

Sustainability at Pankaboard 2022

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About this report

This report is Pankaboard’s second sustainability report, which covers the company’s sustainability performance for the year 2022. This report has been reviewed and approved by the Board of Directors of the company 22.06.2023.

This sustainability report is available only in digital format and it is part of our annual reporting.

If you have any questions regarding our sustainability report or its content, please contact us through reply@pankaboard.com.



Letter from CEO

Sustainability is a major challenge for all of us on this planet, and at Pankaboard, we have our role in providing sustainable cartonboard products for a variety of end uses. During the last years, we are proud to have made progress in many areas of sustainability.

Agile and resource efficient operations, sustainable products, as well as responsible employment, continue to be central development areas in sustainability. We will further focus on supply chain sustainability, stakeholder collaboration and climate actions, as these are major sustainability themes where we can make a positive impact. Sustainable products and value chains are built in collaboration with customers, suppliers, service providers and other key stakeholders.

We have also continued to focus on developing our sustainability reporting practices – this is our second sustainability report, with more concrete sustainability metrics and examples of our sustainability work. The reported information improves the transparency of our reporting while providing a clearer picture of progress made and targets still to be achieved. During the coming years, we will further deepen this work. The EU green transition legislation package requirements will soon enter into force, and we are already now working towards these requirements.



Sampo Antti, CEO





Pankaboard as a company

Pankaboard is the world leader in virgin fibre speciality cartonboards, featuring high thickness folding boxboards and uncoated speciality cartonboards for various applications. Pankaboard offers high-quality cartonboard solutions for packaging, various graphical and industrial applications, and food service products. Typical end-uses are packaging applications requiring high thickness, stiffness, purity and visual characteristics.

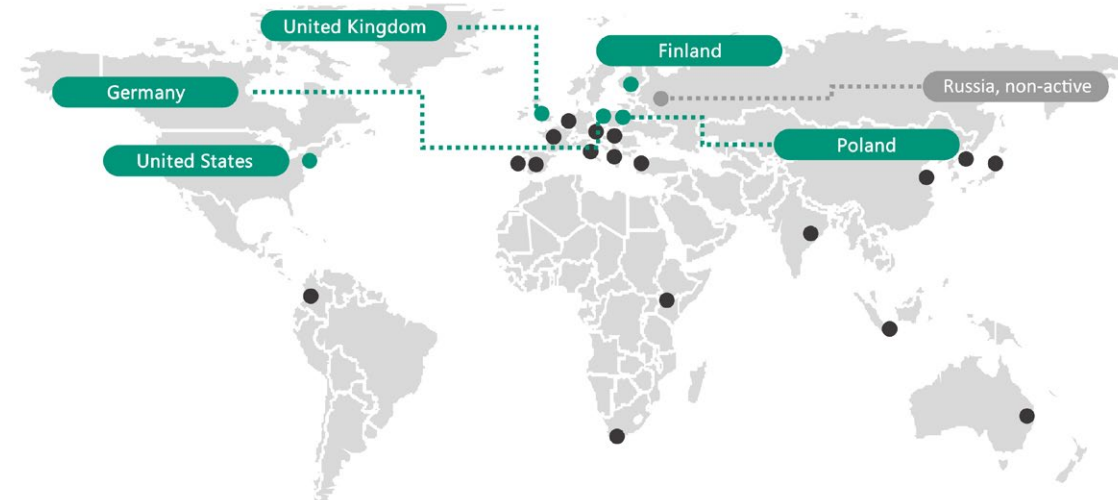
With an exceptional range of products, tailored service, and innovative spirit, we provide our customers with solutions for unique converting and end-use requirements. Our flexible operating model, our specialized high-quality assets and skilled personnel fulfil our customers' specific needs.

The Pankakoski Mill has operated for respectable 110 years and was acquired by the current owners in 2006. The Mill is located in Pankakoski, Finland and we have sales in more than 60 countries. Pankaboard Oyj is the parent of the company group and Pankakoski Mill Oy and Pankaboard

Deutschland GmbH are fully owned subsidiaries. Pankakoski Mill Oy is the heart of the operational activities. Our sales offices outside Finland are located in Poland, Germany, UK and USA. LLC Pankaboard, the Russian sales company, have been terminated during 2022 and the company is expected to be liquidated during 2023.

In 2022, our turnover was 102,6 million euros. We have on average 175 employees at Pankaboard. The annual capacity of board production is 110,000 tonnes, consisting of both uncoated and coated virgin fibres products.

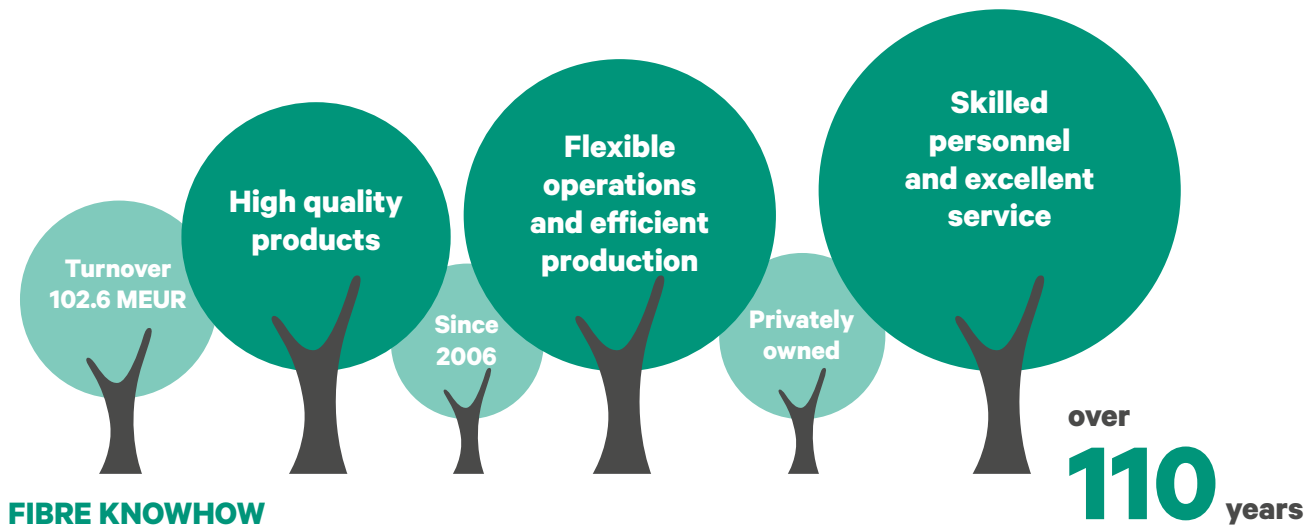
Our products are based on virgin fibre materials, which are 100 % traceable and, from sustainably managed, legal sources. Our tracing systems secure the chain of custody and cover the requirements of both FSC CoC/CW and PEFC CoC forest certifications. Pankaboard has certified ISO14001 Environmental Management System, ISO22000 Food Safety Management System and ISO9001 Quality Management System.



5
sales offices

65
delivery countries

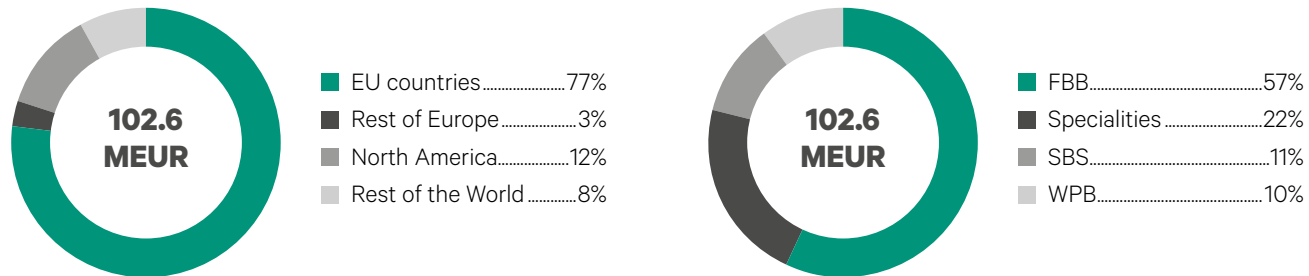
600
customers



FIBRE KNOWHOW

We deliver our products worldwide. 80% of our sales are to Europe, and the remaining 20% to markets outside Europe, like USA and Asia.

Geographical & product turnover splits, 2022



Company management

In the financial year 2022, Pankaboard Board members were:

- Dan Karsson, Chairman of the Board, since April 2021
- Ian Halliday, Deputy Chairman of the Board, since April 2021
- Mikko Heinonen, Member of the Board, since August 2006
- Aarne Luukko, Member of the Board, since April 2021
- Lennart Simonsen, Member of the Board, since April 2021

Pankaboard's Management Team members were:

- Sampo Antti, CEO, since August 2021
- Pasi Piiparinen, Deputy CEO, since June 2019
- Tiina Staljon, CFO, since May 2018
- Petri Saastamoinen, SVP Operations, since September 2008
- Arto Pekkarinen, VP Supply Chain & Customer Service, since September 2007
- Christer Nordman, VP Sales Development, Marketing & Products, since November 2009

You can find more detailed introductions about the Board members on our website www.pankaboard.com

Our strategy, values and mission

Our strategy is to focus on virgin fibre speciality cartonboards, where we aim to be the first choice for our customers. We aim to grow faster than the market by actively seeking new end uses for our existing products and by developing our sales network on chosen core markets. We continuously improve our operational performance and develop our asset base by targeted investments. We also continuously assess possibilities to grow by M&A.

Our vision is to be global leader in sustainable and innovative high value-added specialty virgin fibre cartonboard.

Our core values are:

- Sustainable profitability
- Openness and Trust
- Agility and Continuous improvement
- Co-operation with our customers, suppliers, and other stakeholders for mutual benefit



Our sustainability approach

Climate change is one of the biggest challenges the world is facing. Businesses such as Pankaboard are responsible for playing their part in reducing CO₂ emissions throughout their supply chain. The changing climate and upcoming new regulations create opportunities and risks for the business.

Packaging products play a vital role in reducing environmental impacts of goods and food that we all consume. Packaging protects the products from impurities, prolongs the shelf-life of food, and thus reduces the food waste. Packaging protects the goods from damage in transport and handling and therefore prevents unnecessary waste. Fibre-based packing material is recyclable. Furthermore, smart package design (light weight, easy to stack) reduces logistics' emissions.

Sustainability is in the heart of our business and is embedded to all our processes and decision making.

An important part of our sustainability is the sustainability of forests. Protecting the environment, reducing our footprint, and ensuring safe and fair working conditions for our employees are cornerstones of our activity. Our virgin fibre-based cartonboards are all renewable and recyclable. Our cartonboards from well managed forests provide sustainable solutions for a wide range of applications. Close collaboration with our suppliers improves the efficiency, transparency, and responsibility of the entire supply chain. We use suppliers with the highest sustainability standards.

We are continuously working to keep our environmental impact as low as possible. We utilize the principles of circular economy in all our production processes. Our raw materials are traceable and controlled.

In 2022, no incidents of non-compliance occurred considering environmental permit, laws, or regulations.

Materiality analysis

A materiality analysis was conducted at the beginning of 2022. The material topics identified are based on their relevance to our business and stakeholders. Through the materiality analysis we can ensure that we focus on and invest in the most important sustainability aspects.

In the first phase of our materiality analysis, we longlisted relevant sustainability topics for cartonboard industry and our business. In the second phase, we identified the most relevant topics in a workshop, facilitated by a third party. The stakeholders' expectations included in the materiality analysis were based on our dialogues with different stakeholder groups. The material topics for Pankaboard are presented in on the right.

Material topics for Pankaboard according conducted materiality analysis.



Agile and resource efficient operation

- Water consumption
- Circular economy



Desired employer & partner

- Employee engagement
- Health and safety
- Supplier commitment to sustainability



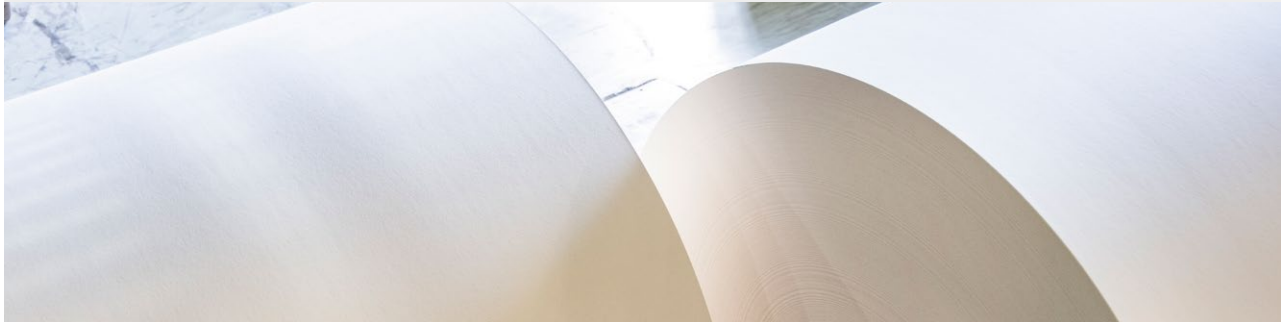
Climate change mitigation

- Carbon emissions
- Energy efficiency



Sustainable products

- Sustainable raw materials
- Certified raw materials
- Low carbon footprint of the products



Sustainability themes, targets, and progress

Based on the results from the materiality analysis, we have set Sustainability visions and ESG targets to achieve these visions. They were approved by the Board of Directors. The sustainability visions and targets help us focus our sustainability work and measure our progress. We will review them on regular basis in the future.

Agile and resource efficient operations

We want to be agile and meet our customer demands and wishes. Circular economy and minimizing loss of resources is in the heart of our operations.

Desired employer and partner

We want to be a desired employer and partner. Healthy and safe working environment is a priority for us. We want to increase employee engagement.

We want to be a trusted partner and build long-lasting relationships. Therefore, it is essential that all our partners act in accordance with our ESG policies.





Carbon emissions / climate change mitigation

We want to contribute to climate change mitigations by cutting our own fossil CO₂ emissions as well as emissions of our products.

Sustainable products

We use only sustainable raw materials. All our fibre raw materials are certified, and all our products are traceable.

Material sustainability themes for Pankaboard, including key targets and progress made during 2022.

Themes	Aspect	Targets	Progress
 Agile and resource efficient operations	Water consumption	<ul style="list-style-type: none"> 10% reduction in surface-water intake per production ton by 2024 (baseline year 2017) Fulfilments of environmental permit regulations (limits are yearly averages) <ul style="list-style-type: none"> Wastewater Phosphorus, 3 kg/day Wastewater COD, 1,500 kg/day Wastewater Solids, 170 kg/day Wastewater Nitrogen, 40 kg/day 	2022: 10% reduction since 2017 2022: Phosphorus 0.8 kg/d COD 1,289 kg/d Solids 136 kg/d Nitrogen 17 kg/d
 Desired employer & partner	Engagement and wellbeing	<ul style="list-style-type: none"> Active feedback from employee Response rate over 50% for employees in wellbeing survey Survey Yearly improvement in customer NPS (goal for NPS 40) 	2022: 46% 2022: customer NPS 19
	Safe working environment	<ul style="list-style-type: none"> Zero accidents Near misses and safety observations reported actively 	2022: 4 lost time accidents 2022: 144 pcs
	Supplier commitment to sustainability	<ul style="list-style-type: none"> Supplier Code of Conduct approved by > 80% of suppliers and service providers by 2024 	2022: started
 Climate change mitigation	Carbon emissions	<ul style="list-style-type: none"> 90% of energy use coming from renewable energy sources Introducing an Environmental and Energy Policy 	2022: 89% 2022: postpone to 2023
	Energy consumption	<ul style="list-style-type: none"> 5% reduction in energy consumption by 2025 (MWh per production ton) 	2022: 14.9% energy consumption reduction achieved (from 2015 levels)
 Sustainable products	Certified raw material	<ul style="list-style-type: none"> 100% traceable and from sustainably managed, legal sources (continuous target) 	Target achieved in 2022

Managing sustainability

The Board of Directors has the highest responsibility of sustainability. Board of Directors is responsible for reviewing and approving the reported sustainability information, including material topics.

The senior management approves the environmental and energy policy, sets environmental goals, and an environmental management program. The senior management also sets the objectives and measures for the improvement of energy efficiency under the Energy Efficiency System (ETJ+) scheme. Senior management will ensure that staff are adequately informed about the environmental and energy impacts of their work. Senior management is responsible for ensuring that the necessary resources are allocated to the implementation, maintenance, and development of the environmental and energy management system.

The Energy Efficiency Team (ETJ Team) is chaired by the management representative appointed as the main energy efficiency officer, i.e. SVP Operations. The authorized purchase persons are responsible for the procurement of materials and chemicals and for identifying suppliers' environmental and energy requirements.

Our key operational management systems are based Environmental Management System ISO14001, Quality Management System ISO9001 and Food Safety Management System ISO22000. Operational policy guides our operations related to management, environment, quality, and food safety.



Our Environmental and Energy Manual describes how Pankakoski Mill Oy has organised its environmental and energy management to ensure continuous improvement of environmental protection and compliance with the requirements of ISO14001.

We comply with all applicable laws, regulations and high standards related to our products, processes and used raw materials. All our purchased and used raw materials are traceable and fulfil our own sustainability requirements and food industry standards. We use standardised processes and follow the delivery agreements. We constantly follow changing regulations and upcoming new demands affecting our business, with the help of Linnunmaa Lex legal services.

Ethical business and governance

We are committed to ethical and sustainable business standards. Our Code of Conduct has been approved by the Board of Directors on April 2022. It sets the highest principles for ethical behaviour and is our core policy. The Code of Conduct guides us with practical examples and advice so that we can make the right choices in our everyday work. Supervisors are expected to set an example and support employees in following the Code of Conduct.

Our Supplier Code of Conduct was approved in November 2022 by the Board of Directors. Supplier Code

of Conduct covers following topics: Workplace Health and Safety, Environment and Safety Issues, Corruption and Bribery, human rights (forced labour, disciplinary measures, child labour, discrimination) and reporting of non-compliance. The Supplier Code of Conduct is published on our [website](#).

Our core policies, Code of Conduct, Supplier Code of Conduct as well as Operational Policy, guide our daily work in terms of sustainability. To complement these policies, we will introduce an Environmental and Energy Policy during year 2023.

We are a trusted partner for our stakeholders, customers, employees, investors, and the community in which we operate. Pankaboard has an internal control system

for compliance, financial and non-financial reporting, and operations. Commitment to honesty and ethical practices is part of a company's control environment.

Fair business

We have zero tolerance for corruption and bribes. Business gifts are only acceptable when they are lawful, minor in value, given openly, and are consistent with common business practices. Everyone shall avoid and mitigate situations that give rise to or appear to give rise to a conflict of interest.

Pankaboard competes openly and fairly and does not tolerate any illegal cooperation with competitors. Pankaboard and all its employees must comply with all applicable antitrust and competition laws and regulations in all situations. Pankaboard ensures that all agreements with competitors, customers, distributors, and other business partners comply with applicable competition laws and regulations.

The financial and non-financial reporting information of Pankaboard must be up-to-date, current, accurate, complete, available, protected where necessary, verifiable, and retained. They must also comply with the requirements of the accounting principles, applicable laws, and regulations and Pankaboard's internal guidelines. Pankaboard complies with anti-money laundering obligations and all applicable tax laws and regulations in the countries where it operates.

Employees must report suspected misconduct to their immediate supervisor, supervisor's supervisor, or other members of the company's management. There have not been any reported non-compliances.

Pankaboard does not participate in or otherwise support political activities, whether local, communal, or national, and does not make donations to political parties or groups.

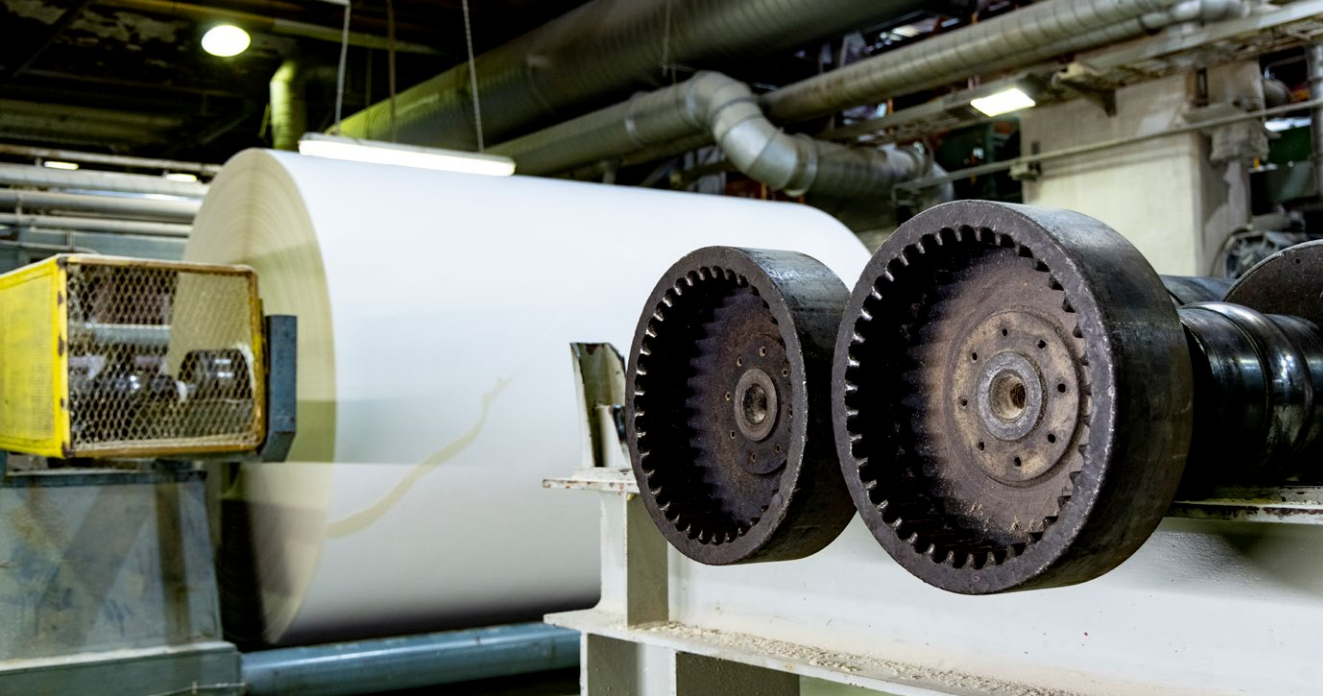
Fair treatment of people

We promote fair treatment of people in various ways in our own operations as well as in the broader value chain. We value diversity and create a work environment where all team members can participate and develop. We do not tolerate discrimination against employees based on their racial or ethnic origin, age, gender, disability, sexual orientation, religion, family status, social background, political opinion, trade union membership or other similar characteristics. We respect human rights and human dignity and respect internationally recognized human and labor rights and standards, and local labor laws. We respect the rights and interests of local communities and avoid and minimize adverse impacts.

Data security

Information security and data protection are important for our business. We invest in developing, maintaining, and supporting the data security to protect our own, our customers' and partners' privacy. Our goal is to create and maintain a positive information security culture and data protection to guarantee high quality services and a good corporate image. Our data security policy sets the highest data security principles and guides our daily work. The principles comply with the applicable legislation and apply to all Pankaboard personnel. The Board of Directors decides about the development activities, organization and resources related to different dimensions of information security.





Supply chain sustainability

We want to ensure the sustainability of our entire production and supply chain. We expect our business partners to follow ethical standards like those of Pankaboard and to familiarize themselves with our Code of Conduct. Pankaboard will not conduct business with a supplier engaged in violations of fundamental human rights.

Pankaboard's sourcing decisions are made based on our company's interests, considering environmental, economic, and social aspects. Supplier performance and product quality is regularly monitored through e.g., complaint handling, customer surveys, laboratory tests and

with product quality analyzer. Operational guidelines for purchasing and the Supplier Evaluation Guidelines provide guidance on environmental considerations.

Certifications are one way of improving the sustainability of raw materials and products. Certifications are available from raw materials to end-use requirements. Pankaboard is committed to the continuous development of all processes related to certified production. We are committed to both major forest certification systems: PEFC and FSC® (FSC-C107457). The certificates for the chain of custody of wood-based raw materials, show that the wood and fibers used in Pankaboard's products come from sustainable sources and are fully traceable. Both PEFC and FSC® were audited in 2022, and non-compliances were not found.

Human and labour rights

In line with our Code of Conduct we respect internationally recognized human laws and labour rights. We follow all local labour laws concerning e.g. wages, working hours and minimum age limits for employment. We are also committed to comply with ILO (International Labour Organization) Declaration on Fundamental Principles and Rights at Work, International Bill of Human Rights, United Nations Global Compact as well as UN Guiding Principles on Business and Human Rights. These declarations set the bare minimum requirements and are important especially if local laws are inadequate.

We expect our suppliers and service providers (also tier 2 supply chain) to act according to the human rights and labour requirements and provide decent working conditions for their employees. We promote equality and diversity and ensure that workers receive equal pay for work of equal value.

Managing environmental risks

The environmental aspects, risks, and hazards of all Pankakoski Mill's activities are identified at least every three years or when new information on environmental impacts or significant changes in operations becomes available. At the same time, environmental opportunities are identified, for example in relation to energy saving or eco-labelling.

The Safety Manager and production management, as well as others where appropriate, are involved in the

identification of environmental concerns and risks. The assessment identifies the environmental aspects of products and activities that cause or may cause environmental stress, consume natural resources, pose a risk of accidents, cause a change in the ecosystem, or affect the functioning of society. The assessment focuses on the environmental aspects and impacts during production, as these are usually the ones that can be most effectively addressed. For significant changes, an assessment can also be carried out over the entire life cycle of the product.

For example, available research on the state of the environment and the environmental impacts of the forest-based industries can be used in the assessment. Other separate studies on the environmental impact of Pankakoski Mill will also be carried out where appropriate. A separate contingency plan has been drawn up in accordance with § 15 of the Environmental Protection Act to prepare for the most significant environmental risks. The contingency plan describes how environmental risks and incidents are to be identified.

The Mill's Management Team sets or reviews the company's environmental objectives annually as part of the annual planning process. Significant environmental aspects, legal and other requirements, stakeholder expectations and available technology are considered when setting the environmental objectives. In the product development phase, environmental aspects are considered, for example in terms of material and energy efficiency.



Desired employer

At the end of 2022, we had 172 employees at Pankaboard of which 12 work abroad. At the end of 2022, 14% of our employees were female and 86% male. Average age in our organisation in Finland was 43 years. In Pankaboard's Management Team has six members, five members are male and one female.

During 2022, six new employees were hired, and 12 employments ended.

Safe working environment

Safety of our employees is a key priority for us and the building ground of being a desired employer. We want to ensure healthy and safe working environment for all our employees and people visiting our mill and premises. We continuously develop our safety practices and actively build safety culture. We comply with all relevant statutory and workplace-related health and safety requirements. We believe that all accidents and work-related illnesses are preventable. We also promote well-being at work and strive to reduce absences due to sickness. Our goal is to minimize the impact of work-related risks. The ultimate goal is zero accidents, and we work hard to achieve it.

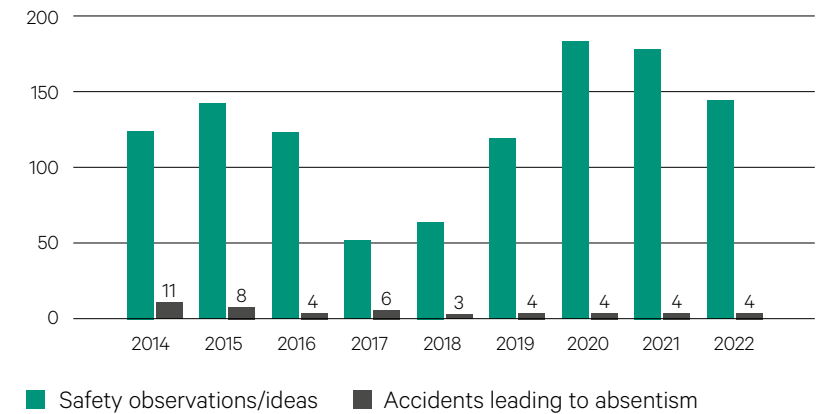
Our safety management system is described in Pankaboard's Safety manual. The development of our safety work and health and safety related topics are reviewed at least once a year by Pankaboard Management Team in management reviews.

We continuously follow our safety development through safety indicators such as work-related accidents and loss of workdays due to accidents. We also measure safety observations done by our personnel (see the adjacent graph). All the accidents and observed safety improvement ideas are carefully investi-

We provide meaningful jobs and workplaces which our employees can be proud of. We focus on building safe working environment and culture where everyone can express their opinions. We encourage collaborative team working as we believe that together we can find more innovative solutions and ways of working. Pankaboard's business also creates plenty of indirect jobs.

gated and corrective actions are planned and carried out. The accidents are also communicated with the personnel to prevent their recurrence.

Shared safety observations in relation to work accidents leading to absenteeism



Our safety work is based on the risk management and the preventive safety work. Our mill is regularly inspected to identify any safety risks and safety improvements ideas. The employees are encouraged to report any safety issues or shortages, observed hazards and to share their safety improvement ideas by rewarding the best idea monthly with a paid day off. During 2022, one rewarded safety idea was related to cleaning of the sludge plant strainer. The idea resulted in safer conditions for doing the monthly cleaning of the strainer.

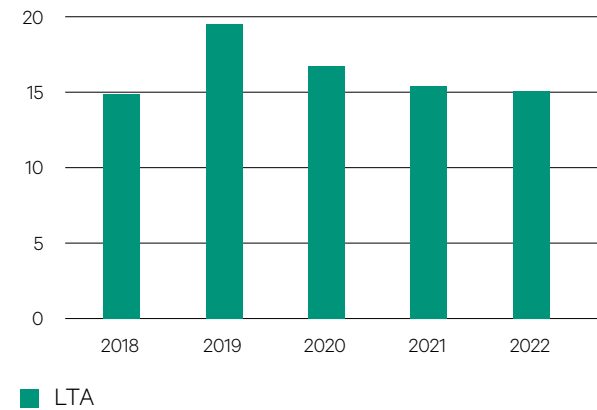
All the new people (Pankaboard's own and external employees) are instructed on safety working methods and principles. Own employees get specific safety trainings depending on their job description. All own employees need to perform safety training, fire-work training and first aid training. Due to the measures taken, employee education and awareness on safety have been significantly increased. Safety has been improved also by e.g. upgrading safety equipment, and having members of the factory fire department present on every shift.

In 2022, there were 4 work related accidents resulted in absence. We have been able to keep the accident level low from 2016 onwards after implementing special measurements and procedures.

During 2022, one rewarded safety idea was related to cleaning of the sludge plant strainer. The idea resulted in safer conditions for doing the monthly cleaning of the strainer.

Lost Time Accidents (LTA), 2018–2022

Number of LTA/mio working h



■ LTA
Development of work-related accidents at Pankaboard during 2018–2022. A lost time accident is a workplace incident that produces an injury that results in an employee missing time on the job beyond the date of injury. The rate is calculated per million working hours.

Engagement and well-being

We believe that meaningful assignments, balance with the work and the private life and clear responsibilities are a basis for employee well-being. We want to create inspiring and rewarding working culture by encouraging our employees to work together and share their knowledge to find new ways to work, communicate and innovate. We provide different kinds of professional education possibilities for our employees based on their own interests. We value professional leadership and personal development according to our operational policy. Our goal is to create a work culture that emphasizes performance among the personnel and to gain an entrepreneur spirit to our team.

We also believe that equal opportunities and mutual respect are vital in building well-being in working community. We value diversity and treat all our employees fairly, regardless of age, gender, health, or other personal factors. The remuneration for each position is based on the collective agreement, experience and skills, pay structure and/or seasonal pay agreement applicable to the post in question and does not discriminate on grounds of gender or any other personal factors.

In order to maintain skilled personnel, development and recruitment of personnel are crucial. All the new employees go through a task-specific induction program. In addition, task-specific job guidance instructions are used to teach the new person the correct and safe ways to perform the job.

At Pankaboard we have a leisure committee focusing on coordinating free time activities supported by the

company. We also support the physical well-being of our employees by supporting their sport activities monetarily.

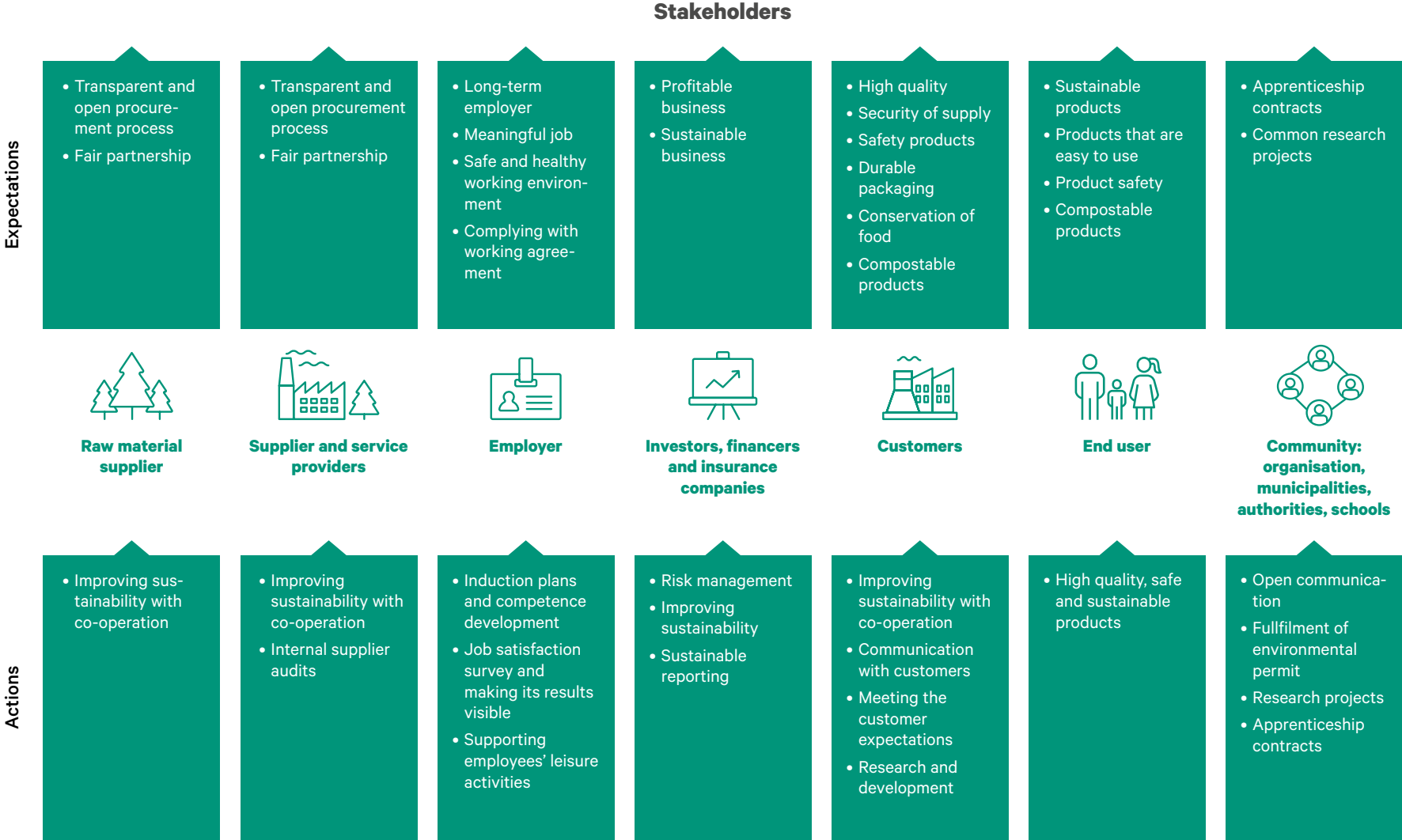
Absence rate is followed annually, and the target is to decrease it. In 2022, absence rate due to sickness was 7.5% of the total worktime. The figure was raised by several corona clutches in the Pankakoski Mill.

Future-proofing our business requires investing in timely and high-quality training. Training also creates social wellbeing and can increase engagement to work. We train local employees in cooperation with personnel representatives and authorities. Pankaboard supports research and development related to its field and cooperates closely with educational institutions.

We follow the wellbeing and satisfaction of our personnel regularly with a personnel wellbeing survey. Latest survey was conducted in 2022, with improved response rate, especially among blue collars, compared to previous survey in 2017. The survey was carried out by an independent third party, Feelback Oy, and it dealt with various themes including the motivation to work, work community, satisfaction to leadership and management, among others. Environmental and social sustainability were also touched upon as their own themes. With the survey, we identified some improvement areas which we will work on during 2023. Development areas include company level communication, employee empowerment, and employee wellbeing. In the future, the survey will be conducted every second year, the next will be in 2024.

Stakeholders and value creation

We want to be aware of our stakeholder's needs and expectations in order to understand our impacts and improve our operations. We understand that open dialogue and active communication with our stakeholders is important part of building sustainable business for today's and future needs. Maximising value creation and positive impact on our different stakeholders is also key aspect when creating profitable business. As part of our sustainability work, we have identified our main stakeholders, their needs, and expectations (see the adjacent figure). Stakeholder feedback is regularly handled in the senior management level.



Customers and end users

Pankaboard has wide customer base with approx 600 active customers in over 60 countries. Pankaboard works closely with the customers to ensure individual service and to fulfil specific customer needs. With our wide product offering we help our customers to find solutions for their diverse converting and end-use requirements. Continuous product development and finding new ways of using our products are the cornerstones of Pankaboard's business. Our operating model supports a specialised product offering and close cooperation with customers ensuring individual service and flexibility.

We provide solutions which help our customers to improve their own sustainability. We create value by providing low-carbon packaging solutions which are recyclable, and one product type is also compostable (PankaPlex). Our customers can rely on our products to fulfil their high-quality expectations with timely delivery.

We use customer surveys to identify further operational development needs. Also, the complaints and customer feedback are constantly monitored, and corrective actions are carried out when needed. Reasons for complaints are investigated. We also do preventive actions to keep our customers satisfied. Complaints have been declining quite constantly since 2014. According to the latest customer survey, the greatest challenge is security of supply. The goal is to improve the Net Promoter Score (NPS) of our customers and the overall customer satisfaction year by year. The customer satisfaction survey is conducted twice a year, and it the results are monitored by the Board of Directors.

Financiers

We create value for our investors by securing a profitable and sustainable business. We concentrate on developing business areas and products that have the most potential in the future. We seek new market areas and customers and aim to find ways to utilize our existing products and services in new and innovative ways. We build business on the bases of circular economy. Our processes are highly resource efficient, so no excess wastage is created. The risk management is essential in our operations, and we execute continuous contingency planning.

Suppliers and service providers

To promote our sustainable business, the whole supply chain needs to fulfil the high sustainability standards and requirements. We are aware that actions of our partners and suppliers influence our business and how our other stakeholder assess our sustainability. By working together with our world class suppliers, raw material providers and service providers we are able to improve the sustainability of our operations and the whole upstream supply chain. We actively communicate with our suppliers and measure their performance and quality of products purchased. We conduct audits regularly for our key suppliers. We also perform regular traceability exercises in cooperation with our customers.

Pankaboard's Code of Conduct as well as Supplier Code of Conduct work as tools to improve the supply

chain transparency and responsibility. Pankaboard seeks to ensure that all our suppliers operate in compliance with the terms and standards of our supplier Code of Conduct. In case of non-compliance with some of the standards in our Code of Conduct, Pankaboard will help to secure a program of steady improvements. (Read more about the ethical guidance of our Code of Conducts in ch. [Ethical business and governance](#)).

Local communities

Schools, universities, and authorities are our main societal stakeholder groups. We follow and comply with all environmental regulations and act according to the requirements set in the environmental permits. Our activities are constantly monitored by the authorities. We continuously follow the wastewater values and emissions to air to meet the environmental permit targets. The compliance with the permit is followed through self-monitoring and independent third-party environmental monitoring.

We take the communication with our factory neighbours seriously and handle possible complaints with care. During 2022, there was one remark regarding exceptional noise from the Pankakoski Mill. The noise was caused by a broken safety valve in steam supplier's process. The leak started over the weekend and was repaired on the first weekday morning.

We actively work with vocational schools and provide apprenticeship contracts and summer jobs for students. These agreements are beneficial for the students and for Pankaboard; students will learn a profession while working

Pankaboard's Code of Conduct as well as Supplier Code of Conduct work as tools to improve the supply chain transparency and responsibility

and Pankaboard gets future's talents and motivated workforce. A personal training plan is drawn for each of the students. The aim of the training is to complete a vocational qualification for a board manufacturer. We also offer summer jobs for students in the postgraduate phase.

We are an active member in several industry associations and other organizations:

- Pro Carton
- Cepi Cartonboard
- Finnish Forest Industries
- Finnish Association of Purchasing and Logistics, LOGY
- Pohjois-Karjalan pelastusalanliitto
- Paper and Board Association UK
- Finnish Packaging Recycling, RINKI (Suomen pakkauskierrätys)
- European Carton Makers Association, ECMA
- North Karelia Chamber of Commerce

We are also proud to support local culture and art – during the past years we have for example supported Lieksa Brass Week Musical Festival and Lieksan Hurtat sports association.

CASE

Maintenance career path

Maintenance plays a key role in keeping the Pankakoski Mill running: It is responsible for, i.e. preventive maintenance, repairs and is involved in investments in equipment and development. It also helps to manage the plant's environmental load. The preventive maintenance and monitoring of machinery and equipment is aimed at avoiding malfunctions and abnormal discharges. Maintenance also

takes care of the operation, calibration, and preventive maintenance of measuring equipment. Maintenance aims at focusing on work requiring specialized skills and equipment knowledge, root cause analysis, risk assessment, preventive and investigative maintenance.

The maintenance organization employs 30 people. One of them is mechanical engineer **Virve Immonen**, working as Mechanical Maintenance Planner at Pankakoski Mill. Virve has been working at the mill for the past 15 years, first under maintenance companies Maintpartner, Empower and Caverion, and from 2020 under Pankaboard. Part of her career, she has been working also as warehouse-material engineer.

Virve sees Pankaboard as a positive and inspiring workplace, with a long industrial history. Virve appreciates

the independence and versatile tasks in her job. Her work is sometimes also challenging with ad hoc schedules and component availability issues. It is important to have know-how of mechanical engineering, good knowledge of mechanical equipment and ability to read machine drawings. Equally important is to have versatile IT skills, organizational skills, ability to manage large projects, and to work systematically but flexibly under pressure. A good knowledge of the plant's equipment streamlines the work. Virve would recommend maintenance specialist work to anyone who is keen on mechanics and professional development, is flexible and able to work alone as well as part of a team, sometimes under pressure.

Mika Miettinen, Maintenance Manager, is in charge of the maintenance operations at Pankakoski Mill. With a 34 year long history in maintenance, he knows that planned and timely maintenance ensures the efficient use of production capacity in a safe, proactive, and cost-effective manner. Mika sees clear benefits in having the maintenance done in-house, not outsourced, as before 2020. As production and maintenance are under the same coveralls, communication is smoother, and everyone work towards a common goal. In addition, personnel safety is improved, process operation is more reliable and safer. High quality operation processes and products also ensure that emissions are minimized, thus reducing environmental impact.

Mika thinks the apprenticeship format used in training new maintenance employees is functioning well. Apprenticeships can be done in the factory, so people are directly familiarized with the factory work. A future development point is to increase specialization during apprenticeships.





Agile and resource efficient operation

Pankakoski Mill has two board machines:

- Board machine 2 (BM2), trim width 3.060 mm, capacity appr. 65,000 t/a
- Board machine 3 (BM3), trim width 2.250 mm, capacity appr. 45,000 t/a
- The Mill also has integrated groundwood pulp production and an integrated biofuel steam plant (outsourced)

Pankakoski Mill's operation is based on resource efficiency and circularity. The main goal is to recycle all the production waste and all used water is purified and returned to the nature. By saving resources and working efficiently we produce less waste, raw material usage is optimised, and valuable resources are not discarded.

In 2022, the Pankakoski Mill had a record year in wood use: 130 716 m³ used as raw material out of which we produced 89.5 tons of cartonboard.

Waste

Circularity is the basis for everything we do. Our goal is to reach highest material efficiency and thus reduce waste. By using material side flows we can reduce the amount of material discarded or burned. All the waste is sorted and if possible reused and recovered. For example, the fly ash from the biofuel boiler has been utilised in the structures of the field and noise barrier. Materials that cannot be used in production are used to generate energy whenever possible. In the case of Pankakoski core processes, all combustible production waste formed in the production processes goes to energy production to the neighbouring biofuel steam plant, which provides steam to the production plant. All production waste is reused, recycled, or combusted with energy recovery.

Water usage and wastewater generation

In addition to CO₂ emissions, water usage and wastewater of our production have the most impact on the environment. Cardboard production is water intensive: it uses a lot of raw water and creates wastewater. Most of the raw water is used in the production process. It is vital to invest in water efficient operations and constantly reduce raw water usage. We purify all our used raw water and return it back to Lieksa river.

The Pankakoski Mill uses raw water from the Lieksa river as well as chemically purified water from the river in process waters. In addition, the Mill uses municipal tap water. The plant uses about 2.7 million m³ of raw water annually, of which 2.1 million m³ is purified and released as wastewater back to Lieksa river. The raw water consumption has decreased by 6.5% in year 2022 compared to previous year. Municipal water consumption has been around 1% of total water use, or just over 30,000 m³ per year.

We work closely with the environmental authorities and any deviations are reported to the authorities in the monthly wastewater report. The effects of the plant's emissions on water bodies are monitored by participating in the joint monitoring of the Lieksanjoki - Pielinen Mönninselkä area together with the City of Lieksa and Savon Taimen Oy.



Sustainable products

Sustainability is at the core of Pankaboard's operations and products. All our products are made from renewable materials and are recyclable (see end uses for cartonboards in the adjacent figure). We have integrated principles on circular economy into our product development and processes. Our goal is to use sustainable raw material as efficiently as possible. We use only certified fibre raw materials, and we prioritize renewable materials with low CO₂ footprint.

Pankaboard's production meets the key quality and environmental standards for the paperboard industry. The company is committed to continuous development of all processes. Pankaboard has a certified management system based on the following:

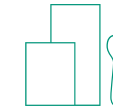
- Quality standard ISO9001
- Environmental standard ISO14001
- Food safety standard ISO22000 according to the HACCP-requirements.
- Pankaboard is committed to both major forest certification schemes:
 - The Programme for the Endorsement of Forest Certification PEFC
 - Forest Stewardship Council FSC® Chain of Custody and Controlled Wood

Certified management systems for the chain of custody of wood-based raw materials show that all the wood and fibre used in Pankaboard's products come from legal, sustainable, and well managed sources and are 100% traceable. In addition, currently two cartonboard grades (PankaBrite and PankaPlex) have the inspected board status of Nordic Ecolabelling and one cartonboard grade (PankaPlex) has OK Compost certification both for home and industrial compostability.

End-uses for Pankaboard's cartonboards



Food trays and skin pads



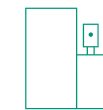
Food packaging



Luxury beverage



Healthcare



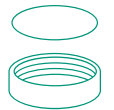
Beautycare



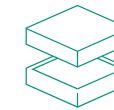
Food service



Food underlays



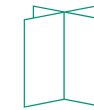
Capseals



Rigid boxes



Picture frames



Displays & laminates



Coasters



Skin packaging

Product safety

Pankaboard products are clean and hygienic. All board grades produced by Pankaboard are manufactured from virgin fibres. Pankaboard is highly committed to product safety and its continuous improvement. All raw materials used in board production are approved for food contact. In the approvals, possible health risks have been considered. Pankaboard's products are regularly tested against major European and US food safety regulations. In addition to pure and clean raw materials, the drying technology used on BM3 (Condebelt®) makes the products microbiologically very pure thanks to the high temperature used in the drying process. Condebelt® gives unique surface and strength properties to the board. Our product category PankaPlex (< 240 gsm) is also certified compostable both at domestic and industrial scale. We take all complaints seriously and scrutinize each of them carefully, and refund when necessary. Complaints may be related to for example late delivery, product quality or impurities in products. Complaints provide us valuable information improvement measures are taken based on complaints.

Food safety of products is monitored through different indicators: compliance testing, recalls, customer feedback and reclamations as well as internal observations. To make sure we fulfil the regulatory requirements, we analyze and make risk assessments for substances commonly known to be harmful to health. We also keep the know-how up-to-date related to the materials used in the manufacture of contact materials and associated regulation. Monitoring, including traceability of e.g. raw materials and additives, is important. Food safety management system

Our products fulfill highest safety standards

- 1. Hygiene**
Manufacturing follows good manufacturing practices
Strict hygiene also required for subcontractors
- 2. Odour and taint**
Neutrally allows direct food contact
Robinson test max. 1.5 for one year
- 3. Purity**
OBA free
Microbiologically pure and no contaminants
- 4. Consistency**
High quality virgin fibre raw material and clean water

has met requirements in 2022. No substances that appear in the REACH candidate list of SVHC (Candidate List of Substances of Very High Concern) are present or used in our products.

Material efficiency

Material efficiency and reusing of materials are the key principles of our production. By reducing material usage,

we can reduce our environmental footprint as well as reduce costs. 90% or more of the composition is organic fibre material. Only 10% or less is inorganic material, mainly minerals. Based on the composition, boards are classified as biodegradable.

Pankaboard's products are fully recyclable, and they can be reused as raw material several times. The ground-wood pulp gives favourable properties to the products because of the stiff and high-quality fibres. As a result of

the high bulk, the amount of material can be minimized to reach the required thickness and stiffness requirements. This leads to light and sustainable products as well as more sustainable value chain.





Zero-carbon product family

To help our customers to achieve their sustainability targets, we have developed the Pankaboard Zero-C product family: CO₂-neutral versions of our selected high-quality cartonboard products. We offer a wide range of traditional Pankaboard products with carbon-neutral Zero-C options: PankaBrite (400–550 g/m²) for food packaging, PankaLux (410 – 560 g/m²) for high-end packaging applications, PankaStar for special design packaging, PankaDisc for coasters and underlays, as well as PankaSilk and PankaMax for various laminated constructions.

A comprehensive life cycle assessment (LCA) based on ISO14025 standard has been conducted for all Zero-C products. The analysis identified the climate impact of

the products throughout the life cycle. In accordance with the product category rule for cartonboard products, the calculation took into account mandatory emission sources from upstream processes (e.g. production of raw materials and materials), emissions from our own core activities (e.g. logistics, product manufacturing, waste management in the production process) and downstream processes (distribution of products and management of packaging waste during transport).

The results of the LCA have been documented in the environmental product declaration (EPD) report verified by a third party. The average fossil emissions of Zero-C products were around 650 kg CO₂e/ton of product. However, wood-based carton packaging contains biogenic carbon, which was estimated to be as high as -1,000 kg CO₂e/ton of product. In the adjacent figure fossil GHG-emission are represented per product category.

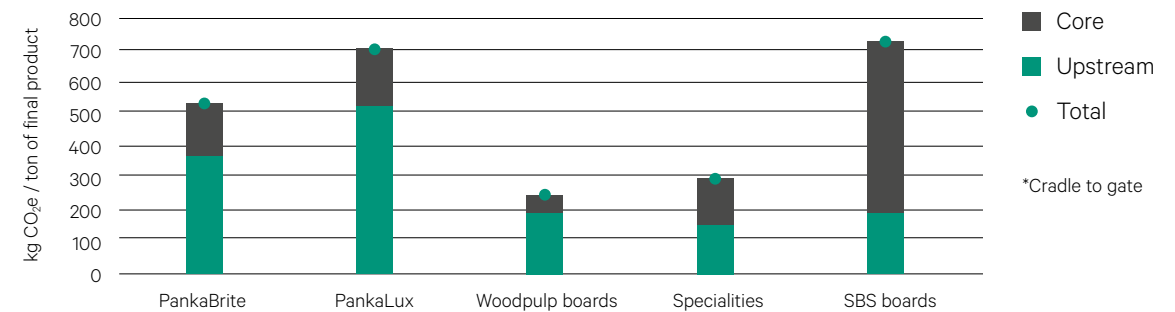
When considering fossil GHG emissions only, the upstream module accounts for most of the emissions for other products and the core module for the SBS boards. In the upstream processes, most significant sources of fossil GHG emissions are e.g. calcium carbonate and latex production for PankaBrite and PankaLux, and calcium carbonate and alkylketene for woodpulp boards and specialities. In the case of SBS boards, most significant fossil GHG emissions arise from the core processes from the production of the purchased pulp, which constitutes most of the products' mass. For all products or product groups, the upstream module is the most relevant life cycle stage for most impact categories except water use. In the case of SBS boards, the core module is more emphasized in terms of various environmental impact categories compared to other studied products.

For Zero-C products, we will compensate all manufacturing-related fossil CO₂ emissions in full, through certified compensations programs. The total amount of offsetting does not take into account the biogenic carbon already

sequestered in the products (the emissions would be negative if biogenic carbon was included). To ensure and enable that we achieve our targets with the Zero-C product family, we have partnered with Nordic Offset, a trusted Finnish provider of carbon footprint management. Carbon emission compensations are carried out in co-operation with Nordic Offset, through high quality compensation programs, e.g. Verra, Gold Standard or Finnish Puro.earth. We also actively seek solutions to reduce fossil emissions from our operations and products.

In 2022, we faced some challenges in terms of low-carbon raw material availability for Zero-C product family. Wood imports from Russia to Finland ended in March 2022 due to war in Ukraine and we had to seek alternatives for birch pulp. As a solution, we increased the use of softwood pulp and started importing eucalyptus pulp from Brazil. Presumably Brazilian eucalyptus has higher carbon footprint which is why we aim to update our LCA calculations based on the new raw material during the year 2024.

Fossil GHG emissions of Pankaboard cartonboards*





Climate impacts

As stated before, climate change is one of the biggest challenges the whole world is facing. We at Pankaboard are continuously trying to find ways to reduce our own carbon emissions by improving energy efficiency, using renewable energy, enhancing material efficiency, and manufacturing products with low carbon footprint.

Energy purchased for our production (scope 2 emissions) would be one of the biggest single CO₂ emission sources if majority of our energy need was not covered with CO₂ free energy. Our target is that 90% of our energy use comes from renewable energy sources. Pankaboard's production uses mostly local wood materials while the integrated biofuel steam plant uses mostly wood-based side-streams and production surplus to provide energy for the factory.

To reduce our product's carbon footprint, we need to be aware of the CO₂ emissions profile of our products. During 2021-2022 we conducted a LCA (life cycle assessment) project to all our product families (read more in chapter [Zero-carbon product family](#)). This LCA study concerned five different Pankaboard high-quality specialty cartonboards, two of which are assessed on the product level and three on the product group level:

- Folding boxboards: PankaBrite (product level assessment)
- Folding boxboards: PankaLux (product level assessment)
- Woodpulp boards (product group level assessment)
- Specialties (product group level assessment)
- Solid bleached boards (product group level assessment)

Energy efficiency

Cardboard producing process is energy intensive. The production processes require mainly thermal energy for drying of cardboard. At Pankaboard, the thermal energy is generated at the mill by using mainly locally sourced biofuels, such as bark from the pulp wood and recycled fuels and to a lesser extent from heavy and light fuel oil. The share of recycled fuel has been around 97% of total thermal energy consumption.

Pankakoski Mill uses an Energy Efficiency Scheme ETJ+ for continuous improvement of energy efficiency. ETJ+ is integrated into the existing management system. An energy inspection was carried out by independent third party Sweco at Pankakoski Mill Oy in 2022. Various energy efficiency improvements, mainly process optimizations and new equipment investments, have been done during 2022 and are continued during 2023.

Energy consumption decreased in relation to net production tons in 2021-2022. In absolute terms, electricity and steam consumption have remained at the same level. Voluntary Energy Efficiency Agreement targets for energy savings in the 2015-2025 contract period, with an intermediate target in 2020 of 3% savings from 2015 levels and an overall target in 2025 of 5% savings from 2015 levels. Target is measured in terms of energy intensity (MWh per production ton). In 2022, 14.9% energy savings from 2015 levels was achieved, so the target is exceeded.

The factory purchases electricity from Väre Oy, liquid gas is supplied by Gasum Oy, Steam is purchased from Adven Oy from the heating plant on the factory site. Steam is mainly produced from wood and recycled fuels.

Emissions to air

In 2022, Pankakoski Mill CO₂e emission measurement was carried out by a third party. According to the results, the emissions meet the environmental permit limits. Compared to year 2021, the absolute emissions grew 5% in 2022. Emissions reported include the direct CO₂e emissions of Pankakoski Mill production. The fuels used include recycled energy waste from the factory, wood-based waste and by-products, propane, heavy and light fuel oils.

Read more about our product related fossil emissions in chapter [Zero-carbon product family](#).



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