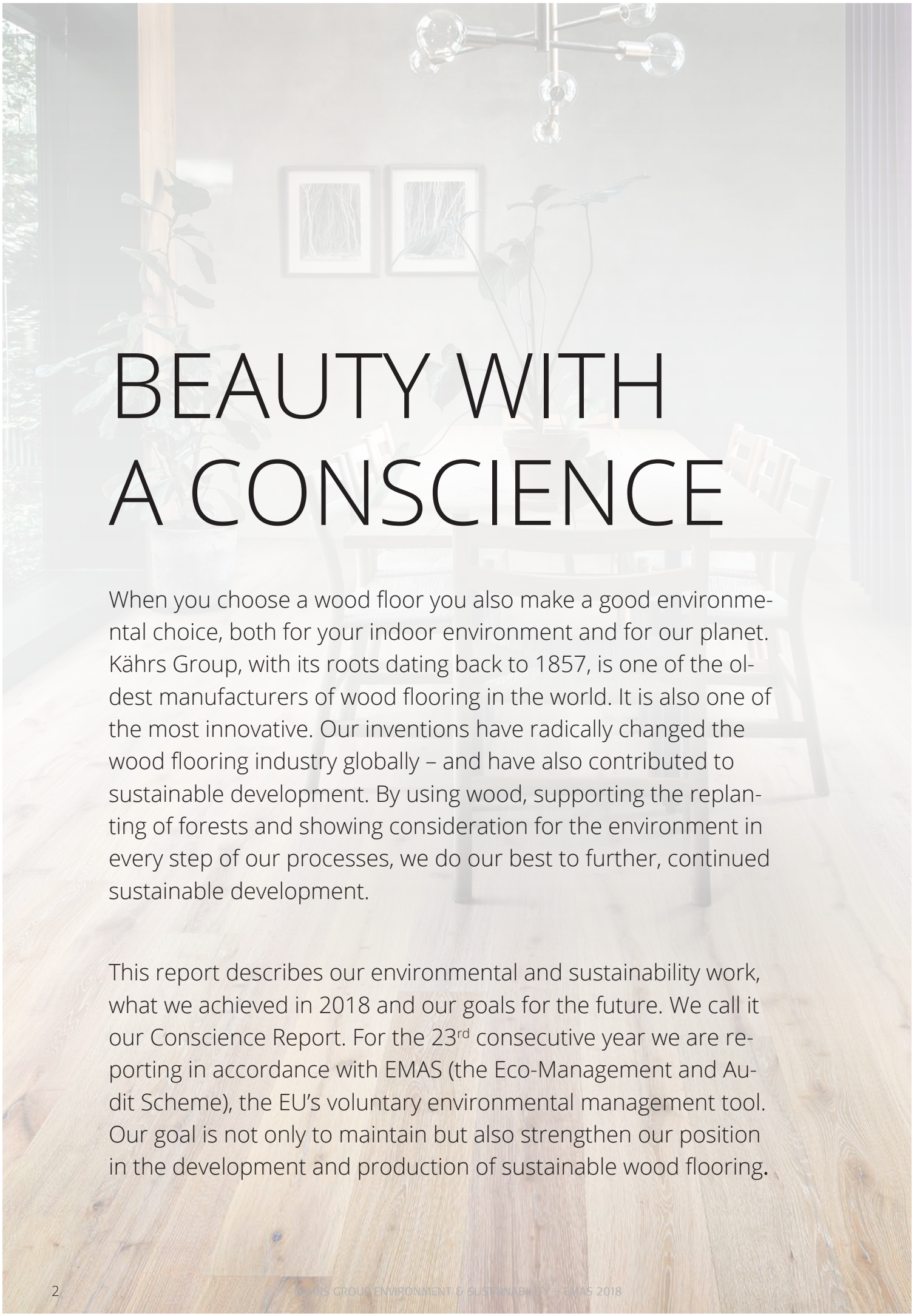
Kährs Group

ENVIRONMENT & SUSTAINABILITY EMAS 2018

The Conscience Report

This report is a translation of the controlled Swedish EMAS-report which covers Kährs Group Sweden and the operations in Nybro, Blomstermåla and Malmö

EMAS
VERIFIERAT MILJÖLEDNINGSSYSTEM
S-000055



BEAUTY WITH A CONSCIENCE

When you choose a wood floor you also make a good environmental choice, both for your indoor environment and for our planet. Kährs Group, with its roots dating back to 1857, is one of the oldest manufacturers of wood flooring in the world. It is also one of the most innovative. Our inventions have radically changed the wood flooring industry globally – and have also contributed to sustainable development. By using wood, supporting the replanting of forests and showing consideration for the environment in every step of our processes, we do our best to further, continued sustainable development.

This report describes our environmental and sustainability work, what we achieved in 2018 and our goals for the future. We call it our Conscience Report. For the 23rd consecutive year we are reporting in accordance with EMAS (the Eco-Management and Audit Scheme), the EU's voluntary environmental management tool. Our goal is not only to maintain but also strengthen our position in the development and production of sustainable wood flooring.

Content

About Kährs Group

Kährs Group is a Europe-leading manufacturer and distributor of premium flooring with strong brands in its product portfolio as Kährs and Upofloor. Kährs Group, which delivers products to more than 70 countries, is the market leader in wood flooring in Sweden, Finland and Russia and holds a strong position in other key markets, such as the UK, Norway and Germany. The Group has approximately 1,700 employees and annual sales of more than EUR 300 million. The President and CEO is Christer Persson. The owners are Triton & Hartwall Capital.

Read more at www.kahrsgroup.com

This report covers Kährs Group's Swedish units, organised within the subsidiary AB Gustaf Kähr and its operations in Nybro, Blomstermåla and Malmö, which produce about 6 million m^2 of wood flooring and employ 850 people.

About EMAS

EMAS is the EU's voluntary environmental management and environmental auditing regulation, Number 1221/2009. It aims to improve environmental work at companies and organisations and make it more efficient. EMAS conveys a credible message about the result of the environmental work though an assessed/audited and approved environmental report.

SUSTAINABILITY VISION TO 2030

In the past year, Kährs has launched a wide-ranging programme of changes to become an even better partner for our customers. We make the most of all the expertise and the networks we have within the Group and are set to become a total supplier of flooring for construction and interior design projects around the globe. This means that we have added new product categories to the wood flooring and resilient flooring already in our product portfolio. However, although the company has undergone sweeping changes, we have been keen to hold onto the values that make Kährs unique – our heritage, our design, our quality and our innovations – while taking sustainability into account in all the choices we make.

As part of the ongoing change process, we review and reassess our plans and targets to ensure that they take us where our sustainability vision leads. We have long considered it self-evident to factor in all aspects of sustainability. However, we have seen an additional need to explain more clearly what this means for us and our business. In 2018 our production and purchasing organisation drew up a target document, a roadmap for our work on sustainability in the short and the long term, from three years ahead to our vision for 2030. We are now developing this further by tying our measures and activities in to the UN's 2030 Agenda – a trend that we recognise crosses industries and affects us all.

There is a global consensus on the actions it will take for the world to develop in a more sustainable direction. The UN's 2030 Agenda sums this up in 17 sustainable development goals (SDGs) and serves as a guide for our work. We have chosen six of these SDGs to focus on in greater depth, as we judge them to be particularly relevant in the contexts in which we operate. We have linked our own vision for 2030 to each SDG and drawn up internal targets and key figures so that we can drive improvements and monitor progress consistently across the entire Kährs Group.

We have a vision that Kährs is to be climate positive and we are going to achieve this by cutting our consumption of fossil products, for example, and prioritising renewable energy sources in our operations. One important interim target is to make our internal transport completely fossil-free within five years. We have been using electrically powered forklifts for light transport, often indoors, for a long time, but have recently started to convert our diesel-powered outdoor forklifts too. One outdoor forklift used for heavy loads has now been replaced with an electric version in an initial trial before we make the switch on a larger scale.

Kährs' pellet factory was completed in 2018 and biofuel deliveries have begun in 2019. We have always made use of wood material that cannot be turned into flooring by turning it into fuel, but processing it into pellets makes this renewable biofuel available to more users. A fuel that does not contribute towards net carbon emissions and therefore carries no climate impact.

Wood as a raw material plays a key role in our work on sustainability. Not only is wood a crucial resource for us, it also has an impact on other sustainability aspects such as climate, biodiversity and the opportunity for people all over our planet to earn a living. Therefore, one of our most important activities is to continue to increase our purchasing of certified wood raw material, thus helping to drive up demand for raw materials from long-term, sustainable forestry.

Christer Persson
President and CEO

Summary of the 2018 environmental year

In 2018 we continued to work to ensure that our operations are run more sustainably and more responsibly. We have continued to tackle compliance issues in our Compliance Committee – a Group-wide forum on sustainability.

The Kährs Group's comprehensive approach to running businesses responsibly and sustainably and the expectations of stakeholders mean that we observe principles of social, economic and environmental consideration in our planning and operations.

Our production facilities are located in the heart of urban areas, close to residences and other municipal operations which make issues concerning noise, dust, surface runoff water and traffic very important. We conduct our own checks to monitor the environmental impact of our operations and changes over time.

Work on product certifications constantly places demands on the Kährs Group's operations, from product development and purchasing via production and HSE functions, to the marketing and communication departments. LCA data from a life cycle analysis carried out in partnership with Linköping University in 2017 was used for an upcoming Environmental Product Declaration (EPD).

The issue of climate change and the need to reduce our carbon dioxide emissions affect our activities – especially transport and energy consumption. One of the strengths of the wood flooring business is a very high proportion of renewable raw materials for the production of flooring and as biofuel. Delivering our floors to over 70 countries leads to a high quantity of transportation, however, mainly by ship and truck. Dependence on fossil transport fuels is thus part of our climate impact that demands future action and research.

Our wood products store carbon over the decades that the flooring is used. Increased use of wood is good in terms of counteracting climate change because the material comes from a renewable source and is built from carbon dioxide, which is thus kept out of the atmosphere.

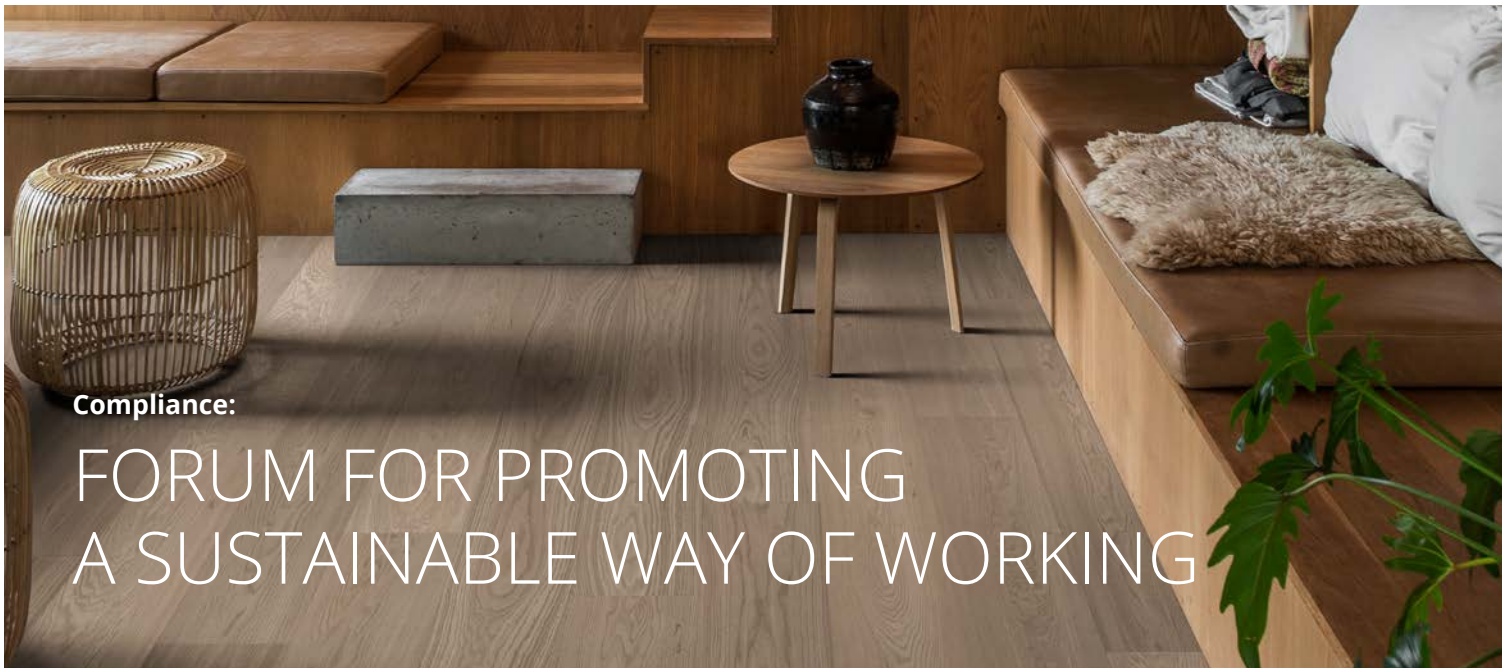
Sold wood flooring stored more carbon dioxide than we released during 2018.

POSITIVE RESULTS/MEASURES

- The Kährs Compliance Committee has continued its work to encourage progress in promoting the development of a sustainable approach.
- Almost 6 million square metres of manufactured wood flooring entailed the storage of over 88,000 tonnes of carbon dioxide.
- The new chemicals system, iChemistry, is now fully operational, thus making us well placed to continue to develop and improve our chemicals management.
- We have continued to support projects to benefit the protected stag beetle
- During the year a new plant for manufacturing wood pellets has been built adjoining the flooring factory in Nybro. The pellet facility will produce fuel pellets from by-products such as sawdust and wood materials that cannot be used in flooring manufacture.
- An efficient new surface layer dryer has been built and taken into operation.
- One of the sawmill's filters has been replaced.

FUTURE CHALLENGES

- Transport between Kährs Group units and external suppliers results in carbon emissions. Our challenge is to constantly improve logistics to reduce carbon emissions.
- Action plans to cut energy use and amounts of waste have not proven sufficient to attain the targets. Our challenge for the future is to step up work to become more energy-efficient.
- Noise at our production sites is an important issue and we recognise a need to constantly improve and reduce our emissions of noise to the surrounding environment.
- It has proved difficult to attain stable operation of the ozone plant, which is designed to reduce the amount of COD in process water from cleaning our machines. This means a delay to our work to reduce the amount of hazardous waste from the cleaning process.
- Greater interest in certification of products and operations from customers in many countries is increasing the demands made of our organisation.



Compliance:

FORUM FOR PROMOTING A SUSTAINABLE WAY OF WORKING

Our systematic work on compliance and development in all aspects of sustainability covers a wide area and has had its own forum – the Compliance Committee – since 2015. The Committee oversees our compliance with laws and regulations and sets targets for our work on ESG (Environmental, Social responsibility and Governance) issues. Members of Group Management and our environmental ambassador take part and the Board of Directors and owners can follow developments via key performance indicators and reports.

The Compliance Committee includes four representatives of Group Management and our environmental ambassador. The function of environmental ambassador, established in 2010, focuses on sustainability and compliance issues, mainly relating to environmental and social responsibility. The Company's Board of Directors and owners can follow developments via key performance indicators and reports and the results presented therein are reported regularly at Board meetings and periodically to our principal owner.

AREAS OF RESPONSIBILITY

The Committee is responsible for issues regarding non-financial compliance, including the Company's overarching programmes, policies and processes that ensure that operations are conducted in accordance with existing rules, as well as its exposure in terms of important legal or regulatory issues, Enterprise Risk Management (ERM), Business Continuity Planning (BCP) and Environmental, Social Responsibility and Governance (ESG). It is also responsible for ensuring that the Company fulfils its owners' demands on reporting Key Performance Indicators in accordance with the UN's requirements for responsible investment (UN PRI) and the owners yearly Transparency Report (www.triton-partners.com/responsibility).

The Committee oversees the Company's implementation of and compliance with applicable policies, such as the Company's Code of Conduct, its Code of Conduct for Suppliers and guidelines on anti-corruption and money laundering. It is also tasked with ensuring that all operations within the Group are conducted in accordance with relevant regulations, laws and product certifications. Work on risks at local level are described on page 30.

The Committee's duties also include dealing with complaints received via the employees' whistle-blower system.

"Kährs Group's Code of Conduct is intended to provide information about the Group's operating principles and offer tools to help make decisions that align with our ethical expectations and legal obligations. Within the area of our influence we strive to ensure that employees and business partners follow the principles of our code of conduct when working with us. Adhering to high ethical standards and doing the right thing are the driving forces behind Kährs Group's success and have been a core component of how we have done business since our beginning.

The requirements stated in this Code of Conduct are mainly based on internationally agreed standards such as the Universal Declaration of Human Rights, the principles in the UN Global Compact, the UN Convention on the Rights of the Child and applicable ILO Conventions."

General Principles from Kährs Group's Code of Conduct

ENVIRONMENTAL LABELLING OF PRODUCTS

Product certifications and requirements applicable to many of our wood flooring products

CLASS E1	**CARB 2**
FORMALDEHYDE-EMISSION (EN 717-1:2004)	**FORMALDEHYDE**

Environmental Management System

Our operations affect the environment. To reduce our impact, we work on continuous improvement and follow-up and our management system helps us control the environmental work in a structured and efficient manner.

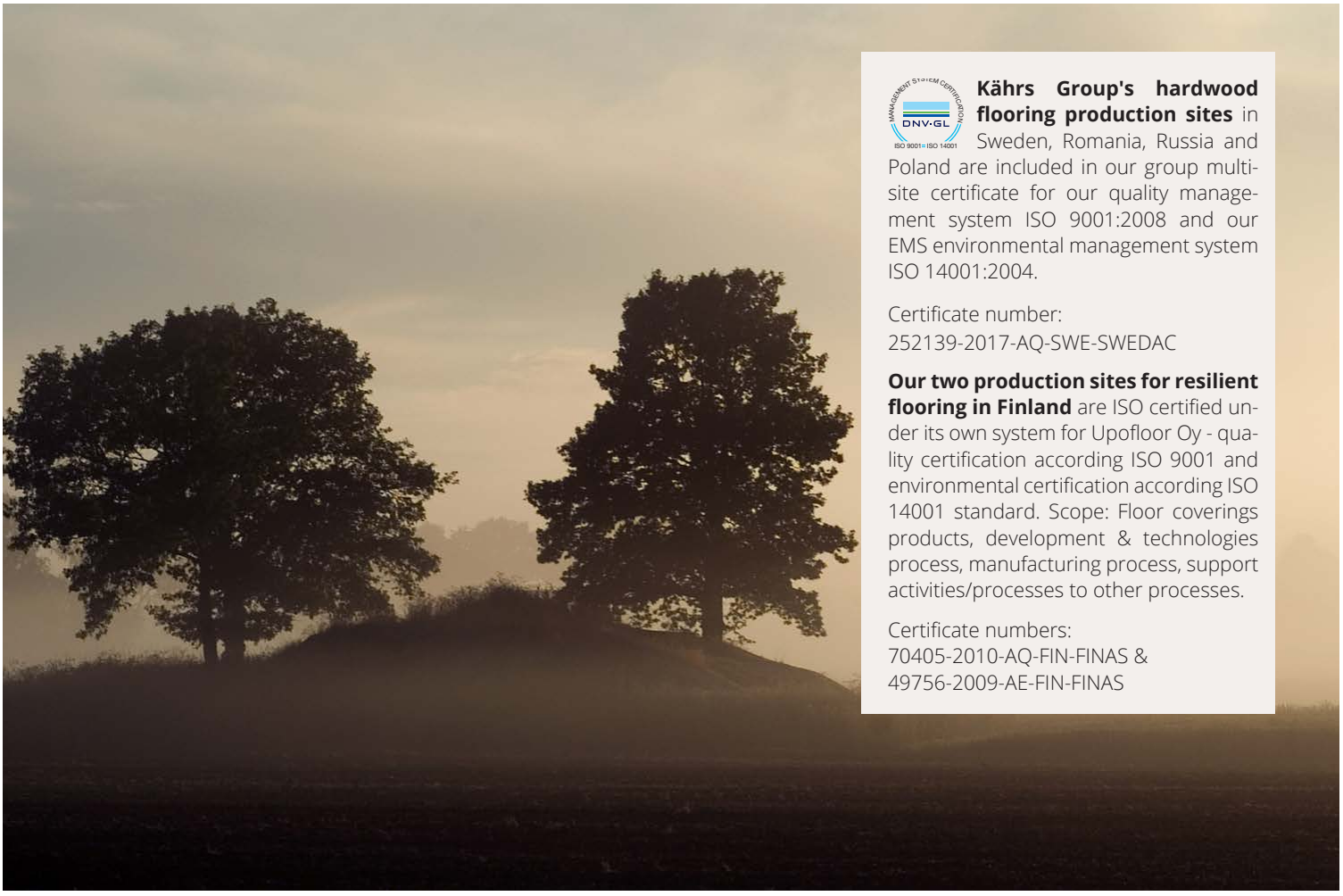
Kährs Group's environmental management work is now based on the same conditions and under a joint ISO 14001 certificate. From 2017, energy mapping and energy streamlining is covered by the environmental management system.

VITAL COMPONENTS OF THE ENVIRONMENTAL WORK

- Organization and distribution of responsibilities
- Identified environmental aspects and legal requirements
- Kährs' environmental policy, environmental targets & plans of action
- Routines for controlling the environmental effect of the activity/product and preparation for emergencies
- Internal and external environmental communication
- Training, education and participation
- Monitoring through internal audits and handling of deviations
- Auditing of the environmental management system
- Management reviews - Kährs Group's management meets four times a year to evaluate and improve the efficiency of the management system

THE DIFFERENCE BETWEEN ISO 14001 AND EMAS

EMAS is a complete environmental management system based on ISO 14001. EMAS includes requirements not normally included in an environmental management system. According to EMAS, our annual environmental report must be made public and published on the Swedish Environmental Protection Agency's website. Another difference is the requirement on employees' involvement, that we manage through our intranet, MBL – the Employment (Co-determination in the Workplace) Act – and departmental meetings.



Kährs Group's hardwood flooring production sites in Sweden, Romania, Russia and Poland are included in our group multi-site certificate for our quality management system ISO 9001:2008 and our EMS environmental management system ISO 14001:2004.

Certificate number:
252139-2017-AQ-SWE-SWEDAC

Our two production sites for resilient flooring in Finland are ISO certified under its own system for Upofloor Oy - quality certification according ISO 9001 and environmental certification according ISO 14001 standard. Scope: Floor coverings products, development & technologies process, manufacturing process, support activities/processes to other processes.

Certificate numbers:
70405-2010-AQ-FIN-FINAS &
49756-2009-AE-FIN-FINAS

Group-wide quality and environment programme

Since 2017, one Group-wide quality and environment management system covers all wood flooring operations. See page 34 for more information about the Group's production facilities outside Sweden.

A Group-wide management system was a logical development in creating a common platform in the Group for management of quality and environmental issues. This facilitates the process of attaining our goals and creating a consensus on what the Company is to achieve and how it should go about doing so. In the first half of 2018, the Group was upgraded and certified under standards ISO 9001:2015 and ISO 14001:2015.

In parallel with the implementation of the Group-wide management system, Kährs Group introduced a system for strategic analysis and risk assessment:

BUSINESS CONTEXT

As a means of support for planning of the business and developing strategies capable of translating goals into outcomes, Kährs Group analyses internal and external conditions via an annual SWOT analysis, at both local and global level.

STAKEHOLDERS' REQUIREMENTS AND EXPECTATIONS

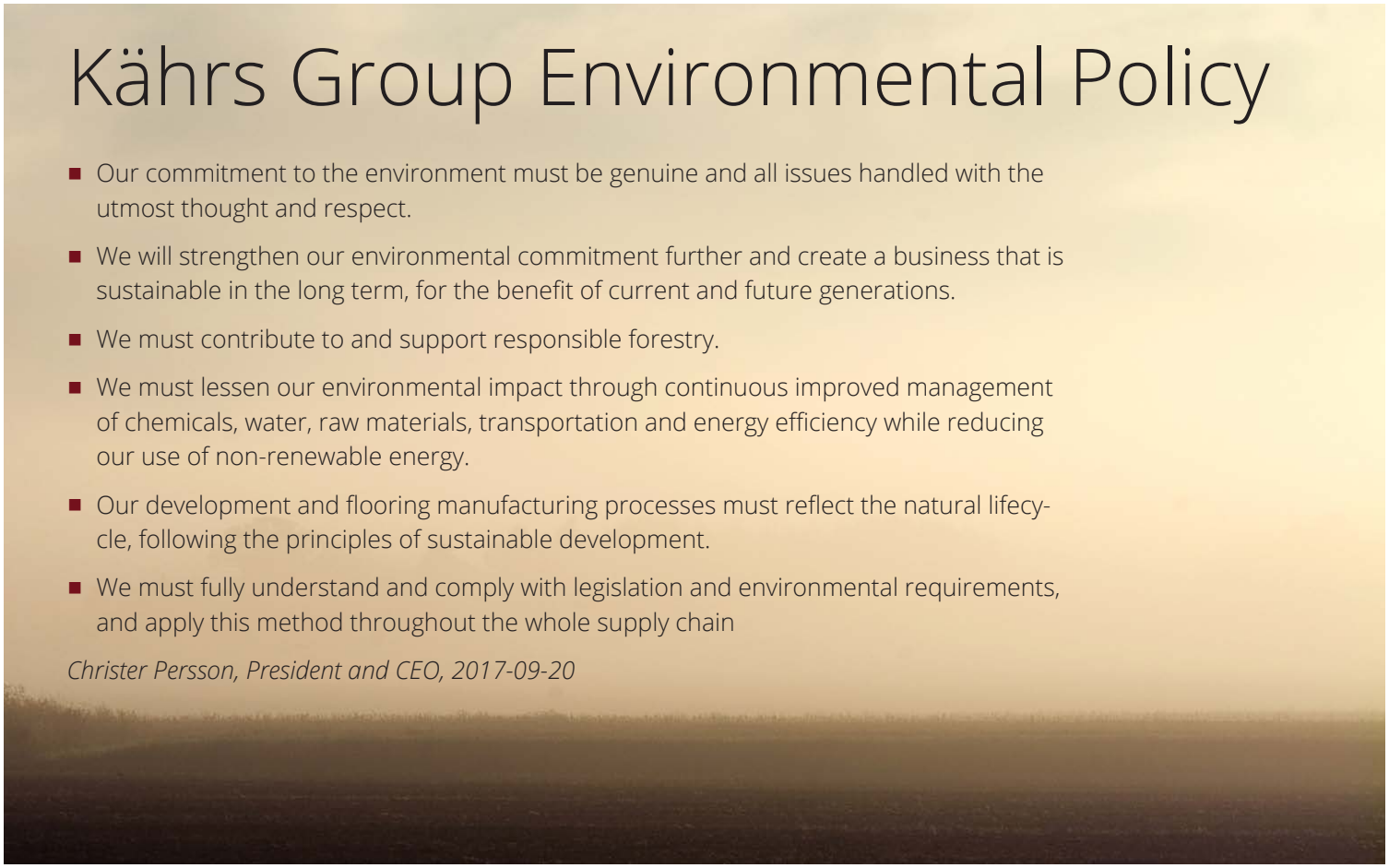
One key factor in the success of an organisation is an active understanding and management of stakeholders' influence on the business. Various stakeholder categories are assessed in terms of importance, needs and expectations, and of whether such expectations have been fulfilled or not.

RISK ASSESSMENT

Kährs operates a systematic process for assessing and consolidating the risks and opportunities of all its Group units based on its strategic analyses. The results, in the form of environment, safety, commercial and financial risks identified are then used as a basis for management's strategic planning.

QES

The Group's work on quality, environment and safety (QES) is coordinated via a global network involving several physical meetings to plan and coordinate this work among the units. Working towards goals, development and execution of action plans and internal audit are all part of operational activities. The group also discusses longer-term goals and visions in environment, quality and work environment, over a time horizon of five to ten years. In addition, the new WIA incident reporting system is playing a part in enabling the application of best practice within the Group.



Kährs Group Environmental Policy

- Our commitment to the environment must be genuine and all issues handled with the utmost thought and respect.
- We will strengthen our environmental commitment further and create a business that is sustainable in the long term, for the benefit of current and future generations.
- We must contribute to and support responsible forestry.
- We must lessen our environmental impact through continuous improved management of chemicals, water, raw materials, transportation and energy efficiency while reducing our use of non-renewable energy.
- Our development and flooring manufacturing processes must reflect the natural lifecycle, following the principles of sustainable development.
- We must fully understand and comply with legislation and environmental requirements, and apply this method throughout the whole supply chain

Christer Persson, President and CEO, 2017-09-20

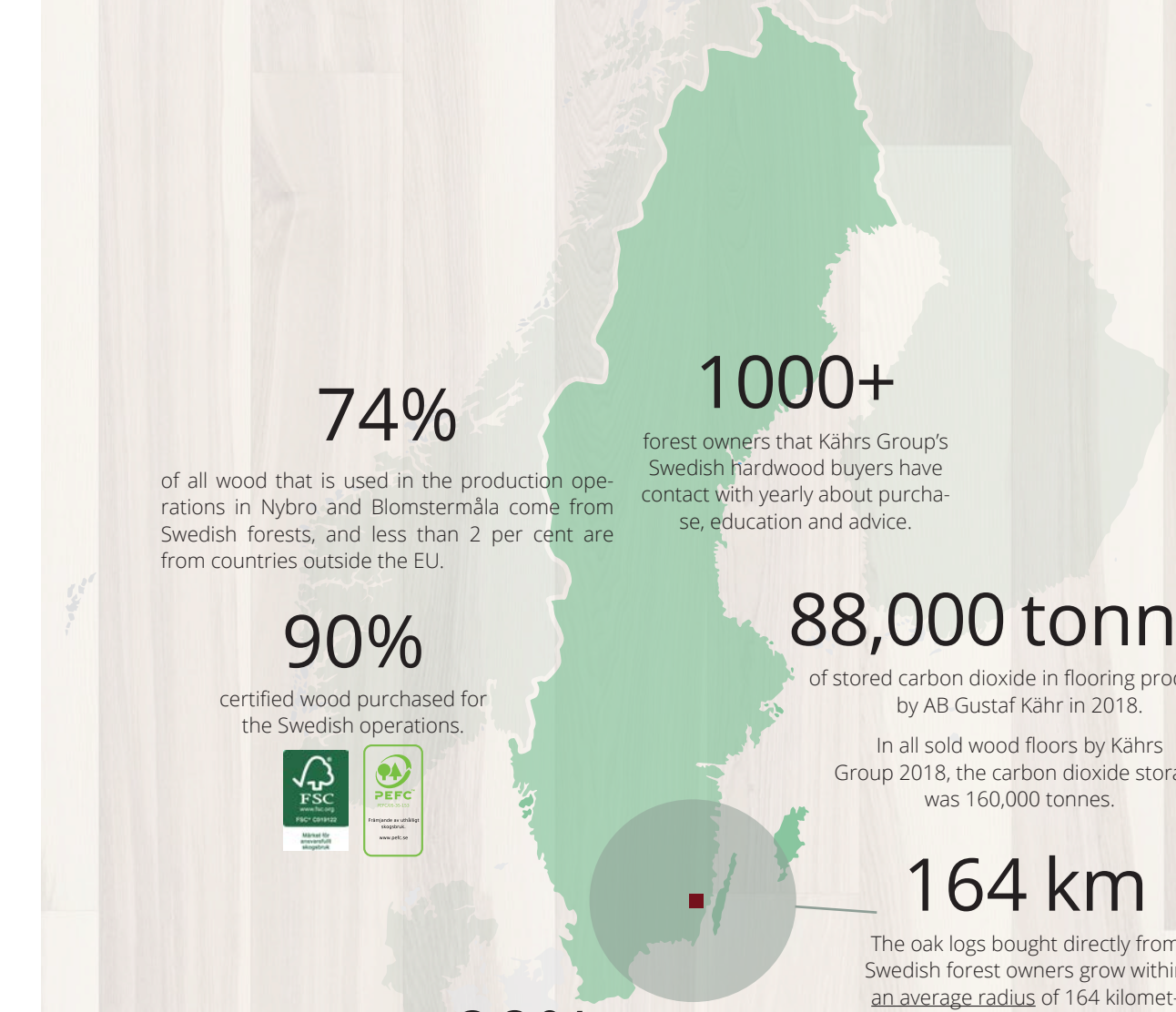
WOOD FLOORING

in a circular economy

- Wood is renewable. Given sunlight, carbon dioxide and water, trees can produce timber for ever. Forests in Europe are expanding by around 6,000 km^2 annually.
- Manufacture of wood products is often a lean-energy process generating relatively low emissions of carbon dioxide.
- Chemicals are used in the construction and to give the products the right characteristics.
- Biodiversity and responsible forestry must be protected.
- One of the challenges is to reduce the volume of fossil fuels used in transportation.
- Ash from biofuel combustion can be returned to the forest as nutrient.
- Wood is CO2-neutral. Wood stores carbon dioxide from the atmosphere. If wood is burnt to generate electricity and to produce heating, it only releases as much carbon dioxide as the tree has stored during the time it was growing.
- Water is used during the production of flooring. We are striving to reduce water consumption and to improve our own process to clean polluted water.
- Residual products from manufacturing are used as biofuel to generate electricity and produce heating.
- It is possible to recycle the products.

SUSTAINABLE FORESTRY

HE FOUNDATION OF OUR WOOD FLOORING



74%

of all wood that is used in the production operations in Nybro and Blomstermåla come from Swedish forests, and less than 2 per cent are from countries outside the EU.

1000+

forest owners that Kährs Group's Swedish hardwood buyers have contact with yearly about purchase, education and advice.

90%

certified wood purchased for the Swedish operations.

88,000 tonnes

of stored carbon dioxide in flooring produced by AB Gustaf Kähr in 2018.

In all sold wood floors by Kährs Group 2018, the carbon dioxide storage was 160,000 tonnes.

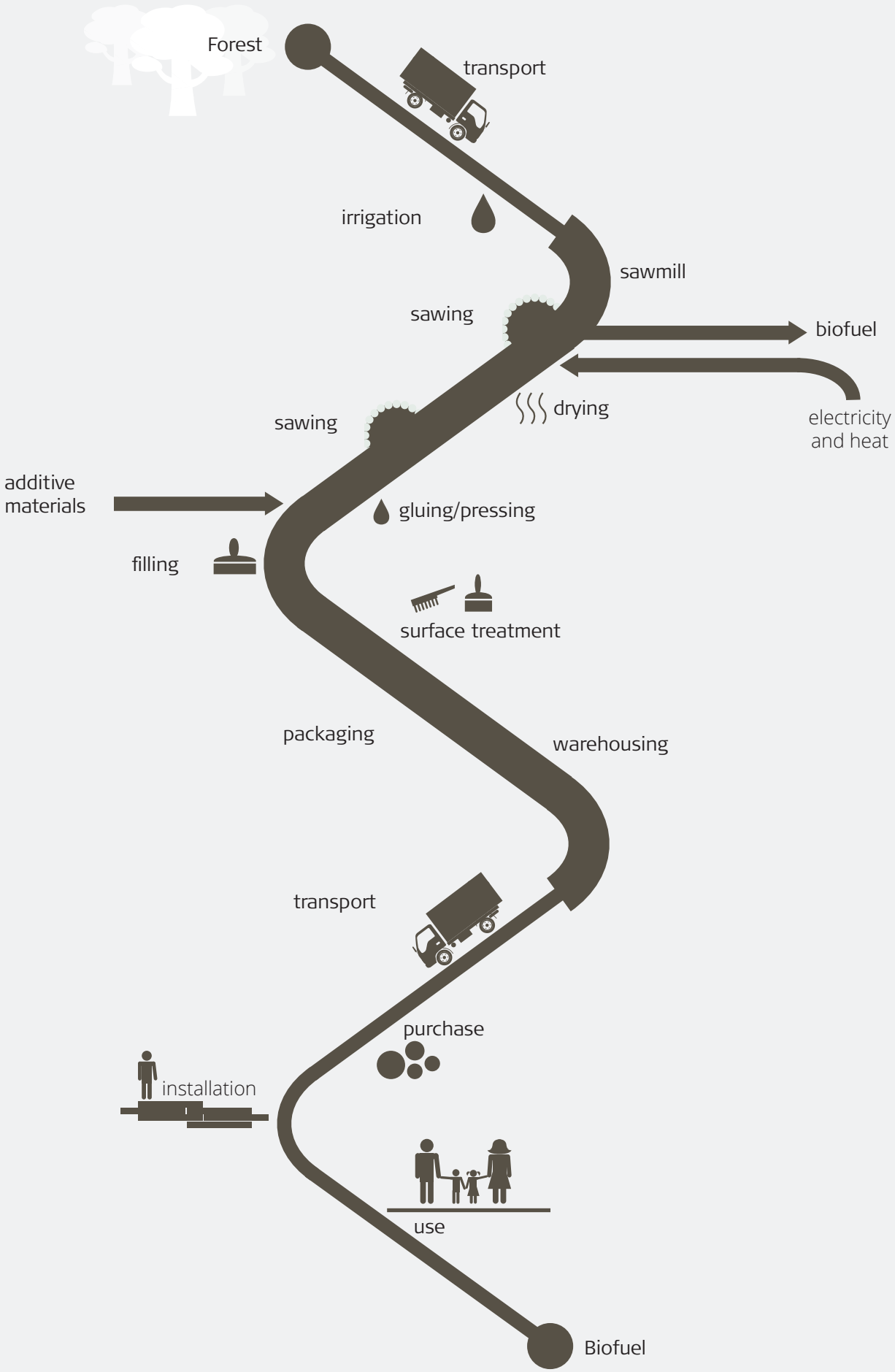
164 km

The oak logs bought directly from Swedish forest owners grow within an average radius of 164 kilometres of our sawmills in Nybro and Blomstermåla.

approx. 90%

of the floors we sell have a surface layer of oak. The Swedish oak tree is harvested and maintained according to the Swedish act on broad-leaved deciduous forest, Ädellövsskogslagen (1984:119).

Our operations – wood flooring lifecycle



IMPACT ON THE ENVIRONMENT – ECOLOGICAL BALANCE

An organisation's activities, products and services affect or could affect the environment. This impact is described through environmental aspects. Some aspects will have no impact on the environment during normal operation and a few only in connection with operational disruptions or accidents.

SIGNIFICANT ENVIRONMENTAL ASPECTS

An activity that causes or may cause significant environmental impact is called a significant environmental aspect. To determine which of our environmental aspects are the most significant from an environmental perspective, we perform an annual evaluation, in which we take into account factors such as extent, environmental policy, legislative requirements, local/global environmental impact and risks of operational disruption or accidents.

The significant environmental aspects form the basis for the goals that we have set for reducing our impact on the environment.

ECOLOGICAL BALANCE

We report on the development of significant environmental aspects within Kährs Group's Swedish operations in what we call an Ecological Balance. This includes trends for outcomes of key environmental indicators and a description of negative and positive environmental impact for various environmental aspects. Results of work on our goals are also reported.

The trend for each significant environmental aspect is summarised with a colour code, where the colour indicates the development compared to the previous year.

= Positive development during the year

= The situation is stable

= Environmental impact is increasing, measures required

Responsible forestry – Biological diversity

Our largest impact on biological diversity is linked to the extraction of wood raw materials and purchases of wood raw materials, we have chosen to focus on this through sustainable forestry. One of Kährs' main environmental objectives is to increase the proportion of certified wood material in our floors.

Environmental Target: Certification

ONE OF KÄHRS' GOALS IS TO INCREASE THE PERCENTAGE OF CERTIFIED WOOD RAW MATERIAL

In 2018, our goal for certified wood raw material was 90 per cent, calculated as a percentage of the total volume purchased for the Kährs Group's Swedish operations; the outcome was 90 per cent.

The forest certifications Kährs Group uses are FSC®, FSC-Fairtrade, FSC Controlled Wood, PEFC and trusted certifications that we have deemed acceptable in conjunction with leading environmental organisations.

All wood purchases, according to our specifications, must comply with the requirements of the Lacey Act and the European Timber Regulation.

Our ambition is to purchase according to Kährs Group's standard for controlled wood, as our minimum acceptable level, which is a good way to provide support to responsible forestry. The amount of sold FSC certified flooring is driven by customer demand.

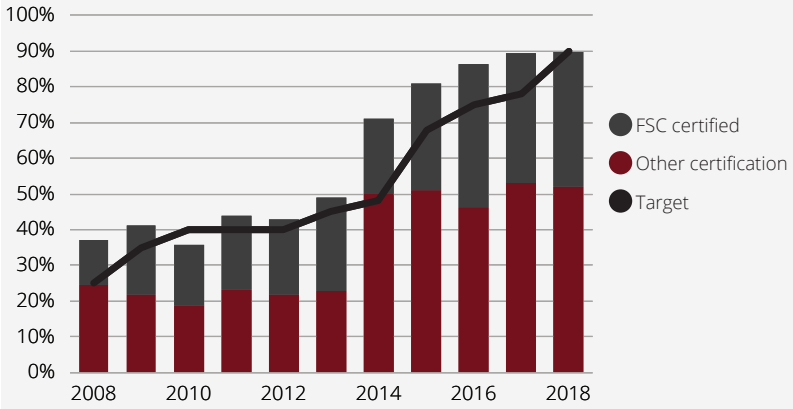
The percentage of FSC-certified oak logs available in Sweden is dependent on the percentage of woodland that is certified. Today the percentage is over 50 percent, but despite this the actual hardwood supply available is limited. All the local Swedish raw material is classified as "from low-risk area" by the FSC but due to costs considerations many of the small landowners choose not to become FSC certified.

We consider it important to continue working with certified material through collaborations with the various players and stakeholders in the industry.

OUR RESPONSIBILITY

The wood floors we manufacture are 98 percent made of wood material, and as a considerable user of wood as a raw material, we have a responsibility to support and encourage the development of sustainable forestry. Through continuously increasing demand for certified wood, we contribute to placing a value on lasting, long-term forestry. It is our belief that a future, sustainable supply of controlled wood is of utmost importance not only for Kährs Group, but also as a global concern.

PROPORTION OF CERTIFIED WOOD RAW MATERIAL PURCHASED FOR KÄHRS GROUP IN NYBRO & BLOMSTERMÅLA.



Targets for 2019

The target for Kährs Group Sweden is 90%.

- The Kährs Group's Russian operations will be FSC certified in early 2019. This will give us traceability for more purchasing of wood products and thereby a higher proportion of certified wood within the Group.
- Work with new and existing suppliers of wood material to increase the proportion of certified materials.

For all wood purchasing in the Kährs Group the target is to attain 73% certified wood raw material in 2019. In 2018 we reached 71% for the Group as a whole.

SIGNIFICANT ENVIRONMENTAL ASPECT: USE OF RAW MATERIAL – PURCHASES OF WOOD RAW MATERIAL

ENVIRONMENTAL IMPACT	RISK	TREND
Purchasing of wood raw material. Can cause a deterioration in biological diversity & disruption in carbon sink.	Wood from felling operations that do not meet requirements for sustainable forestry being delivered to Kährs.	Positive development

Support for rejuvenating oak stocks

There are plenty of Swedish oak trees and growth is occurring in terms of cubic metres. However, there is a need to rejuvenate the oak stocks, as a majority of the trees are old. Young forests and replanting are not enough to keep the oak stocks up in the long term, which may become a problem in about 100 years' time.

The Swedish Forest Agency has drawn attention to and seeks to prevent a long-term lack of broadleaf woodland and poorer biodiversity. Therefore, it is possible to obtain government grants to rejuvenate broadleaf woodland. The grant covers 80% of the cost of planting new broadleaf trees.

KÄHRS PROVIDES EXTRA FUNDING FOR SEEDLING PURCHASES

Kährs has decided to provide additional support, in addition to the government grant, to forest owners who have supplied logs to Kährs and who choose to rejuvenate by planting oaks. Kährs will meet the remaining 20% of the cost of seedlings in order to provide an extra incentive to the forest owner. 10–30 regeneration felling operations are carried out on oaks every year, in an area where Kährs could provide support to rejuvenate oak stocks. The project will be launched in 2019 and we hope to see increased oak replanting as soon as this year.

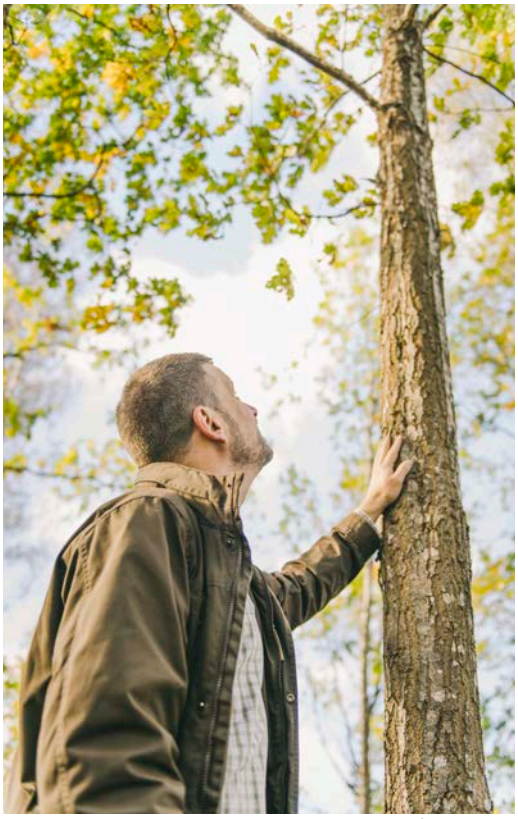


Photo: Roxx

The Nordic Swan Ecolabel helps us to get a little bit better every day

The Nordic Swan's ecolabelling criteria build on a life cycle perspective – from raw material to waste, and the criteria are constantly being developed. As the Nordic Swan tightens up its requirements, we as a company have to apply for re-assessment of our licence to demonstrate that we meet the new, tougher, criteria.

By making higher demands of our products, the raw materials and our production process, the Nordic Swan Ecolabel provides excellent support in our work to develop more sustainable products for the market. Our latest licence renewal was approved in February 2019 and covers more than 180 different wood flooring products from Kährs.

THE NORDIC SWAN ECOLABEL IS CELEBRATING ITS 30TH ANNIVERSARY

The Nordic Council of Ministers launched the Nordic Swan Ecolabel in 1989 to help consumers make good choices for the environment and today it is the official ecolabel of the Nordic countries, run on behalf of the government with no industry interests or profit motive. The EU Ecolabel is the European Union's ecolabel.

WHAT THE NORDIC SWAN ECOLABEL AND THE EU ECOLABEL STAND FOR:

- They are voluntary, positive labelling schemes for products (goods and services).
- The Nordic Swan Ecolabel is the official registered Nordic ecolabel. The EU Ecolabel is the European equivalent to the Swan.
- The criteria and product groups for the Nordic Swan Ecolabel apply in all Nordic countries and the EU Ecolabel in all EU countries.
- The labels are only awarded to the best environmental products on the market and set ambitious environmental, health, quality and performance requirements.
- The requirements are constantly increased.
- Goods and services bearing the Nordic Swan or EU Ecolabels have complied with tough criteria and are third-party assessed.

Source: svanen.se

Kährs

har erhållit nordisk miljömärkningslicens nr. 3029 0012
för produktgruppen: 029 Golv

enligt kriterieversion 6.5 - giltig till: 31 december 2021

Stockholm, 05 februari 2019, Miljömärkning Sverige

Ragnar Unge, VD

Detta certifikat omfattar de produkter som står på det giltiga licensbeviset.

Miljömärkning Sverige

Water - Sources and usage

Water is part of a closed loop environmental system, so it is very important that the water we return to the environment is clean. The largest part of our water use goes to the irrigation of timber and to regulate the moisture content in the drying process.

USE

The irrigation of timber prevents the timber from drying too quickly and cracking before it is sawn. In Blomstermåla water is taken from the River Alsterån, while the process in Nybro is based on recirculation to reduce water use.

To prevent the drying of sawn wood from proceeding to quickly, the moisture level in the drying facility is regulated, which also requires water. Water is also used to cool and clean processing equipment.

EMISSIONS TO WATER

Surface runoff water/leachate from irrigation of timber and from biofuel stores has elevated levels of oxygen-demanding substances and tannins (a substance that arises from the decomposition of wood or other organic substances). A vegetation-based sediment filter (VSF) in Nybro reduces the amounts of organic matter to the recipient.

In Blomstermåla no recirculation of irrigation water takes place; instead it is filtered, mainly by ground soil, before it reaches the River Alsterån. Outgoing water is regularly tested to check for emissions of potential pollutants.

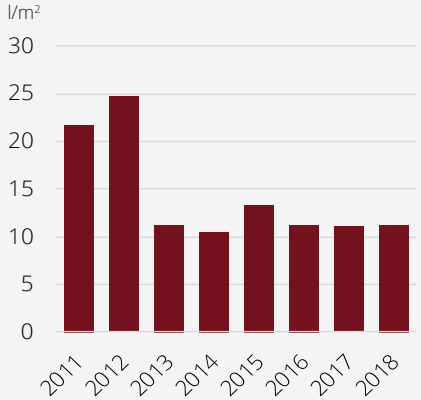
Cleaning of machinery and equipment produces process wastewater is generated in manufacturing operations. The polluted process wastewater contains organic substances (TOC) that are not easily degraded in the municipal treatment plant. Therefore, all process wastewater is treated in an internal sedimentation/adsorption process to reduce the amount of persistent organic substances before it is released into the municipal wastewater network. Yearly, about 150 m^3 treated process wastewater is released from the operations in Nybro.

To reduce the amount of organic matter (TOC) in the process water to the municipal treatment plant there are two cleaning stages; sedimentation and ozone treatment.

The sedimentation stage has continuously been in use during the whole year.

The ozone equipment installed at the end of 2016 has not reached a sufficient operating status. Therefore, under 2018 we continued working to improve conditions for continuous operation of the ozone step.

WATER USE l/m²



WATER USE 2018	m^3	l/m^2
Municipal drinking water	30,025	5.1
Of which is for the drying process	16,417	2.8
Of which is cooling water	8,558	1.4
Groundwater for irrigation of logs	0	0.0
River water for irrigation of logs	36,375	6.1

Water – Source, use and treatment

Type of water	Treatment stage Kährs	Diverted to	TOC content before treatm.	TOC content after treatm.
Leachate from timber yard	VSF	Municipal storm water network (for surface runoff water)	50-300 mg/l	58 mg/l

Type of water	Treatment stage Kährs	Diverted to	TOC content before treatm.	TOC content after treatm.
Process wastewater from cleaning of gluing and hardening equipment	Sedimentation/ adsorption process	Municipal sewage network	ca 21,000 mg/l	2,400 mg/l

SIGNIFICANT ENVIRONMENTAL ASPECT: WATER USE & RELEASE OF PROCESS WASTEWATER

ENVIRONMENTAL IMPACT	RISK	TREND
Water pollution and the dispersal of organic material which is not degraded in a municipal wastewater treatment plant (WWTP).	Damage to treatment processes in a waste municipal wastewater treatment plant or recipient.	Stable development

Waste - Recycling

By reducing waste, material efficiency increases while resource consumption decrease. We strive to reduce the amount of waste that arise from our operations.

WASTE

Our operations mainly give rise to waste that is recycled for its materials (such as plastics, corrugated cardboard, metals and office paper) and energy extraction (such as sand paper, adhesive residue, plastic ribbons and filter bags from our filtering systems). What cannot be used for material recovery or energy extraction is sent to landfill. By-products such as wood chips and sawdust are included under "Energy efficiency and biofuel production" on pages 28–29.

All waste is sorted according to Kährs' Waste Standard. The Waste Standard is based on the principles of the waste hierarchy, which is a prioritisation guide for how we should treat our waste when we dispose of it.

We are working to move the waste as high up the waste hierarchy as possible and increase quality at each level.

The vast majority of waste that arises in AB Gustaf Kährs' operations goes for material recycling and energy extraction. Only a very small proportion goes to landfill.

The landfill material generated tends to be waste material from rebuilding projects. In 2018, however, the total amount of waste increased, mainly because the plant in Nybro replaced production equipment during the year, which increased the amount of metal sent for recycling.

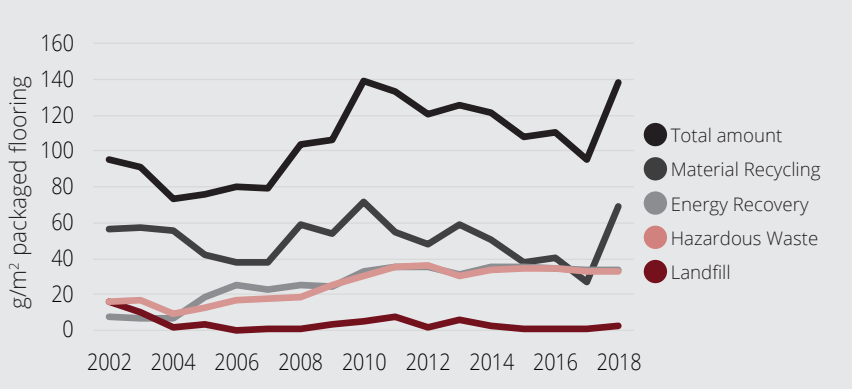
HAZARDOUS WASTE

Hazardous waste constitutes one of our significant environmental factors and largely arises in cleaning our equipment and in conjunction with retooling in our production processes.

Even though the waste is managed in an environmentally acceptable manner, it still interrupts the natural ecocycle. The handling of hazardous waste also always involves a risk that hazardous substances will harm the environment if they end up in the wrong place.

At Kährs, hazardous waste is collected in containers approved for the purpose, and is stored and handled in designated locations. Selected contractors then process the hazardous waste professionally and in an environmentally correct way.

AMOUNT OF WASTE PER M² OF PRODUCED WOOD FLOORING. TOTALLY AND PER FRACTION.



WASTE 2018	tonnes	g/m²
To material recycling	413	70
To energy recovery	199	33
Disposed as hazardous waste	197	33
To landfill	13	2

SIGNIFICANT ENVIRONMENTAL ASPECT: HAZARDOUS WASTE

ENVIRONMENTAL IMPACT	RISK	TREND
Waste production means inefficient use of materials. Hazardous waste violates the natural cycle.	The handling and storage of hazardous waste involves a risk of seepage into nearby soil and watercourses.	Stable development

Environmental targets – Waste

ONE OF THE ENVIRONMENTAL TARGETS FOR 2018 WAS TO REDUCE THE AMOUNT OF HAZARDOUS WASTE

In 2018 we focused on reducing hazardous waste. The target was to reduce the amount by 5% per square metre of wood flooring compared with 2017. The target was not reached and the result was an increase of 1%.

One reason why we did not achieve the target is that we did not manage to get treatment of water used in the cleaning process up and running as planned. In 2018 the focus was on maintaining stable operation of the ozone stage of process water treatment.

Target and action plan for 2019

The target of cutting the amount of hazardous waste by 5% per square metre of wood flooring compared with the previous year remains.

The target applies in all Kährs Group production units.

The action plan for Kährs Group Sweden includes activities that involve launching the treatment of water used in cleaning, which today is treated as hazardous waste. Another key to reduced volumes of hazardous waste is a positive outcome from our pilot study on distilling solvents from cleaning machinery in the surface treatment stage.

KÄHRS' WASTE STANDARD

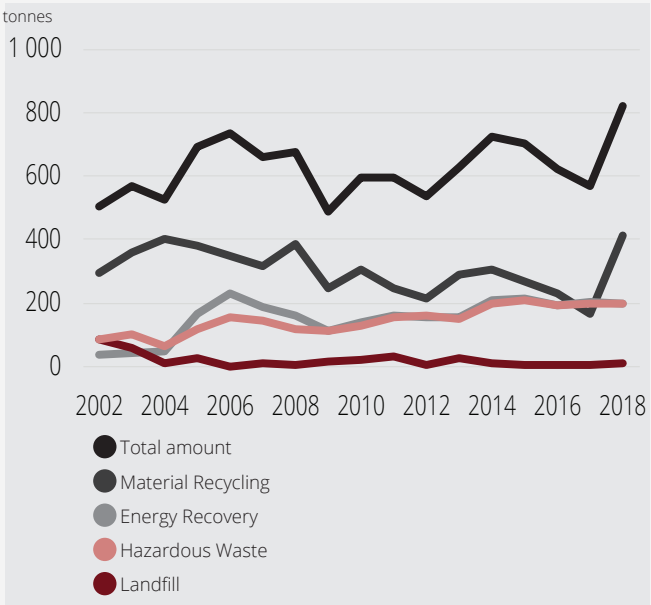
Kährs Avfallsstandard

Allt avfall som uppkommer inom verksamheten ska sorteras enligt denna standard. Farligt avfall har markerats med *.

Fraktion	Färg	Symbol	Exempel	Tar vägen
Blandskrot	Svart		Plåtbitar, skruv & mutter, stålband, plåtskyfflar, tomfat, tömda motorer och maskindelar	
Brännbart	Röd		Handskar, munskydd, plåster, skor, gummi, kläder, flaskor, hinkar, dunkar m.m....	
Plastemballage	Transparent säck		Transparent emballageplast som krympfilm och bubbel-plast	
Återvinningsbart papper	Vit eller blå		Tidningar, kataloger, kontors-papper	
Wellpapp	Brun eller nätkorg		Wellpapp	
Bobiner, Kantskydd	Blå containrar		Bobiner, Hylsor, Kantskydd, Fritt från annat material	

AMOUNT OF HAZARDOUS WASTE PER SQUARE METRE OF FLOORING

TOTAL AMOUNT OF WASTE TONNES PER FRACTION



Material efficiency

Our material flow consists primarily of wood materials and additive materials for the product, as well as production maintenance materials and fuels. An improved efficiency of materials reduces the demand for resources and the need for transport.

WOOD MATERIALS

Hardwood – Oak, Ash and Beech sawn in Nybro & Blomstermåla
Softwood for cores and back veneers, purchased sawn materials

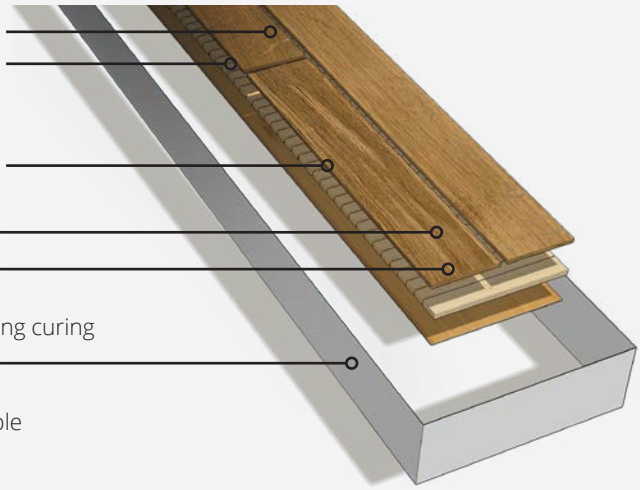
AUXILIARY MATERIALS

Water-based adhesive for joining wear surfaces & pressing the various layers of the floorboard together

Filler used to even out the surface and fill in any knot holes

Surface treatment for performance and appearance
- Water-based UV curing lacquer
- Stains & oils – contain small quantities of VOCs, emitted during curing

Packaging materials
- Corrugated cardboard, wooden pallet – renewable, recyclable
- Plastic shrink wrap and metal banding – non-renewable, recyclable



We see a certain increase in the use of auxiliary materials per square metre of flooring produced. Consumption of packaging material, both renewable (wood+paper) and non-renewable (plastic) has increased due to changes in our product mix and the number of boards that can be placed in each pack. We have also decided that all packaged products must be placed on wooden pallets instead of blocks.

The product mix also affects the use of surface treatment products such as lacquer and oil from one year to the next.

MAINTENANCE MATERIALS

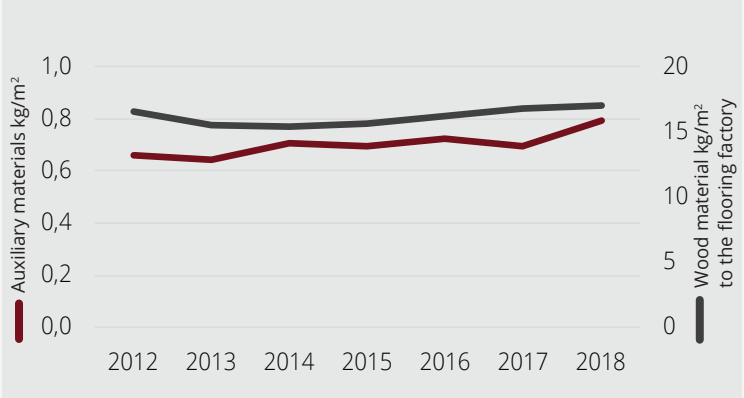
Almost all mechanical equipment needs some form of maintenance material, e.g. lubricants or hydraulic oils, in order to work. This material also needs to be replaced on a regular basis to ensure that our machines work as efficiently as possible. Regular maintenance and the replacement of worn parts and lubricants mean our equipment lasts a long time and we reduce the risk of faults occurring in the manufacturing process.

RISK-BASED CHEMICALS MANAGEMENT

Before any new chemicals are introduced for use in any of our production processes, they are individually assessed against environmental and safety criteria. Approved chemicals are listed in the chemicals registration system iChemistry, in which information about all chemicals is available via material safety data sheets. There are about 455 registered chemicals.

CONSUMPTION OF MATERIALS PER SQUARE METRE OF WOOD FLOORING MANUFACTURED (kg/m²)

The trend curve refers to sawn wood for the flooring factory and includes both own-sawn and purchased wood material excluding residual products such as sawdust and wood waste.



MATERIAL USE 2018	tonnes	kg/m²
Wood material	150,000	25
Logs to the sawmills	85,000	
Sawn wood and semi-manufactures	65,000	
	tonnes	g/m²
Additive materials for products	4,700	800
Renewable	1,200	200
Non-renewable	3,500	600
Maintenance chemicals	68	12
Renewable	41	7
Non-renewable	27	5

SIGNIFICANT ENVIRONMENTAL ASPECT: CONSUMPTION OF ADDITIVE MATERIALS

ENVIRONMENTAL IMPACT	RISK	TREND
Use of a non-renewable resources and risk for hazardous substances spreading into nature.	Hazardous chemical substances risk getting into the environment & being absorbed by plants, animals & humans	Stable development

Emissions – Emissions from manufacturing

Emissions are substances that leave a closed operation and enter the environment and are often associated with emissions of hazardous substances. Emissions from our operations mostly come from transport and manufacturing processes. Care and maintenance of our floors also gives rise to certain emissions.

Emissions to the atmosphere from production processes are primarily diffuse emissions of VOCs and dust from the filter installations.

VOCS

VOCs are volatile organic compounds found in our auxiliary materials (lacquer, oil, stain, filler and glue) and in various chemicals used in cleaning and maintaining machinery.

The largest amount of VOCs are consumed during solvent-based cleaning in the production process. Used solvents are treated as hazardous waste and are dealt with by approved contractors.

Emissions of VOCs mainly take place in the surface treatment process. Some substances classified as VOCs used in hardening glue are consumed as they react and thus not released during the production process.

Of the total amount of auxiliary materials (non-renewable) used, less than 0.2% is VOCs released during the production process. Other VOC emissions come from maintenance chemicals, e.g. sprays.

DUST

Pipelines transport large quantities of wood shavings and wood dust through our large filter facility at Kährs Group's factory in Nybro. Preventive maintenance ensures that the filter equipment operates well. By measuring, examining and listening to the equipment, we are able to identify faults early on, so that we can prevent emissions and avoid costly repairs to the filters.

OTHER EMISSIONS TO THE ATMOSPHERE

The thermal energy is bought from a local energy company that uses biofuel from Kährs. The combustion process releases carbon dioxide, nitrogen oxide and dust. The carbon dioxide emissions contribute to the greenhouse effect, but biofuel does not cause a net increase in atmospheric carbon dioxide. However, nitrogen oxide contributes to acidification.

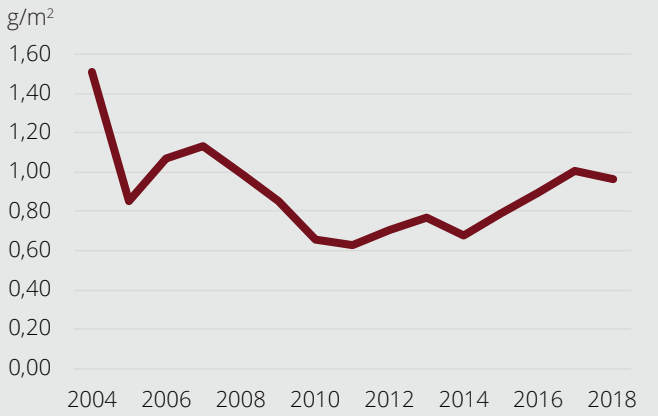
The energy conversion does not occur on Kährs' premises, and no emission is therefore stated for this in the report.

NOISE

The location of Kährs' main factory in central Nybro is a challenge in terms of noise. Noise is caused primarily by fans and filters in the manufacturing plants, but also in connection with transport (loading/unloading or road/engine noise). Noise may be harmful or least perceived as a nuisance by people both inside and outside the company premises (employees, neighbours and local residents).

In 2018 a filter plant was replaced at the sawmill to reduce noise emissions to the immediate environment. In addition, noise protection has been improved in equipment surrounding the filter.

EMISSIONS OF VOCs - GRAMS PER SQUARE METRE OF MANUFACTURED WOOD FLOORING



EMISSIONS 2018	tonnes	g/m²
VOC (Volatile Organic Compounds)	5.7	0.95
Dust (estimated quantity)	2.2	0.4

SIGNIFICANT ENVIRONMENTAL ASPECT: EMISSIONS TO AIR

ENVIRONMENTAL IMPACT	RISK	TREND
Emissions of substances that adversely affect air quality.	A disruption to equipment or a process can entail increased emissions.	Stable development. Increase of dust mainly due to increased production (more operating hours).

Our use of chemicals

Wood accounts for 98% of the content of the floors Kährs manufactures. To make a finished product that performs well in everyday life and that can handle the demands of use in modern environments, it is necessary to add materials and substances that enhances the wood's beauty, protects the surface and holds the construction. Auxiliary materials in the products and maintenance chemicals in production are simply necessary in the manufacture of wood flooring.

Our focus is to minimise the amount of chemicals in our processes. There are many good reasons for doing that; to reduce the impact on the environment and the risks for people who work with us or use the products are obvious reasons. Financially, it is also an advantage to keep down the amount of auxiliary material.

PROVIDES IMPROVED PERFORMANCE, LONGEVITY AND BEAUTY TO THE WOOD FLOORS

For us who produce wood flooring, the natural beauty of the wood is another important reason not to overdo the amount of lacquer applied to the surface. We work with our suppliers to develop effective and durable surface treatments that will do the job and protect the floor already at small amounts to preserve and enhance the feel and the beauty of wood.

HOLDS TOGETHER A GENIUS CONSTRUCTION

Other chemicals in our products are used to hold up the construction. The multi-layer/engineered construction of doors and wood flooring was invented by Gustaf Kähr already in the 1930 's and was a genius solution to problems such as. dimensional stability and resource utilization of wood material.

Engineered wood flooring simply means that the floor is built up in several layers of layers of wood that are placed in opposite directions to make the wood's inherent powers pull in different directions. This in turn reduces the swelling and shrinkage of the flooring boards when humidity changes in a room and will minimize the gaps between the boards.

The other big advantage of engineered wood flooring is to use the slow-growing hardwood only to the floor's visible, upper layer. A thrifty problem solving that saved both the deciduous forest and the wallet, and which has become a standard today. The design requires that the various layers are joined and we do this with water-based adhesive.

KEEP OUR FACTORIES RUNNING

Other groups of chemicals that are needed in order to produce flooring is motor fuels and maintenance material that lubricates the machines in our manufacturing facilities.

EXAMPLES OF ENVIRONMENTAL MILESTONES LINKED TO CHEMICALS:

1937 we were awarded the first patent for the multi-layer wood door that 1941 leads to the first patent for multi-layer engineered wood flooring

1958 we introduced the first factory finished floor

1984 we introduced the first solvent-free lacquer system

1999 first glueless joint, Woodloc® was introduced to the world

2011 we are certified according to DIBt, French VOC A+

2013 Kährs' first Swan, Nordic Ecolabelled products were launched. The Swan labelling means continuous tightening of set requirements on the products and the purpose is to help consumers choose the best products from the environmental point of view

2016-2017 tests are made in new technology for cleaning of process waste water, based on ozone.

2017 Kährs Group changed to a new adhesive system with very low levels of formaldehyde.

Chemical Mapping - The Foundation for Safe Chemistry

As demand is becoming more influenced by lifestyle trends, product development has led to greater variation and more advanced designs in our wood flooring ranges. Inventory, development and management of chemicals in order to reduce risks and impact on the environment has always been part of the development work but have gradually become more and more complex.

The management, administration and evaluation of chemicals is a constantly ongoing process in our operations where chemicals are part of the end product. Information must always be available for employees and users of products. Furthermore, both new and existing chemicals must be evaluated – partly before being brought into the business and then recurrently through the lifetime of the product. In order to meet these requirements, the Kährs Group introduced a new chemicals register in 2016.

DEVELOPING THE CHEMICALS PROCESS

After the initial mapping of chemicals in the system, the focus is now on constantly developing and improving our chemicals process. Our procedures for bringing in new chemicals have been reworked and these have been implemented in 2018. The purpose is to ensure that we bring in the most optimum alternatives available in the market, and that we constantly challenge ourselves and our suppliers to break new ground in improving the chemical products.

During the year, work has been under way with users in our production departments, where the focus has been on greater awareness and risk assessments in chemicals management.

Kährs' production facility in Romania started using the chemicals system in 2018, with priority given to chemicals used in our products.

In 2018, 55 new chemicals were brought into our business and approximately 50 products were deactivated. There were 455 registered chemicals at the end of the year.

Emissions – climate impact through transport

Kährs Group sells and delivers wood flooring all over the world, which involves many long-distance transport runs. The resulting fossil carbon dioxide emissions contribute to an increased greenhouse effect and thus an increase in the risk of climate change.

Kährs Group's emissions of fossil carbon dioxide come from transport and amount to about 16,700 tonnes. This is equivalent to 1.5 kg CO_2/m^2 of manufactured wood flooring within the Kährs Group. Fuel energy amounted to a total of 57,000 MWh.

SEA & ROAD DOMINATE

Calculations of transport emissions are based on data from our suppliers of transport services.

Cargo ships are used primarily to transport incoming wood material from Europe and other sources, and for transport of finished flooring to customers. Truck transportation is used for transport between suppliers and the production sites and for transport needs that cannot be served by ship or train. Most transportation work is via cargo ships, but the largest carbon dioxide emissions come from road transport. Parts of the transport route for wood to the Blomstermåla sawmill use the rail network.

CLIMATE IMPACT FROM TRANSPORT

The fossil carbon emissions caused predominantly by truck transport contribute to a greater greenhouse effect and thus constitute a higher risk of climate change. Nitrogen oxide and sulphur dioxide contribute to acidification of lakes and watercourses.

MEASURES & ACTIVITIES

Our main activities to reduce carbon dioxide from our transport are to increase efficiency when planning logistics and to use transport methods that produce lower carbon dioxide emissions.

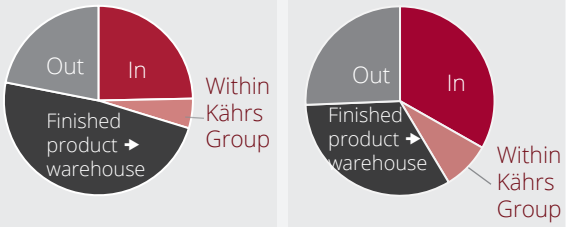
In 2018 we established new environmental criteria when procuring transport services.

We are also working to increase reporting from our transport firms to us, in order to improve the level of detail in the data we use to calculate emissions from transport. During the year a fossil-free transport flow was procured between Nybro and our recipients of the pellets we will be manufacturing in our new pellet plant.

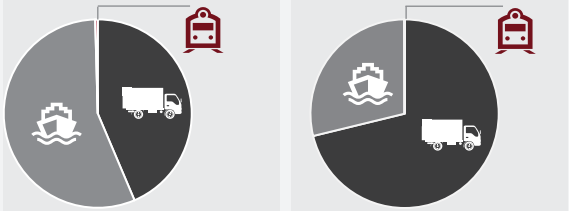
TONNE-KM TRANSPORT WORK 2018 APPROX 574 MILL.

CO2 CARBON DIOXIDE EMMISSIONS 2018 APPROX 16 700 TONNES

TRANSPORT FLOWS



MEANS OF TRANSPORTATION



TRANSPORTS	Transport work (Mill. tonne-km)	Carbon dioxide CO2 (tonnes)	Nitrogen oxid NOx (tonnes)	Sulfur dioxide SO2 (tonnes)
All transport	574	16,700	97	29
Incoming transport	142	5,600	26	3
Transport within Kährs Group (SE)	29	1,400	6	0
Finished product to warehouse	277	5,500	43	21
Outgoing transport	126	4,300	22	5

SIGNIFICANT ENVIRONMENTAL ASPECT: CLIMATE IMPACT THROUGH TRANSPORTATION

ENVIRONMENTAL IMPACT	RISK	TREND
Emissions of carbon dioxide from fossil fuels into the atmosphere give rise to an increased carbon dioxide content and an enhanced greenhouse effect.	Procurement of less efficient transports.	Stable development

Transforming into sustainable internal transportations

The overall transformation of more sustainable vehicles and fuels in the industry is currently ongoing and for us at Kährs this not only concerns transports between plants and to our customers, but also transporting and handling materials at our facilities. Here at Kährs we consider transportations running on alternatives to fossil fuel, e.g. electricity, HVO or Biogas to be green and our goal is to have a fossil free fuelled fleet of internal vehicles in five years.

Looking at the entire fleet, all forklifts used indoors are electrical and we are currently testing and evaluating electrified trucks for our outdoor operations. We also aim for the energy used at our plants to be sustainable, as the case in Nybro where the electricity is certified 100% from renewable sources. When the alternatives do not allow electrical solutions, we strive for the best possible solutions, such as fossil free HVO for our heaviest machines.

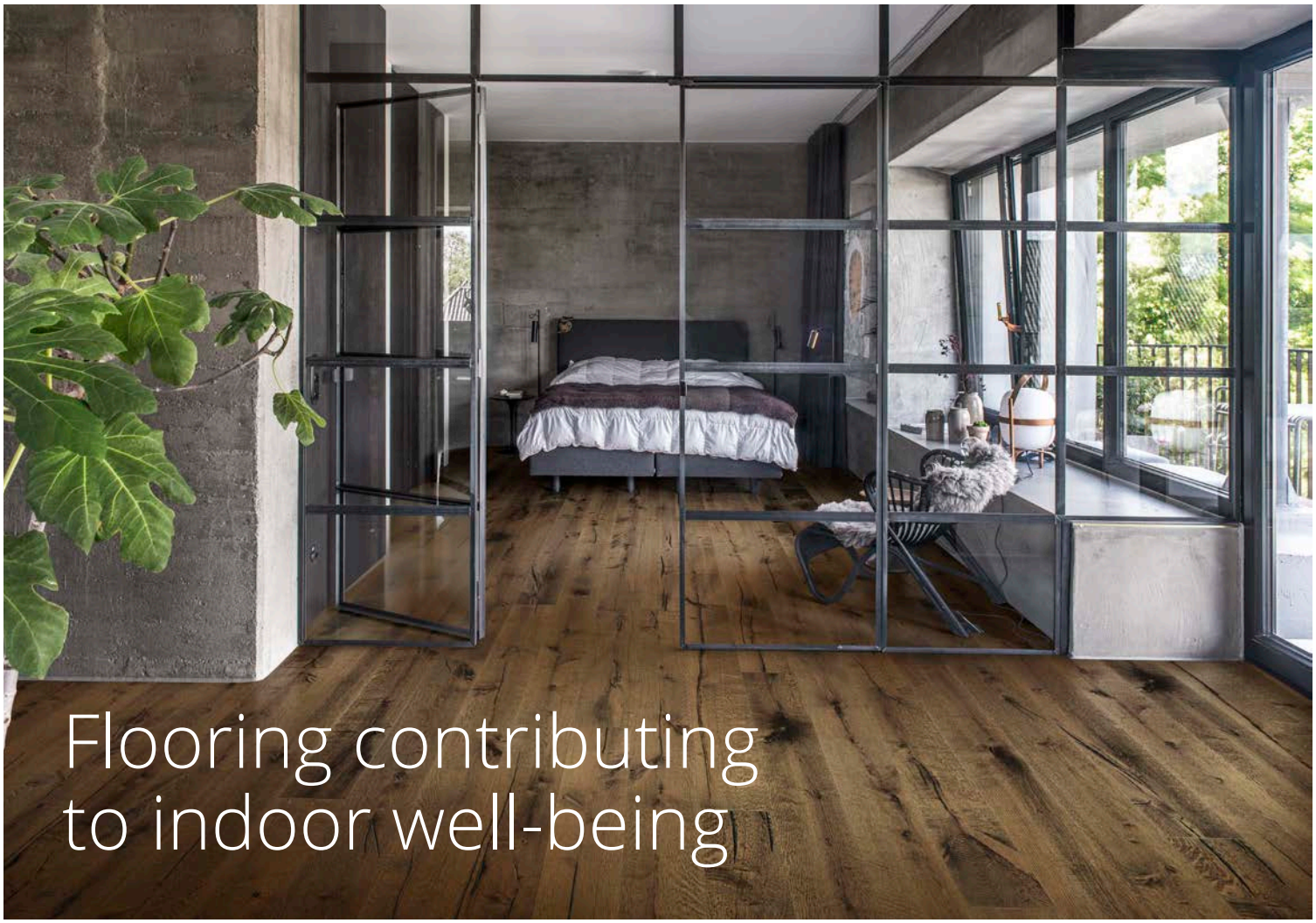
In regards of external transportation, we encourage suppliers to actively work reducing their emissions from transportation. We demand all suppliers to have a plan for constantly improving towards the most optional sustainable alternative, while we select the best possible means of transportation (e.g. train, and ship when possible). All vehicles used in transportation involving Kährs should be classified Euroclass 5 at the minimum. We request better and more detailed statistics from our transportation suppliers for follow-up and measures – when we get better understanding of our biggest impact areas we can also plan for more effective measures.

Sustainability and environmental actions are at the heart of Kährs Group and a sustainability approach characterizes the entire organization. This is also why we aim to adapt towards the UN Sustainability Development Goals (UN SDG) that are set for 2030. One of the UN SDG's that is of high concern to us is "Climate action" and thus greener transports are a crucial part of our commitment to reduce our operations' impact on the climate.

Photo: The first electric forklift in the fleet of 17 vehicles for outdoor heavy lifting at Kährs in Nybro Sweden.

WOOD FLOORING – A WAY OF STORING CARBON DIOXIDE

Via the wood flooring sold by Kährs Group in 2018, more than 160,000 tonnes of CO2 will be stored for up to 50 years in the floor installations completed. A wooden floor can have a life cycle of 50 years and can then be used as biofuel, since 98 percent of the product is wood. Burning wood does not produce a net increase in atmospheric carbon dioxide, provided that the forest is replanted. Alternatively, the floor can be recycled into another wood-based product and will then continue to store carbon dioxide.



Flooring contributing to indoor well-being

Perhaps not many of us connect well-being and health to flooring. However, considering that we typically spend about 20 hours per day indoors would make healthy floors seem like an obvious choice. Then, what is a 'healthy floor'? To that question, there are at least four dimensions.

First, there is the environmental aspect. A healthy floor is a floor that is certified "low emission" from at least one certification organization. The floor should be healthy for its occupants and the environment, as well as able to be recycled, upcycled, reused or repurposed at the end of its life – it should not be a landfill product.

In the past few years, a growing body of scientific evidence has indicated that air within homes and other buildings can be more heavily polluted than the outdoor air, even in the largest and most industrialized cities (Lung.org/United States Environmental Protection Agency EPA). Indoor pollution is strongly affected by emissions from materials such as paint, furniture, plastics, flooring and accumulations of dust. Thus, an easy to clean and maintain floor, made of sustainable, low-emitting materials provides for good conditions for improving indoor air quality, in addition to beautifying the space where you live and work.

The best assurance for environmental quality and health is to have products third-party tested for formaldehyde and VOC emissions that meet the EU E1 standard, the Finnish M1 standard for emissions, the French VOC law, US CDPH 01350 and Floorscore® certification program for LEED projects.

Kährs' design- and production teams work closely with its suppliers to ensure they are providing the best, safest and healthiest materials for our flooring. In addition to this, the chemical team analyzes all chemicals used in our flooring to meet standards such as the EU REACH and the Swedish BASTA. Kährs arguably has among the most environmental certifications and transparency of products, and the company's work in this field will never be done.

Secondly, floors have an impact on ergonomics. A healthy floor can improve ergonomics in several ways, for example by absorbing noise and thus making an acoustic climate less stressful and more comfortable.

The third dimension is comfort. A healthy floor should be soft and comfortable to stand and walk on, which is significant not the least for people who spend their whole day standing and walking indoors. Flooring made by a softer material is gentler to your knees and hips and makes you less tired.

The fourth dimension to a healthy floor is the coloring. This is particularly important within the healthcare sector where colors for example might affect the need for pain killers, but also in schools where the right choice of color can have a calming effect on the students and improve their overall performance. In conclusion, the choice of a healthy floor can improve your indoor well-being significantly.

Kährs Group is currently adapting for the future with a strong focus on new product categories, where sustainable requirements are applied throughout the process. We develop products that are healthy, recyclable and perform to the highest standards, while all materials are responsibly sourced. We also work closely with our suppliers to ensure that they provide us with the safest and highest performing materials and coatings. For Kährs, health and safety for all stakeholders is always top priority.

Emissions – Emissions from use of the product

Millions of square metres of wood flooring from Kährs Group are installed in fine homes, and in quality commercial and public premises every year. Cleaning and maintenance lengthens the lifespan on the flooring, but also involves the use of cleaners and maintenance chemicals.

As a manufacturer we have a responsibility to make floors that are easy to clean and care for and to suggest suitable cleaning and maintenance methods for various application areas.

Care and maintenance instructions accompany every delivery of wood flooring and detailed information is available in many different languages on our website and on our products. Care and maintenance are important components of our "flooring schools", where floor contractors, floor installers and store staff are trained.

Our own maintenance products have been formulated and tested to combine effectiveness with minimised environmental impact. Generally we advocate dry methods of cleaning for daily care and our (no VOC) Cleaner product when necessary.

Oiled floors require treatment after installation, then periodically as necessary. Kährs Satin Oil is used for maintenance.

EMISSIONS FROM WOOD FLOORING

All wood flooring can generate emissions, for example, of formaldehyde and VOCs, both naturally from the wood itself and via additives. Emissions from a wooden floor decrease over time and within a month from installation the levels are so low that they cannot always be measured. There are of course a range of guidelines and labels to help users choose low-emission products. Wood flooring products from Kährs Group meet the criteria of some of the market's strictest environmental labels, such as the Nordic Swan Ecolabel, E1, M1 and CARB 2, to name just a few. Organisations and government agencies lay down requirements for processes by which analyses are performed. Kährs Group regularly analyse the wood flooring it produces for compliance with requirements for and guidelines on emissions during the in-use phase. These analyses follow relevant standards for analysis of VOCs and formaldehyde. A higher proportion of environment-labelled wood flooring creates the conditions for lower emissions during use.

Kährs focuses constantly on reducing its use of products containing VOCs and formaldehyde. In 2017, Kährs switched to a new amino-based bonding system in production. The new adhesive has a very low formaldehyde content.

PRODUCT MAINTENANCE

Excessive use of aggressive cleaning agents and chemicals benefits neither the indoor environment, the environment or the wood floor. We recommend a mild cleaner, sparingly used. The best way to protect the floor is to prevent dirt/grit and debris from spreading into the room using effective dirt barrier systems at entrances and to wipe up spills quickly.

KÄHRS FLOORING SCHOOL

We train flooring professionals, building contractors and store staff on site at our premises in Nybro. This is an opportunity for us to provide information on suitable methods of care and maintenance. Moreover, care and maintenance advice is included in our presentations given during customer visits and at events all over the world.

ANALYSIS OF EMISSIONS OF VOCS AND FORMALDEHYDE AFTER 14 DAYS' ANALYSIS

Analysis in acc. with CDPH-IAQ, ISO 16000-6:2011, EN 6516:2017 and EN 717-1.
Limit for formaldehyde from CDPH has been 9 µg/m3 since 2012.

Concentration in Classroom, CDPH		2011	2016	2018
Formaldehyde	µg/m³	4	<2	<2
TVOC (C_5-C_{17})	µg/m³	320	280	44

SIGNIFICANT ENVIRONMENTAL ASPECT: EMISSIONS FROM USE OF THE PRODUCTS

ENVIRONMENTAL IMPACT	RISK	TREND
Recommended methods can reduce environmental pollution, e.g. less emission of chemicals and extend the life of the product. Emissions from the wood floor are monitored according to the requirements for different product certifications.	Incautious care of wood flooring may result in unnecessary emission or use of chemicals.	Positive development – increased share of environmentally certified products an clear recommendations for care.

Energy efficiency – Use & biofuel production

Efficient energy consumption reduces environmental impact and, in our case, results in renewable energy becoming available to consumers who still use fossil fuels. All conversion of energy affects the environment and the climate via the consumption of fossil fuel and the production of acid gases.

All electrical and thermal energy at Kährs' Swedish facilities is generated from renewable sources.

The electricity used is classified as 100 per cent renewable. The biofuel that we supply to Nybro Energi is recycled to the production facility at Nybro in the form of renewable thermal energy. Nybro Energi certifies that the recycled thermal energy corresponds to the energy generated from biofuel.

ENERGY CONSUMPTION

The major share of energy consumed in Kährs Group's Swedish operations is used in drying timber, heating for pressing and transport (as described on page 24).

- Our dry by products (wood chips and wood material) are bought by a local energy company for the manufacture of wood powder or wood pellets used in the generation of thermal energy.
- The residual products from our sawmills consist of sawdust, bark and chippings.
- Ash from combustion in the biofuel boilers is returned to the local forests as a nutrient.
- The total volume of fossil-based fuels in 2018 equated to 57,000 MWh, being used in transport to and from Kährs Group's production facilities, transport to warehouses and customers and internal transport within the factory facilities.

Because this represents the energy for all transport in Kährs Group, the specific energy consumption is 5.2 kWh/m². Other energy data applies to the operations in Sweden.

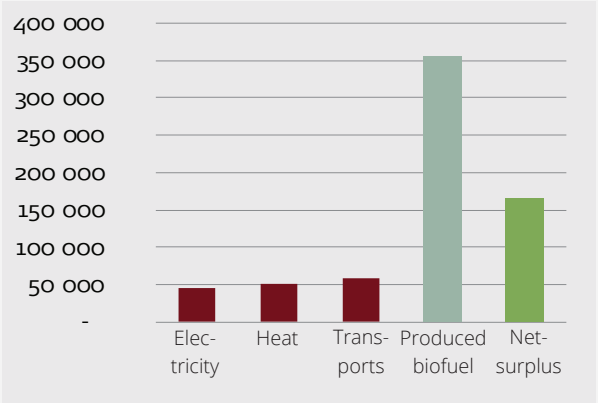
POSITIVE ENERGY BALANCE

In 2018, Kährs operations resulted in a surplus of carbon dioxide neutral, fossil-free bioenergy.

Kährs produces biofuel with a higher energy content than is used for electricity, heating and transport. Once all internal consumption of energy is deducted from the total volume of biofuel produced, a surplus of 173,000 MWh remains, enough to heat 8,650 normal-sized detached houses in Sweden. Biofuel is carbon dioxide neutral and over time has no climate impact, as carbon dioxide is absorbed by regrowth of new trees.

ENERGY SURPLUS, MWh 2018

The total amount of biofuel produced and delivered from our plants corresponds to energy use of 19,450 homes in Sweden (based on the Consumer Agency's data on the energy consumption of a normal house per year).



ENERGY	MWh	kWh/m²
Used electricity	45,000	7.6
Heat consumption	52,000	8.6
Transportation energy (fossil) Kährs Group	58,000	5.4
Production of biofuel	355,000	59.2
Net-Energy Produced (Carbon Neutral)	165,000	23.4

SIGNIFICANT ENVIRONMENTAL ASPECT: ENERGY USE

ENVIRONMENTAL IMPACT	RISK	TREND, se graph on page 29
Acidification, emission of carbon dioxide and the consumption of resources in the conversion of energy.	Increased use of energy.	Stable development

Environmental Target Energy Use

REDUCE ENERGY USE PER M²

The target for 2018 was to produce and carry out energy efficiency measures that are estimated to cut energy use by 2% compared with 2017. The target was not reached, mainly because several parts of the action plan were not completed or were tackled late in 2018.

The legally required energy audit started within the company in 2017 and resulted in new proposed savings. The energy survey gives us greater knowledge of our processes and increases focus on energy efficiency.

The increase in energy during the year is due to increased production and a higher proportion of self-sawn (and thus dried) raw materials and a change to the drying process. The impact of colder weather during the spring also affected total energy consumption.

We perform continuous measurements of energy use in our premises and processes. Through these measurements we have identified potential savings in existing equipment, which have subsequently been addressed. This is ongoing work that continues to identify future opportunities to reduce energy use.

COMPLETED AND ONGOING ACTIVITIES:

- Installation of a dryer with energy recovery in 2018
- Dryer doors have been sealed and a programme of measures continues.
- Motorised drives are being replaced by units in a higher energy class as part of an ongoing process.
- Energy survey

The effects of measures carried out have not yet had an impact in outcomes for 2018.

Energy use is affected by many factors, including weather, mild/severe winters and increases or decreases in production volumes.

For several years, demand for our products has been very high at the same time as access to logs for surface layers has been limited. This has meant we have not had the same opportunity to air-dry sawn material, before it enters our production line.

The consequence of this is that it has become necessary to kiln-dry the timber, which increases our energy consumption per dried m³.

We have therefore launched strategic work to increase the amount of air-dried material in the years ahead and so reduce energy use.

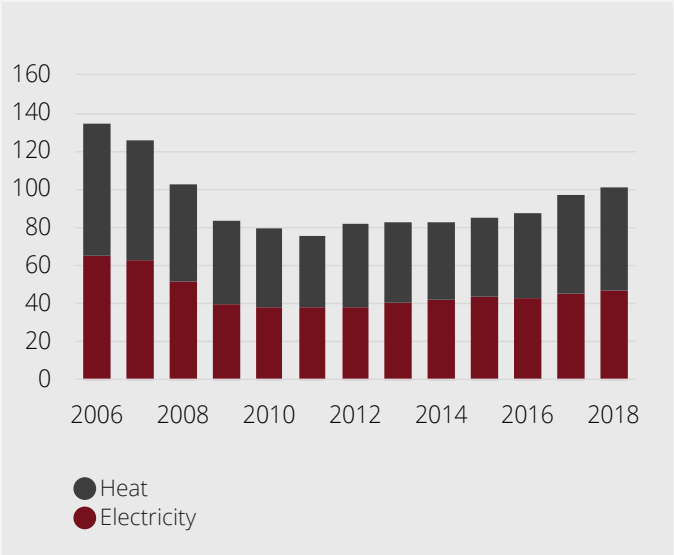
Kährs uses Schneider-Electric's Power Monitoring Expert software to monitor and evaluate energy consumption for the factory in Nybro at facility level and at machine level.

Targets and action plan for 2019

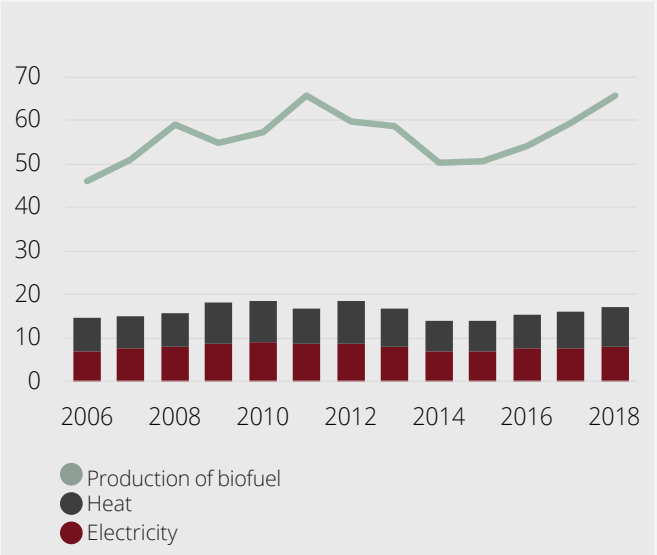
More efficient use of energy remains an environmental target for Kährs Group. A new target for Kährs' Swedish operations is to produce and carry out energy efficiency measures that are estimated to cut energy use by 2% in 2019, compared with 2018 as the reference year.

The action plan incorporates heat recovery from compressors and automatic gates and everyone contributing towards working energy-efficiently.

TOTAL ENERGY USE (MWh)



ENERGY USE AND PRODUCTION OF BIOFUEL (kWh/m²)



Risks

Legislation has moved in the direction of tighter requirements for risk assessment and action to reduce risk. Risk is affected by both probabilities and consequences of an event.

OUR WORK ON RISK

In the Kährs Group in Nybro and Blomstermåla, we work systematically with risk assessments. Changes are valued, if new risks can arise, the recurring rounding of the operations from work environment, environmental and safety perspectives provide input to what occurs in our business. We also consider risks and opportunities from a strategic perspective in order to best develop the business.

Following an annual analysis of environmental risks, an action plan is drawn up to address what must be remedied in order to mitigate these risks.

Our risk-thinking has several starting-points:

- During our assessment of environmental aspects, a risk assessment of these aspects is performed
- We use the WIA occurrence reporting system with risk identifiers and a common system of global follow-up for major incidents
- We have introduced "Business Context" and SWOT analysis for environmental issues
- Results and observations from audits are shared in an internal global network
- Environmental and fire protection inspections

OUR BIGGEST RISKS

According to the risk analysis, the biggest environmental risks are associated with fire, filter breakdown and handling of chemicals. The risks of water and soil pollution arise mainly during loading and unloading of chemicals, but procedures are in place to prevent incidents and minimise environmental impact if an accident should occur.

ACTIONS

Actions taken were followed up and a new action plan produced, with handling of chemicals again one of the heavyweight topics.

More expertise in and better procedures for purchasing and handling of chemicals via the chemicals management system make the right response more likely.

Incidents involving chemical spillages have demonstrated that Kährs employees react in the right way when something happens, enabling us to prevent discharges and environmental impact.

Internal and external audits

Audits serve as an aid in monitoring how important processes are operating. The audits verify that we have a procedure in place that is governing in line with the requirements and goals laid down in Kährs' management system.

INTERNAL AUDITS

Management prioritises the processes that are to be assessed via the audits. The standards for the individual management systems (SS-EN ISO 9001 and SS-EN ISO 14001, as well as the EMAS Ordinance) specify requirements for internal audits.

We conduct internal audits at scheduled intervals to determine whether the management system has been introduced and maintained in a fit-for-purpose way, but also to identify areas for improvement.

Internal auditors with various roles in the Company represent a highly competent audit team. Planning, implementation and reporting serve to evaluate and support Kährs' programme of continuous improvement as per the PDCA cycle. Audits are performed on the basis of Kährs' Group-wide environmental and quality management system. Verification of the efficiency of the system in the different facilities forms part of the audit process.

Internal audits are conducted on a broad front throughout the Kährs Group and in 2018 we audited:

- Logistics
- Traceability
- Emergency management
- Energy process

Consolidated reports are sent to the management group and the management group can influence the audit plan.

EXTERNAL AUDITS

Periodic audits of the management system for environment (ISO 14001) and quality (ISO 9001) were carried out during the year. An external audit of Kährs' FSC® certification was carried out. Audits were also conducted to verify that we meet the requirements for our certified flooring products and for the energy survey in our ISO system.

Local conditions – Kährs Group Nybro

Kährs Nybro facility is subject to a licence that permits the facility to produce up to 20 million m^2 of wood flooring per year. The licence also includes sawing up to 200,000 m^3 of timber annually.

AUTHORITY-RELATED EVENTS IN 2018:

- During the year, registration for the installation and operation of a pellet plant at the operations in Nybro was submitted to the government committee in Nybro municipality. The authority board approved the notified change.
- Measures have been taken in 2018 to reduce the emission at a measuring point in the already performed noise mapping. It resulted in a reduction, but further measures are planned.
- Measures to improve quality of stormwater and process water in progress.
- Kährs has, after the authority's targeted supervisory work, made an inventory of the stormwater drains at the sawmill and implemented some improvement measures
- Kährs has established new routines for managing ponds for rainwater and irrigation water
- No complaints were received during the year.

Permit conditions

Term (Date of issue)	Guideline	Status
3. Discharge of VOC (2005-0204)	Max. 0.75 tonnes of VOCs per started million m^2. The applicable limit value is 15 tonnes of VOCs per year.	Met: 0.59 tonnes per started million m2.
4. Noise (2005-02-04)	55 dB(A) weekdays, Monday–Friday 07:00–18:00 45 dB (A) at night 10:00 p.m. to 7:00 50 dB (A) at other times Maximum momentary noise level at night is 55 dB (A).	Measures have been carried out to reduce noise emissions. The measures helped to reduce noise at one measurement point, but additional measures will be taken to meet the requirements set.
5. Noise (2005-02-04)	At a new establishment, measures shall be taken to reduce noise emissions to the Swedish Environmental Protection Agency's guidelines for newly established industry.	In 2018, for example, the installation of the pellet plant and the layer dryer have been affected by the requirements. The layer dryer has been evaluated and meets the criteria. The pellet plant has not been evaluated because it was taken into use in 2019.
8. Decontamination and after-treatment	Examine the need for decontamination and after-treatment measures	MIFO-FAS2 was conducted in 2013. No action necessary. Follow-up and registration takes place when groundwork is carried out.
9. Dust (2008-11-25)	2 mg/Nm^3 dry air, measured by random sampling.	Measurement performed on four filters during 2014. All results <0.5 mg/ Nm3. No measurements were carried out in 2017. Maintenance and monitoring of the filters is carried out according to the regular maintenance system. New emission measurements will be carried out in 2019.
10. Water (2010-09-09)	Process wastewater shall undergo sedimentation and adsorption processes before it is released to the municipal sewage/wastewater network.	Met via one treatment plant with a sedimentation stage and ozone cleaning or a filter step. The ozone facility has not attained operational status and the company informed the authorities of this.
11–14. Water (2010-09-09)	The residue arising from the sedimentation and adsorption shall be disposed of as waste. Outgoing water must not damage the municipal sewage/wastewater network, water treatment plant or the recipient. In its environmental report, Kährs shall annually present its work to reduce the amount of process wastewater and pollutants into the municipal sewage treatment plant.	Solid waste, glue and sawdust from the water treatment processes are treated as combustible waste. Low pH in outgoing water following sedimentation, pH adjustment does not take place continuously in the ozone step, because the operational status of the ozone step has not been stable, and the company has informed the authorities of this.

** The environmental report (submitted to the government committee, Myndighetsnämnden, in Nybro Municipality) comments on all the conditions.*

Local conditions - Kährs Group Blomstermåla

The operations in Blomstermåla do not require a separate permit, but are regulated by a number of precautionary and protective measures regarding issues such as irrigation, water and air emissions, management of chemicals, waste and noise. The sawmill in Blomstermåla sawed 25,000 m³ of timber in 2018. In 2018, the sawmill produced rough-edged blocks and planks, immediately after the division of the log in the band saw. These are then further processed in the Nybro factory.

IRRIGATION

The watering system operated the entire season. The diversion to the river Alsterån is mainly via ground infiltration, but runoff from the drainage area leads to the river bank area.

At the most, about 3,400 m³ of timber was stored in the water storage. Analysis of TOC in irrigation water show results of 81 mg TOC/liter. Totally approx. 14,000 m³ of logs were irrigated with 42.000 m³ river water.

RISKS IN CHEMICALS MANAGEMENT

The risk of accidental discharge into the nearby river Alsterån that flows alongside the sawmill is one of the most important environmental aspects connected with the Blomstermåla sawmill. Kährs is included in the Alsterån Water Council and follows the program for recipient monitoring. Emergency kit boxes in case of chemical spills have been placed around the sawmill. Protective equipment for storm drains (for surface runoff water) is positioned in selected locations to be available if any spillage occurs close to storm drains.

Oil storage and hazardous waste storing have improved in terms of marking.

TRANSPORT

Transport is also a significant environmental aspect for the operations in Blomstermåla. Over 70 per cent of the imported logs delivered to Blomstermåla were transported by train via Oskarshamn or by boat to Kalmar in 2018. The Swedish logs are primarily transported by truck and constitutes of two-thirds of the totally delivered amount.

EMISSIONS TO AIR AND NOISE

The new sawdust storage facility has been in use since 2016 resulting in he dispersal of sawdust in the area around the River Alsterån has ceased. The sawmill has expanded its operations with a night shift, which is not assessed to affect fulfilling of the noise conditions.

AUTHORITY INSPECTION

The Blomstermåla operations are classified as a so called Class C facility. The Environment Committee in the Mönsterås Municipality is the supervisory authority. An inspection by the local authorities was conducted in 2018. Environmental aspects and demands are managed and followed up within our self-monitoring system.

Approval

Kährs Group's subsidiary company AB Gustaf Kähr and its Swedish units are included in our quality and environmental management system according to ISO 14001 and ISO 9001 as well as EMAS registration. Certificates are available for download at www.kahrs.com.

This environmental report according to EMAS is controlled by DNV GL, which is a SWEDAC-accredited environmental auditor (accreditation number 053). DNV-GL has reviewed Kährs Group's Swedish production plants and has found that they have environmental management systems that meet the requirements stated in the EMAS regulation (No. 1221/2009) and EU2017/1505. From 2006 and forward, Kährs' Swedish units are registered collectively as Kährs Nybro. S-000055.

APPROVED

DNV-GL has reviewed the environmental report for 2018 and has found it to be accurate, and sufficiently detailed to meet the requirements in EMAS.

The report includes the production units in Nybro as well as Blomstermåla and AB Gustaf Kähr's collective functions in Nybro and Malmö.

Solna 2019-06-14

Ann-Louise Pått
Management Representative

DNV GL - Business Assurance

Certificates

	EMAS	FSC®	ISO 9001	ISO 14001	PEFC
Year	1997	2005	1999 252139-2017-AQ-SWE-SWEDAC	1997 252139-2017-AQ-SWE-SWEDAC	2013

EMAS has the purpose of promoting environmental improvements. It is a voluntary EU programme that requires public reporting of environmental conditions.

FSC® is an international organization working for global responsible forest management that takes into account both the environment and the people living in and from the forest. The Kährs "chain of custody" certification means that we may buy FSC material and manufacture and sell flooring products that are "FSC Mix certified".

ISO 9001 is the international quality management system.

ISO 14001 is an international standard for environmental management, designed to protect the environment, prevent pollution and achieve constant environmental improvements.

PEFC (Programme for Endorsement of Forest Certification) is an international system for sustainable forest management. Kährs has a chain of custody certificate.

About Kährs Group

Kährs Group is a leading European manufacturer and distributor of premium flooring. The Group is the market leader in wood flooring in Sweden, Finland and Russia and also holds strong positions in other key markets such as Norway, the UK and Germany. The Kährs Group's products are sold in more than 70 countries with its own staff in 17 countries.

The Kährs Group provides flooring and accessories with a focus on premium products with a high design content, good quality, a responsible approach to the environment and a high level of service. The Group's brand portfolio includes two well-known global brands, Kährs and Upofloor, and a number of local brands.

Kährs is the Group's main brand and the original in modern wood flooring. In 2019 the offering of products from Kährs was expanded to include more product categories such as Luxury Vinyl Tiles (LVT) and textile flooring.

Upofloor is a leading brand in PVC-free resilient flooring for public spaces, such as hospitals and schools. The Kährs Group has a leading position and is a pioneer in the PVC-free resilient flooring segment, with the launch of the world's first PVC-free resilient flooring (2004) and the world's first homogenous PVC-free resilient flooring (2014).

In its more than 160 years of history, the Kährs Group has built a strong brand through innovative flooring solutions and close relations with customers, suppliers and forest owners, which has helped to confirm the company's strong position in the market. The Kährs Group constantly develops its products to create added value for private, commercial and public spaces through beautiful and environmentally sustainable wood and resilient flooring with a long lifetime.

The Kährs Group has production networks in strategic locations, near to raw materials and main markets, to ensure competitive quality products and punctual deliveries. Operations are adapted to local conditions in terms of sales strategy, marketing strategy and distribution, but with harmonised product platforms that enable effective use of capacity and flexible production planning. Through this the Kährs Group has adapted its production to attain a balance between economies of scale and a local presence. The company has seven production units in Sweden, Finland, Russia, Romania and Poland. Technical development and the company's centre for the design of wood-based multilayer flooring are based in Nybro, Sweden, while product development of PVC-free resilient flooring takes place in Finland.

The Group employs about 1,700 people and has annual sales of approximately EUR 300 million.

Kährs®

UPOFLOOR®

Unit	ISO 9001	ISO 14001	FSC®	PEFC
Wood flooring manufacturing				
Maklino, Russia	Yes	Yes	Yes	Yes
Satulung, Romania	Yes	Yes	Yes	Yes
Białośliwie, Poland	Yes	Yes	Yes	Yes
Resilient flooring manufacturing				
Ikaalinen, Finland	Yes	Yes	Not relevant	Not relevant
Nokia, Finland	Yes	Yes	Not relevant	Not relevant

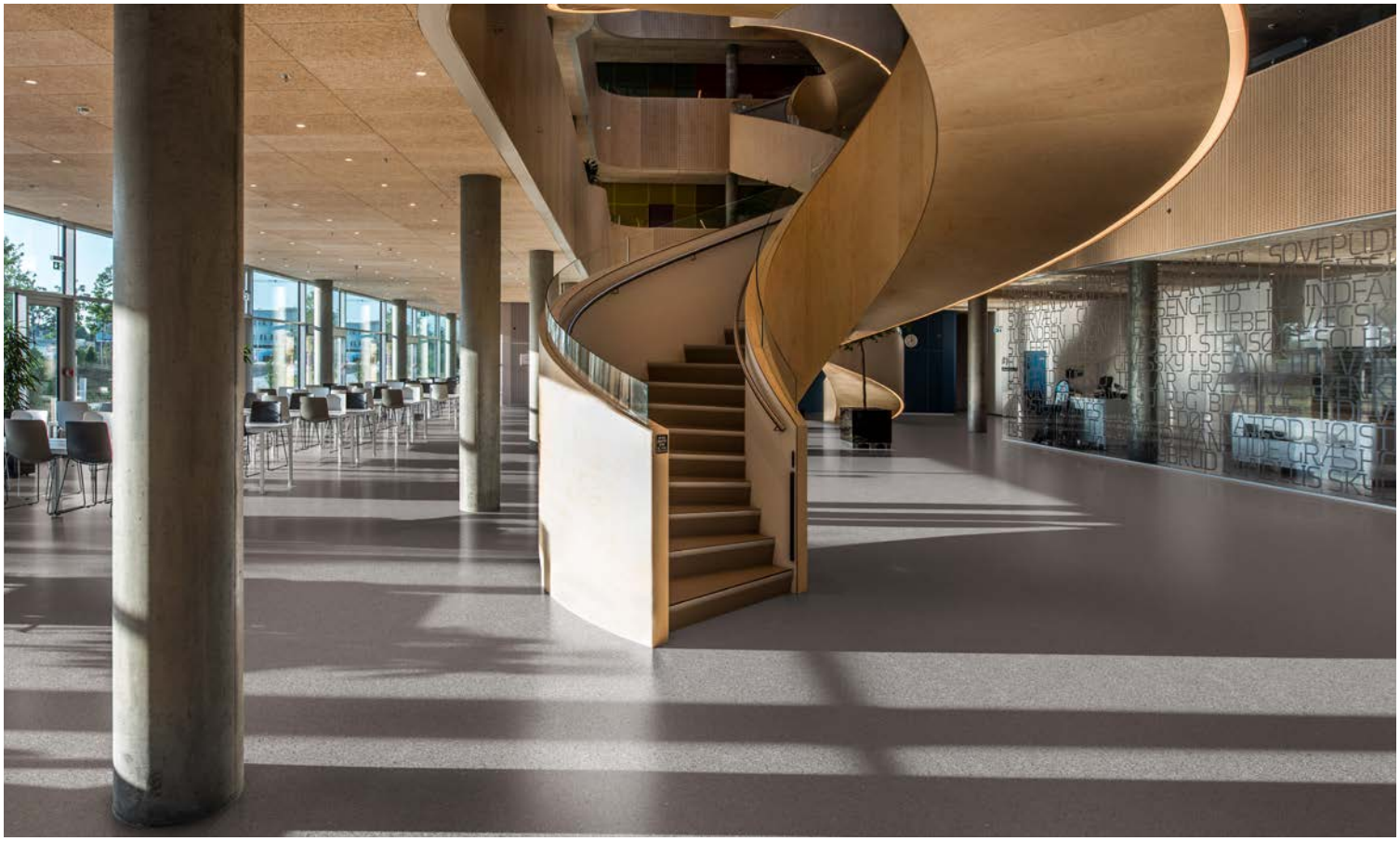
Ecological balance data 2018 – Kährs Group

	Total		Specific amount		
			Wood	Resilient	
Use of Energy					
Electricity (renewable)	51,699	MWh	5.39	1.22	kWh/m²
Electricity (non-renewable)	32,275	MWh	2.74	5.21	kWh/m²
Heat (renewable)	82,864	MWh	8.5	2.94	kWh/m²
Heat (non-renewable)	4,708	MWh	0	3.62	kWh/m²
Vehicle fuel (fossil)	3,978	MWh	0.42	0.06	kWh/m²
Produced biofuel	446,837	MWh	48.05	-	kWh/m²
Material Use					
Wood material to products	189,167	tonnes	20.34	-	kg/m²
Chemicals for products, adhesives, hardeners, lacquers, stains, oil etc.	4,595	tonnes	0.49	-	kg/m²
Polymers for resilient products	4,618	tonnes	-	3.28	kg/m²
Reused in production	200	tonnes	-	0.8	kg/m²
Total water use	93,776	m³	9.83	1.62	l/m²
Of which is potable water	30,135	m³	3.24	-	l/m²
Emissions					
Waste	8	tonnes	0.001	-	kg/m²
VOC	11	tonnes	0.001	-	kg/m²
Waste					
To material recovery	637	tonnes	0.07	0.02	kg/m2
To energy recovery	638	tonnes	0.02	0.34	kg/m²
Landfill	831	tonnes	0.05	0.26	kg/m²
Hazardous Waste	344	tonnes	0.03	0.02	kg/m²
Production					
Wood Flooring	9.3	mill. m²			
Resilient Flooring	1.3	mill. m²			

Ecological balance data for 2018 refers to all Group production units engaged in the manufacture of flooring.

Wood flooring is manufactured in Nybro and Blomstermåla in Sweden, Maklino in Russia, Satulung in Romania and Białośliwie in Poland.

The Group's resilient flooring is manufactured at the production units in Nokia and Ikaalinen, Finland.



A history characterised by innovations & major progress in our environmental work

HISTORY

In 1857 Johan Kähr the elder moved from Mönsterås to the small, but thriving community of Nybro in Småland. He brought with him a lathe and a few other tools to set up a shop crafting wooden utility goods. These simple beginnings became the foundation of the modern Kährs Group of today.

In 1919, Gustaf Kähr, grandson of founder Johan Kähr, set up the company AB Gustaf Kähr. Under his leadership the company developed and became an important and innovative producer of wooden doors, toys, furniture and flooring. Gustaf was dedicated to finding efficient ways of using the wood raw material and improving the stability of wood when used as building materials. His perseverance paid off when in 1937 he received the patent for the invention of the modern multi-layer, laminated door.

Following upon this success he worked hard to find a solution for the problem of gapping, twisting and cupping of wood floors. After several years Kährs was awarded a patent, in 1941, for the invention of today's modern engineered hardwood floor, the multi-layer floor.

In 2012 AB Gustaf Kähr and Karelia-Upofloor Oy merged to form Kährs Group.

KÄHRS GROUP TODAY

Today, Kährs Group is a group operating worldwide, with production in several locations in Europe. Our product portfolio has been complemented with resilient flooring for use in environments with high traffic, needing low environmental impact, with the main focus for PVC-free, plasticizer-free, low-VOC products.

Our objective is to provide the market with flooring that is beautiful, durable, easy to install and more sustainable. We're proud that people all over the world appreciate our products. Today, our floors can be found in fine homes, offices, shops, hotels, concert halls, theatres and sports arenas from Europe and Asia to the Americas.

ENVIRONMENTAL MILESTONES

Kährs has always been at the forefront when it comes to innovative development. Developments in the early years of the company often comprised utilising resources more efficiently, striving for what today is considered sustainability:

1921 we began using waste wood as biofuel for steam energy

1937 we were awarded the first patent for the multi-layer wood door

1941 we received the first patent for multi-layer engineered wood flooring

1958 we introduced the first factory finished floor

1984 we introduced the first solvent-free lacquer system

1997 ISO 14001 certification & EMAS registration achieved

1999 first glueless joint, Woodloc® was introduced to the world

2004 we launched the new generation Activity Floor, pre-finished, no job site shutdown, and today is FSC® and DIN certified.

2005 FSC certification

2010 we opened the first LEED certified (green) warehouse in Scandinavia

2011 we are certified according to DIBt, French VOC A+

2011 we made the first wood floor made from dual labelled FSC®-Fairtrade certified wood

2013 Kährs' first Swan, Nordic Ecolabelled products were launched. The company's Swedish production units became PEFC certified.

2014 investment in a new, industry leading production line for advanced flooring designs & better utilisation of oak raw material

2015 Final sealing of the old landfill facility on Kährs' site in Nybro

2016-2017 investments are made in new technology, for cleaning of process waste water, based on ozone.

2017 Kährs Group certified under a common ISO 14001 certificate. Change to new adhesive system with very low levels of formaldehyde.

2018 A brand new plant for production of wood pellets is built. Makes biofuel from Kährs available to more users than the previously recovered wood powder.

Definitions

ADDITIVE MATERIAL
Material other than wood that is included in finished wood flooring. e.g. glue, lacquers.

AGENDA 2030 & GLOBAL GOALS
Agenda 2030 and the 17 global goals for sustainable development were adopted by the world's leaders in 2015. The goals are intended to help bring about socially, economically and environmentally sustainable development in all countries of the world by 2030.

AUTHORISATION OF PERMITS
Process of decision making on permits for activity that can be dangerous to the environment. Committees, the ECD and the application are involved. The decision is taken by the Environment Inspection Committee of the County Administrative Board.

BASTA
A database of construction and plant products that meet BASTA's stringent requirements for chemical content. BASTA is used by the construction industry for the selection of better products. bastaonline.se

CARB 2
California's environmental legislation, California Air Resources Board, phases 1 and 2, regulates requirements on formaldehyde in products.

CARBON DIOXIDE (CO2)
Is included in the natural cycle and contributes to the greenhouse effect. Burning fossil fuels results in a net increase in carbon dioxide, which may affect the climate.

CIRCULAR ECONOMY
A collective term for economic models for business opportunities in which circular process are used in a company, society or organisation instead of linear processes that up to now have been dominant.

DNV GL
DNV GL Group. The certification body for Kährs' environment and quality management system, as well as EMAS and FSC.

DUST
Particles that can cause contamination if discharged.

E1
A requirement for formaldehyde emissions according to European Standard EN 14342:2005 (Wood Flooring), class E1 is < 0.124 mg/m3.

EMAS
Eco-Management and Audit Scheme. The EU's environmental management and environmental auditing regulation.

ENVIRONMENTAL ASPECT
Part of an organization's activities, products or services that affect or could affect the environment. Kährs' significant environmental aspects are identified, evaluated and prioritized. Kährs' significant environmental aspects, outcome and how we work with them are described in this report.

ES
Energy survey in accordance with Swedish Act (SFS 2014:266) on Energy Surveys at Major Corporations.

EUTR
EU Timber Regulation: Prohibits operators in Europe from selling illegally logged timber and products in the EU market. Legally logged timber is defined as timber produced in accordance with the laws in the country where it is logged.

FORMALDEHYDE
A toxic compound that is found naturally in green plants (including trees) and fruit. Also found in many glues. The glues used by Kährs are within the E1-norm.

FOSSIL FUELS
Oil, coal and natural gas which are not classified as renewable.

FSC®
Forest Stewardship Council - an organization that works internationally for environmental certification of ecologically, economically and socially sustainable forestry.

GWH
Gigawatt hour – an energy unit corresponding to one million kWh (kilowatt hours).

GWP100
The GWP factor indicates how much effect a gas has on the climate compared with carbon dioxide. One kg of carbon dioxide corresponds to 1 GWP. This is calculated on a 100-year perspective, which means for instance that biofuel does not add any carbon dioxide. The hydrocarbons subject to restriction under the Kyoto protocol (various forms of HFC) have GWP values between 120 and 12 000, depending on their absorption of radiation and atmospheric lifetime.

HDF
High Density Fibreboard. Material used in the core of Linnea floors.

LNU
Linnaeus University

M1
A Finnish classification system aiming to promote the development of building materials with minimal environmental impact. The system shows recommended materials, for example in the construction of regular office and residential environments. M1 stands for a low degree of emissions and low odour.

MIFO
Methodology for the Inventory of Contaminated Areas. Phase 1 includes interviews and compilation of historical documents. Phase 2 includes sampling and analysis at critical locations.

MWH
Megawatt hours Megawatt hour - an energy unit = thousand kWh (kilowatt hours).

NITROGEN OXIDES (NOX)
A group of gases composed of nitrogen and oxygen, formed during combustion. In moist air, nitrogen oxides are converted into nitric acid, which falls as acid rain. Nitrogen oxide emissions also have a fertilising effect.

NATIONAL ENV. OBJECTIVES
Sweden has 16 national environmental objectives. Read more on the Swedish Environmental Protection Agency's website:

PDCA
Is short for Plan, Do, Check, Act and is a scheme in quality management for systematic improvement.

PEFC
The Programme for the Endorsement of Forest Certification. An international non-profit, non-governmental organization promoting sustainable forest management around the world and tracking of timber from certified forests through the processing & trading chain.

RENEWABLE
When a resource is used up more slowly than it is regenerated. Examples are water, wood and various biomass products. Non-renewable means something that is depleted faster than it is regenerated, e.g. products based on fossil oil, such as diesel or plastics.

RESPONSIBLE FORESTRY
Wood material that comes from suppliers who can show verification that the forest of origin is managed in a sustainable manner. Examples of verification are FSC, PEFC, documented origin, underwater sawing.

SDG
Sustainable Development Goals

SUNDA HUS
In SundaHus Miljödata (literally, Healthy buildings, Environmental data) you can search for thousands of assessed products. The assessments are based on various characteristics and are divided into five classes. A, B, C+, C- and D. sundahus.se

SULPHUR DIOXIDE (SO2)
A gas that is formed when fossil fuel is burned, and the sulphur in the fuel is oxidized by atmospheric oxygen. In contact with humid air sulphur dioxide is gradually converted into sulphuric acid, which contributes to acidification.

TANNINS
Also known as tannins and polyphenols which are found in oak wood, coffee, tea and red grapes.

THE LACEY ACT
A US law that prohibits trade in protected species. The law was amended in 2008 to include plants and plant products such as timber and paper. It was the first legislation in the world to prohibit trade in illegally produced wooden products.

TONNE-KM
Tonne-kilometres Unit of transport work performed. It is calculated as the number of tonnes transported multiplied by the number of kilometres.

TRIPLE HELIX COOPERATION
Interactions between the academic, industrial and institutional systems as a means to foster technological innovation and economic growth.

UV-LACQUER
Lacquer that is quickly cured by exposure to ultraviolet (UV) light.

VOC
Volatile Organic Compounds. A collective designation for organic compounds (solvents) primarily consisting of carbon, hydrogen and oxygen. VOCs contribute to the formation of ozone close to the soil.

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MANAGEMENT SYSTEM CERTIFICATION
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ISO 9001 = ISO 14001

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