CARING FOR WATER MEANS CARING FOR EVERYONE'S FUTURE

PERFORMANCE REPORT ON WATER MANAGEMENT IN THE PLANTED TREE SECTOR | 2021 EDITION

ibá
brazilian tree industry

Photo: WestRock

A sector that cultivates trees and cares for the environment

The forest-based sector has evolved in recent years, looking beyond its forests and manufacturing processes. Its performance in accordance with the bioeconomy places the environment and natural resources at the center of business. Practices such as forest and landscape management and boosting industrial efficiency have become better established, and alongside dialog with neighboring communities, form the foundation of efforts toward shared water use. Long-term availability of this resource is considered an asset as well as a key element in decision-making processes that drive continuous improvements in operations, in the forest as well as the factory.

There are 9 million hectares of trees planted for various segments and products, such as paper, cellulose pulp, packaging, wood panels, laminate flooring, biomass for energy, charcoal for steel production, wood for the construction sector, and viscose for the textile industry. There are also nearly 6 million hectares of natural vegetation preserved through Permanent Preservation Areas (PPAs) and Legal Reserves (LR), in compliance with the Brazilian Forest Code, as well as Private Natural Heritage Reserves (PNHR). In other words, for each hectare of productive forests, nearly 0.7 ha is set aside for conservation purposes. The conservation and production areas form a mosaic in the landscape, allowing flora and fauna to move and conserving biodiversity.

9 million hectares of planted trees

6 million hectares of preserved area

3,8 million job opportunities throughout Brazil

The future depends on everyone's efforts

Global water use has grown six-fold over the last 100 years, and continues to grow steadily at a rate of 1% per year due to population growth, economic development, and changes in consumption patterns (UN, 2020).[1]

There are also impacts caused by climate change that will further affect water availability and quality, especially in tropical areas, where most developing countries are located. Society's vulnerability to such impacts results not only from extreme events such as heavy rains, heat waves, and prolonged drought, but also from their impacts on food security, human health, providing cities with water, energy production, industrial development, economic growth, and ecosystem prosperity.

The management of water resources leads to gains in three areas: the human right to clean water and sanitation, mitigation and adaptation to climate change, and directly and indirectly helping to achieve many of the UN Sustainable Development Goals (SDGs) and the Global Forest Goals from the United Nations Forum on Forests (UNFF), as we shall see below.

[1]The United Nations World Water Development Report 2020

Our efforts have intensified over time...

The topic of water in the Brazilian forest sector has been studied by academia and by corporate research & development divisions for quite some time. The first studies on forest hydrology date back to the early nineteenth century. In 2014, Ibá began to discuss and implement a more strategic and sectoral approach to its actions in this area, in collaboration with relevant partners.

1963 Forest hydrology first appears as a discipline at the Federal University of Viçosa (UFV).

1975 Thesis: "Study of some quantitative and qualitative aspects of the water balance in eucalyptus and pine plantations."

1987 Creation of the Program of Experimental Catchment Monitoring and Modelling (PROMAB) at the Forestry Science and Research Institute (IPEF).

Two micro watersheds were demarcated to monitor the quantity and quality of water in a eucalyptus forest.

1991 Inauguration of the Forest Hydrology Laboratory at the Luiz de Queiroz College of Agriculture (ESALQ/USP).

1999 Article "Effects of clearcutting eucalyptus plantations on the water balance, water quality, and soil and nutrient losses in a watershed in the Paraíba Valley, SP."

2004 Monitoring to compare data from micro watersheds containing managed pine forests with those containing native vegetation.

2009 Inauguration of the Forest Hydrology Laboratory at UFV.

2010 Publication of the first volume of "Writings of The Dialogue – Plantation Forestry and water: science, dogmas, challenges" by the Brazilian Forest Dialogue.

2014 Creation of the Ibá Water Resources Working Group.

2015 Launch of Ibá's infographic "Planted Trees and Water Resources."

2017 Discussions begin on defining sector indicators within the framework of the Ibá Water Resources Working Group.

2018 "Planted Trees and Water Resources" infographic updated, and video "Are you doing your part for water conservation?" released.

Active participation in the International Symposium on Forests and Water (IUFRO, Chile) and the 8th World Water Forum (UN, Brazil).

2019 Publication of the first volume of Casos de Sucesso - Florestas e Recursos Hídricos [Success stories: forests and water resources] by the Brazilian Forest Dialog with support from Ibá.

Publication of article entitled "Effects of eucalyptus plantations on water flow in Brazil: moving beyond the debate on water use."

Launch of the "Growing Stories" video series with an episode focusing on water and a spring preserved by João Bento; of the entire series, this episode received the most views.

2021 Launch of the first sector report entitled "Caring for water means caring for everyone's future".

Photo: Ecofuturo / Mike May

More than a report: a tool for transparency

The set of indicators was defined with the participation of the companies, sector associations, and partnering research institutes, and was divided into three categories: corporate, forestry, and industry.

The corporate indicators address initiatives that span all areas of a company, from the forests to the industry, and focus on dialog with affected and interested parties. The forest indicators attempt to identify the companies' most common management practices for conserving soil and monitoring water quality and quantity. Meanwhile, the industrial indicators provide an overview of water use in manufacturing facilities, including practices such as reuse.

This publication is an unprecedented initiative, the fruit of a proactive effort meant to provide transparency about the main practices that comprise water management in the planted tree sector, as well as to measure these practices, and make continuous monitoring the central point of the water management strategy in the sector.

100% **of the companies have public relations channels to receive comments, complaints, and suggestions**

0,3% **of all public comments/ complaints received are related to water, reflecting the effective management practices adopted.**

90% **of water-related interactions were responded to or addressed.**

The remaining 10% were not resolved in the same year they were received, because of the complex and transverse nature of this issue within the companies. This demonstrates the companies' commitment and seriousness as they not only receive demands but address them by mitigating any potential impacts, avoiding recurrences, and incorporating public opinion into their water management whenever possible.

Corporate

Care starts with dialog

Social relationships, ranging from staff and contractors to communities, consumers, academia, and government, are an important component in business resilience.

Dialog, listening, and mapping opportunities for improvement are recurring practices. This relationship becomes more solid with engagement, constantly relying on communication channels such as telephone, e-mail, workshops, meetings, and suggestion boxes in workplaces and communities. All these methods prize the perceptions and experiences of people who interact with the areas managed by these companies.

These tools are important, especially for analyzing the effectiveness of activities to prevent and/or mitigate potential negative impacts and optimize the positive effects of operations from the viewpoints of stakeholders and affected parties.

Protection, monitoring, and study in the forests

Like all living things, trees capture the water they need for their development, whether they are exotic or native species, planted or part of natural forests. Most of the water captured returns to the atmosphere in the form of water vapor.

If well managed, planted forests can help maintain hydrological processes such as water infiltration in the soil and water quality, providing an important environmental service for society.

Different scientific studies on the water balance in forestry show that an average of 83% of the water that falls on plantations in the form of rain is evapotranspirated, and returns clean to the atmosphere. The remaining 17% drains off, charging streams and rivers in watersheds. These values are similar to those reported for native forests, which involve 81% evapotranspiration and 19% draining off into bodies of water. Note, however, that these values are averages and may vary depending on climate and water availability in each region, where they may be higher or lower. Good management considers these factors as well as soil type for landscape planning, and also includes economic and conservation activities and forestry practices involving soil conservation.

In general, the planted tree sector strives to adopt and improve management practices that match water availability with demand from forests and other land uses; this is fundamental for long-term business viability and to prevent regional tensions over water use. Landscape planning that utilizes mosaic plantings, which intersperse plantations of different ages with natural forests, can also contribute to water availability. These two practices are recognized by the UN in its set of guidelines for adapting to climate change (UN, 2020).[1]

Throughout this document, eleven indicators depict water management, from seedling production until the trees are planted and become a forest.

Photo: Bracell

In the nursery

Seedlings need an average of 3 months in the nursery before they can be planted in the stands. This is a very important step and receives special attention; the sector monitors the volume of water required by each seedling to boost efficiency in the use of this resource, as well as seedling performance.

Conservation practices

Water is intimately related to the soil and the forest, since leaf canopies and trunks reduce the impact of rain on soils, helping to maintain stability and avoid erosive processes such as runoff of sediment in rivers. Forest cover also allows rainwater to penetrate the soil more slowly, which helps recharge the water table.

100% **of the companies have some type of measures in place for soil and water conservation in their forests.**

Companies that work in forestry and other land-use sectors must comply with the Brazilian Forest Code (Law 12.651/2012), which does not permit deforestation or commercial plantations in PPAs or areas surrounding rivers, lakes, and springs. These areas are important for soil stability and, in turn, preserving water resources.

[2] 2019 Annual Report of the Program of Experimental Catchment Monitoring and Modelling (PROMAB) at the Forestry Science and Research Institute (IPEF).

Photo: Eucatex

85%

of companies restore natural vegetation in PPAs when necessary, or take measures to protect it.

One example is isolating the areas from potential degradation, such as fencing to keep out livestock, which is done with the approval of neighbors and according to local needs. Restoring vegetation not only contributes to biodiversity and carbon sequestration, but also provides ecosystem services such as water filtering and production, soil conservation, flood protection, and recreation.

91%

of companies monitor soil erosion.

93%

of companies adopt measures to prevent erosion.

These include maintaining rural roads, building dam containment systems and embankments, and planting in raised rows.

93%

of companies leave bark, branches, and leaves on the ground after harvesting.

This practice improves infiltration capacity, which protects and improves soil quality in terms of nutrients. Companies also direct some of these materials to local communities for their use.

Quantity and quality

Quantitative and qualitative monitoring of water bodies make it possible to understand and assess the effects of planted forests, and also permit monitoring of management practices and protective measures to guide potential adjustments, when necessary. Studies show that this approach, known as adaptive management, can minimize the impacts of plantations on water resources.

86%

of companies monitor qualitative aspects for water bodies.

77%

perform quantitative monitoring on water bodies; 58% do so at least once each day.

Investing in partnerships

Ibá's associated companies are on the cutting edge of water research, conducting scientific studies and monitoring their bodies of water in partnerships with universities and research institutes.

39%

of companies have academic partnerships.

There are at least 7 partnering research centers: 6 are Brazilian and 1 international.

- **Catholic University Center of Eastern Minas Gerais (UNILESTE);**
- **Getúlio Vargas Foundation (FGV);**
- **University of Sao Paulo (ESALQ/USP) through PROMAB/IPEF;**
- **Santa Catarina State University (UDESC);**
- **Federal University of Viçosa (UFV), through the Forestry Research Society (SIF);**
- **Federal University of Mato Grosso do Sul (UFMS);**
- **Commonwealth Scientific and Industrial Research Organisation (CSIRO, Australia).**

Evolving factories

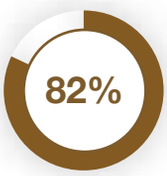
For decades, much of forest-based industry has been taking measures to reduce water use in factories by applying concepts from the circular economy.

Although the pulp and paper and floor and paneling producers that make up this sector are very different, including in how they use water resources, all of them invest in rational water use.

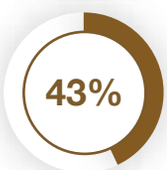
Most of the water captured for use in production is returned to the bodies of water where it originates. But before being returned to the environment, it is rigorously treated in wastewater treatment plants. Most of the water that is not directly returned goes back to the environment as steam (for example, through factory stacks), as products dry, or via evaporation from water treatment pools. Another portion of the water used in the manufacturing process remains in the product.

Pulp and Paper

In this segment, water is used to wash logs and cellulose pulp, just after cooking, and also in the bleaching process.

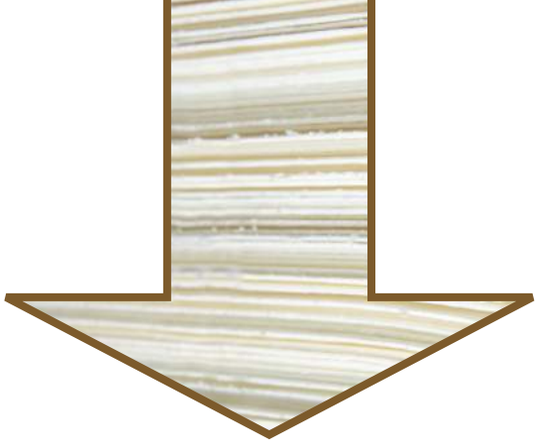


of the water captured by most of the sector is returned to the water body it was extracted from.



of all water from the manufacturing process is reused.

Photo: Cenibra

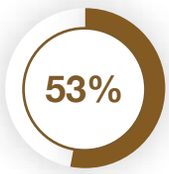


75%
volume of water

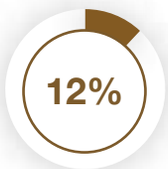
used to produce a ton of cellulose pulp has been reduced over the past four decades.

Floors and panels

In the floor and paneling segment, water is used for washing logs and woodchips. For the most common types of panels, MDF and MDP, pressing is done in a dry process that uses practically no water.



of the water captured by most of the segment is returned to the water body it came from.



of all water from the manufacturing process is reused.

MDF and MDP

are manufactured by dry pressing.

A word from...

Herly Carlos Teixeira Dias

Full professor and researcher in the Department of Forest Engineering at the Federal University of Viçosa (DEF/UFV).

Forests and water: past, present and future

Today, I view the forest sector very differently than I did twenty years ago, when I started working at UFV as a professor specializing in Forest Hydrology and Watershed Management in the Department of Forest Engineering. In the past, information about the relationship between forests and water was more discreet and less disseminated, as were the activities and work by companies' environmental and social divisions.

For example, some monitoring activities in the sector were very important and started well before this, but they were not disclosed. For example, the discipline of forestry hydrology, which taught the tools for monitoring hydrological processes, began in 1963 with Professor Alberto Dacker in the Forest Engineering course at UFV. Some experiments were introduced in Brazil after that, but still in a timid way.

Much has changed between that time and now, including the monitoring and management practices within the forest sector. Today, society, the scientific community, and the population at large are able to access many of these initiatives. There is dissemination in the scientific media, and this extension has spread many of the efforts involving monitoring, development, and application of soil and water conservation techniques. Currently, entities such as SIF, the Minas Gerais Forest Association (AMIF), IPEF and Ibá play a very important role for the forest sector, serving as a link between companies, academia, and society.

I believe that we are on the right track, with a lot of work to be done, but with good prospects and new opportunities. I believe that if everyone becomes aware of how their actions affect water availability, in terms of quality and quantity, the cycle will close and the sustainability we have dreamt about for so long can be achieved! It is a major challenge, but if we start to chip away at the edges and work little by little together, without fear or prejudice, from all sides, the economy, the environment, and society will be able to develop at the same time.

Currently, entities... play a very important role for the forest sector, serving as a link between companies, academia, and society.

Photo: Adriano Gambarini/WWF-Brasil
Source: International Paper

Silvio Frosini de Barros Ferraz

Associate professor in the Department of Forest Sciences at the Luiz de Queiroz College of Agriculture (ESALQ/USP)

How can we universalize the sector's advances in water conservation?

The forest sector has made progress in conserving water, mainly by pioneering the adoption of good management practices, compliance with environmental legislation, forest certification, and investments in research and social projects. However, there are differences between the companies, and we need to honor those that stand out and encourage those that still need to make progress in this area.

> **Water from streams that run through planted forests is generally high-quality.**

The water from streams that run through planted forests is generally high-quality, and the effects of management are eventually noticed in an isolated and non-persistent manner after harvest activities. Understanding the specific effects of forest operations is a precise challenge that requires research involving experimental micro watersheds.

However, the use of water by planted forests remains one of the most controversial topics. Given the size of the sector, the diversification of the industry, and regional social and environmental characteristics, the main challenges are:

• Monitoring - in various companies, monitoring must be qualified and adapted according to their objectives, techniques, analysis, and application of results. Sporadic collections and measurements cannot be equated to the scientific monitoring carried out by PROMAB, for example.

• Inclusion - for small businesses water conservation is a larger challenge that may result from lack of access to technology, lesser investment capacity, or fewer market requirements. These companies must be included.

• Vision - there is still a notion that social and environmental sustainability implies reduced productivity, which is considered "losses" rather than "future gains" or activities required to reduce risks to society, the environment, and the forest asset itself. Many challenges arise from this lack of strategic vision.

• Diversity - the country is diverse, with major variations in water availability and demands from the population and agriculture. For this reason, forest management must be tailored to the specific limitations in each region related to society, the economy, and water availability.

• Communication - communication on this issue is not effective, perhaps because of controversy or the complexity involved. As a result, water as a topic is not directly addressed, concealing the challenges and great advances that have already been made.

The points here are not critiques, but instead represent opportunities for progress toward water sustainability in planted forests and understanding water as a resource to be shared. The Forest Hydrology Laboratory at ESALQ/USP and PROMAB/IPEF have been committed to addressing these challenges for over 30 years.

Foto: Eucatex

The practical results!

See how companies put these indicators into practice to improve water management and refine their corporate performance, as well as actions they take in the nursery, forests, and industries.

Water footprint of eucalyptus pulp | Klabin

In 2019, Klabin started a project in partnership with the Center for Sustainability Studies at FGV to calculate the water footprint of its products. Water footprint is a methodology for measuring water consumption throughout the entire production chain, from forest to the mill, and identifying measures to reduce water use and boost efficiency. The first product examined was short-fiber pulp, made of eucalyptus and produced in the company's Puma Unit (Ortigueira, Paraná). Notable points from the main results of this study are:

• An integrated vision of water management/ consumption, which allows a more assertive response in investments for reuse and reduced consumption of water.

• Innovation: the results yield more precision in analyzing innovative measures for water efficiency.

• Customer service: the market, especially in Europe, is increasingly looking for specific environmental information about products.

• Knowledge generation: the partnership between Klabin and FGV has led to training for internal teams, which allows the company itself to calculate the footprint of other products.

Finally, Klabin has reinforced its commitment to continue pursuing water efficiency in its operations. From 2004 to 2019, the company reduced the amount of water it consumes to produce each ton of product by 45%. Klabin is also on CDP's "A List" for water, which evaluates companies according to their management of water resources.

Corporate Case

Klabin

cmpc

Nursery Case

Reducing water use in seedling production | CMPC

CMPC's nursery in Barra do Ribeiro, Rio Grande do Sul, implemented an action plan between 2016 and 2020 that reduced water consumption by 17%. The plan was divided into four parts:

• Diagnosis: the points with the highest consumption were identified to revise management practices and adopt alternatives to systematically reduce water consumption.

• Immediate correction of problems: one fast-acting measure was to eliminate leaks, replace irrigation nozzles, and conduct maintenance in the system.

• Modernization: all irrigation pumps were replaced, irrigation distribution systems were modified, new nozzles were installed to reduce losses, and a system was implemented to monitor consumption and potential losses online.

• Reuse: the tube washing system was redesigned, and structures that use rainwater for cleaning were installed.

In response, water consumption dropped from 5.2 m^3 to 4.3 m^3 per 1000 seedlings produced. This reduction saved 133,000 m^3 of water from 2016 to 2020. Considering that an average person consumes 154 liters of water each day, this equates to the annual consumption of drinking water in a city with 2,400 inhabitants. Additionally, equipment renovations and closing the water treatment plant circuit are planned in order to further optimize water consumption.

Bracell

Forest Case

Agrometeorology beyond boundaries | Bracell

Bracell BA has invested in collecting data on its entire production area in Bahia to better understand cause/effect relationships between agrometeorological conditions and eucalyptus cultivation, from a productivity point of view and also considering conservation of natural resources and sustainability of the regional landscape. Agrometeorological conditions from 1980 to 2018 were analyzed in terms of climate and year-to-year variability, producing maps of precipitation, temperature, relative humidity, wind speed, and water balance which make it possible to understand water as a resource within the context of conservation and productivity. This study helped the company improve forest management through adjustments that included plantation spacing, soil tillage, and clone selection. The results were implemented not only on Bracell's properties, but also in forests belonging to its partners and outgrowers. This highlights the company's commitment to technology transfer focusing on sustainable use of water resources and business continuity, strengthening the value chain, regional development, and conservation of water and other natural resources beyond its farms.

Project Água Viva: revitalizing the Doce River Basin | Cenibra

Project Água Viva ("Living Water") is intended to restore the hydrological sustainability of the Rio Doce Basin in terms of sustainable development and quality of life for those who consume this water. The project is based on four pillars: social engagement, water sustainability, socioeconomic development, and public health. In order to improve the quality of the water captured to supply the municipalities where Cenibra operates, the company has installed over 100 septic tanks and fenced 417 springs on property belonging to third parties and rural communities upstream from municipal water catchment locations. The septic tanks are intended to reduce the organic load of pollutants, and fencing off the springs helps reduce the amount of sediment that runs off into rivers and streams. Two other measures also ensure good quantities of water in the basin: subsoiling over 4,000 ha of third-party areas to increase rainwater infiltration and recharge the water table, and building 40 small embankments over storm drains that cross the company's rural roadways in order to create small reservoirs close to communities that regulate water flow during dry periods and are important to society in the regions where the company operates.

CENIBRA®

Forest Case

GERDAU
O futuro se molda

Forest Case

Water Project | Gerdau Florestal

The Water Project seeks to decentralize water capture to supply forest activities, while also decreasing impact on local water availability. For this purpose, 10 reservoirs holding 250,000 liters each were installed at strategic points in the farms, fed by 4 mobile catchment systems. This strategy of decentralizing catchment increased water availability at the local level by increasing the number of uptake points, thus reducing the quantity of water captured from each to an insignificant level (0.5–1 l/s). These adjustments provide stability for forestry operations, with water flows that cause less impact on water resources. Another important point of the project is decreased greenhouse gas emissions, since locating these reservoirs at strategic points has reduced the average distance water is transported.

Mogi Guaçu: Roots Program | International Paper

The Mogi Guaçu Roots Program [Programa Raízes do Mogi Guaçu] is a partnership with WWF-Brazil, the Copaiba Environmental Association, and the Southern Federal Institute of Minas Gerais to remediate and restore springs and riparian areas of Atlantic Forest in the Mogi Guaçu River Basin. Restored forests help stabilize soil, maintain water quality and availability, and expand habitats that are important to biodiversity. Landscapes with greater water resilience make it possible for people and productive sectors to be more economically sustainable. Areas with low rates of forest cover and high risk for water scarcity were identified in a landscape containing 500,000 ha in SP and MG, and targeted as priorities for restoration. These areas lie beyond International Paper's borders, and as a result multi-sector dialog and strengthening local governance were needed for these restorations. The company also engaged with rural producers, who not only make their land available for restoration, but also play a role in shared generation of knowledge. During the pilot phase, the program focused on PPAs and planted 21,000 seedlings over 12 ha, protecting 6 springs and engaging more than 40 people who now act as multipliers in sharing the benefits of ecological restoration. The program brings together our different missions and represents the company's philosophy, shaping the future and helping define the world we want for future generations. These roots continue to branch through partnerships that help make the Mogi Guaçu River stronger and stronger.

Forest Case

INTERNATIONAL PAPER

RAÍZES DO MOGI GUAÇU

Foto: Adriano Gambarini/WWF-Brasil
Fonte: International Paper

Innovation in forest management | Suzano

Access to water resources lies at the heart of sustainable development. Over the last 25 years, Suzano has continuously updated its knowledge on the use of water in eucalyptus plantations through a network of experiments in micro watersheds, which act as open-air laboratories. The findings inspired an innovative project called “Landscape Integrated Planning” meant to strengthen landscape management as a management tool. The project consists of three stages:

1. The company’s entire forest base (2.2 M ha) was assessed to identify critical watersheds based on a balance between water supply and demand, as well as the vulnerability of local communities.

2. In 2021, the company will begin to apply management techniques to boost water supply in 100% of these critical watersheds by 2030, in addition to specific work with communities in these areas.

3. Suzano also conducts census monitoring of areas and analyzes water availability via modern remote sensing and modeling techniques, in a pioneering and innovative manner.

This project has allowed the company to set a long-term goal to incorporate water conservation into forest management processes. This is a case of innovation that generates and shares value, reinforced by one of the company’s value drivers: “It is only good for us if it is good for the world.”

Forest Case

Duratex

Industrial Case

Complete reuse of water in the Taquari plant | Duratex

In order to reduce the volume of water uptake for its production process, Duratex implemented a wastewater treatment project to reuse water in its reconstituted panel (MDP) plant in Taquari, Rio Grande do Sul. The project included physical, chemical, and biological treatment for all of the factory’s effluent, followed by treatment to disinfect the water, which is then reused in the production process. The main challenges involved updating the facilities and redefining the layout of rainwater and effluent networks at the plant. The effluent treatment plant, the polishing pond (where the effluent is stabilized), and the chemical/physical analysis laboratory were modified to permit water reuse. The project was successfully implemented over the space of a year, allowing an average reduction of 25% in water captured from the Taquari River. In terms of effluent disposal, the project was successful in that it eliminated all effluent: in other words, 100% of the effluent generated in the production process was reused. The treated water is reused to wash machines and equipment, to wet down wood, in refrigeration, input preparation, and gas washing.

Reducing water use through operational efficiency | Eldorado

Investing in operational efficiency while also striving to reduce environmental impacts is part of Eldorado Brasil's organizational culture. From the very start, the company has made consistent advances in its environmental indicators. Although it has broken pulp production records over the past three years, it continues to produce more while using less and less water, electricity, and chemicals per ton of the pulp it manufactures, and also generates less effluent. Operational efficiency is measured by maximum sustainable pace, which considers average production, and reached 96%, a benchmark for the worldwide pulp industry. This increase in efficiency is largely due to investments in innovations and technologies, such as the autonomous plant project that incorporates Industry 4.0 solutions such as artificial intelligence. This operational efficiency led to a reduction in specific water consumption, from 34 m3/tsa prior to the project to 24.96 m³/tsa. The water reuse rate is 82.3%. The plant is self-sufficient in green energy generated using biomass from materials that are not utilized in the production process, such as lignin and wood waste.

Industrial Case

eucatex

Industrial Case

Treating effluents in water management | Eucatex

Considering reduced water availability and more restrictive effluent requirements, Eucatex has made investments in managing its consumption and improving its effluent treatment, yielding environmental as well as economic gains. These investments involve reducing the consumption of industrial water in its processes, consequently reducing effluent production by 30%. This improved and stabilized effluent treatment, boosting efficiency levels to 95% reduction of contaminants. Besides this important environmental gain, electricity consumption dropped 50% and maintenance costs fell by more than 70%. This improved performance has created greater stability and trust between Eucatex and environmental regulators as well as communities with regard to their commitment to protecting water.

WestRock

Industrial Case

50% less water consumption and effluent generation | West Rock

WestRock's paper mill in Três Barras, Santa Catarina, supplies all four of the company's corrugated cardboard units in Brazil and is constantly improving, which has led to excellent results in the company's environmental and efficiency indicators. A comparison between 2012 and 2019 (before the first plant expansion and the current scenario) shows significant improvements in water efficiency, which positively impacts operational sustainability. During this period, the amount of water needed to produce Hyperform® paper fell 50%, and effluent generation dropped by 58.5%. Other improvements that indirectly impact water preservation are associated with energy efficiency. During the same period, WestRock increased its production of renewable energy generated from biofuel by 24%, which consequently boosted the plant's energy self-reliance by 56%. The improvements continue, with the mill expected to reach 85% self-sufficiency in energy after its second expansion, which will be completed in 2021.

Reducing specific untreated water use in pulp production | Veracel

In 2015, Veracel implemented a plan to reduce its specific annual water use, which had been 25 m³ per ton of cellulose pulp. This is an environmentally strategic objective, since reducing water use also means using less chemicals and electricity. The 2020 target was a 10% decrease, reaching 22.5 m³/ton. Some efforts were made in 2016, but results really improved from 2017, with the implementation of Lean Six Sigma methodology. In 2018, the focus was on automatic control of tank levels to reduce overflows, valve and floodgate adjustments to eliminate leaks, and adoption of an online tool to indicate where water was being lost in the process. In 2019, the focus returned to reuse, and key opportunities were found in the bleaching and evaporation stages. These measures made it possible to meet the target in 2019, a year before the deadline, with final specific water use at 22.2 m³/ton. There are plenty of reasons to continue supporting new ideas and investing in technologies to augment efficiency in factories without risk to equipment or pulp quality. The improvements do not stop here: zero effluent in evaporation and closing the circuit in alkaline filtrates from bleaching may soon become a reality.

Industrial Case

VERACEL

Commitments in the sector

Sustainability is a pillar for the planted forest-based sector; most companies comply with international responsible forest management standards such as those from the Forest Stewardship Council (FSC) and Cerflor, which is internationally recognized by the Programme for the Endorsement of Forest Certification (PEFC), as well as industrial environmental management standards such as ISO 14001 (Environmental Management Systems), which are verified annually by third-party audits.

There is growing awareness of the need to use watersheds as a unit for resource management and forest management planning. This is not a trivial or short-term task, and also requires collective engagement with other land-use sectors, governments, industries, and society.

Corporate

Renew commitments to support research, development, and innovation.

The sector believes that it can continuously improve operations, and consequently renews its commitment to supporting research, development, and innovation, seeing science and technology as great allies in improving water management efficiency.

Dialog is also highly valued, since it has been shown to be the best tool for connecting with academia, civil society, NGOs, governments, and local communities, especially those in the same watershed, that can make major contributions to better shared water use. Relationships should be based on data transparency and scientifically based information, and for this reason the sector is committed to publishing its water management performance every three years, as well as maintaining and encouraging discussions in the Brazilian Forest Dialogue and its state forums, The Forests Dialogue, and other relevant forums. This commitment to shared water use is becoming increasingly evident, as is their influence on other industries that utilize land to adopt good practices, since water availability does not respect companies' boundaries.

Forest

Expand studies on the water balance in plantations, and implement quantitative and qualitative monitoring of water bodies.

In the forests, most of the sector sees opportunities to expand studies on the water balance and implementation of quantitative and qualitative monitoring of water bodies, which is an important tool for understanding and demonstrating whether the companies' management practices are compatible with local water availability, to avoid negative effects on other uses. In some climates and situations, this task can be more challenging.

Industry

Reduce the volume of water captured through reuse and by reducing losses and leaks during production processes.

There is also potential for improvement in the factories. The main focus is on reducing the volume of water taken from lakes and rivers, especially through reducing losses and leaks during production and investing in technologies to boost reuse. These two aspects are routine internal objectives at most companies, and reuse is considered by the UN to be highly necessary in planning future water use within the context of climate change, along with population growth and consequent higher demand for this resource.

Just as the pulp and paper segment knows the approximate percentage of water that returns to the atmosphere (roughly 19%) and the percentage of water retained in final products (roughly 1%), the flooring & panels segment also needs to improve the calculation of these values.

International Commitments

In 2015, the United Nations adopted the 2030 Sustainable Development Agenda, which encompasses 17 goals and 169 global action targets to reach by 2030. The Sustainable Development Goals (SDGs) and their respective targets cover the environmental, economic, and social dimensions of sustainable development in an integrated and interrelated manner.

Water is so important to global sustainable development that it has its own dedicated goal (SDG 6) to ensure availability and sustainable management of water, as well as sanitation for everyone.

Responsible water management in the planted forest sector directly contributes to two goals in SDG 6:

Target 6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

Target 6.6 - By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Besides the targets in SDG 6 that are directly related to water, the sector's activities in this area also directly contribute to three other targets in the 2030 Agenda:

Target 9.5 - Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

Target 12.2 - By 2030, achieve the sustainable management and efficient use of natural resources.

Meta 15.1 - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Also notable within the UN framework is the 2030 Strategic Plan for Forests, coordinated by the United Nations Forum on Forests (UNFF), which promotes sustainable forest management and the contribution of forests to the 2030 Agenda. The Plan has 6 Global Forest Goals and 26 associated targets, which are voluntary and cover a wide variety of themes.

— GLOBAL — FOREST — GOALS —

Responsible water management in the planted forest sector directly contributes to two of the UNFF's goals:

Target 4.3 – North-South, South-South, North-North and triangular cooperation and public-private partnerships on science, technology and innovation in the forest sector are significantly enhanced and increased.

Target 1.3 – By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

Partnering entities in the water agenda

Ibá believes that water needs to be discussed and addressed with various stakeholders. This section appreciates and recognizes important contributions from our main partners in academia, research institutes, and class associations in debates, events, and other initiatives over recent years. Ibá is working to make sure this list keeps growing.

ABTCP
Associação Brasileira Técnica de Celulose e Papel

IPEF

SIF

Glossary

Bioeconomy

Industrial production model based on the use of biological resources. The objective is to offer solutions for sustainable production systems by replacing fossil and non-renewable resources (Embrapa).

Consumption vs. water use

The concepts of use and consumption are different. In forests as well as factories, the water used is involved in the stages of a production process or captured by the trees, but is returned to its source (such as effluents from industry) or the atmosphere (via evapotranspiration by trees). Consumption, in turn, is all the water that does not return to the atmosphere or its source, and effectively remains inside the wood or in the final product after manufacturing.

Dam containment system

This technique prevents erosion on rural roads by digging downhill along the edges of these roads to create a space to store rainwater, stopping it from flowing directly into rivers and dragging sediment along with it.

Erosion

This is the wearing of the earth's surface through mechanical and chemical action of running water, the elements (such as strong winds and storms), or other geological agents.

Evapotranspiration

The process of returning water to the atmosphere by evaporation from the soil and plants via transpiration in the leaves.

Legal Reserves (LR)

Areas covered by natural vegetation within a rural property which are legally set aside for preservation or sustainable use. They vary from 20% to 80% of area, depending on the biome where the property is located..

Micro watershed

Physically, micro watersheds are relatively homogeneous geographical areas located between divisors that drain water into a main water body. Socially, micro watersheds are understood to be a unit of land use and conservation planning, and in agricultural and environmental activities related to sustainable human development.

Planting in raised rows

Seedlings are planted on the raised areas of soil between furrows. This technique is used to prevent erosion.

Permanent Preservation Area (PPA)

Protected areas that may or may not be covered with natural vegetation; their role is to preserve water resources, the landscape, and biodiversity, protect the soil, and ensure the well-being of populations. These areas may be on the banks of rivers, lakes, and springs, or on slopes of more than 45°, and hilltops.

Private Natural Heritage Reserve (PNHR)

This category of conservation unit is voluntarily established by rural landowners for nature conservation.

Resilience

The ability of an organism, environment, or business to return to its original state after a disturbance.

Water balance

The water balance is the difference between precipitation and runoff; in other words, the difference between the water that comes into and goes out of a watershed.

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