserve the soil and water, such as protection of springs and prevention of erosion
- 86% of companies monitor qualitative aspects on water bodies
  - 77% perform quantitative monitoring.
- 82% and 52% percent of the water captured by the pulp and paper and the panel industry, respectively, return to the water bodies after treatment
- 43% of all water for the manufacturing of pulp and paper, and 12% of water for producing panels and flooring come from reuse

The report also profiles 12 cases that give a practical overview of how the KPIs are being implemented by companies and sets straightforward 8 commitments that reflect the attention of this industry with the shared responsibility of this natural resource, including reduction of water use and an increase of reuse.



#### NEW PRODUCTS

A research with 13% of our member-companies was made the pulp and paper, panels and charcoal segments. It was found that 4 kinds of liquid waste and 39 kinds of solid waste are responsible to produce at least 18 new products, such as:



Mineral fertilizer	Calcium chloride
Biological fertilizer	Tiles
Cellulose filler	Chicken bed
MDF/MDP sheets	Animal stall
Energy	Composting
Soil Conditioner	Soil Conditioner
Soil acidity corrector	Furniture
Floor ceramics	Substrate

It is estimated that only for this sampling, 229 new jobs were created, with direct impact in 2,800 people in 50 cities in 3 regions of Brazil.

Some of the initiatives date from 1988.

We also found that about USD 2,8 million of cost were avoided and an income of USD 6,6 million were created in a year.

#### RECYCLING

Paper industry is one that gives most importance for circular economy.

Several companies are specialized in using recycled paper instead of virgin fiber. The numbers proof that.

In 2020 the post-consumption recycling rate reached 70.3%; higher than in global level, that reached 59.1%



### CONCLUSIONS

- Sectorial investments in technology, research, development and innovation provide energy and paper safety in terms of supplying.
- The monitoring of water performance at the sectorial level improves governance and transparency, as well as stimulates companies to implement good practices to reduce the use and promote the circularity of water.
- Having an attempt of looking at residues can add value for companies and to the value chain, generating income and avoiding unnecessary costs.
- All forms of circular (bio) economy generate benefits in social, environmental and economical terms.