

A greener, bluer planet

For many years, our operations have been designed around a circular business model. This means seeking closed-loop solutions, maximising resource efficiency and minimising waste, including CO₂ emissions.

It also means supplying packaging that protects our customers' products and avoids packaging waste and litter. Our ambition is to achieve at least net zero CO₂ emissions by 2050.



Packaging solutions sold as Chain of Custody certified

93.45%

Key Principles

We operate a circular business model using mostly recycled fibre raw material. The virgin fibre raw material we use is renewable and from a sustainable origin. We reuse or recycle side streams and we use renewable energy and strive for energy efficiency where we can. This circular approach increases resource productivity, adding to our competitiveness.

Our circular business model starts with sustainable primary raw materials. Our integrated approach to producer responsibility and paper recycling means that 76% of our raw material is recycled fibre. We use organic by-products as biofuel, circulate our process waters as many times as we can and we collaborate with local organisations to find alternative uses for the rejects we receive with our recovered paper deliveries, that we cannot use in our processes.

In our product-development phase, we work towards synergies within the whole value chain. For example, by designing mono-material packaging solutions, we create efficiencies in our customers' packaging lines, and we improve the recyclability of the packaging after use.

Forests themselves are a closed-loop system, fundamental for local climate and water systems. When managed sustainably, they also provide a renewable source of raw materials for industry, function as a carbon storage and provide employment.

Reduction of relative waste sent to landfill (since 2013)

29.2%

Reduction of relative CO₂ emissions (since 2005)

41.3%

Reduction of relative COD in water discharge (since 2005)

38.5%



Inside this section

30-55

Climate Change	36
Forest	43
Water	48
Waste	52

PLANET CONTINUED

Urgency in responding to climate change continued to be the most important environmental topic in 2021. The IPCC report, published in July, calls for urgent action in the face of the continuing rise in global temperatures. In October, the COP 26 discussed the urgent need to act and stop global warming well below 2°C. The UN's 2030 Agenda for Sustainable Development calls for action via 17 Sustainable Development Goals, and both the Paris Agreement and the EU have set tough carbon targets. By 2030, the Paris Agreement aims to limit climate change to under 2°C, and the European Commission during 2020 set ambitious targets for reducing net EU emissions by at least 55% by 2030 compared to 1990.

Achieving these requires a shift from linear to circular economic models, creating an era of opportunity and a need for innovation. At the same time, all parts of society need to set common targets. With its net zero ambition, Smurfit Kappa is well placed to make these targets a reality and the SBTi validation of our target evidences the robustness of our climate strategy.

We announced our support of the recommendations of the Task Force on Climate-related Financial Disclosures ('TCFD') in May 2020 and we included our first disclosure in the 2020 Annual Report. In 2021, we have significantly developed our disclosure as outlined below which is consistent with the TCFD recommendations. In completing this disclosure we have provided the recommended disclosures in terms of:

- Governance
- Strategy
- Risk Management
- Metrics and Targets

Our TCFD disclosure in full is available in our 2021 Annual Report (pages 54-61) and should be read in conjunction with our Carbon Disclosure Project ('CDP') Climate Change Response made by the Group in 2021. Further information can be found on our website at smurfitkappa.com/sustainability/.

Our progress and evolution of reporting in line with the TCFD recommendations included but was not limited to: a comprehensive top-down identification and process review of climate related risks and opportunities; scenario analysis in

conjunction with an expert third party; and an evaluation of the potential impact on assets from physical and transition risks under different climate scenarios. We expect that certain aspects of our disclosure will further develop and evolve over time.

Circularity has been our business model since our inception, so we are in the lead as the circular economy goes mainstream. Our operations in 36 countries, and 355 production sites in Europe and the Americas, influence the whole packaged goods value-chain. We drive positive change from sustainable and responsible raw material sourcing to minimising operational impact and lowering our customers' environmental footprints.

Our environmental sustainability strategy is in four main areas: Climate Change, Forest, Water and Waste. These strategic priorities cover the most material environmental aspects in accordance with our business and stakeholders' expectations. They cover biodiversity, the circular economy, climate-change awareness, energy use and emissions, pollutants to air, litter on land and oceans, responsible forestry, water quality and scarcity, as well as waste to landfill.

Risks and Challenges: Limits of Resources

Our challenge is to create value within natural resource limits, maximising resource productivity while minimising our environmental footprint. In 2021 we continued to work on our climate related risk register and identifying our physical and transitional risks. The key risks were published in our Annual Report 2021 on pages 60-61.

Climate Change

Climate change is one of the greatest challenges facing society. Our stakeholders are looking for low-carbon alternatives, and therefore we create packaging that is circular by nature and increasingly low-carbon.

Climate change has the potential to impact our business operations in a variety of ways. Extreme weather patterns may affect our operations and supply chain, potentially impacting forests, water, carbon regulation and taxation, and energy availability and affordability.

Forests play an important role in environmental resilience, especially in climate change. We therefore need to promote healthy forests and manage

these resources sustainably. Drought, flooding and local restrictions on water usage may limit our access to water, so we have been conducting water-risk assessments at our paper mills.

Furthermore, paper manufacturing is energy intensive, with a risk of carbon leakage if emission policies are not consistently applied. We recognise that climate change will only be slowed or stopped by a global low-carbon economy, and as we do 78% of our business in Europe, we fully support the EU Green Deal. However, to retain global competitiveness, there must be safeguards against 'carbon leakage' – firms moving to areas with weaker carbon policies.

The Forest Fibre Industry 2050 Roadmap to a low-carbon bioeconomy shows a CO₂ reduction of 50%-60%, compared with 1990 levels, is possible for our sector, based on available and emerging technologies. To reach a reduction of 80% or more by 2050, breakthrough technologies must be available by 2030. We play our part as a leader in this area for example by testing new technologies, such as our hydrogen project in our Saillat paper mill in France.

Scarce Resources

Our stakeholders expect Smurfit Kappa to use sustainable raw materials efficiently, especially forests and fibrous raw material. Halting deforestation is a particular concern for businesses supplying consumer goods and food who tackle this issue in their supply chains. Smurfit Kappa commits to only sourcing sustainable wood and fibre.

To decrease fossil CO₂ emissions we must shift to renewable energy. However, government incentives encouraging use of biomass for energy could lead to increased competition and higher raw material costs, putting paper packaging at a competitive disadvantage.

Packaging recycling and recyclability remain high interests for our stakeholders. Paper-based packaging holds a good position in recycling with its 91.7% collection rates and 82.3% recycling rates in Europe. However, the EU Green Deal emphasis on removing littering and plastic waste remains a risk to all packaging products. The important role of packaging as a vehicle to transport, protect and store goods and its role

Investments in sustainable production

€1.1 billion since 2005

in preventing waste must remain the key focus of regulatory changes which should not create a situation where packaging waste overrules the benefits of packaging.

Water scarcity remains a concern. Freshwater resources are not evenly distributed globally, and human activity is still degrading its quality.

Our water risk assessments and other measures confirmed that our mills' water use has no impact on water availability to neighbouring areas.

Opportunities: Embedding Circularity

A part of circularity is knowing the source of our raw materials and returning them to the production cycle. We depend on natural resources, so we aim to make our operations restorative by minimising waste and improving efficiency. We source natural materials responsibly, replacing and reusing resources and working with our partners to deliver better circular outcomes.

Using renewable wood fibres makes us a part of the biological and technical cycles of the circular economy. The biological cycle is called bioeconomy, and covers production and maximum value-capture of renewable biological resources, including their reuse, recycling and sustainable return through biodegradation. The technical cycle covers the circularity of mainly non-renewable processed resources. Paper and paper-based packaging are involved in both cycles and move between them.

Part of the Bioeconomy

We also recover paper-based packaging from our customers, making our packaging production part of our product's end-of-life. For us, material efficiency means that we are recycling our fibres as long as possible, practically producing new packaging from old packaging. As a natural, organic raw material,

wood fibres do however lose their quality after being recycled. Ensuring sustainably sourced wood fibres are used as part of our packaging solutions means our renewable, recyclable raw material can be sustained into the future.

We exist in both the bioeconomy and technical cycles of the circular economy, making us an efficient user of a sustainable, renewable raw material.

The virgin fibres used by the paper industry are mostly from the removal of young trees to support forest growth, or as by-products from sawmills, both of which are fully renewable, sustainable and reusable.

A total of 76% of our raw material is recycled fibre – the remaining 24% comes from sustainably-managed forests through Chain of Custody certified supply chains. Paper-based packaging has the highest recycling rate of any packaging. Trees capture atmospheric carbon, which remains sequestered in our fibres. Forests also contribute to the water cycle by regulating climate and purifying water. They also supply local industry and provide employment.

Smurfit Kappa participates in sustainable forest management through its own forests and plantations, and by only sourcing fibres from sustainably-managed forests.

Closing Loops

We continually work towards material efficiency, and aim to use all our production by-products ourselves, or by finding synergies with neighbours and local communities. Paper clippings from corrugating and converting operations are returned to our paper mills. Organic by-products – wood bark, dust and black liquor –

are used as biofuel. We work with local organisations which can use other materials, for example some water treatment sludges become soil improvers in road construction, and waste ash can be used in the cement industry. We also seek alternative ways to treat our rejects from the fibre recovery processes, one of them being palletising the plastic waste for alternative fuels (see case story on page 53).

We recycle our process waters several times, and invest in best-practice water treatment. Biogases from this become fuel for our Combined Heat and Power (CHP) plants. At some sites we work with local communities, sending our effluent to local municipal water treatment plants, where it can replace necessary nutrients.

Reducing Leakage

Paper-based packaging collection-rates were higher than for any other packaging material at 91.7% in 2019. Material leakage happens when used products are not being recycled but end up in landfill or as litter.

Paper benefits from being relatively easy for consumers to recycle. We work with municipalities and retailers to collect discarded paper packaging for recycling, and the demand for this is constantly increasing. Our fit-for-purpose packaging avoids over-packaging and waste, and we offer mono-material packaging solutions of corrugated board and paper, facilitating recycling. Eventually it returns to the biological cycle, and if it doesn't return to the recycling loop, it can either be combusted, releasing only the amount of CO₂ it captured while growing, or it degrades naturally, reducing the environmental footprint of the leakage.



Working with Life Cycle Assessments

The aim of the circular economy and waste hierarchy is a resource-efficient and environmentally sound choice. To be able to assess packaging solutions, our stakeholders, especially customers and regulators, are interested in Life Cycle Assessments (LCAs). Smurfit Kappa participates in various LCA projects: as members of Cepi, we take part in the EU Product Environmental Footprint development work, we are an active member in the FEFCO projects both by supplying data for the industry LCA studies and by working in a study to understand the corrugated packaging LCA. We also participate in our customers' LCA studies and

use our data and tools for our own LCA calculations. All these LCA projects deliver valuable information that is being further used for our product and service-development throughout our supply chain.

Investment
€1.74
 million
 in circular business
 in Scotland

CASE STUDY

The Quality Challenge

"At the Glasgow Recycling Facility, we don't sort waste," states Lucy Russell, Managing Director for Smurfit Kappa UK Recycling Operations, "We add value."

The terminology is important. Not all paper provided for recycling is mill-compliant. The Glasgow Recycling Facility supplies raw material to our two UK mills, amongst others. If the mills receive good-quality recycled paper they run more efficiently, use less energy removing contamination, and have lower reject rates. It also means fewer contaminants being wastefully transported to and from mills.

The sorting operations at our Glasgow Recycling Facility are therefore vital and the large-scale operation is due to get bigger. Smurfit Kappa has invested €1.74 million in the facility, demonstrating our commitment to the circular economy, and helping towards responsible production and consumption. It also shows our support for sustainable investment in Scotland's recycling infrastructure, the local economy, and Zero Waste Scotland.

"Kerbside collection is a real challenge in the UK," says Lucy. "Different local authorities have different separation rules, and generally paper is mixed-grade and poor quality. Smurfit Kappa invested in a paper-upgrade line which lets us remove contaminants, then use screens to sort the paper into separate grades."

This upgrade also supports local communities. The UK's new Extended Production Responsibility Law will commence in 2023 and offers local authorities financial incentives to better separate recycling at source.

"They will be paid for quality, and we are geared up and ready to take it," says Lucy. "It's our job to support and educate local authorities on the coming changes so they don't lose revenue – we will pay them for quality recycling,"

Smurfit Kappa's investment in the future does not end there, however. "There are many new developments that not everyone is aware of," continues Lucy. "The huge rise in e-commerce means more packaging is going into homes – we want that to come back to us. Also, the replacement of plastic bags will lead to increased paper food packaging – we're going to get that coming back to us as well."

Responding to our Stakeholders

	What We Believe	What Our Stakeholders Expect from Us	Our Commitments
CLIMATE CHANGE	<p>We are tackling our CO₂ emissions by improving our energy efficiency, as well as moving from fossil fuels to bio-based energy. In addition, we are improving resource efficiency when producing paper products and optimising the use of raw material residual streams, such as black liquor, in bioenergy production. The circular economy is an opportunity for our business as we seek to use resources efficiently, especially in energy production and the creation of innovative packaging solutions. We collect sustainability data on innovation and product design, develop supportive tools and services, and create packaging solutions for customers that lower their carbon footprint.</p>	<p>Paper manufacturing is energy intensive, and our stakeholders, notably customers and investors, expect us to approach climate change responsibly and provide detailed progress reports. However, we can make a significant impact in the value chain through smart packaging solutions that can significantly cut our customers' emissions.</p>	<p>Commitment #1: A 55% relative reduction in Scope 1 and 2 fossil-fuel based CO₂ emissions in our mill system compared with 2005 levels by 2030. Reach at least net zero by 2050.</p> <p>Commitment #2: Collaboration with customers to determine carbon footprints of the packaging life cycle.</p>
FOREST	<p>Promoting sustainable forest management involves managing supplies of sustainable, renewable fibre, while protecting biodiversity and ecosystems as well as creating employment in rural areas. Wood fibres can be recycled up to 25 times as per a recent study when producing paper-based packaging. Using both recycled and virgin fibres in production, we deliver fit-for-purpose packaging with the best overall environmental footprint. We communicate transparently about the sustainable origin of our fibres.</p>	<p>As growing consumption raises pressure on resources, our stakeholders increasingly place value on sustainable consumption, integrity of origin, recycling and avoiding packaging waste. Sustainable forest-management and use of recycled fibres are at the core of the expectations for paper-based products.</p>	<p>Commitment #1: All fibre produced and purchased is CoC certified under FSC, PEFC or SFI.</p> <p>Commitment #2: At least 95% of our packaging is certified as CoC certified under FSC, PEFC or SFI.</p> <p>Commitment #3: All production sites use FSC, PEFC and/or SFI CoC standards.</p>
WATER	<p>Over 90% of the water we use is returned to nature in good condition, and the rest evaporates to the air during the process or is bound to the product. We focus our efforts on further improving the quality of water we discharge, decreasing our water intake and understanding the risks associated with water availability and use in the areas where we operate. This strategy positions us well to deliver a positive change to our processes and the environment.</p>	<p>Stakeholders are increasingly requesting information about our responsible water stewardship covering our paper and packaging production as well as our supply chains. Our key water footprint consists of paper manufacturing and forest and plantation management.</p>	<p>Commitment #1: Reduce the organic content of water returned to the environment from our mill plants (COD) by 60% compared with 2005 levels by 2025.</p> <p>Commitment #2: Perform environmental-impact assessments of the water use of our paper mills (where relevant) and develop water usage measurements.</p> <p>Commitment #3: At least 1% relative reduction annually of water intake by our global paper and board mill system with 2020 as reference year.</p>
WASTE	<p>We believe the circular economy is the business model for the future, and that we have an important role to play in it. Our products are designed to prevent loss and damage to the consumer goods they protect. Our packaging is produced efficiently and is 'right-weighted' to optimise resource use and minimise waste, and it is made from 100% renewable and recyclable fibres. Once fibres are depleted they are typically used for energy generation or in agriculture.</p>	<p>Avoiding customers, product and packaging waste, the circular economy and efficient use of raw materials are material issues for our stakeholders, and many of our customers have stated objectives to reduce waste.</p>	<p>Commitment #1: Decrease the waste sent to landfill by 30% per tonne of product produced by our mill system compared with 2013 levels by 2025.</p>

Progress Made in 2021

Progress made: Since 2005, we have reached 41.3% reduction. In 2021, Smurfit Kappa had its CO₂ target approved by the SBTi and further developed its TCFD disclosure.

Progress made: Our suite of tools that help to determine the carbon footprint of our customers' packaging were used 160,000 times in 2021.

➔ [Read more about our progress on pages 36-42](#)

Progress made: We continued to produce and purchase 99.9% of our fibres under fibre-origin management systems that are CoC certified in 2021. This is within our margin of 1% variation.

Progress made: 93.45% packaging solutions sold as CoC certified in 2021. This was down slightly on 2020 and was driven predominantly by low paper availability in what were extremely tight global markets.

Progress made: All production sites use FSC, PEFC and/or SFI CoC standards.

➔ [Read more about our progress on pages 43-47](#)

Progress made: Since 2005, we reached a 38.5% reduction.

Progress made: We finalised the water risk assessments in our paper mills with two final sites assessed in 2021.

Progress made: In 2021, we reached a 6.2% reduction of water intake at our paper and board mills compared to 2020.

➔ [Read more about our progress on pages 48-51](#)

Progress made: Since 2013, we reached a 29.2% reduction.

➔ [Read more about our progress on pages 52-55](#)

Delivering for SDGs

As an energy-intensive manufacturing business that uses natural resources, Smurfit Kappa has a direct impact on affordable and renewable energy. Through our efforts to reduce the climate impact of our operations as well as our products that can help our customers reduce the climate impacts in their supply chain, we can contribute to the global climate action.

Smurfit Kappa contributes to the realisation of the following SDG and targets:



7.2, 7.3 and 7.A 12.6 13.1, 13.3

As a paper-based packaging company that uses recycled and virgin fibres as its key raw material, Smurfit Kappa has a direct impact on ending deforestation and supporting forest biodiversity and ecosystems.

Smurfit Kappa's forestry and sustainable fibre sourcing actions impact the following SDGs and targets:



12.2, 12.4, 12.5 and 12.6 13.1 15.1, 15.2, 15.3, 15.5 and 15.8

Water is a critical element in pulping wood and recovered paper-fibres and formation of paper. With returning the water back to the nature, Smurfit Kappa has a direct impact on clean water resources.

Smurfit Kappa's water management practices impact the following SDGs and targets:



6.1, 6.2, 6.3, 6.4 and 6.6 12.2, 12.4 and 12.6

As a paper-based packaging company that uses recycled fibres as its key raw material and that produces packaging solutions that are recyclable and recycled, and help to reduce waste of packaged goods, Smurfit Kappa has a direct impact on responsible consumption and production.

Smurfit Kappa's circular business model and packaging design impact the following SDG and targets:



12.2, 12.3, 12.4, 12.5 and 12.6

Scope

- This priority area covers energy use, climate change and greenhouse gas emissions. Our reporting covers our operations from gate-to-gate
- All CO₂ emissions from our paper and board mills relate to the production of paper and board
- Only paper and board production is taken into account, given its fossil CO₂ emissions are 80% compared with our converting operations and its subsequent contribution to fossil fuel CO₂ emissions
- For Scope 3 emissions, we currently cover transport in Europe, Central cluster and Mexico only. We finalised our initial Scope 3 emission evaluation at the end of 2021 as part of our SBTi validation process. As Scope 3 emissions are mainly related to our supply chains, our next step is to understand which are the key reporting items and how we will obtain and manage the data to be reported

- This strategic priority covers forest management, biodiversity, fibre sourcing and the communication of how we use sustainable fibres through certified CoC
- Our reporting encompasses all of our own operations and products

- This priority area covers the water intake and discharge to and from our processes. The data covers all Smurfit Kappa paper and board mills discharging water produced through the process directly to water bodies. Mills that have their process water treated externally are not included
- Only paper and board production is taken into account because this contributes to 95% of all organic discharges and 98% of total water intake
- Our target is set against COD in water which is an indicator of the organic content in water
- As a processor and not a consumer of water, we focus our efforts on further improving the quality of water we discharge, and understanding the risks associated with water availability and use in the areas where we operate

- This priority area covers non-hazardous waste (recovered and landfilled) and hazardous waste generated from Smurfit Kappa's manufacturing processes
- Our target is set against waste sent to landfill from our paper and board mills per produced tonne of paper
- The amount of hazardous waste produced in our production processes is very low and depends on local activities such as construction or change of light bulbs on site. Therefore we have no set target for hazardous waste

Climate change

Minimising energy use and moving from fossil fuels to renewable sources, including biomass, are core elements of our Climate Change strategy aimed at reducing our CO₂ emissions in line with the Paris Agreement, reaching at least net zero by 2050.

Mitigating Climate Change is the most pressing issue of our time and our strategy is to reduce fossil CO₂ emissions throughout our value chain. Our drive for energy efficiency reduces climate impact and lowers cost. Aligning our Climate Change strategy with the UN 2030 SDGs 7 (affordable and clean energy), 12 (responsible consumption and production) and 13 (climate action) which are related to climate change, our focus is on increasing our own low-carbon and energy efficient production systems, increasing our use of renewable fuels, lowering customer carbon footprints and decreasing CO₂ emissions in our supply chain through e.g. transport optimisation. Focus on contributing to

these UN 2030 SDGs and our circular business model makes us an efficient user of natural resources such as wood and energy, and leads to optimal use of residual product streams.

In line with our Climate Change strategy, we are committed to at least net zero by 2050, and have set interim targets on reducing our Scope 1 and 2 CO₂ emissions per produced tonne of paper by 2030 from our paper mills. To support this, we have set a CO₂ reduction programme that focuses on energy efficiency and a shift towards renewable energy.

As part of our Better Planet 2050 initiative, we are committed to reporting consistent with the TCFD

recommendations, see the TCFD table on page 115. Additionally in 2021, we had our CO₂ emission target validated by the SBTi in line with the objectives of the Paris Agreement and well below 2°C. Our SBTi baseline is 2019 and a respective intensity target reduction of 37.7% by 2030 for all our Scope 1 and 2 CO₂ emissions. The actions we are taking to deliver on our interim CO₂ emission target of 55% specific reduction per tonne of paper produced by 2030 complements our validated SBTi target.

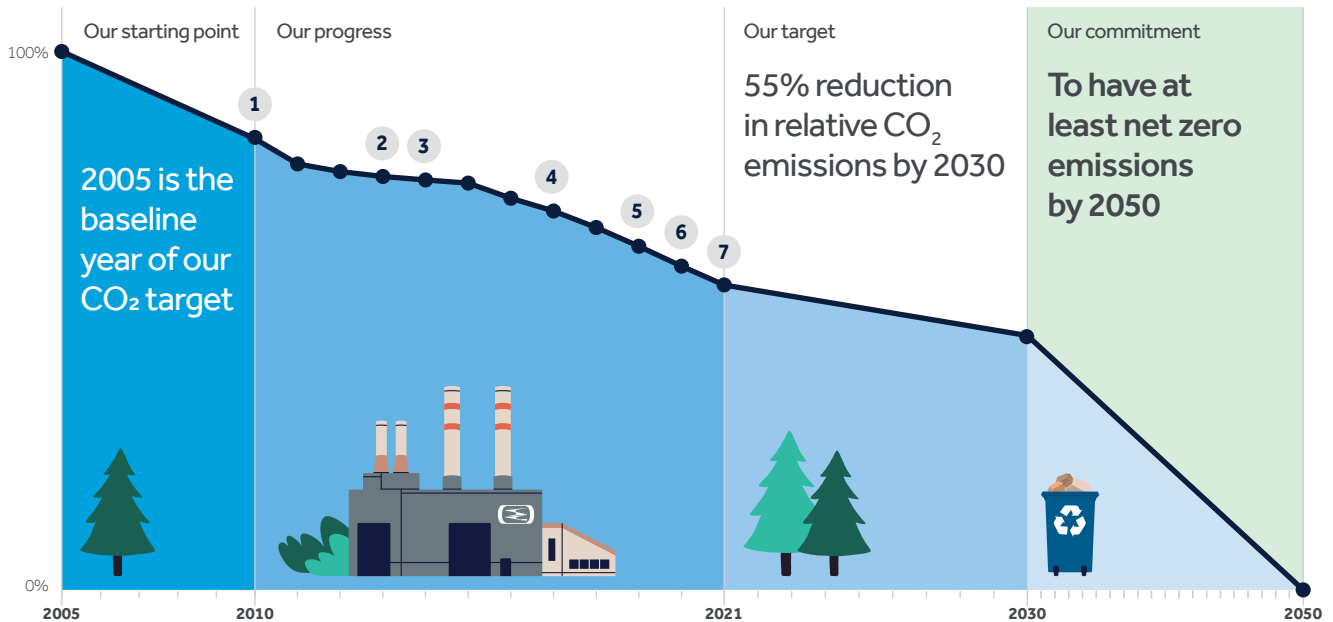
In line with the efficient resource use hierarchy, we only use wood biomass for which no higher value-added purpose exists as fuel and we also use

residual products of wood such as black liquor to generate energy.

The key focus of our energy efficiency investments is to deliver CO₂ emission reductions; however, we support the EU general energy efficiency target with our target to improve our energy efficiency at least by 1% annually in our global paper mill network.

We started to report on EU Taxonomy in our Annual Report (pages 50-51) in 2021. The Taxonomy regulation currently covers the Climate Change Adaptation and Mitigation.

Our Net Zero Roadmap



- 1 Set 2020 target of 20% reduction in relative CO₂ emissions target (2005 baseline).
 - 2 2020 target of 20% reduction achieved with a 21% reduction by the end of 2013.
 - 3 New relative emissions reduction target of 25% reduction set for 2020.
 - 4 2020 target of 25% reduction achieved and more ambitious relative emissions reduction target of 40% by 2030 set.
 - 5 Approval of €134 million new recovery boiler in Nettingsdorf (Austria).
 - 6 Long-term target of at least net zero emissions by 2050 and increased the 2030 emissions reduction target to 55%.
 - 7 SBTi approval received for our CO₂ emission target as being in line with the Paris Agreement and a well below 2°C trajectory. Launched Better Planet 2050 programme.
- Continuous work to understand the scope and new technologies needed to achieve net zero, such as our trial with hydrogen at our Saillat paper mill (France).

Indirect CO₂
emissions reduction

55,000
tonnes
per year

CASE STUDY

Reducing CO₂ at Zülpich – the Logical, Ecological Step

“We wanted to reduce our CO₂ footprint while ensuring our current energy supply. That meant upgrading our lignite-burning boiler. When Smurfit Kappa introduced its Better Planet 2050 targets and committed to having its CO₂ reduction target validated by the SBTi, we knew we needed to do our share,” says Jürgen Groth, Technical Manager, and member of the Zülpich ‘Energy Step 1’ project team.

The current multi-fuel boiler works on 75% lignite, 20% plant rejects, mainly plastic, and 5% biogas from waste-water, to produce half a million tonnes of paper annually. Smurfit Kappa has invested €11.5 million in the ‘Energy Step 1’ project that will help us to significantly reduce CO₂ emissions.

“Naturally, we wanted to replace the lignite with a more sustainable fuel,” says Jürgen, “We also wanted to use more rejects, particularly from other paper mills. It is a waste to pay for reject disposal and incineration elsewhere when we could use it and increase the use of mainly pelletised plastic rejects in our energy mix.”

Lara Hofmann, Personal Assistant to the Zülpich Management Team, points out, “For 150 years the Zülpich mill was supplied by local opencast lignite mines. We have a tradition of a circular approach, with a closed water-loop and use of rejects: more than 90% of our streams are closed. So, this was the next logical, as well as ecological, step.”

Rejects would not be enough, however, and natural gas was used to replace lignite. The power plant was fully operational at the beginning of 2022. The new setup will be less than 60% gas, up to 40% rejects, and around 5-6% biogas.

“Natural gas is currently more expensive than lignite,” says Lara, “But we are future-proofing the plant.”

The reduction in CO₂ from the plant will help Smurfit Kappa contribute to its target to reduce 55% of its CO₂ emissions by 2030. As Lara puts it, “The CO₂ footprint of the paper mill in Zülpich was 220,000 tonnes until the project and we expect it to fall by 55,000 tonnes annually. This means a CO₂ emission reduction by a quarter for the mill and 2% for the entire Smurfit Kappa Group.”

PLANET CONTINUED

Progress in 2021

In December our target to reduce our Scope 1 and 2 emissions was validated by the SBTi. In our approach to tackle climate change, we are using less fossil fuel and emitting less CO₂, promoting renewable sources and closing loops to create circularity in our production process. There are three parts to our CO₂ reduction programme:

- **Investing in efficient energy-generation**
 - Investing in highly efficient CHP systems; and
 - Improving the efficiency of our existing boilers.
- **Investing in efficient energy use**
 - Investing in technologies that reduce energy consumption; and
 - Reengineering our processes and implementing smart energy-efficient solutions.
- **Investing in fossil CO₂ reductions**
 - Where possible, shifting to CO₂ neutral biofuels and other renewable solutions.

Between 2005 and 2021, we achieved a 41.3% reduction of relative CO₂ emissions from our mills. Our global CO₂ emission reduction programme currently covers 100% of our operations with a focus on the paper and board operations that represent 10% of global operations but emit over 80% of our CO₂ emissions.

In 2020, we finalised an evaluation of a suitable CO₂ emission-target for our corrugated operations. Our conclusion is that the current approach to encourage any change is sufficient as the average share of a corrugated site to the Group CO₂ emissions is below 0.5%.

Energy Efficiency

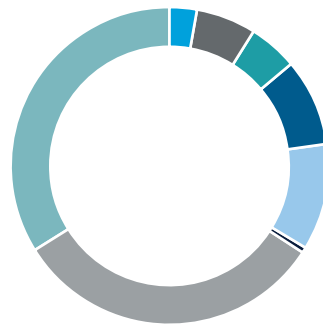
Further progress in energy efficiency is key in achieving our CO₂ emission reduction targets. Since 2005 we have invested €904 million in more efficient energy-generation, technologies that reduce the use of energy and technologies that recover energy. Examples of this are investments in for example CHP generation and heat exchangers. These investments have improved overall energy efficiency in our paper mill system by 20%.

During 2021 Smurfit Kappa Group delivered a 41.3% reduction of relative CO₂ emissions compared with 2005, some of the key actions are listed below:

- The rebuild of PM5 at our Factice mill (France) in 2020 delivered a 22.2% reduction in the mill's CO₂ emissions year-on-year
- The energy efficiency improvements at our Sangüesa mill's (Spain) pulp plant, together with an increased use of biomass improved the mill's CO₂ emissions by 20.2% year-on-year
- Our Nettingsdorf mill (Austria) recovery boiler investment which started in 2020 continued to deliver with further CO₂ emission reductions of 9.0% year-on-year
- Our Zulpich mill (Germany) started its 'Energy Step' project with a rebuild of its multifuel boiler leading to a 8.4% reduction in its CO₂ emissions year-on-year
- Continued work on our PM6 machine in our Los Reyes mill (Mexico) resulted in a 8.2% CO₂ emission reduction year-on-year.

The above mentioned projects are an illustration of the fact that reducing energy usage is both strategic sustainability as well as a business imperative for our paper and board mills.

Our packaging causes only 3% of the carbon footprint in the food product value chain



Key:

- Packaging – 3.0%
- Manufacturing – 6.0%
- Transport – 5.0%
- Retail and Hospitality – 9.0%
- Consumer – 11.0%
- Post-consumer – 0.5%
- Imports Production – 32.0%
- Domestic Ingredients – 34.0%

Source: Data from analysis by WRAP, 2020, UK

Renewable Energy

To reach our CO₂ emission reduction target, we are moving from fossil to renewable fuels. During 2021, our paper mills used 51.8% biofuels, compared with 37.4% in 2005 and 47.7% for all operations.

The Smurfit Kappa Nettingsdorf mill in Austria started its bioboiler in April 2020. Our Smurfit Kappa Piteå mill in Sweden has had its energy production biofuel based since 2018.

As part of our sourcing strategy for grid electricity, we are shifting to CO₂ neutral energy.

Working with our Customers

Using a suite of tools, including Innobook, Pack Expert, Paper to Box, Shelf Viewer and SupplySmart we work with customers to determine their packaging's carbon footprint. These tools provide CO₂ emissions data and other information to optimise solutions.

In 2021, our tools were used 160,000 times. Our InnoTools suite of design software also shows customers the carbon footprint for each packaging unit and tracks its development over time. Our Group CO₂ emission reductions will be reflected in our InnoTools and from there in the footprints of our customers' packaging solutions.

Scope 3 Emissions

We started our work to address all our Scope 3 emissions in our SBTi validation project. Part of this work was an assessment of all of our CO₂ emission sources. This work has given us more insights to our Scope 3 emissions which in line with our estimations for the SBTi make 30-39% of our total emissions. The work done to establish an estimation of the Scope 3 emissions will make the basis for our work to establish a robust reporting system for all relevant Scope 3 emissions. We currently collect data and report on our emissions from transport, where the European operations have been covered and we will gradually cover all countries in the Americas operations. Other Scope 3 emissions will be included in the calculations in the near future, including setting targets for them.

Direct Fuel Consumption, All Operations

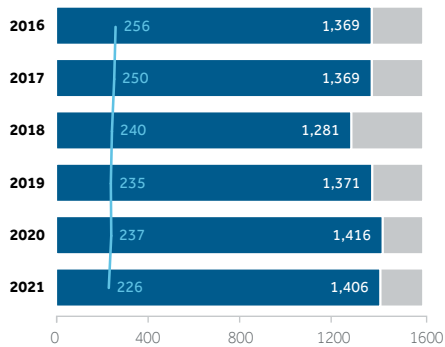


Key:

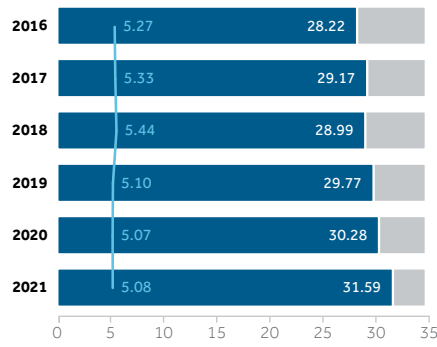
- Natural gas – 44.1%
- Coal – 5.5%
- Other fossil fuels – 2.6%
- Biofuels – 47.8%



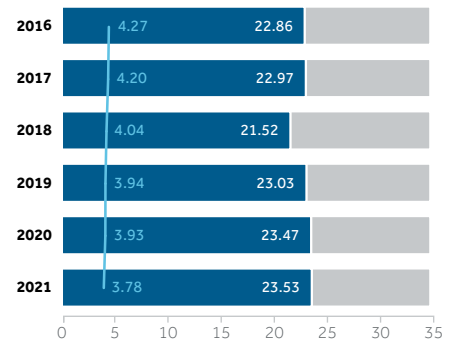
Direct Fossil (Scope 1) CO₂ Emission: European Mills



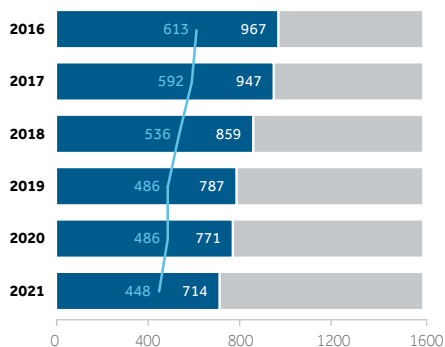
Biofuels: European Mills



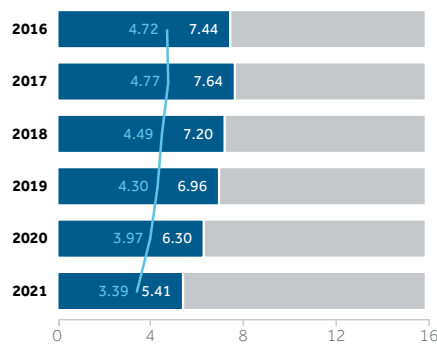
Fossil Fuels: European Mills



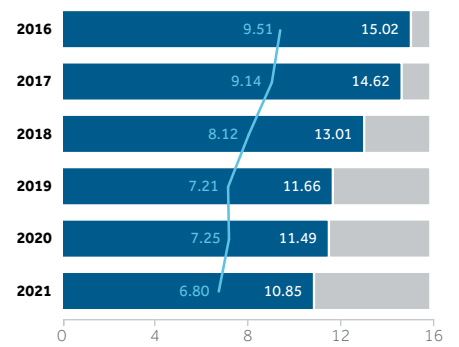
Direct Fossil (Scope 1) CO₂ Emission: The Americas Mills



Biofuels: The Americas Mills



Fossil Fuels: The Americas Mills



Key:

■ Absolute - (ktonnes) ■ Specific - (kg/tonne)

Key:

■ Absolute - (PJ) ■ Specific - (GJ/tonne)

Key:

■ Absolute - (PJ) ■ Specific - (GJ/tonne)

CASE STUDY

Solar Power in Guadalajara

"The COVID-19 pandemic has taught us we are all on the same planet, and if we don't take care of it, it can't take care of us," says Stephany Meza, Project and Environment Coordinator at Smurfit Kappa Mexico. "That's why our solar energy project couldn't be postponed."

Organising a new power supply during a pandemic is not an easy task. However, Mexico is one of the world's best places for solar power. The Distributed Generation Scheme introduced by the government some years ago allows private generation of energy and there are many companies that enable this.

Smurfit Kappa worked to set up 1,693 panels on the roof of our corrugated plant in Guadalajara, Jalisco. This is Smurfit Kappa's second solar project, and the site was chosen as our flagship Mexican solar project which would deliver the best possible environmental benefits, highlighting the possibilities of renewable energy.

"Our clients regularly enquire how we are addressing climate change," says Stephany, "And this is a great example, making us a model and example of what can be done."

The Guadalajara site was also chosen to maximise a return on investment – important given a rise of 4% in electricity costs in Mexico was predicted (which turned out to be 5%). Fortunately, the installation was a success from its operational start in March 2020, producing 900,000 KWh/year: 20% of the plant's total energy requirement. This will reduce indirect CO₂ emissions by 500 tonnes per year, helping towards Smurfit Kappa's CO₂ reduction goals, as well as helping to realise SDG 7: Affordable and Clean Energy.

"The project was very exciting," says Stephany. "We benefitted from excellent teamwork with the plant and Smurfit Kappa engineering teams from Mexico and the Americas, and we gained interest from other firms in the region. It was rewarding to be part of this sustainable development – important for me, my colleagues and the Company."

"It reassured me personally that Smurfit Kappa would keep working on sustainability projects like this, no matter what was happening around us."



Emissions from Transport

We have included emissions in our transport-related supply chain decisions since 2017. Our strategy focuses on three opportunities to decrease transport emissions: maximising efficiency through payload optimisation and reducing empty mileage; developing a good modal mix of road, rail and water transport; and using less carbon-intensive fuel technologies.

For this, data management is essential. Since 2018, we have included transport emission data in logistics decision-making. Therefore our operating companies report transport data annually, and data is aggregated in a central database where an emission calculation is applied based on CO₂ equivalent emission default values according to the Global Logistics Emissions Council by Smart Freight Centre (GLEC) reference model and standards. Since 2021, the transport

emission reporting is validated annually by Smart Freight Center from where we successfully achieved validation certification for 2021 stating that the reporting complies with the GLEC standards. The scope and transport streams in the reporting are described below.

In the reported upstream transport emissions, we include the transport of wood, recovered paper and market pulp, as well as from transporting intermediate products such as reels of paper, corrugated and solid-board sheets from paper mills to converting plants. In 2021 for Europe, these were the equivalent of 373,400 tonnes of CO₂ equivalent. Whilst transport emission calculation for paper reel transport between our own mills and converting plants is accurate, the transport emissions reported also cover a good estimate for emissions when reels of paper are supplied to our corrugated plants by third parties (paper reels supplied from third parties

represents 25% of the total paper reel supply). The estimate for third party suppliers is based on the assumption that the average emission intensity per tonne shipped equals the emission intensity of internal supplies. The assumptions in our transport emission calculations are part of the GLEC validation process.

We also report transport emissions from delivering to customers, representing 118,500 tonnes of CO₂ equivalent.

For 2021, this amounts to a total transport emission of 491,900 tonnes of CO₂ equivalent in Europe.

While corrugated transport is mainly by road over shorter distances, for all remaining transport we operate a modal mix of 4.3% rail, 7.4% water and 88.3% road based transportation. The modal mix is calculated based on shipped volume per mode. Including corrugated transport the total modal

mix is at 3.3% rail, 5.5% water and 91.2% road based transportation.

We started calculating the transport emissions for the Americas in 2019. We have now mapped the transport streams similar to Europe for The Central cluster (Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador and Peru) and Mexico and estimated the transport distances. Given that local transport emission factors are not yet available for these countries, we have applied the GLEC reference emission factors to the Central cluster and Mexican transports. The total transported volume was estimated to be 18 million tonnes. These equal 665,800 tonnes of CO₂ equivalent. This is the second year to calculate transport emissions in this pilot project and the information will become more accurate as we learn from the pilot.



Transport Decarbonisation Journey

Smurfit Kappa is committed to continuously optimise and decarbonize their transportation operation. Therefore a wide range of initiatives are followed with focus on:

- 1. Modal shift:** CO₂ reduction by shifting transport from road to lower emission transport modes. Smurfit Kappa is making use and continuously develops multi-modal transportation leveraging rail, water and wide range of multi modal transport solutions. Access to rail or waterway transportation is part of our logistics infrastructure investments.
- 2. Operational efficiency:** CO₂ reduction by optimising transport operations, increasing load-fill and tonnage per unit, reducing empty mileage, back-loading of trucks to reduce truck movements, supply-chain network optimisation to reducing transport distances between sources and destinations.

- 3. Fuel efficiency:** CO₂ reduction by leveraging new technology, alternative fuels, engine efficiency. As Smurfit Kappa mainly operates transportation with third party transport providers the strategy is to mutually set targets and monitoring progress with our external transport partners.

Scope Statement

The current scope is structured in the following main flows, and transport streams included are outlined in the diagram below.

1. Smurfit Kappa operated transport of wood and wood chips to Paper Mills
2. Transport of recovered paper to Paper Mills
3. Transport of paper reels and solid board sheets from internal Paper Mills to internal or external Corrugated plants
4. Transport of paper reels from external Paper Mills to Corrugated plants
5. Corrugated boxes from Corrugated plants to Smurfit Kappa customers

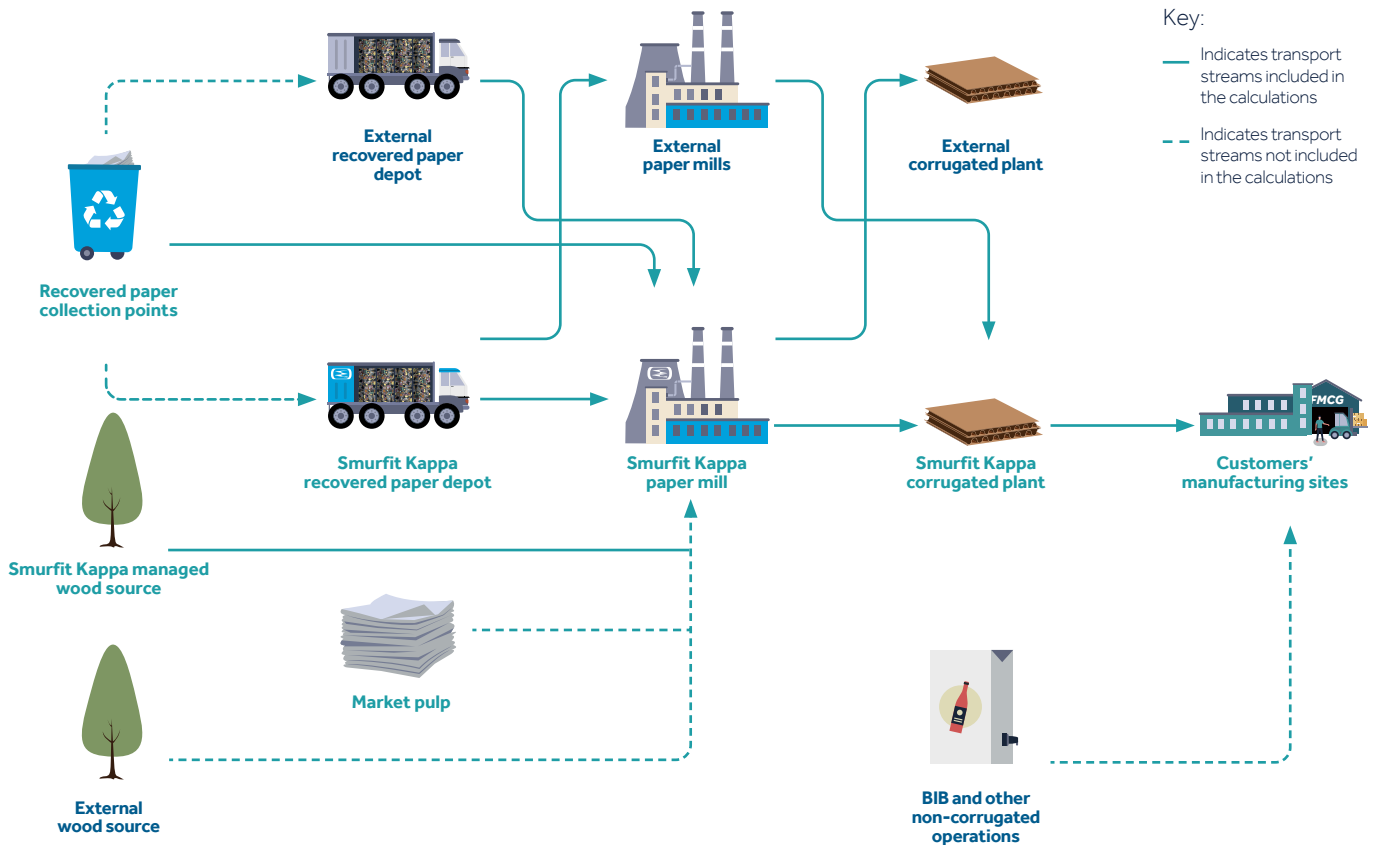
Not in scope for now are the following areas while the intention is to incrementally extend the scope:

- Geography: All other regions beyond Europe are currently not in scope but are in progress to be covered in the next steps
- Goods flows: All material and goods flows beyond the main flows expressed above are out of scope like transport of raw chemicals, starch, or any other commodity supplies. The magnitude of these remaining raw materials will be estimated going forward
- Warehousing: Any external warehousing operation is currently out of scope. The scope for external warehouses is estimated at 1.6 million tonnes of paper transport from paper mills to corrugated plants where external warehouse activity applies. This amounts to 26% of flow 4 and 7% of the entire reported volume in scope

Boundaries

The logistics emission reporting is validated annually by SmartFreight Center for assuring that our reporting complies with the GLEC framework model and requirements. For 2021 the validation process was conducted for the first time in full where we successfully received the validation certification. As part of the validation process a gap analysis is performed in order to incrementally improve the data and reporting maturity. Scope and data maturity is worked continuously to further improve the reporting maturity in line with the requirements from the GLEC framework and to anticipate the future requirements of the forthcoming ISO14083.

Transport Streams



Forest

Natural fibres are our main raw material of which 76% is primarily post-consumer recycled fibres. Producing corrugated packaging from recycled fibres only is not possible. To maintain an optimised recycling system we need fresh fibres, and therefore virgin fibres make up 24% of our raw material supply. We source all our fibrous raw materials sustainably as CoC certified, including our recycled fibres.

Our raw material is renewable, recyclable, recycled and biodegradable. This makes us part of the circular and bioeconomy which we have explained in more depth on pages 32-33. We need virgin fibres for food safety and other technical properties of our packaging solutions. As fibres can only be recycled a limited number of eight times, we also need fresh virgin wood fibres to sustain a healthy fibre recycling-system.

The virgin fibres we use are primarily made of wood for pulp from certified sustainably-managed forests. Smurfit Kappa sustainably manages its own eucalyptus and pine plantations in Colombia which are FSC Certified since 2003, and our forestry operations in Spain and France support small forest owners to manage their forests, certified by FSC and/or PEFC. In Europe, Smurfit Kappa buys most of the virgin fibres from suppliers: Austria, the Baltic countries, France, Germany, Spain and Sweden.

Our Commitment to Sustainable Fibre

Products delivered to our customers must meet the commitments we make in our policy statements (Forestry Policy, Code of Conduct, Social Citizenship).

We source virgin fibres from certifiably well-managed forests, or at least of non-controversial origin, or certified recycled fibres. All materials must be delivered through a third-party-verified CoC certified supply chain. We accept Forest Stewardship Council (FSC), Programme for Endorsement of Forest Certification (PEFC) and Sustainable Forestry Initiative (SFI) certified wood, and the CoC systems at our mills and plants also cover recycled fibre sourcing. We regard these certification schemes as the best available means to conserve forests and their biodiversity. Sustainable Forest Management certification schemes require regular monitoring of the protection of ecosystems and biodiversity.

This is being monitored annually on our sites as part of the forest certification audits and auditing by independent third parties applies to our suppliers through the certified CoC.

100% of the wood we use to produce virgin paper or pulp comes, at least, from sustainable non-controversial origin. In 2021, 56% of this wood is from sustainably-managed forests certified under the FSC, PEFC and/or SFI schemes and the remaining 44% is from FSC Controlled Wood sources, risk-assessed through our FSC and PEFC CoC system and verified by a third party. 12.4% of the wood we use originates from our own forests and plantations.

Our objective is to increase certified wood supplies. Low availability of certified wood at competitive prices in the regions where we can economically source our wood supplies is limiting the possibility of increasing certified wood supplies.

The administrative effort to achieve certified CoC status means that it is often not economically feasible for small forest holders to certify their forest holdings, further limiting the availability of certified wood supplies. However, efforts to increase FSC certified supplies have started to have positive impacts on the certified wood volumes in Spain, where we support forest owners, all smallholders, in achieving the FSC certification of their forests. Also, in Sweden volumes could be increased through finding better agreements with forest owners in the region.

Annually, Smurfit Kappa's recycling operations handle some 6 million tonnes of recovered paper in Europe, and 1.4 million tonnes in the Americas. We have a network of 20 recycled paper depots in Europe, and 25 in the Americas, using recovered paper from municipalities, retailers, industries, and our own corrugating and converting operations. All recycled fibre we use is certified CoC.

Share of Packaging Products Sold as CoC Certified 2017-2021



Key: Smurfit Kappa Group

Our Certified Raw Materials



Key: Recycled, Virgin, Certified, FSC Controlled wood

CASE STUDY

Team Work for Improved Due Diligence

“How can we consistently ensure sustainable sourcing of wood fibre across a global organisation with over 350 sites?” asks Emilio Ledesma, “We wanted to create a global system that covers both certified CoC and regulatory requirements.”

The answer is the Wood Fibre Risk Assessment platform: a Microsoft SharePoint-based tool to be used globally by all CoC managers and local purchasers. It is the product of an international team from all relevant Smurfit Kappa sites. For instance, Matteo Ferrari (Italian, working in the Netherlands) assessed large centrally-purchased suppliers, whereas Emilio Ledesma (Mexican) and Pierre Dumestre (French) used their extensive experience of the particular requirements of local suppliers.

“First we had to list wood species and origin country for all our paper mills and third-party paper suppliers,” says Matteo, “Together with our ‘Preferred by Nature’ partner organisation we used FSC national risk assessments to update the Smurfit Kappa National Risk Assessment map. Then, using the CoC status of the suppliers and our standardised purchasing-decision flowchart, we divided all centrally-purchased paper suppliers into high, medium or low risk. For high-risk suppliers we worked together to find the right risk mitigation actions.”

The Due Diligence System (DDS) procedure, and use of the Assessment platform, have been implemented through team meetings and training in fibre-origin risk, a process which was third-party verified by ‘Preferred by Nature’. It is part of our DDS, to ensure implementation of Smurfit Kappa’s sustainability policies at local and central levels. This all goes towards supporting SDG 15, ‘Promoting Sustainable use of Ecosystems’, and 12, Responsible Production, as well as increasing regulatory demands as the UK is developing its own sustainable fibre regulation next to the EU Timber Regulation and the US Lacey act that we currently comply with.

The Assessment Platform also promotes fairness. “This means that we don’t stop using uncertified small suppliers – we help them get their certification,” says Pierre. “More than 93% of our packaging is FSC certified, and CoC certification makes it easier for us, but it will take some time for everyone to be CoC certified.”

“It was really a team effort,” says Matteo. Pierre agrees; “We could do it because we are a very structured group, with harmonised nomenclature of materials and information. The Platform and DDS procedure defines a clear supplier status for everyone in Smurfit Kappa.”



Chain of Custody

Smurfit Kappa does not source fibre from high deforestation-risk areas including High Conservation Value areas. Through supply-chain transparency we ensure our sustainability commitments and fibre origins. We use robust monitoring and third-party auditing of our wood and fibre supply chain.

The best practice to deliver our commitments is through CoC certification.

Our complete paper mill system has been CoC certified under FSC and PEFC schemes in Europe since 2010, and under FSC, PEFC and/or SFI schemes in the Americas since

2015. At the end of 2021, 92.8% of our paper was produced as CoC certified, according to FSC, PEFC or SFI standards. The remaining 7.2% are from non-controversial fibres in accordance with FSC Controlled Wood standard, and managed through the mills' CoC certified risk assessment systems.

We have increased our targets for the production of certified CoC paper, produced by our mills and packaging solutions, delivered to customers to 95%, to be reached by 2025 at the latest.

At the end of 2021, we reached 93.45%. This was down slightly on 2020 and was driven predominantly

by low paper availability in what were extremely tight global markets.

The goal of the Smurfit Kappa DDS is to further ensure that all of the related Group sustainability policies are implemented at local and central purchasing level. The new wood fibre risk assessment procedure together with the Wood Fibre Risk Assessment platform facilitates greater team work and standardises local purchasing processes. The implementation of the DDS has been third party verified by 'Preferred by Nature' and the verification process consisted of both overall group and on-site gap assessments. The audit report will be used to further strengthen our

related policies/procedures and the implementation of our sustainable fibre sourcing policy requirements.

Although we source most of our wood from Europe, in 2021, we sourced wood fibres from 39 countries among which nine are classified as potential high-risk countries: Argentina, Belarus, Brazil, Bulgaria, Chile, Colombia, Indonesia, Russia, Slovakia, Slovenia and Ukraine. In Colombia, we only source from our own FSC certified plantations. Fibres sourced from the other eight countries require additional due diligence before purchasing to ensure our sourcing policy requirements are followed.

CoC: Proven Trail for Sustainable Fibres

Transparency throughout the supply chain is vital to delivering our sustainability commitments. Robust monitoring and third-party auditing of our supply chain is ensuring sourced fibre complies with our sustainability principles.

Our manufacturing sites are CoC certified, and over 99% of our fibres are sourced through CoC certified supply chains. Our commitment is to deliver over 95% of our sold products as CoC certified.

Our definition of sustainable forest management comprises optimising the forest's benefits: supplying timber for our business, providing jobs and income for communities and maintaining healthy forest ecosystems that support biodiversity, protect water bodies and supply non-wood forest products.

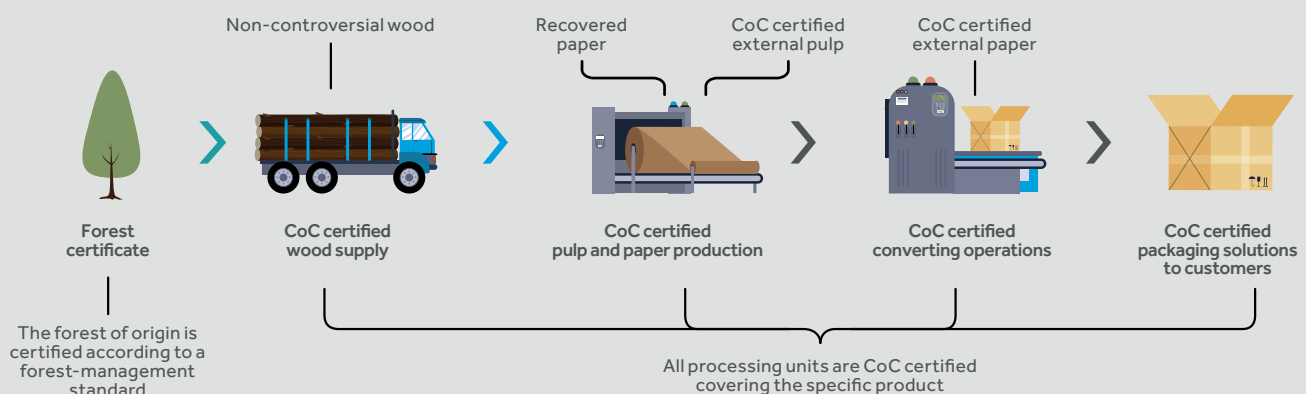
Production of sustainable paper-based packaging starts in the forest. The forest-owners commit to manage their forests and plantations according to sustainable forest management criteria. They obtain a certification after an independent, third-party audit and follow a regular audit scheme where their forest management-practices are being evaluated.

The forest certification related CoC management systems start from the harvest of the trees. Each operation and entity processing the material has its own CoC system which covers storage and use of the material, production and shipping of products, documentation of material and product flows and communication to customers through invoices and delivery notes. In the Smurfit Kappa system, the paper production and converting operations have their own CoC certificates.

Each product carrying a forest certification scheme on-product label carries a licence number that can be further traced back to the supplier, producer and the country of origin of the raw material.

A small amount of fibres used in CoC certified products may come from non-certified forests. Evidence of these 'non-controversial' sources is required to comply with the minimum standard of sustainable forest management. Smurfit Kappa requires this portion to comply with the FSC Controlled Wood standard.

CoC Model



PLANET CONTINUED

Forest and Plantation Management

All of Smurfit Kappa's own forest plantations are based in Colombia, France and Spain. All our plantations are certified, either to FSC or PEFC standards.

Colombia

Almost all the virgin wood fibre our Colombian plants need is supplied by 67,000 ha of certified forests and plantations which we own and manage. We use nature conservation programmes with the best sustainable development principles, promoting responsible use of natural resources along with economic development and social inclusiveness in collaboration with NGOs and other third-party organisations. We also conform to comprehensive legal, technical and environmental regulations, subject to annual review.

Our 67,373 ha of forests and plantations in Colombia include:

- 41,672 ha of commercial plantations, of which 4,966 ha are partnerships with private landowners;
- 22,593 ha of protected natural forest; and
- 3,107 ha for infrastructure.

In our commercial plantations, 57% of the land is pine, 36% eucalyptus, 5% is being replanted and 2% is dedicated to research. Our Colombian forest management programmes have been certified by FSC since 2003.

Biodiversity and Ecosystem Conservation

A third of our Colombian forest land is dedicated to protecting forest sustainability, helping maintain the area's rich biodiversity and preserving watersheds, habitats and ecosystems.

To maintain forest biodiversity and sustainability, our principles for our commercial plantations are to:

- Conserve them, by protecting and promoting species, diversity, sustaining ecosystems, and protecting water sources and habitats;
- Identify appropriate species and practices that increase plantation yields whilst protecting the environment; and
- Develop research programmes to preserve and enhance soil productivity.

Fibres for paper are efficiently-produced on our commercial plantations. We use carefully selected areas for plantations, avoiding valuable ecosystems and protected forest areas.

Protecting and promoting natural habitats is important to our approach, so in Colombia we use our own research centre as well as third-party institutions. Since 2009, we have worked with four local universities – Cauca, Nacional, Valle and Quindío – studying the flora and fauna populations in and around our forests.

Examples include:

- Since 2013, a partnership with the Biology Programme of the Natural Science School of Universidad del Valle has studied the 'diversity of birds, mammals and plants in the natural forests of the forestry nucleus in Sevilla'.
- In 2014, a literature review aimed to inform conservation planning by identifying areas of special biodiversity close to the Company's plantations and natural forests in the Santa Rosa-Pereira core areas.
- During the past five years, studies developed by Smurfit Kappa identified 1,280 species in our forests. This includes 662 trees, 540 birds, 77 mammals, and one amphibian, of which 53 species are threatened. Our plantations and neighbouring protected forests form important wildlife corridors, contributing to species, conservation in the Andean ecosystem, and need careful management.

- Since 1994 we have collaborated with coffee farmers in the regions where we have forest plantations to introduce ecological synergies from coproduction of forest plantations and coffee farming.

We also work with neighbouring communities, engaging local people in our decision-making. This is especially important where indigenous people may have land rights, and livelihoods are often dependent on forests. Smurfit Kappa is a proud member of the communities it operates in, abiding with local laws and striving for best practice in what we do. We respect the local ways of working and when those are in line with the sustainable forest management practices, we support their use.

CO₂ stored in our growing trees

9.26 million tonnes

Forest Growth and Carbon Sequestration

Colombia

Every year the trees in our plantations sequester carbon from the atmosphere and store it in the growing stock.

Our plantations in Colombia have been established on land that has been in low-productivity use. Since the start of our forestry operations in Colombia, we have established sustainably managed tree stock which has increased the CO₂ sequestration capacity and carbon stock to a total current storage of over 9 million tonnes of CO₂ equivalents (eq). In 2021, the biomass on our plantations sequestered in total a little over one million tonnes of CO₂ eq from the atmosphere, a figure similar to the CO₂ eq in the wood we harvested, and stored in total 9.26 million tonnes of CO₂ eq from the atmosphere in our growing trees inventory that remains at this level year on year.

To calculate this, we use a methodology, developed in collaboration with the Ministry of Agriculture and Rural Development (MADR), National Centre of Coffee Research (CENICAFE), and several forestry companies to quantify the growth and carbon sequestration capabilities of commercial pines and eucalyptus species grown under tropical conditions.

Europe

The forested land area in Europe has been in a steady growth since 1950's. The land area has grown during this time by some 30% and between 2005-2015 by 44,000km² (FAO), an equivalent of over 1,500 football fields. Smurfit Kappa owns some 500ha of forest in Europe, and we source a large proportion of our timber used at our virgin paper mills from forest owners whose forest holdings are located in boreal or hemiboreal forests.

Sustainable forest management benefits carbon sequestration and carbon storage in boreal forests. According to a recent study*, the carbon storage in intensively managed boreal forests grows faster than in those that are less managed. The study shows that the carbon sinks in the sustainably managed forests in Nordic Countries grew by 35% during 1990-2017, where as in other, less managed boreal forests it remained about the same. This means that supporting sustainable forest management is a means to mitigate climate change.



*Höberg P. et al. Sustainable boreal forest management – challenges and opportunities for climate change mitigation.

Our forest management activities are independently audited each year and must demonstrate compliance with the 10 FSC principles (including Principle 3 relating to Indigenous peoples' rights) which set out the essential elements of environmentally appropriate, socially beneficial and economically viable forest management. The last such audit was conducted by FSC in July 2021 with no issues identified.

In July 2021, sections of both our commercial and natural forests in Cajibío, Colombia were cut down or burnt by individuals or groups allegedly representing the Misak community. The company reported these actions to local authorities in order to protect the personal safety of our employees, the local community and the forests. There has been no further unlawful activity or damage to the local ecosystem since then. Through our operations in the Cajibío region and our ongoing commitment to the social development of this traditionally agricultural area, we have been firmly established as a part of the local community since we purchased the farms there 52 years ago. These forests have been FSC certified since 2003.

In 2021, there were no substantiated violations reported of the rights of indigenous people.

France and Spain

In Europe, we offer forest management services through our wood supply companies in Spain and France, where we own and manage some 500 ha of forest. In both, we follow local best practice for forest management, as certified by PEFC. Our wood-handling operations are CoC certified to FSC and PEFC standards.

100%
certified raw material
supplied to Cali mill

CASE STUDY

Sustainable Forest Management – A Personal Mission

"We have to take care of the environment because if we don't, in the future there isn't going to be much nature left," says Grimanesa Ramirez, Harvest Supervisor. Grimanesa has been with Smurfit Kappa over 30 years and currently works at our forest plantation in Santa Rosa de Cabal, Colombia, a city on the western slopes of the central Andean mountain range.

Like everyone working in Smurfit Kappa Forestry operations, Grimanesa is trained in sustainable forest management and understands how to protect habitats and ecosystems. She leads a team of thirteen people, ensuring careful felling of full-grown trees, planting new trees, and minimising impact on the surrounding diversity.

All Smurfit Kappa forest plantations in Colombia are FSC Certified; this Colombian plantation supplies our Cali mill with 100% certified raw material. Working with our forest is not just about managing a raw material, everyone understands their role in the value chain and the importance of delivering a CoC certified product – and takes pride in this.

"I have always taught my son that the environment must be protected," says Grimanesa. "I took him to the plantation where I work, and he was so excited! Now, every day he asks me to send pictures of the birds and animals I see and tell him how I am taking care of them. If we don't take care of what we have, then how are we going to do it? We have to be an example and allow children to be a reflection of what we do."

Grimanesa believes in her work and why it is important, commenting "I am providing a service and passing on knowledge to other people, and it's really wonderful to share like that."

Smurfit Kappa mainly uses recycled fibres but will always need new wood from sustainably managed forests. As Grimanesa puts it, "If we don't take care of what we have, then who will do it? We have to set an example for our children."



Water

Using water is critical in the paper-making process. Without water, we cannot produce the paper we need for our packaging solutions.

Smurfit Kappa is mainly a processor of water, as illustrated in the diagram below. Our global operations used 140 million m³ of water in 2021. Almost all of that – 137 million m³ – was used by our 34 paper and board mills and the remainder is used by our 241 other (packaging) operations.

Of the 137 million m³ used by the paper and board mills, 125 million m³ was discharged in good condition and almost 12 million m³ is evaporated in the air and will return as rainfall. We also reuse water several times, after which it is processed in our water treatment facilities and returned to public water bodies. Of the water discharged, 76 million m³ was used for processing and 49 million m³ for cooling.

Water treatment is part of the bioeconomy. We use bacteria to clean the water, and the resultant biogas fuels our on-site CHP plants. The water-cleaning sludges can be used for other water treatment processes, or in agriculture. We also support forests in maintaining nature's water-cycles through promoting certified sustainable forest management. For example, preserving water bodies linked to commercial forests

is an indicator of sustainable forest management, while allocating protected forest land, as we do in Colombia, further supports natural water ecosystems (see Forest section on page 43).

Committed to Sustainable Water Stewardship Assessing Risks Related to Water

Since 2014, we have investigated the environmental impact of our paper and board mills and undertook water risk assessments across all our mills. We first conducted a global risk assessment based on the geolocations of our mills using the Aqueduct and WRF tools and created a water scarcity risk mapping for our sites followed by individual risk assessments at sites. During 2021, we finalised water-risk assessments in all our paper mills. We will continue our programme starting in 2022 with the new acquisitions.

The water-risk assessments process focuses on three main risks – physical risk, including local water scarcity and mill equipment, regulatory risk, and reputational risk. Each assessment comprises a supporting desk

study and an on-site audit of each category, including interviews with key stakeholders. Since 2018, the mills have included these assessments in their ISO 14001:2015 certification risk assessments.

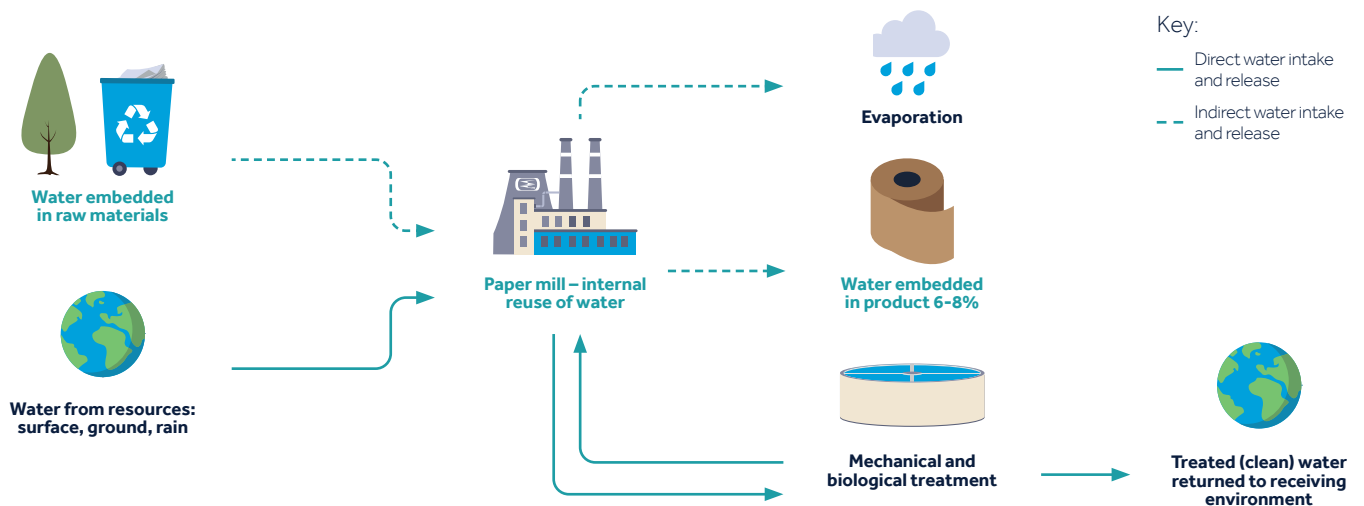
All assessments to date confirmed that our mills' water use has no impact on water availability to neighbouring areas. Only 12% of our paper and board production and just 4% of our water intake takes place in areas of water scarcity. Nevertheless, we always use water sustainably – many of our stakeholders are concerned with local quality and expect good water management practices.

Our products need to meet hygiene standards, and our paper-making technologies require good-quality water. Together with our neighbours and stakeholders we have a common interest in good water stewardship and we will use these findings to build individual site water stewardship strategies. To manage possible changes in our mill environments, the assessments will be repeated every five years.

Since 2018, we are a signatory to the CEO Water Mandate and we are also a member of the CEPI Water Issue Group that is looking into water specific industry issues.

Our paper mills engage with their stakeholders in multiple ways. Six of our paper mills – Forney (USA), Los Reyes and Monterrey (Mexico), Nervión (Spain), Nettingsdorf (Austria) and SSK (UK) – discharge their water to the municipality water treatment system and our Morava mill (Czech Republic) shares its water treatment plant with the local municipality. This collaboration benefits all participants as the water discharge from paper mills helps to balance the nutrition needs for municipality water treatment and thus reduce the need for additional water treatment nutrients needed by the municipality. Depending on location, we participate in water-body management and cross-industry collaboration, for example, our Roermond paper mill (Netherlands) receives the phosphorus it needs for water treatment from a neighbouring baby food plant where it is a by-product of their processes.

Water in the Paper Mill



CASE STUDY

Improving Water Treatment – Good Enough is Never Good Enough

“This takes us to a new level of excellence in how we process water,” says Alvaro Jose Henao Ramos, CEO of Smurfit Kappa Colombia, referring to the €6.3 million sustainable new water treatment facility at the Barranquilla Paper Mill.

This huge two-stage investment shows Smurfit Kappa’s commitment to SDG 6: Clean Water and Sanitation, and to the UN Global Compact CEO Water Mandate, which address the importance of clean water and action on water scarcity. An in-depth assessment in 2017 had already confirmed that the mill’s water use had no material impact on local water availability. “Currently, more than 90% of the water we use is returned to nature in good condition, and the remaining water is transformed into steam or linked to the product during the production process,” Alvaro explains.

However, for Smurfit Kappa there is always room for improvement. “We focus on reducing use, and improving the quality of the water we discharge, going beyond the minimum required by law,” says Alvaro. The new Wastewater Treatment Plant greatly reduces water uptake from the nearby Magdalena River and improves the quality of water returned to it. For example, the COD in the water discharged from the plant will be reduced by 80%, helping towards the company-wide goal of reducing COD by 60% by 2025.

The Barranquilla site produces containerboard from 100% recycled materials. As Alvaro says, “For many years, our operations have been based on a circular-economy model in which we seek to maximise resource efficiency and minimise waste.” The new Wastewater Treatment Plant is no exception. It is a state-of-the-art, self-sustaining anaerobic reactor which will also generate biogas that can be used to help power the mill, reducing the need for external power sources. This helps towards our commitment to net zero emissions by 2050.

Barranquilla is part of an investment programme covering Smurfit Kappa paper mills in Colombia, and which includes upgrading facilities at the Barbosa and Cali paper plants. “Water is a fundamental resource for Smurfit Kappa,” says Alvaro, “and we are happy to see how our investments in water treatment in Colombia leave us with room for growth as well.”

COD water discharge reduction

80%

PLANET CONTINUED

Focus on Better Water Use and Water Quality

For the vast majority of our operations, availability of 'fresh' water is not a concern for the foreseeable future. Nevertheless, we believe that a responsible approach to water is crucial.

As a processor and not a consumer of water, we focus our efforts on further improving the quality of water we discharge, and understanding the risks associated with water availability and use in the areas where we operate. We therefore continually implement best practice in our mills' water treatment. In 2021, over 98% of paper and board was produced at mills with best-practice water treatment systems. This involves decreasing the organic content of process water through anaerobic and aerobic treatments before returning it to public water bodies. Future investment plans include building best practice water treatment for the remaining operations.

Smurfit Kappa strives to continuously improve its water management, with current focus on better water use and improve the quality effluent release. Improved water efficiency in our paper mills means improved production efficiency. Therefore, we monitor closely the opportunities arising from best practices to improve our efficiency. In 2020, we set a new target to reduce water intake at our paper and board mills by 1% annually per produced tonne of paper, making 2021 the first year to report on our progress. Our COD target is a good measurement also in terms, of understanding how our water-efficiency strategy works, as the COD impacts both paper production as well as effluent.

Progress in 2021

In 2021, we made steady progress reducing our relative COD discharge from our paper and board mills. This year the progress is mainly due to our investments and projects in the Americas.

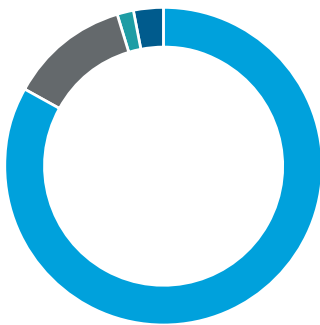
Between 2005 and 2021, the COD content of processed water returned to the environment has decreased by 38.5% relative to production, compared with 38.2% in 2020. The reduction is due to the start of the biological waste water-treatment plant at our Barbosa mill (Colombia). The 2021 result was impacted by an incident in the water treatment plant at our Alfa d'Avignon mill (France) at the end of 2020, which led to temporarily higher COD emissions through 2021.

In 2020, we introduced a new target to reduce our water by 1% annually in our paper and board mill network. The water intake of all our operations was 137 million m³, in comparison with 144 million m³ in 2020. For 2021, compared with 2020, the average water intake by our paper and board mills decreased to 17.6 m³ per tonne of paper produced, from 18.7m³. 2021 is our first year reporting against the target, and we achieved a 6.2% reduction in comparison to

the baseline year 2020. Whilst the specific water intake trend has been decreasing, the key contributors to the target in 2021 were our Cali mill (Colombia) and Parenco mill (the Netherlands).

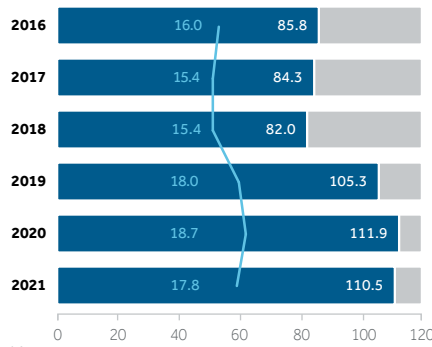
Our paper mills recycle water at a high rate. At the headbox of a paper machine, the pulp consistency is around 1% in the water mix. Initially, 75-125m³ water is used per tonne of paper. We discharge 3-7m³ water – about the same amount as the intake per tonne of paper. Depending on the specific local location, we recycle 10-40 times the amount of water needed in the paper-making process, and reuse this in the paper machine before returning part to our process, after treating it in our water-treatment plants. Our Smurfit Kappa Zülrich (Germany) and Bento (Brazil) mills operate closed water loop systems.

Water Sources – All Operations



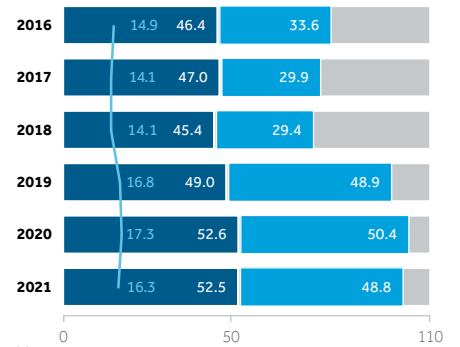
Key:
■ Surface – 83.2%
■ Ground – 12.1%
■ Grid – 2.9%
■ Other – 1.8%

Water Intake: European Mills



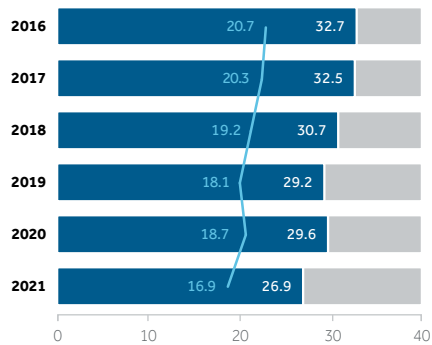
Key:
■ Absolute (Mm³)
— Specific (m³/tonne)

Water Released: European Mills



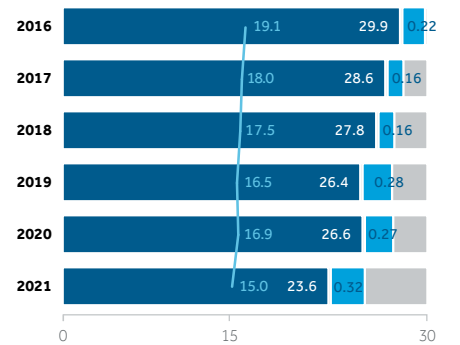
Key:
■ Absolute process (Mm³)
■ Absolute cooling (Mm³)
— Specific (m³/tonne)

Water Intake: The Americas Mills



Key:
■ Absolute (Mm³)
— Specific (m³/tonne)

Water Released: The Americas Mills



Key:
■ Absolute process (Mm³)
■ Absolute cooling (Mm³)
— Specific (m³/tonne)

CASE STUDY

Upgrading water treatment at Eslöv Corrugated

“A huge growth in our production volumes meant that we needed to redesign our water treatment,” says Martin Engholm, General Manager at the Eslöv converting plant Sweden.

“The increased amount of printing inks, challenged our old water treatment and we needed to work out a new solution.” This is because Eslöv is a conversion plant – as well as corrugating and cutting, it also prints. Print units need to be thoroughly cleaned between print runs to wash out the old colour, using beautiful colours means that our effluent has unwanted sediments that can’t be sent to the municipal water treatment plant as it can’t handle them. A standard water treatment plant could bring down the COD level, but with the sediment, the plant continued to have an issue.

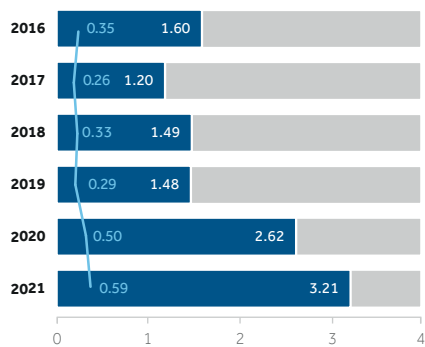
“What we needed,” says Emma Hansson, Head of Quality Control, “Was some flocculation!”

Flocculation is a chemical process which removes a sediment from a fluid. The flocculating chemical causes the sediment to clump together, making filtration possible. “After flocculation, the sediment looks like brown popcorn,” says Emma. “That’s a lot easier to remove than fine particles. We run the factory in three shifts, accumulating the wastewater in a tank and then run the wastewater treatment plant during the day. After flocculation, the water is suitable for the municipal water treatment plant.” The sediment will then be sent to a local waste management company for a suitable treatment.

The flocculation plant is surprisingly tiny for a plant of the size of Eslöv – it fits on a small truck. “The pilot plant arrived on a trailer, actually,” says Martin. “We tried it for six months and there was a lot of fine tuning needed, but at the end of the trial, the flocculation plant stayed and the trailer was sent away.”

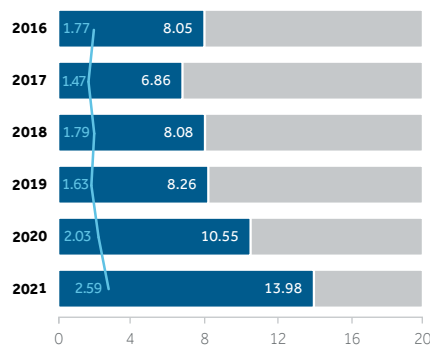
In addition to helping the Eslöv plant with its sediment treatment, the flocculation plant has helped the site to reduce their COD emissions by 25%. The next step the team is thinking about is to return the cleaned water back to the process and increase circulation. “Clean water is one of the UN SDGs, the SDG 6. We are proud that our plant can play a role in the global sustainability movement and delivering to our Group commitments,” conclude Martin and Emma.

Process Water Discharges* Biochemical Oxygen Demand (BOD): European Mills



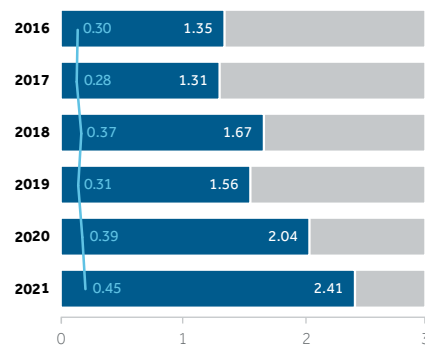
Key: Absolute (ktonnes) Specific (kg/tonne)

Process Water Discharges* Chemical Oxygen Demand (COD): European Mills



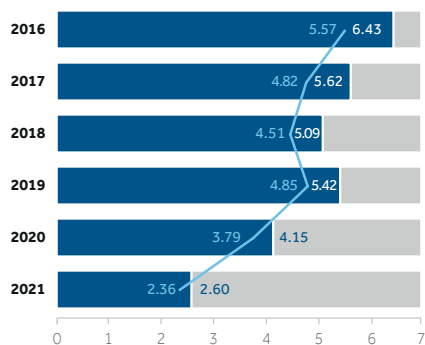
Key: Absolute (ktonnes) Specific (kg/tonne)

Process Water Discharges* Total Suspended Solids (TSS): European Mills



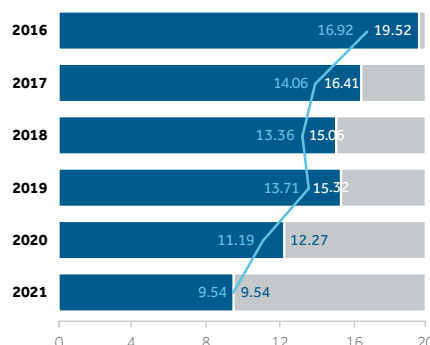
Key: Absolute (ktonnes) Specific (kg/tonne)

Process Water Discharges* BOD: The Americas Mills



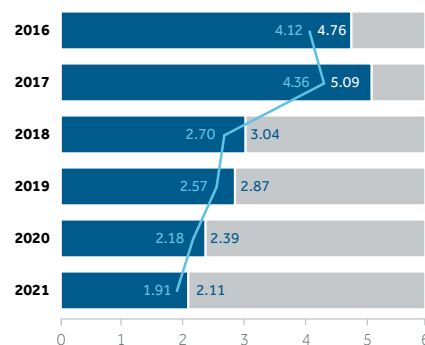
Key: Absolute (ktonnes) Specific (kg/tonne)

Process Water Discharges* COD: The Americas Mills



Key: Absolute (ktonnes) Specific (kg/tonne)

Process Water Discharges* TSS: The Americas Mills



Key: Absolute (ktonnes) Specific (kg/tonne)

* Figures of mills releasing to the environment (mills that released water to external water treatment plants) are not reported.

Waste

Efficiency of material usage is vital for the bioeconomy and circular economy. We continually find alternative ways to reuse, recycle and recover, to end the linear economy where products end their life-cycle at landfill.

Our packaging solutions help prevent waste generated, especially in food products' supply chains by protecting products from damage or spoilage. After use – at the end of its life, any paper-based packaging becomes a valuable raw material – it has the highest recycling rate of all packaging materials, supported by advanced recycling systems. As the graph on page 55 shows, 91.7% of old corrugated packaging is being collected for recycling and the industry is currently able to recycle 82.3% of its weight as recycled fibres.

Smurfit Kappa also participates in its product end-of-life management. Our 45 recycling depots collect recovered paper and paper-based packaging, returning it back to our paper mills, where the fibres will be recycled. It is in our interest that the products will be recycled back to the paper-making process. In addition, our packaging reduces its own impact by being 'right-weighted', using the minimum necessary material, and we are committed to offering sustainable packaging concepts to all our customers. Read more about the Circular Aspects of our Products on page 85.

Our product end-of-life is part of our material sourcing strategy and we collect used boxes to make new boxes from them. Therefore, we can say that we have fully committed to the product end-of-life management; we are a key actor in the circular economy and one of the largest recyclers of paper in Europe, as well as many of our regions in the Americas.

Our key raw material is recycled fibre and, globally, we use 76% of recycled fibres and only 24% virgin. Our other raw materials have been explained in the tables on pages 92-93.

However, whilst our products are recyclable, we generate under 107 kilogrammes of non-hazardous waste per tonne of paper and board, 51% of which is recovered. A large part of the non-hazardous waste we generate is due to the fact that we are a significant player in the paper-recycling business. The recovered paper bales sent to us by recycling companies often contain unwanted plastic, metals, glass, textiles, sand and other non-usable materials; 49% has to be sent to landfill. On average, it takes 1,084 kilogrammes of recovered paper to produce one tonne of paper and board. To reuse as much as possible, we separate unwanted elements using water, some of which is retained by the non-usable materials and can contribute as much as 53% to the weight of subsequent waste.

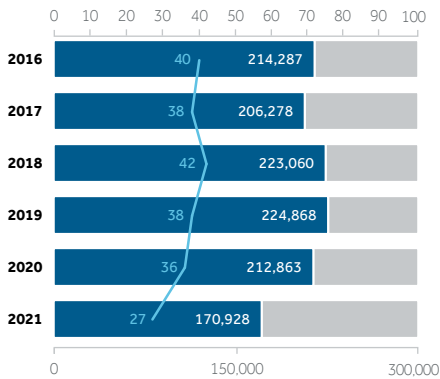
To minimise landfill, we reuse our own waste as far as possible. Currently, approximately 51% is recovered, and we aim to reduce the amount of waste sent to landfill by 30% per tonne of paper by 2025, compared with 2013.

Our converting operations send paper clippings back to our mills, delivering high-quality recycled fibre. Recovered paper from our corrugating and converting operations comes with minimal auxiliary materials, decreasing waste from the recycled fibre pulping process, further evidencing our circular approach to production.

Our production waste streams and collaboration with other industries to use our side streams are described in the diagram on page 55.

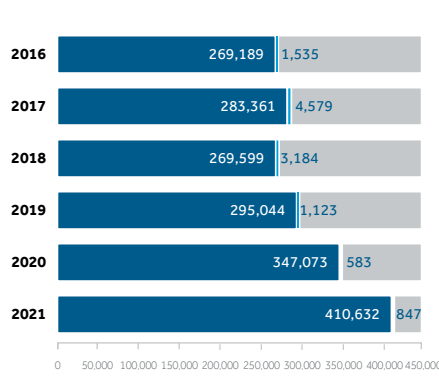
Non-hazardous Wastes

European Mills



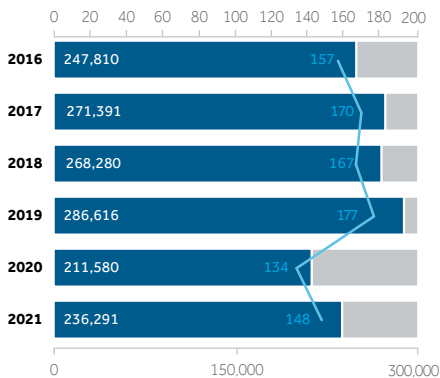
Key:
■ Waste sent to Landfill (tonnes)
— Specific (kg/tonne)

European Mills



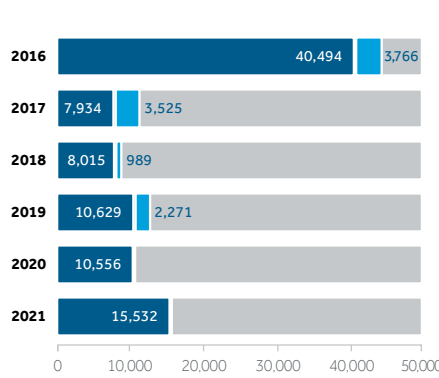
Key:
■ Waste sent to Recovery (tonnes)
■ Waste Sent to Other (tonnes)
■ Waste sent to Landfill (tonnes)

The Americas Mills



Key:
■ Waste sent to Landfill (tonnes)
— Specific (kg/tonne)

The Americas Mills



Key:
■ Waste sent to Recovery (tonnes)
■ Waste Sent to Other (tonnes)
■ Waste sent to Landfill (tonnes)

Reduction of waste to landfill from 2020

90%

CASE STUDY

One Company's Waste is Another Company's Fuel

"We are always focusing on continuous improvement, and finding more sustainable solutions," says Pieter van de Noort, Sourcing Manager of Smurfit Kappa Parenco, The Netherlands.

Smurfit Kappa has always had a commitment to reducing landfill use, and therefore we look for alternative ways to extract the full value from our rejects. Parenco's waste is non-recyclable waste products, mostly plastics, which they receive with their raw materials for pulping. Historically this would have gone to landfill, but the Group has committed to decreasing landfill waste by 30% by 2025. Also, recent legislation has severely restricted landfill use. So far, Parenco has been able to reduce its waste by 90%.

This circularity is possible because of a synergy across Smurfit Kappa sites. When it was acquired in 2018, Parenco was upgraded according to the Smurfit Kappa 'best practice' standard, which included upgrading the pulping detrashing system so it was able to remove metals. The resulting rejects were largely plastic, which can be used as fuel. The mill looked for partners to make this possible, and now part of the rejects are being further processed into pellets called subcoal, that is as versatile as a fuel, and can be easily and safely shipped to customers using, for example, cement and lime kilns, which prefer alternative fuels.

Meanwhile, 200km away from Parenco, the Smurfit Kappa Zülrich mill started a major project to renew its energy production and can also use these plastic rejects as fuel.

"This way the circularity remains within our company, we optimise the usage of our own resources within Smurfit Kappa, and reduce external expenses," says Jan Klijn, Pulp and Energy Manager at Parenco. "Of course, we had to get a permit to transport the waste across the border," says Pieter. "A consultant helped us with that, and now we can start implementation."

"In the future, the majority of the detrashed rejects will go to Zülrich," says Jan, "The rest goes to other parties, such as subcoal production."

"All these measures mean we save money, stop using landfill and provide affordable fuel," continues Jan. "It's the kind of win/win we find with environmental solutions."

Work Against Litter

Litter and the reduction of packaging waste are a global megatrend. Our products are the world's most recycled packaging materials. While the paper industry in Europe generally achieves 72% recycling rates (lower than paper-based packaging's 82.3% recycling rate in the graph on page 55), in the US and in Latin America recycling rates of 68% and 47% have clear upward potential. This, along with our raw material's biodegradability, positions us to work with stakeholders towards litter-free solutions.

Eventually, our packaging returns to the biological cycle – if not to the recycling loop, then it will either be combusted, emitting only the CO₂ that the wood captured while growing, or will degrade naturally with an even smaller environmental footprint than effectively all other packaging solutions.

Work Towards Optimised Use of Raw Materials

We continually collaborate with other industries to use our side streams, including agriculture, cement and pharmaceutical. In 2019, we joined the 4evergreen initiative that aims to support product design for recyclability and calls for the development of optimised collection systems and appropriate recycling infrastructures. The 4evergreen initiative brings together the whole paper-based packaging value chain, from suppliers to packaging customers such as fast moving consumer goods businesses, to find solutions to current and future challenges in collaboration.

Progress in 2021

Our starting point is paper-mill waste sent to landfill. After a Group-wide assessment in 2015, we set a target to reduce this by 30% per tonne of paper by 2025. Most waste is reject material from the recovered paper pulping and screening process. Other sources include sludge from our water-treatment facilities, calcium carbonate residue from lime kilns and ash from biomass boilers.

We made significant progress against our target in 2021, reaching a reduction of 29.2% of waste sent to landfill (23.7% in 2020) from our paper mills per tonne of paper since 2013.

The circular collaboration between SK sites Parenco (the Netherlands) and Zülpich (Germany) was the key contributor to the reduction of waste sent to landfill. With the Zülpich Energy Step project, combined with pelletizing rejects for energy use elsewhere, our Parenco mill was able to reduce its waste sent to landfill by over 90%. As the Zülpich energy project moves ahead, an increasing amount of rejects from Parenco will be sent to Zülpich for energy production, ensuring that we utilise the valoric value of the otherwise useless materials at the end of their life and help our Zülpich paper mill reduce its CO₂ footprint.

In addition, the Nervion mill (Spain) found an outlet for its lime mud that is being sent to recovery at a local cement plant.

Around 1% of our waste is classified as hazardous, with it mostly coming from maintenance, ink sludge from printing and converting operations and per operation, the amount is small. Our hazardous waste assessment showed the key issue is correct waste classification. Due to local and national lack of clarity in hazardous waste definition, we believe it is conservatively reported in this report.

Our hazardous waste figure decreased from 10,000 tonnes in 2020 to 8,800 tonnes in 2021. The annual amount varies due to maintenance, product additives and hazardous waste tanks taking over a year to fill.

CASE STUDY

Corrugated Journey to Zero Landfill (UK)

The West Auckland Corrugated plant has been working to find a recycling or energy recovery alternative to all its waste streams. Only one waste stream was left to find an alternative disposal to landfilling. "This was the most complicated one," says Lily Joynes, the Health, Safety and Environmental Manager at the plant. "Finding a recycling option for our die-cut machine cutting tools was surprisingly challenging, considering that all the materials are easily separable and recyclable," explains Anth Jones the plant's Production Team Leader.

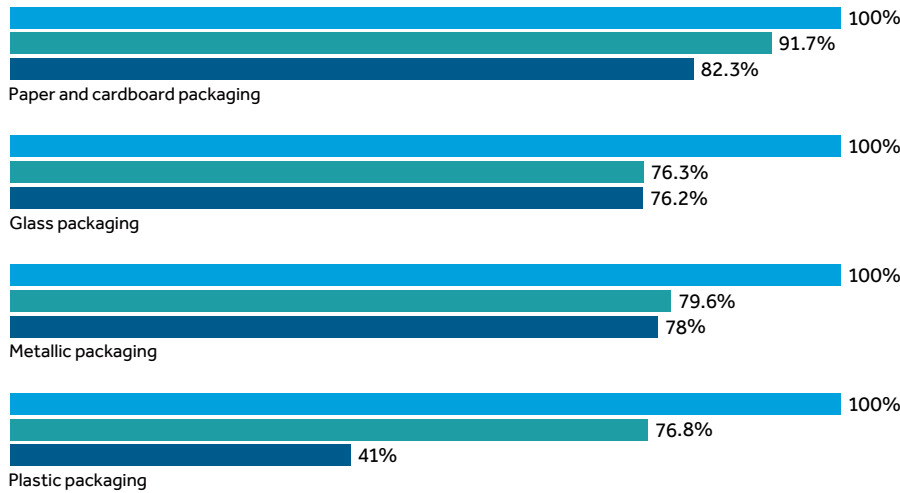
The plant follows the waste hierarchy in its decision-making, and recycling the valuable raw material from the old tools was the ambition of the team. "After a thorough investigation, we found out that none of our current recycling partners could take the material for further processing," says Lily, "however, we found a solution with a timber recycling-plant 20 miles away from our site." Timber-Pack is able to remove the metal cutting parts from the wooden board and further process the wood into chipboard. "The best part is that this chip board can be used, for example, in building kitchen countertops. That shows how valuable the material still is in its second life," says Alex.

Now, West Auckland Corrugated recycles some 15 tonnes of cutting tools annually, leading up to 420 tonnes of avoided waste by 2050. This will also mean 160 tonnes avoided emissions of CO₂ equivalent from landfilling, another important measure.



15 tonnes
of cutting tools recycled annually

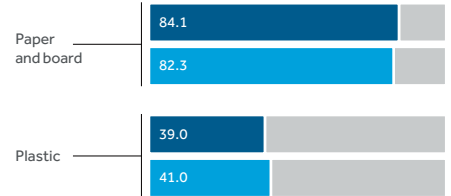
Circularity of Packaging in 27 EU Countries (%) Source: Eurostat



Key: Year 2019

Used Collected Recycled

Packaging Recycling Rate in 27 EU Countries (%)



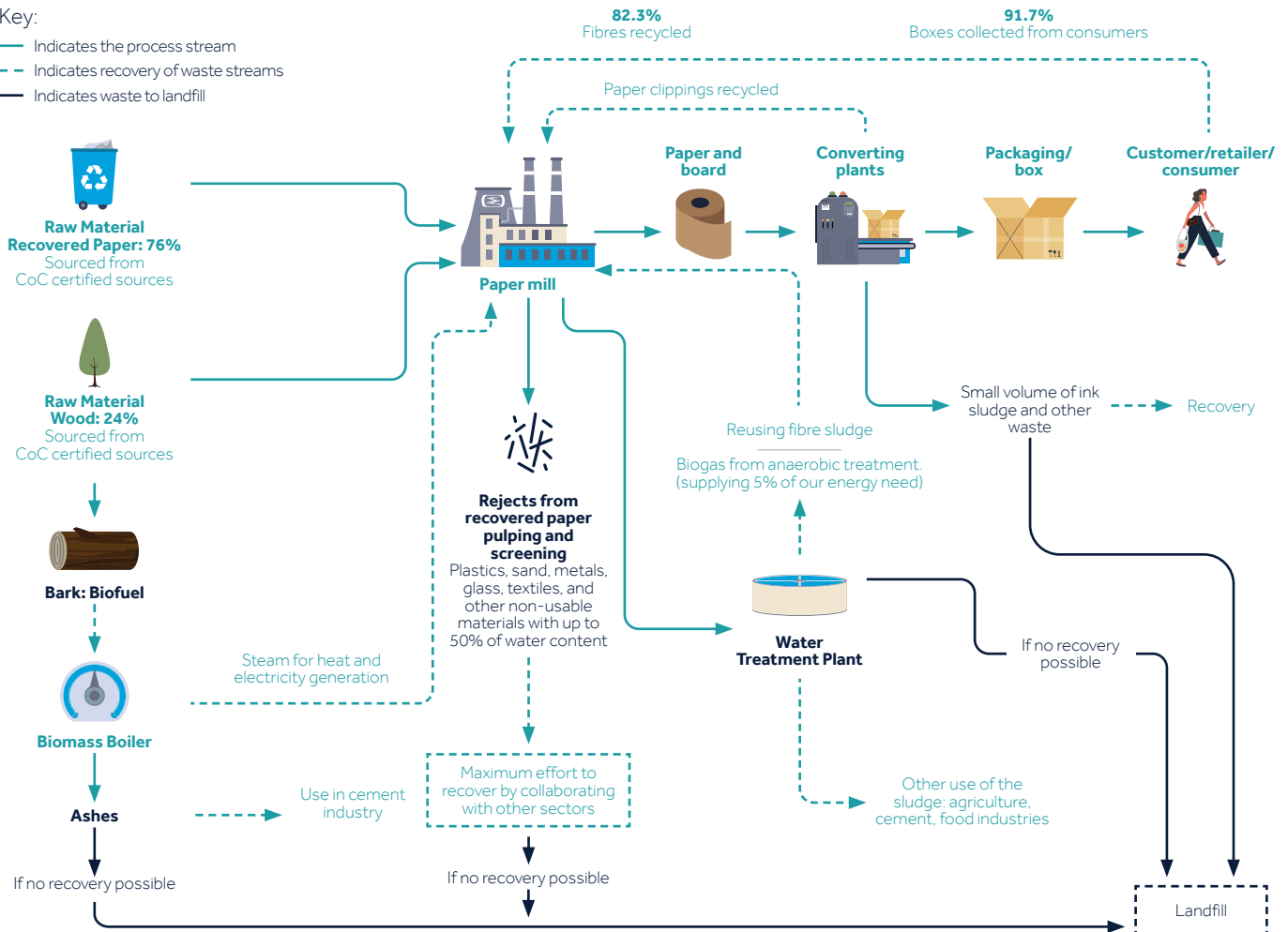
Key:

2014 2019

Production Waste Streams

Key:

- Indicates the process stream
- - - Indicates recovery of waste streams
- Indicates waste to landfill



➔ For complete disclosure of our wastes, please see **pages 92-100**