



2019 ICFPA Sustainability Progress Report





ABOUT THE INTERNATIONAL COUNCIL OF FOREST & PAPER ASSOCIATIONS (ICFPA)

The ICFPA serves as a forum for global dialogue, co-ordination and co-operation among 18 pulp, paper, wood and forest fibre-based associations that encompass 28 countries. The top pulp, paper and wood producers around the world are represented by the ICFPA's member associations. www.icfpa.org

ICFPA MISSION

Serve as a forum of global dialogue among national and regional industry associations and their leadership to co-operate in the development of common positions on issues of mutual interest; represent the forest, paper, wood and forest fibre-based industries with global policy organisations; and co-ordinate action and distribute information through member associations.

ICFPA PURPOSE

To benefit global society through collaboration with industry, governments and non-governmental organisations on public policies that facilitate the manufacture of sustainable products from virgin and recycled forest-based resources that meet human needs for information, packaging, housing, hygiene, energy and other innovative products.



SUSTAINABLE DEVELOPMENT GOALS

The ICFPA's commitments align with the objectives of the United Nations Sustainable Development Goals — indicating that these actions relate to some of the most pressing sustainability issues of our time. Throughout this report, relevant goal icons note where the ICFPA's efforts are contributing to progress on the Sustainable Development Goals.

Progress on our commitments

Industry performance on several indicators is plateauing, reflecting major progress achieved in previous years that the industry is now maintaining. Additional

investments and incentives could drive increased progress. Where applicable, that is noted in this report.

COMMITMENT	INDICATOR	2016/2017 performance	Change from baseline	Change from 2017 report*
Creating solutions to global climate change and energy supply challenges	Greenhouse gas (GHG) emissions intensity	0.557 mt CO ₂ eq / mt production	-19.2% (2004/2005)	-0.4%
	Share of bio-energy in the fuel mix	64.1% of on-site energy needs met by biomass and other renewable fuel sources	+11.1 percentage points (2004/2005)	+0.9 percentage points
Promoting sustainable forest management worldwide	Sustainable Forest Management (SFM) certified hectares	51% of procured wood fibre is from third-party certified sustainably-managed forests	+40 percentage points (2000)	-2 percentage points
Recovering and recycling fibre	Global paper recycling rate	59.3% of paper and paperboard consumed globally is used by mills to make new products	+12.8 percentage points (2000)	+0.4 percentage points
Improving environmental management	On-site energy intensity	18.01 GJ LHV / mt production	-1.05% (2004/2005)	+0.06%
	Sulphur dioxide (SO ₂) emissions	0.73 kg SO ₂ / mt production	-63.5% (2004/2005)	-29.8%
	Water use	33.1 m ³ process water discharge / mt production	-8.3% (2004/2005)	-1.2%
Investing in workers and communities	Recordable incident rate	2.67 (number of recordable incidents x 200,000 hours / number of hours worked by all employees)	-35% (2006/2007)	-8.9%

* Where applicable, this table includes updated data from the previous reporting period



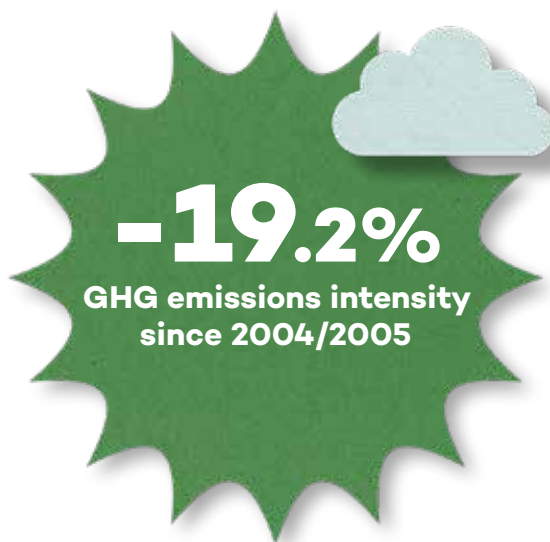
Creating solutions to global climate change and energy supply challenges

THERE ARE THREE WAYS TO MITIGATE CLIMATE CHANGE: BY CAPTURING GREENHOUSE GASES (GHGs) FROM THE ATMOSPHERE; BY STORING GHG (IN THIS CASE, CARBON) IN FORESTS AND FOREST-BASED PRODUCTS; AND BY AVOIDING GHG EMISSIONS.

Progress toward this commitment is demonstrated by measuring the reduction of GHG emissions from ICFPA members' facilities relative to their production; and the increase of their share of bio-energy in the fuel mix.

Efforts such as investing in energy efficiency improvements at facilities, increasing use of low-carbon fuels and reducing reliance on traditional fossil fuels led ICFPA members to reduce their GHG emissions intensity by 19.2% since the 2004/2005 baseline year.

By using renewable energy from carbon-neutral biomass¹ — which includes spent pulping liquors recovered from the production of wood pulp, wood manufacturing residuals and forest residues — to



ICFPA members reporting: AF&PA, CEPI, FPAC, Ibá, JPA, PAMSA

produce a significant portion of the energy needed to run its operations, as well as other renewable fuels, members have increased their share of bio-energy in the fuel mix by 11.1 percentage points since the 2004/2005 baseline year to a share of 64.1% in 2016/2017.

Progress on both of these indicators is starting to plateau.

Several ICFPA member associations are engaged in long-term commitments to reduce GHG emissions, such as Australia's *18 by 2030*², Canada's *30 by 30*³ and the European Union's *2050 Roadmap to a low-carbon bio-economy*.⁴



NORSKE SKOG REDUCES EMISSIONS THROUGH SIGNIFICANT INVESTMENT, USING MODERN EQUIPMENT



Catalogue, brochure, magazine and newsprint production will target 20% less direct GHG emissions, thanks to a major investment at Norske Skog's Boyer Mill in Tasmania, Australia.

A new system was designed on-site, integrated to existing operations and built using latest technology equipment sourced from the international market. The system recovers heat, converts it to steam and reuses it to reduce GHG emissions across the mill.

"Steam is used to help dry paper," explains Dale Richards, general manager, Boyer Mill. "Using recovered heat means the mill will use significantly less coal to generate the mill's heat and steam requirements, which results in lower emissions and reduced energy costs."

The initiative — one of the earliest industrial processes supported through the Australian government's Emissions Reduction Fund — will remove an estimated 37,000 tonnes of GHG emissions from the atmosphere every year. To put the emissions reduction into context, that equates to approximately 15,000 cars removed from the roads, each and every year.

The reduced use of coal also improves the Boyer Mill's overall energy costs, helping the mill remain viable in a globally competitive market.

Efforts such as those of Norske Skog led the Australian paper industry to reduce its direct GHG emissions by 5.1% from 2014-15 to 2016-17. Industry investment in reducing GHG emissions was equivalent to removing around 30,000 cars from Australia's roads.



ICFPA members reporting: AF&PA, CEPI, CORMA, FPAC, JPA, PAMSA

MERCER PEACE RIVER PULP'S INVESTMENTS IN BIO-ENERGY GENERATION



The Mercer Peace River Pulp mill meets more than 90% of its on-site energy needs through biomass and renewable fuel sources, including sludges, pulping soap, non-condensable gases and turpentine.

Located in the town of Peace River in the Boreal Forest region of Alberta, Canada, the mill has invested over CAN\$4 million in technology upgrades since 2014.

"These investments allow for better processing of bio-based fuels, increasing the biomass processing capabilities of the power boiler by 7%," says process specialist Moïse Dion.

Upgrades to the boiler's Over Fire Air system allow for better air penetration, thereby resulting in higher heat generation due to improved fuel-air contact. Additionally, the installation of a self-sealing feeder helps prevent the combustion of residuals such as fly ash (a by-product of burning coal) by inhibiting air ingress, which can lead to a reduction of energy efficiency.

Like all Mercer mills, the Peace River Pulp mill is a net supplier of energy, producing more energy than it uses. The mill converts residuals from the pulping processes into environmentally-friendly by-products, adding value to its business. Since 2014, the mill also has produced over 300GWh of green electricity.

Mercer Peace River Pulp plans to exceed 98% bio-energy use in the near future. Work underway includes the re-injection of carbon-laden ash streams back into the boiler — a technology that will displace fossil fuel by burning char residues contained in fly ash while also diverting wastes from landfills.



Promoting sustainable forest management worldwide

SUSTAINABLE FOREST MANAGEMENT (SFM) PROTECTS ONE OF EARTH'S MOST IMPORTANT RESOURCES AND ENSURES THE LONG-TERM VIABILITY OF THE GLOBAL FOREST PRODUCTS INDUSTRY TO MEET SOCIETY'S GROWING NEEDS. WHEN SUSTAINABLY MANAGED, FORESTS PLAY A CENTRAL ROLE IN CLIMATE CHANGE MITIGATION BY CAPTURING AND STORING CARBON.

Progress toward this commitment is demonstrated by measuring the percent of forest-based wood fibre supplied to ICFPA members from certified sustainably-managed forests, defined here as wood that has been certified by the Forest Stewardship Council (FSC®) and/or by a national certification system formally endorsed by the Programme for the Endorsement of Forest Certification (PEFC™).⁵

The total SFM-certified forest area used to supply the industry reached 51% of total managed forest area in

2017 to 300.37 million hectares, a significant increase from 11% or 62.16 million hectares in the 2000 baseline year. Countries represented by ICFPA member associations host a large portion of the forest area certified globally.

ICFPA members reporting: AF&PA, CEPI, CORMA, FPAC, Ibá, JPA, NZFOA, PAMSA



Performance on this indicator is down 2 percentage points from the previous report (2015 data). This is the result of industry shrinkage in certain regions and/or increased transparency of reporting on areas that are double certified, rather than a decrease in SFM-certified forests.

The vast majority of the rest of the wood supply in countries covered by the reporting associations is either commercially unavailable or owned by private, often small, landowners who are not formally SFM-certified for economic and/or practical reasons. In those cases, companies

manufacturing paper and wood products are able to trace wood through internationally-recognised chain-of-custody systems. In addition, a large proportion of the world's uncertified forests is in developing countries, where there has been minimal penetration of credible SFM certification systems.

Beyond promoting SFM certification systems worldwide⁶, the ICFPA advocates the role of planted forests in providing sustainable raw material grown on smaller land areas.



BRAZIL GROWS FOREST CERTIFICATION THROUGH EFFECTIVE ENGAGEMENT



The Brazilian forest plantation sector's commitment to SFM goes far beyond the implementation of standards, but also rests in deeper stakeholder engagement and in turn, commitment.

"The engagement of companies, non-governmental organisations and researchers in forest certification schemes is key to continuous improvement and growth," says Nathalia Granato, who is responsible for forest affairs at Ibá, the Brazilian Tree Industry. "It also makes standards more locally relevant, outcome-orientated and data-driven while increasing recognition by the market."

Although Brazil's plantation area certified by FSC® has grown by only 10% since 2015, the number of new members of FSC® International increased by 48% over the same time period. Ibá has contributed to this growth since 2016, when it was informally appointed as convener of Latin American Economic Chamber representatives in preparation for the 2017 FSC® general assembly.

Ibá also works closely with the Brazilian forestry certification scheme — Cerflor, which is fully endorsed by PEFC™ — to address issues including raising performance levels, increasing market recognition and ensuring financial sustainability.

From 2016 to 2018, entities participating in Cerflor meetings doubled, from an average of 14 to 28, thus enhancing involvement from interested parties and producing tangible gains. This in turn helps the sector to exert a positive influence on the certification process and its effectiveness in the promotion and delivery of SFM.

TIMBERLANDS PROTECTS KĀREAREA FALCON TO ENHANCE BIODIVERSITY



Timberlands works closely with the Wingspan National Bird of Prey Centre to manage threatened native kārearea falcon populations in the Kaingaroa forest — New Zealand's largest forest plantation — located in the centre of the country's North Island.

Jointly-developed best practices are applied for operations near nesting kārearea and the birds are monitored and cared for until they fledge. Results of Timberlands-sponsored research on kārearea behaviour and habitat are also implemented into the falcon management practices.

Responsible forest management and structured harvesting can come at considerable operational cost. Explains Timberlands forest risk manager Colin Maunder, "Moving machinery away from a newly discovered nest is costly and at times we have to reschedule an operation planned for an area with a nest — but all this is important to ensure the continued growth of the plantation falcon population."

Timberlands' initiative is part of the whole New Zealand forestry sector's commitment to biodiversity enhancement and management.

To provide information regarding managing biodiversity in plantation forests, the New Zealand Forest Owners Association (NZFOA) hosts, funds and updates a rare species website, which links with the New Zealand Department of Conservation's listings of rare and threatened species and offers expert guidance on threatened species such as kārearea, kea, kiwi and long-tailed and short-tailed bats.

Companies' continued support and sponsorship of research into threatened species increases the pool of research on the flora and fauna that make plantation forests home.



Recovering and recycling fibre

IMPROVING THE QUANTITY AND QUALITY OF FIBRE RECOVERY AND RECYCLING REDUCES THE AMOUNT OF PAPER IN THE WASTE STREAM, DIVERTING IT FROM LANDFILLS; ENSURES THE INDUSTRY HARVESTS ONLY WHAT IT NEEDS; AND ALLOWS FIBRE TO BE REUSED IN THE MANUFACTURE OF NEW PRODUCTS, OPTIMISING THE USE OF WOOD AS A RAW MATERIAL AND PROLONGING THE CARBON STORAGE CYCLE.

Progress toward this commitment is demonstrated through the global recycling rate⁷, which represents the amount of recovered paper used by paper and paperboard mills as a percent of global paper and paperboard consumption.

The global recycling rate reached 59.3% in 2017 — a 0.4 percentage point improvement from the previous report (2015 data) and 12.8 percentage points increase from the baseline year (2000).

On average, ICFPA members' individual recycling rates are higher than the global rate. Further improvement will depend on better sorting and collection of quality fibre for recycling as well as continued industry engagement.

+12.8
percentage points
global recycling rate
since 2000



*Data for 175 countries worldwide
(Fastmarkets RISI)*

TORK PAPERCIRCLE® RECYCLING INITIATIVE GIVES PAPER TOWELS A HAND AT A NEW LIFE



Essity's Tork PaperCircle® is the world's first recycling service for paper hand towels.

While Essity first attempted to recycle its Tork-brand paper towels in the 1990s, the collected material contained too much waste to be suitable for use in new products.

To explore ways to improve the quality of the collected paper towels, Essity's global technical innovation manager Sara Lundström and global brand innovation manager Åsa Degerman started a collaborative pilot project with behavioural scientists together with an Essity customer — a German bank that generates some 72 tons of used paper towels per year.

Studying the behaviours of washroom visitors and cleaners at the bank's 17 sites, the team implemented and tested various solutions to optimise the paper towel sorting and collection process. Tork PaperCircle focuses on the positioning of used paper towel receptacles, provides information in the washrooms and trains cleaning staff to ensure the quality of the collected material is as pure as possible (≥ 98% paper towels).

Next, Tork PaperCircle works with recycling partners to collect the used paper towels from customer sites and deliver them to local Essity mills for recycling. Essity's ownership of the entire process guarantees that the paper towels will be recycled into new tissue products. By closing the loop, waste is reduced by 15-20% and the carbon footprint is reduced by at least 40%.*

Tork PaperCircle received a 2017 European Paper Recycling Award for its contribution to the circular economy. Currently available in Germany, the Netherlands, Belgium and Sweden, Essity aims to establish Tork PaperCircle in other countries across Europe and beyond.

** Based on a life-cycle assessment — conducted by Essity and verified by IVL, Swedish Environmental Research Institute Ltd, 2017 — where the avoided processes were taken into account.*



Improving environmental management

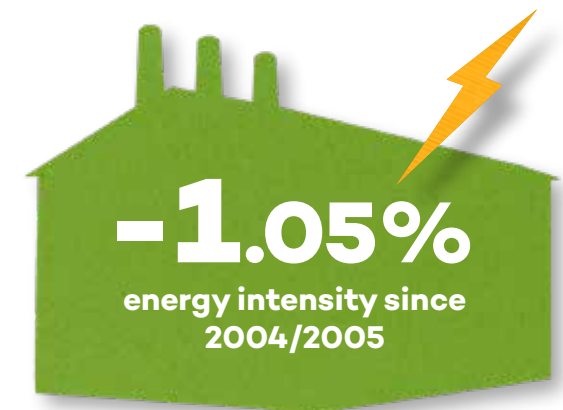
BY REDUCING THE ENVIRONMENTAL FOOTPRINT OF THEIR FACILITIES, COMPANIES ARE ENSURING THEY MAINTAIN THE NATURAL RESOURCES ON WHICH THE INDUSTRY DEPENDS AS WELL AS RESPONDING TO SOCIETAL AND INDUSTRY EXPECTATIONS.

Progress toward this commitment is demonstrated by measuring ICFPA members' on-site energy use; sulphur dioxide (SO₂) emissions — a major contributor to acid rain; and water used for process purposes relative to their facilities' production.

Energy efficiency improvements at company facilities resulted in a 1.05% improvement in their energy intensity since the 2004/2005 baseline year. Performance is flat from the previous report (2014/2015 data). Low energy prices — particularly for natural gas — have disrupted energy efficiency programs. Further improvements in energy efficiency could be achieved by implementing advanced

technologies at facilities, which depends on industry investment cycles.

Reduced use of fuels with a high sulphur content as well as increased prevalence of SO₂ removal systems on boilers led to a 63.5% reduction in SO₂



ICFPA members reporting: AF&PA, CEPI, CORMA, FPAC, JPA, PAMSA



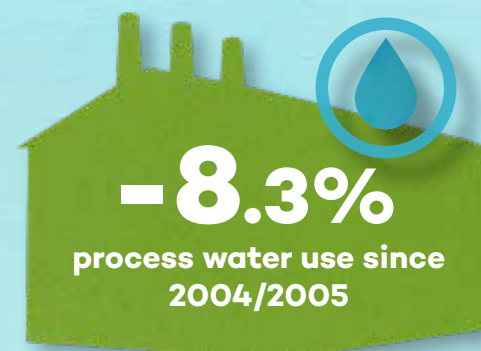
ICFPA members reporting: AF&PA, CEPI, FPAC, JPA

emissions from member facilities since the 2004/2005 baseline year.

This includes a 29.8% reduction from the previous report (2014/2015 data).

Water used for process purposes is treated before discharge. Members reduced their use of process water by 8.3% from the 2004/2005 baseline. Performance on this indicator has improved by 1.2% from the previous report (2014/2015 data). It should

be noted that not all water reduction projects undertaken at company facilities are reflected in the process water metric. Nonetheless, water reduction efforts are of major importance in many regions of the world.



ICFPA members reporting: AF&PA, CEPI, FPAC, Ibá, PAMSA

CLEARWATER PAPER'S ENERGY USE OPTIMISATION SHRINKS ENVIRONMENTAL IMPACT



Clearwater Paper replaced a direct heated, Kraft batch digester system with a continuous digester that utilises exchanger-based heat recovery to reduce reliance on fossil fuels at their pulp mill in Lewiston, Idaho in the northwestern United States. The digester is a major component in the process of cooking wood chips to make pulp.

"Replacing our older digesters with new, energy efficient technology reduces site energy consumption. The lower thermal energy requirement reduces greenhouse gas and other combustion-generated emissions," explains John Deuser, Lewiston pulping project manager.

The continuous digester enabled Clearwater Paper to save more than 100,000 pounds per hour of steam compared to the previous batch process, which equates to an estimated reduction of 150,000 tons of GHG emissions per year — equivalent to removing approximately 30,000 cars from the road. The mill's reduced energy needs will avoid the same amount of GHG emissions per year going forward.

The Lewiston community was a strong supporter and benefited from more than US\$7 million in local purchases and US\$56 million of purchases in the surrounding region related to the project. Throughout the construction phase, approximately 150 construction workers were living, eating and spending money in the community.

Clearwater Paper's project contributed to the American Forest & Paper Association's *Better Practices, Better Planet* 2020 energy efficiency goal being surpassed ahead of its 2020 deadline.

METSÄ GROUP CLOSES THE SULPHUR DIOXIDE LOOP



Metsä Group's bioproduct mill in Äänekoski, Finland is the first pulp mill to create an integrated loop for sulphur dioxide emissions. The circular economy and environmental efficiency were the driving forces behind the decision to integrate a sulphuric acid plant into the mill, which aims to make complete use of all production side streams.

Camilla Wikström, who saw this project through as senior vice-president of pulp production for Metsä Group, explains, "We are always pushing for the most modern technologies and for decades have based our actions on strong environmental thinking."

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SAPPI TUGELA MILL'S TRIFECTA OF WATER AND ENERGY SAVINGS, AND BETTER PULP QUALITY



With increased demand on pulp quality from the paper machine and the internal evaporation limitations, Sappi's Tugela mill and the company's Tech Centre in South Africa undertook a project to improve the mill's pulp washing efficiencies while ensuring reduced water transfer to the evaporator plant.

The study highlighted shortcomings in the process equipment. The proposed solutions were in contrast with the original equipment manufacturer suggested operating setup and design.

"Our modifications were vindicated by significant improvements contaminant carryover to the paper machine. Further opportunities presented itself for re-use of process water that resulted in additional energy and water. The

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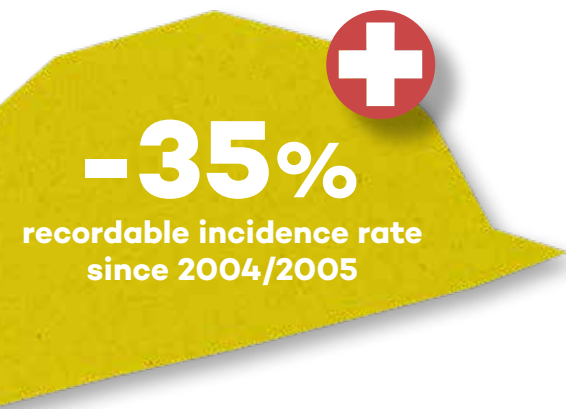
Investing in workers and communities

THE GLOBAL FOREST PRODUCTS INDUSTRY EMPLOYS 13.2 MILLION PEOPLE DIRECTLY, AND ANOTHER 41 MILLION PEOPLE INDIRECTLY⁸, PARTICULARLY IN RURAL AREAS IN MANY PARTS OF THE WORLD. THE INDUSTRY'S PRESENCE CONTRIBUTES TO THE LOCAL ECONOMIES OF RURAL COMMUNITIES AND COMPANIES PAY THEIR WORKERS ABOVE-AVERAGE WAGES.

ICFPA members are committed to the well-being of their employees, and work to advance safety awareness and to implement improved safety processes.

Progress on this commitment is demonstrated by measuring ICFPA members' recordable incident rate, which reflects the number of recordable injuries and illnesses that occurred per 100 employees in a year.

ICFPA members have improved their recordable incident rate by 35% since the 2006/2007 baseline year, and 8.9% since the last report (2015 data).



ICFPA members reporting: AF&PA, CEPI, FPAC, JPA, PAMSA

JAPAN'S CONCENTRATED EFFORT TO IMPROVE SAFETY PERFORMANCE



Japan Paper Association's (JPA) Action Plan for Prevention of Industrial Accidents includes the goal to achieve zero fatal accidents in the worksites of its member companies.

"Ensuring a safe workplace is absolutely top priority for all JPA members," says Koichi Ishida, chairman of JPA's Safety and Health Committee. "We share best practices and work together to assure continuous improvement of workplace safety by eliminating industrial accidents in the paper industry."

The Safety and Health Committee facilitates communication and information-sharing between JPA members, providing a forum for high-level executives to discuss safety issues and solutions.

JPA surveys its member companies and their workers to identify risk points throughout the paper production process, as well as successfully implemented safety measures. Resulting information and data are shared with JPA's board of directors, JPA members, the Japanese Federation of Pulp and Paper Workers' Union and other industry organisations to ensure the safety of employees, temporary contract workers and visitors to facilities.

Based on the collected material, JPA is developing an industry-wide safety manual.

To further strengthen safety measures and promote cross-industrial information exchange, JPA participates in Japan's Public-Private Council for Safety Measures in the Manufacturing Industry, which also includes the Ministry of Health, Labour and Industry, the Ministry of Economy, Trade and Industry, the Japan Industrial Safety and Health Association and other major national manufacturing industries.



Blue Sky Young Researchers and Innovation Award

THE ICFPA'S GLOBAL BLUE SKY YOUNG RESEARCHERS AND INNOVATION AWARD⁹ AIMS TO STIMULATE COMPETITION AMONG STUDENTS AND YOUNG RESEARCHERS CARRYING OUT PROJECTS IN A WIDE RANGE OF ACTIVITIES RELEVANT TO FOREST-BASED SCIENCE, PRODUCTS USING FOREST-BASED RAW MATERIALS, PROCESS IMPROVEMENTS OR OTHER INNOVATIONS THROUGHOUT THE VALUE CHAIN.



The theme of the inaugural competition, held 2016-2017, was Game Changing Technologies for the Forest and Paper Industry — Unfolding the Potential of Forest, Paper and Wood-Based Products. The three winners presented their projects to industry leaders at the ICFPA's 2017 International CEO Roundtable in Berlin, Germany.

2017 WINNERS

Esthevan Gasparotto (Brazil): Cutting-Edge Technologies for Forest Monitoring and Measurement

Treevia Forest Technologies aims to revolutionise the way forests are monitored and measured around the world. Using wireless sensor devices, Treevia's SmartForest Integrated System for Forest Monitoring collects data on forest growth and other environmental variables — allowing forest managers to eliminate measurement errors that arise when manually collecting data; enable better understanding of how variables affect forest development, and remotely monitor fire risk. Through the SmartForest system, forest managers will be able to access data on their forests from anywhere in the world using any mobile device and use it to make better decisions.

Koh Sakai (Japan): Cellulose Nanofibres Prepared by Phosphorylation

The properties of naturally-derived cellulose nanofibres (CNF) position it as a superior alternative to synthetic materials (e.g. structural plastics, optical films, thickeners) and additives (e.g. reinforcing fillers for composite materials), but its many hydrogen bonds make it difficult to obtain the CNF by mechanical treatment alone. A phosphorylation method was used to introduce phosphate groups on the surface of cellulose crystals before mechanical treatment, resulting in a homogenous CNF dispersion. Also developed were a wet powder that could be used instead of a conventional powder thickener, and a transparent sheet that could be used in lieu of a glass substrate and conventional plastic films.

Shuji Fujisawa (Japan): Biocompatible Nanocellulose/Polymer Composite Microparticles Formed by Emulsion-Templated Synthesis

Polymer microparticles are an important area of research for drug, cosmetic, food, electronic and medical applications. A key property required for these microparticles is biocompatibility but, since they tend to be synthesised based on oil resources, their biocompatibility is usually poor. An emulsion-templated process was used to prepare polymer microparticles with surfaces were densely covered with biocompatible CNF. The narrow size distribution and good dispersibility of these biocompatible CNF/polymer microparticles allows for application in industrial materials (e.g. spacers for liquid crystal displays and column packing materials) as well as the medical field.

ICFPA MEMBERS CONTRIBUTING DATA TO THIS REPORT:

Australia: Australian Forest Products Association (AFPA)

Brazil: Brazilian Tree Industry (Ibá)

Canada: Forest Products Association of Canada (FPAC)

Chile: Corporacion Chilena de la Madera (CORMA)

Europe: Confederation of European Paper Industries* (CEPI)

Japan: Japan Paper Association (JPA)

New Zealand: New Zealand Forest Owners Association (NZFOA)

South Africa: Paper Manufacturers Association of South Africa (PAMSA)

United States: American Forest & Paper Association (AF&PA)

**Represents 18 members from the following countries: Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, United Kingdom*

METSÄ GROUP CLOSES THE SULPHUR DIOXIDE LOOP (cont'd from p. 11)

The Äänekoski mill proved to be the perfect opportunity to take the circular use of resources to the next level. Pulp production generates sulphuric compounds that are traditionally filtered. The new sulphuric acid plant captures these odorous gases and converts them into sulphuric acid for the production of tall oil, a byproduct of pulp production.

The mill closes a chemical circle by producing 35 tons of sulphuric acid daily, which in turn reduces costs and emissions of 360 trips by truck annually and minimises sulphate emissions to water and air.

SAPPI TUGELA MILL'S TRIFECTA (cont'd from p. 11)

synergy of a number of initiatives yielded great results for both operational and environmental impacts,” explained Allen van Zyl, project leader.

Modifications made to the beltwasher washing zones improved drainage and cross-contamination of filtrate water. The supply of a cleaner pulp to the paper machine had a direct impact on the mill's final effluent chemical oxygen demand, with an overall load reduction of about 40%. The concurrent increase in the volumes of pulp fed directly to the paper machine also improved machine drainage and stability.

Accompanying water reduction projects undertaken at the mill included the improved control of process water balances, attention to leaks and the inspection and repair of open water storage facilities. Combined, these initiatives achieved a 30% reduction in water abstraction from the Tugela river.

The water saving projects allowed the de-bottlenecking of some processes that enabled the Tugela mill to increase its pulp production by more than 23% while also achieving an increased paper output by 5%.

Notes

¹ [confirming link]

² www.18by2030.com.au

³ www.fpac.ca/30by30

⁴ www.cepi.org/Investment2050Roadmap

⁵ The ICFPA is a member of the Programme for the Endorsement of Forest Certification (PEFC™) and of the Forest Stewardship Council (FSC®).

⁶ [confirming link]

⁷ The global recycling rate is derived from Fastmarkets RISI's Annual Review of Global Pulp and Paper Statistics, which provides data on recovered paper usage and trade for 175 countries worldwide.

⁸ Food and Agriculture Organisation of the United Nations, State of the World's Forests, 2014

⁹ www.icfpa.org/blue-sky-award



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