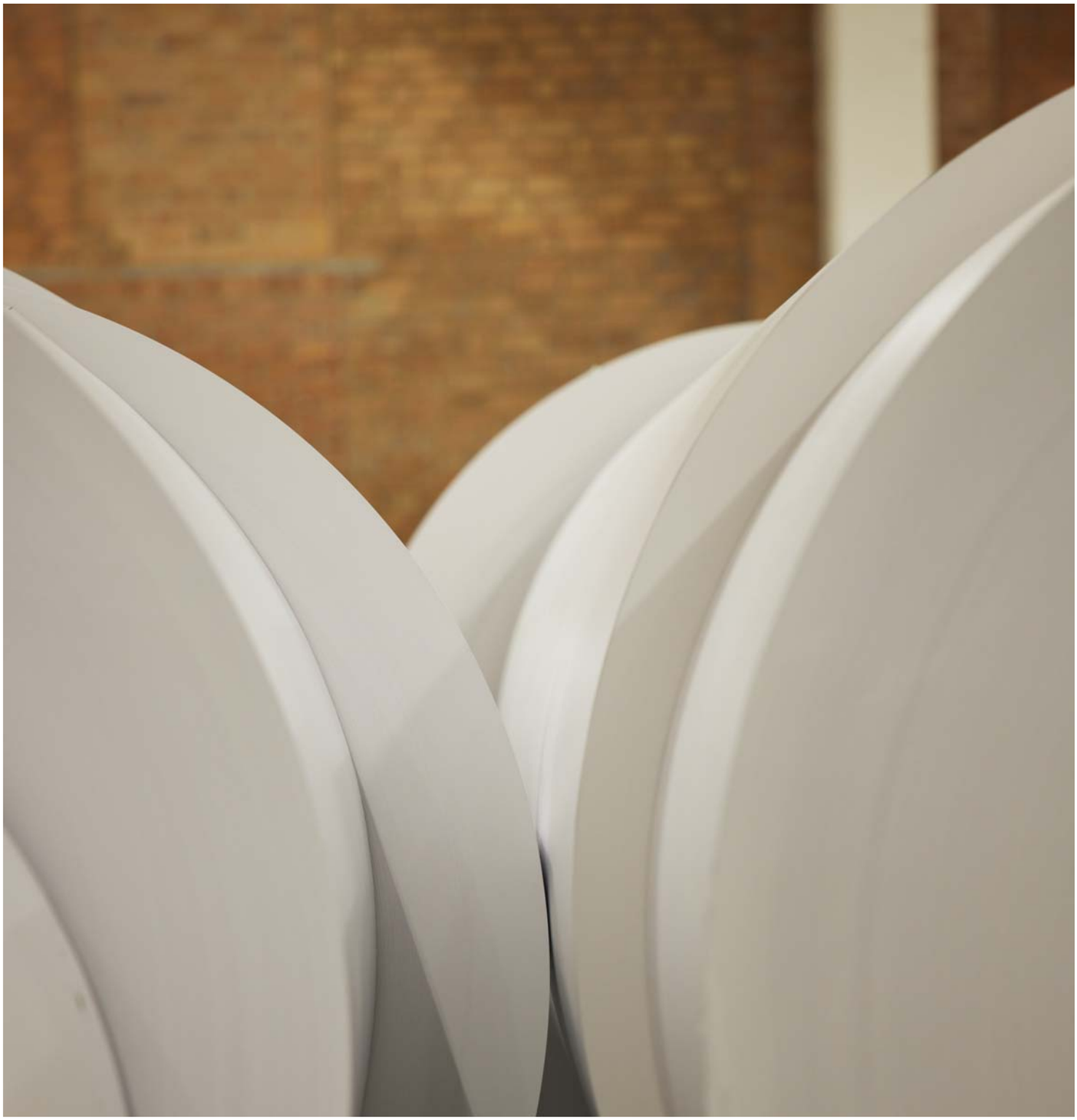
Arctic Paper Grycksbo AB
Environmental Report 2024

EMAS 2024



ARCTIC PAPER

Environmental Report 2024

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Arctic Paper Grycksbo AB

Paper has been produced in Grycksbo for 280 years. On April 23, 1740, Johan Munktell received royal permission to establish a paper mill. Operations began the following year with half a dozen handmade paper craftsmen. Approximately 100 years after the founding, in 1836, the first paper machine was installed in Grycksbo.

Today, Arctic Paper Grycksbo is one of Europe's leading manufacturer of matt coated graphic paper. We apply a sustainability perspective in all aspects of our operations – from the selection of renewable raw materials and environmentally sustainable production processes to responsible energy use and logistics systems.

Arctic Paper Grycksbo has been registered under the EU EMAS Regulation since 1997. The registration covers the company's operations in Grycksbo.

Arctic Paper | Europe

Sales Office Paper Mill Head Office

Arctic Paper SA

Arctic Paper SA is one of Europe's leading suppliers of high-quality book paper and graphic fine paper.

The Group produces high-quality coated, uncoated woodfree, and uncoated wood-containing paper. Its product portfolio includes the brands Amber, Arctic, G, and Munken. Production takes place at three European paper mills: Arctic Paper Munkedals and Arctic Paper Grycksbo in Sweden, and Arctic Paper Kostrzyn in Poland. The total production capacity of these three mills is approximately 695,000 tonnes of paper per year. The company employs about 1,584 people and operates 13 sales offices across Europe. Our head office is located in Kostrzyn, Poland, with a branch office in Gothenburg, Sweden.

Arctic Paper S.A. has been listed on the Warsaw Stock Exchange since October 2009 and on NASDAQ OMX Stockholm since December 2012.

Printed on Arctic Volume Ice 150 g/m²

Preface

Arctic Paper Grycksbo AB continues to be a forerunner in sustainable production. Our paper, based on certified renewable raw materials, is an important part of the sustainable society we strive to support. By staying at the forefront and proactively working to reduce our environmental impact, we aim not only to meet but also to exceed regulatory requirements.

Environmental awareness permeates our entire operation, and environmental considerations have been a central focus in all our investments. Over the years, we have implemented significant improvements and can now proudly say that our water usage and water emissions are among the lowest in the industry. This is the result of our efforts to optimize resources at every stage of the process – from raw materials to energy, chemicals, and water.

Our environmental management system, based on ISO 14001 and EMAS, helps us systematically ensure continuous improvement. Our vision is for environmental efforts to be fully integrated into our daily operations. Through the commitment of our employees and strong local engagement, we have fostered a culture where sustainability is a natural part of our business. We view sustainability as part of our DNA and a fundamental condition for long-term success.

In 2024, we continued to monitor our environmental objectives and action plans from the previous year. We are proud of the progress we have made, particularly in the area of transport, where we have further reduced our environmental impact. The share of Euro 6-compliant transports has increased, and in our work to make the mill completely fossil CO_2-free, we have taken an important step by switching to HVO100 diesel for all internal transport.

In addition, we have launched two major projects aimed at further reducing our environmental footprint. The rebuilding of PM9 will increase our energy efficiency and allow us to recover even more heat from our processes. Meanwhile, our Bio25 project will involve building a chip dryer, giving us greater ability to rely entirely on renewable fuels, and a pellet press, enabling us to support others in doing the same.

We have also implemented a number of internal process improvements that have led to reduced energy consumption.

In this EMAS environmental report, we present our results for 2024. By working transparently and openly with our environmental impact, we aim to strengthen stakeholder trust and demonstrate our long-term commitment to a sustainable future.

We look forward to continuing our journey toward a more sustainable operation and thank all our employees and stakeholders for their contributions and trust.

Kent Blom
VD, Arctic Paper Grycksbo

Printed on Arctic Volume Ice 150 g/m²

Facts about Arctic Paper Grycksbo AB

Products	Wood-free coated fine paper under the brands G and Arctic Volume
Production Capacity	220,000 tonnes/year
Sales	Export 92%, Sweden 8%
Turnover	SEK 2.1 billion
Employees	330

Energy	
Steam boiler (biofuel)	49 MW
Steam boilers (electric)	20 + 17 MW
Back-pressure turbine	6.5 MW

Storage Capacity	7,000 tonnes

Paper Machines	**Width**	**Grammage**	**Speed**	**Capacity**
PM 9	252 cm	115–300 g/m²	400 m/min	60,000 tonnes/year
PM10	386 cm	70–130 g/m²	1,100 m/min	160,000 tonnes/year

Arkskärmaskiner	**Arkbredd**	**Arklängd**	**Kapacitet**
SM 5–9	26–213 cm	42–205 cm	170,000 tonnes/year

Certifieringar		**Valid until**
Quality management system ISO 9001:2015	SE007601	2027-05-31
Environmental management system ISO 14001:2015	SE007601	2027-05-31
Environmental management system EMAS 1221/2009	Nr. S-000061	
Energy management system ISO 50001:2018	SE007600	2027-05-31
FSC® Chain of Custody, DNV-COC-000002	License no. FSC-C007342	2027-06-29
PEFC Chain of Custody, DNVSE-PEFC-COC-31-31	License no. PEFC/05-33-98	2027-09-30

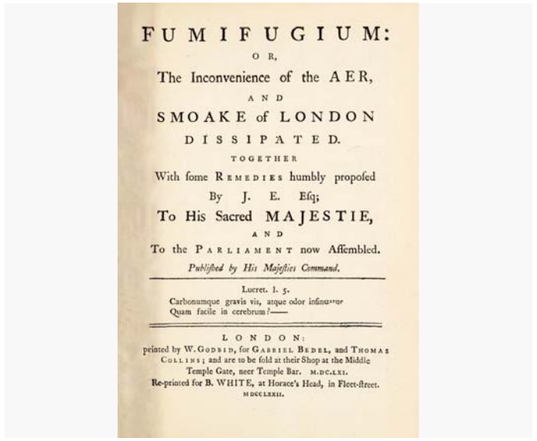
Products	Arctic Paper Grycksbo produces coated fine paper under the brands G and Arctic Volume, designed for printed materials that demand high standards of image reproduction and readability. The main applications include direct mail, illustrated books, manuals, catalogues, maps, posters, and magazines.

Printed on Arctic Volume Ice 150 g/m²

Environmental Management

Awareness

In modern human history, the understanding of the interaction between the environment and human society was, early on, pushed to the margins. Natural resources were seen as infinite, and human impact was considered negligible. Environmental issues that were addressed were primarily limited to those that clearly and directly affected human health. Over time, methods for environmental assessments were developed, laying the foundation for more advanced environmental management. In Fumifugium, published in 1661, John Evelyn wrote "The Inconveniencie of the Aer and Smoak of London dissipated", which can be seen as a precursor to modern environmental investigation.



FUMIFUGIUM:
OR,
The Inconvenience of the AER,
AND
SMOAKE of LONDON
DISSIPATED.
TOGETHER
With some REMEDIES humbly proposed
By J. E. Esq;
To His Sacred MAJESTIE,
AND
To the PARLIAMENT now Assembled.
Published by His Majesties Command.

Lucret. l. 5.
Carbonumque gravis vis, atque odor insuavis
Quam facile in cerebrum!——

LONDON:
printed by W. GODBID, for GABRIEL BEDEL, and THOMAS COLLINS; and are to be sold at their Shop at the Middle Temple Gate, neer Temple Bar. M.DC.LXI.
Re-printed for B. WHITE, at Horace's Head, in Fleet-street.
M.DCC.LXXII.

Consideration

Environmental management means systematically becoming aware of, and gradually reducing, one's negative impact on the environment. EMAS and ISO 14001 are the foundational standards that form the backbone of our environmental management systems. These standards not only ensure compliance with laws and regulations, but also promote continuous improvement through procedures, audits, objectives, and programs.

Arctic Paper – Committed to Reducing Environmental Impact

Today, the drivers for reducing environmental impact are many. Through long-standing commitment and well-established systems, Arctic Paper is a conscious and responsible group with a clear focus on reducing environmental impact, increasing efficiency, and maintaining an open dialogue.

Operational Policy

Arctic Paper Grycksbo's operational policy covers quality, environment, energy, occupational health and safety, and the traceability of fiber raw materials.

The policy is reviewed annually during the management review:

- We shall be a reliable company in every respect and always deliver the right quality in our products and services to both customers and employees. We shall meet the owners' profitability requirements to ensure our long-term survival.
- We shall work with continuous improvements in line with our established objectives. We are committed to complying with applicable laws and other requirements. Each employee holds personal responsibility in their work and should be continuously developed.
- We shall use raw materials efficiently and minimize our consumption of energy and water. Environmental considerations shall always be taken into account in procurement, energy use, and transport. When making changes to plant equipment, we shall strive for energy-efficient solutions. We shall actively work to prevent environmental pollution and maintain preparedness for potential environmental incidents. We shall report our environmental efforts transparently. We commit to fulfilling the requirements of our certified systems in environmental and energy management, EMAS registration, and chain-of-custody standards, including FSC and PEFC.
- Arctic Paper Grycksbo shall be a safe and attractive workplace with good opportunities for employee development. We shall systematically and purposefully promote health and safety both in our own workplace and throughout our operations. Arctic Paper Grycksbo shall also actively engage in our local region.

Kent Blom
MD, Arctic Paper Grycksbo AB

Printed on Arctic Volume Ice 150 g/m²

Paper Production

Pulp Reception

The mill purchases pulp in bale form from external suppliers in the EU and South America. The pulp bales are dissolved during stock preparation using internally treated process water and are then refined in mills to soften and swell the fibers. Refining is important for the strength properties of the paper. Various raw materials and additives – such as calcium carbonate, sizing agents, and starch – are added to the pulp. The pulp is then screened in several stages to remove any possible impurities.

Paper Machine

Headbox and Wire Section

The function of the headbox is to distribute the diluted stock over the whole width of the wire. Dewatering and forming of the web take place in the wire section.

Press Section

The web is dewatered still further in the press section. Here, the paper is given the right density and surface structure.

Drying Section

The paper is dried in the drying section with the help of steamheated cylinders.

Surface Sizing / Coating

After drying, the paper surface is coated on both sides through a coating process. This gives the paper a smooth, strong, and more print-friendly surface. After coating, the paper is dried using infrared dryers and additional steam-heated cylinders.

Machine Calendering and Tambour

The web passes through a calender, which gives it its final surface structure. The finished web is rolled onto a tambour and moved to the winding machine.

Winding Machine

In the winding machine, the large reel is divided into smaller reels in line with the customer's order.

Finishing

Paper Cutting Machines

The reels proceed for further conversion. In paper cutting machines, they are cut into sheets in varying formats as requested by the customer. Some of the sheets are packaged in an automatic bale packaging machine.

Pallet Pack

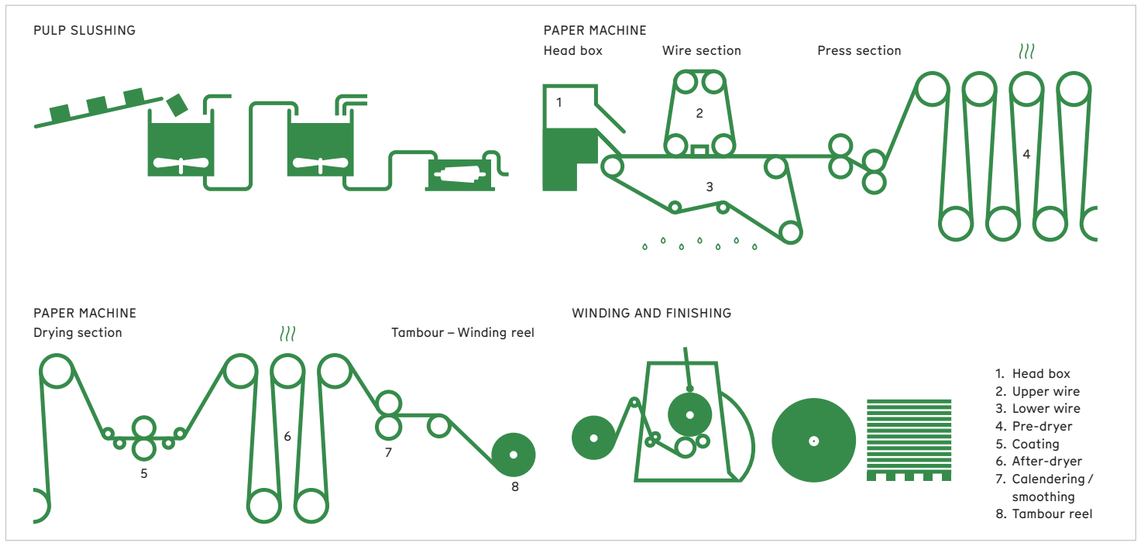
The pallets of sheets are covered with cardboard lids made from recycled paper and wrapped in shrink film.

Reel Pack

Reels to be delivered directly to the customer are provided with protective stretch film packaging.

Storage and Shipping

Wrapped pallets of sheets and reels are placed in the finished goods warehouse awaiting dispatch. Further transportation is carried out by road, rail, or ship, depending on the customer's geographical location.



Printed on Arctic Volume Ice 150 g/m²

Bioenergy

Arctic Paper Grycksbo's biofuel plant has been in operation since 2009 and supplies the mill's entire steam demand. In addition to the steam boiler itself, the facility includes flue gas cleaning filters and a turbine that generates renewable, self-produced electricity. The transition to biofuel has eliminated fossil carbon dioxide emissions, resulting in an annual reduction of approximately 75,000 tonnes of CO_2.

The switch to biofuel has also significantly reduced sulphur dioxide emissions and particulate emissions. Thanks to a flue gas filter, dust particles that would normally be released through the chimney are effectively captured.

The steam boiler is primarily fueled with pellets, the same type used for residential heating, though in much larger quantities to meet the mill's industrial steam requirements. In 2024, more than 16,000 tonnes of pellets were delivered by truck to Grycksbo. The pellets are emptied into large hoppers and stored in a silo. Before entering the boiler's burner, the pellets are ground into a fine powder using powerful mills.

The facility also has the capability to burn liquid biofuels.

Wastewater Treatment Plant

In the mill's process wastewater, there are dissolved substances that consume oxygen. These substances deplete the natural oxygen present in lakes and watercourses, and oxygen deficiency can result in poor living conditions for fish and aquatic plants.

Incoming wastewater from production is first treated through chemical precipitation in a pre-flotation stage. The water then proceeds to a biological treatment stage, where a large number of bacteria and a smaller number of protozoa feed on bacteria and organic particles. Fungi, appearing as filaments, are also present in the biological treatment.

The organisms in the biological treatment stage feed on and break down the organic substances continuously entering the facility through the incoming process wastewater.

Thanks to this biological treatment, dissolved pollutants are converted by microorganisms into solid matter, which can be more easily removed. This treatment mirrors the natural oxygen-consuming decomposition that would otherwise occur in Lake Grycken, downstream from the mill. In essence, the natural process is relocated within the facility, where it can occur under controlled conditions in terms of temperature, oxygen levels, and nutrients (nitrogen/phosphorus). All of this contributes to a significantly improved purification result.

After the biological treatment, the water undergoes final chemical precipitation in a post-flotation stage, before the purified water is discharged via Gryckån stream into Lake Grycken.

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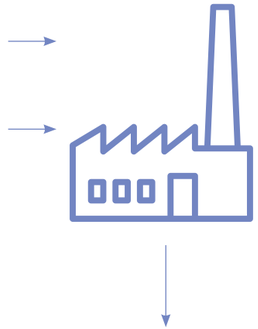
Environmental Data and Regulations

Below are the raw materials, chemicals, and energy required to produce one tonne of paper in 2024. The corresponding values for 2023 are shown in parentheses. Additionally, emissions to air and water, as well as the amounts of waste generated by the operation, are reported.
At the bottom, we present our compliance with the conditions established by regulatory authorities. Applicable environmental requirements are outlined in this year's environmental report to the authorities and can be requested from the EMAS environmental contact person (see page 18).

For comments on major changes, please refer to pages 12–15.

Raw materials			
Pulp	593	(594)	kg
Chalk	389	(390)	kg
Starch	22	(22)	kg
Chemicals	54	(55)	kg

Energy			
Pellets	455	(729)	kWh
Pitch oil	5	(5)	kWh
Fuel oil	0	(0)	kWh
Electricity – purchased for process use	616	(638)	kWh
Electricity – purchased for steam production	585	(365)	kWh
Electricity – from in-house turbine	8	(19)	kWh
Total energy used	1,670	(1,753)	kWh



Emissons to air			
Nitrogen oxide (NO_x)	0.062	(0.103)	kg
Carbon dioxide (CO_2)	0.035	(0.037)	kg

Discharges to water				BAT*
AOX	1.50	(1.05)	g	
SS	0.067	(0.080)	kg	0.02-0.35
TOC	0.126	(0.117)	kg	0.038-0.0375
BOD_7	0.076	(0.055)	kg	
Nitrogen (N)	0.047	(0.059)	kg	0.01-0.1
Phosphorus (P)	0.0006	(0.0005)	kg	0.003-0.012
Process water discharged to Gryckån stream	8.6	(9.4)	m^3	3.5-20 m^3

Waste

Energy extraction			
Combustible	0.68	(0.60)	kg
Wood	0.31	(0.30)	kg
Hazardous	0.12	(0.11)	kg

Landfill / Incineration			
Ash	0.65	(0.68)	kg
Sludge	0	(0)	kg
Unsorted waste	0.05	(0.15)	kg
Hazardous waste	0.05	0,05	kg

Material recycling			
Covering material	30	(19)	kg
Metal scrap	1.9	(2.1)	kg
Paper/Cardboard	1.9	(1.5)	kg
Plastic	0.01	(0.02)	kg
Hazardous waste	0.16	(0.03)	kg

Compliance with permit conditions	**Result 2024**	**Max permit**	
Production (level net)	170,066	310,000	tonnes/year
Discharges to water			
Suspended solids	31	100	kg/day
TOC	58	125	kg/day
BOD_7	35	60	kg/day
Total Nitrogen (N)	22	40	kg/day
Total Phosphorus (P)	0.3	0.5	kg/day
Discharges to air			
NO_x	37	75	mg/MJ of input energy (guideline value)
Dust	0.5	30	mg/Nm^3 dry gas at 6% O_2
Other conditions			
Noise (nighttime)	45	45	dB(A) (guideline value)

* BAT – Best Available Techniques (BAT) for non-integrated paper production according to EU Directive 2014/687.

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Biodiversity

The biodiversity we see on Earth today is the result of 4 billion years of evolution. Some species have disappeared, while others have emerged – all have changed over time. This applies to both plants and animals.

It is the responsibility of every organization to safeguard biodiversity and minimize any potential impact their operations may cause. In our case, this is done in several ways – primarily by complying with the conditions set by regulatory authorities, but also through voluntary participation in environmental management systems and certifications. The company's operations in Grycksbo cover an area of 427,040 m².

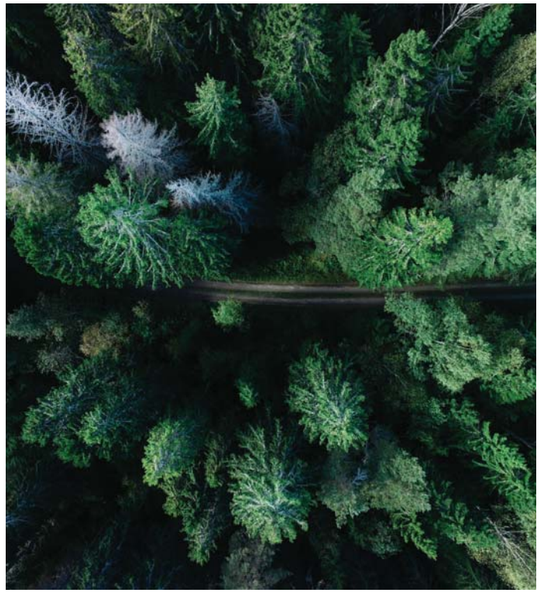
Ongoing employee training and awareness in environmental matters is also an important signal within the organization. Since 2013, a web-based environmental and energy training program has been in place and is regularly updated.

One way we contribute to biodiversity is by using only pulp made from wood sourced from certified forestry. All our pulp suppliers are certified under FSC® and/or PEFC. In 2024, 100% of Grycksbo's pulp purchases consisted of certified pulp. This ensures that the raw material comes from responsible sources and does not contain fiber from:

- Illegally harvested wood
- Wood harvested in violation of traditional and human rights
- Wood from areas where high conservation values are threatened
- Wood from forests being converted to plantations or non-forest use
- Wood from forests with genetically modified tree species

Sustainable Responsibility

The demands on society – including companies and organizations – to make sustainability an integrated part of their operations are constantly increasing. Sustainability work should permeate all areas of the business and also be incorporated into strategic development.



Arctic Paper Grycksbo is certified according to ISO standards for quality, environment, and energy. All of these standards are important tools in supporting this effort.

Arctic Paper Grycksbo is also a member of the Dalälven Water Conservation Association (DVVF), a collaboration of stakeholders with ties to the Dalälven River. The members include companies, municipalities, and organizations. The purpose of the association is to monitor environmental trends in selected lakes and watercourses and to assess the significance of individual pollution sources. The association maintains a website: www.dalalvensvvf.se

Through our sustainability perspective, Arctic Paper Grycksbo has achieved strong results in several areas. Energy use in production (biofuels, self-produced green electricity, and purchased fossil-free electricity mix) has virtually eliminated emissions of fossil CO_2 and SO_2. Calculations show that CO_2 emissions related to purchased electricity are as low as 0.001 g per tonne of paper produced.

Water emissions are also at a very favorable level when compared to EU industry standards.

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Significant Environmental Aspects

In the company's environmental aspect register, all areas of the operation and their potential environmental impacts are described. The register is updated annually and serves as the basis for identifying the company's significant environmental impacts.

The evaluation model used in this process is part of the company's environmental management system and is available upon request from the Head of Quality, Environment, and Development: Björn Legnerfält, bjorn.legnerfalt@arcticpaper.com

Environmental Aspects That Cause or May Cause Significant Environmental Impact	Activities to Reduce the Risk of Significant Environmental Impact
Continuous impact	
Discharges to water	
Discharges of oxygen-consuming substances (BOD_7), suspended solids (SS) that may cause sedimentation, as well as phosphorus and nitrogen, which contribute to eutrophication.	Biological treatment combined with flotation systems is used to minimize these discharges.
Energy consumption	
Energy consumption has an indirect environmental impact depending on the energy source.	The energy management system according to ISO 50001 ensures continuous efforts to reduce energy consumption.
Transport	
Transport causes noise, air emissions, and the consumption of fossil fuels.	The Group's transport operations are coordinated by Arctic Paper Logistics. The majority of deliveries from Grycksbo to Finnish customers are shipped directly from Grycksbo, as are some deliveries to Swedish and Norwegian customers. Other paper products are transported by truck from Grycksbo to Gothenburg, where they are further distributed to customers.
Risks in the Event of an Incident	
Chemicals	
The following chemicals share the characteristic that, in the event of an incident, they could impair the performance of the wastewater treatment system: • Biocide – added to prevent bacterial growth in the process • Latex – a binder used in the coating mixture • Dispersing agent – added to pigments and coating mixtures to facilitate blending	Procedures and instructions are in place to minimize the risk of incidents and the consequences of any potential leakage.
Oil from Lubrication and Hydraulic Systems	
In the event of an incident, oil may be carried with cooling water directly into the Gryckån stream. Oil may also enter the wastewater treatment system, ending up in the separated sludge or in the treated water discharged to Gryckån.	Preventive maintenance routines are in place to reduce the risk of failures or operational disruptions. Oil levels are monitored, and losses are tracked across the mill's various hydraulic systems. An oil boom is installed in the Gryckån downstream of the mill to capture oil in the event of a spill.
Pumping Station Before Treatment	
In the event of an incident – such as a power outage or abnormally high flow to the wastewater treatment plant – untreated process water may overflow into Gryckån, leading to increased discharge of oxygen-consuming substances and suspended solids.	A backup power supply is installed to handle temporary power disturbances. Routines are in place for scheduled maintenance shutdowns and public holiday periods to ensure planned management of production stoppages.
Other Sources of Environmental Impact	
Pulp Production	
The pulp is purchased from external suppliers, and its production causes air and water emissions as well as noise.	Only suppliers certified by FSC® and PEFC, and approved by the Nordic Ecolabel (Swan), are used.

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Significant Environmental Aspects

In the environmental aspect register for Arctic Paper Grycksbo, two aspects have been identified that are not included among the core indicators presented on pages 12–15. These aspects are outlined below (transport and oil losses).

Transport to Arctic Paper Grycksbo

Pulp is sourced from manufacturers in Europe and South America. Transport is carried out by truck and ship. Process chemicals, pigments, and fuels are transported mainly from Europe and South America, also by truck and, in some cases, by ship. Packaging materials are delivered by truck from suppliers in Sweden and Denmark.

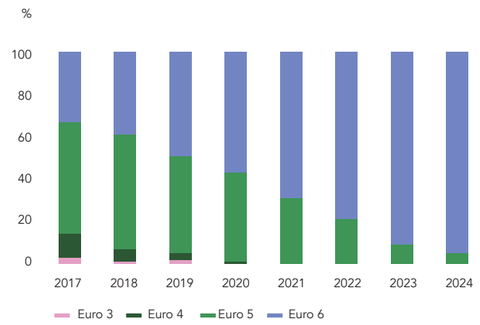
All raw materials – including process chemicals, pigments, and fuels – are procured on a "delivered Grycksbo" (DAP) basis, meaning that the supplier is responsible for the transport to Arctic Paper Grycksbo's site. In 2021, a project was initiated to collect data on emissions from inbound transport. The results have been used to set targets in this area.

Transport from Arctic Paper Grycksbo

Transport activities generate noise and involve the consumption of fossil fuels, which leads to air emissions. Depending on the final destination, different transport solutions are used for the company's products.

The majority of deliveries to Finnish customers are shipped directly from Grycksbo, as are some deliveries to Swedish and Norwegian customers. For other countries, rail and sea transport may be used to varying extents.

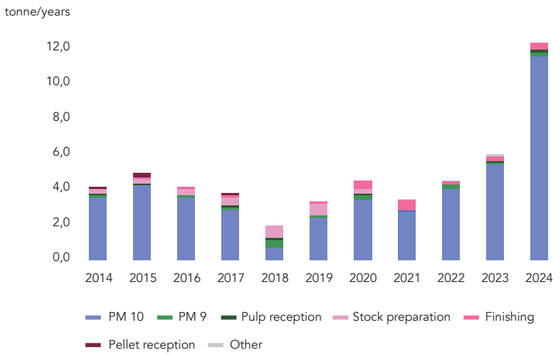
Road transport of paper products from Grycksbo is presented alongside, broken down by the Euro emission class of the vehicles used by the carriers. Rail and sea transport are included to varying degrees.



Losses of Lubrication and Hydraulic Oils

The lubrication and hydraulic systems used in the paper machines and other equipment have been identified as a potential source of unwanted emissions. Preventive maintenance and strong incident preparedness are the two primary measures taken to minimize these risks.

In 2024, several incidents occurred that led to an increase in oil leakage from paper machine 10.



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Core Indicators

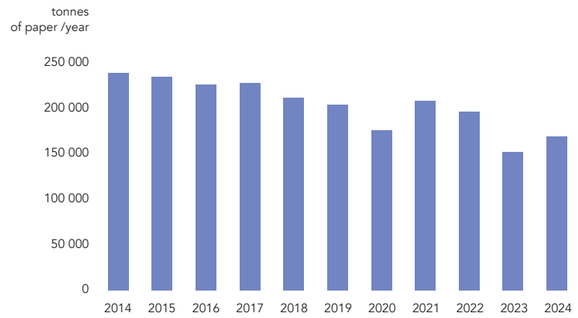
The following pages present core indicator results, with comments on significant deviations.

The core indicators for energy and emissions to water and air fall within the range of variations observed over the past ten years. However, due to lower production volumes and an increased number of market-related production stops, we see a rise in specific values for indicators such as water use, phosphorus, and nitrogen. At the same time, emissions of suspended solids have decreased, both in specific terms and in total annual volume. This improvement is seen as a result of the organization's enhanced ability in recent years to manage fluctuating wastewater flows to the treatment plant. Looking ahead, energy efficiency projects planned for 2025 are expected to ensure continued improvements in environmental performance, despite changes in production levels.

As for steam production for the process, a shift has been observed due to favorable electricity prices. This will be discussed further below.

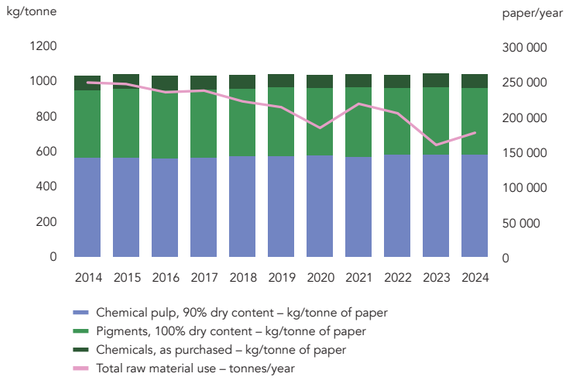
Net Production

To describe the development of the company's environmental performance, the relationship to the net production of paper is an important aspect. The net production shown in the adjacent diagram serves as the basis for calculating the operation's efficiency in relation to the core indicators.



Material Efficiency

The main raw materials used in paper production are pulp, pigments, starch, and auxiliary chemicals.
For key figures on raw materials, see page 8.



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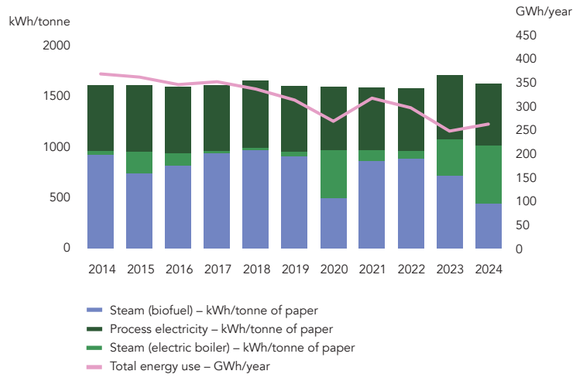
Core Indicators

Energy Efficiency

The most energy-intensive processes in paper production are steam generation for paper drying and in-house electricity production for powering the facility's motors, refiners, and pumps. The adjacent diagram shows the total energy use and the distribution between energy sources. For key figures on energy consumption, see page 7.

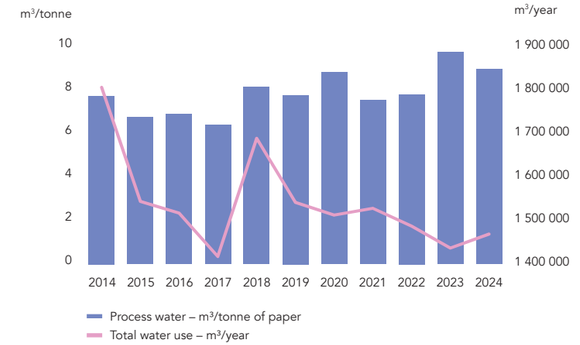
During the year, a smaller share of steam was produced using biofuel due to favorable electricity prices. As a result, the proportion of steam generated by electric boilers increased.



Water Use

In papermaking, water is mainly used to disperse pulp bales into fiber stock, and to transport this stock to the paper machine's headbox. In the paper machine, the stock is dewatered as the paper is formed. Most of the water is recycled within the facility, while excess water is directed to the mill's treatment plant. Water use is measured as the volume of water discharged from the facility after passing through the treatment plant.

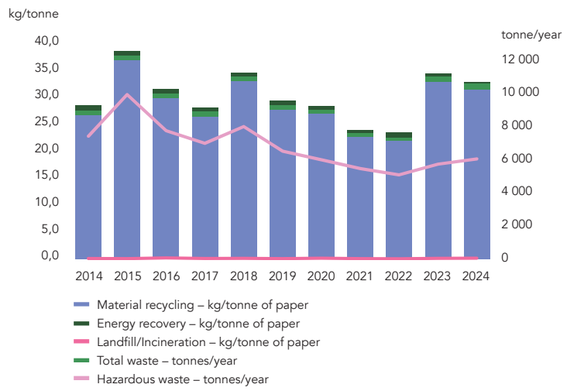
Note: Since the fine-tuning of newly installed stock cleaning technology in 2018, water consumption has shown a positive downward trend.



Waste

The diagram shows the company's waste volume in relation to production. The majority consists of sludge from the water treatment process, which is used as cover material for landfills – a method approved by the County Administrative Board of Dalarna. Waste such as paper, cardboard, plastic, and metal is managed by external contractors, who resell it as raw material to other processes. Waste that is not suitable for recycling, such as combustible materials, is primarily sent for energy recovery (district heating plants).

The amount of hazardous waste is too small to appear in the adjacent diagram. However, even hazardous waste can often be recycled – for example, waste oil is incinerated in approved facilities and converted into new energy. For key figures related to waste, see page 7.



Printed on Arctic Volume Ice 150 g/m²

Core Indicators – Emissions to Air

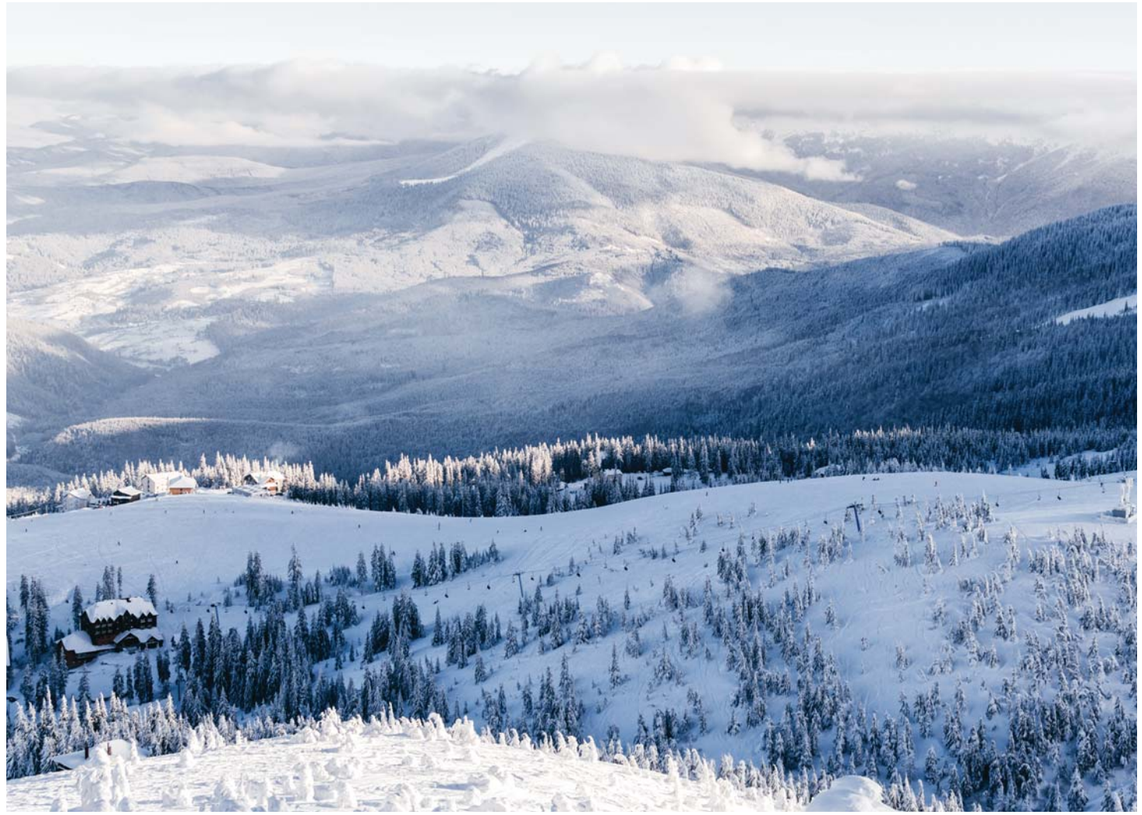
Nitrogen Oxides ($NO)_x$

During combustion, nitrogen bound in the fuel reacts with oxygen in the air. NO_x is a collective term for these nitrogen oxides, which can contribute to the acidification of soil and water.

Other Air Emissions

Arctic Paper Grycksbo's biofuel plant has been in operation since 2009 and supplies the mill's total steam demand. In addition to the steam boiler, the facility includes flue gas cleaning filters and a turbine for renewable, self-generated electricity.

The use of 100% fossil-free energy in production – including biofuel, in-house green electricity, and purchased fossil-free electricity mix – has eliminated fossil carbon dioxide emissions.

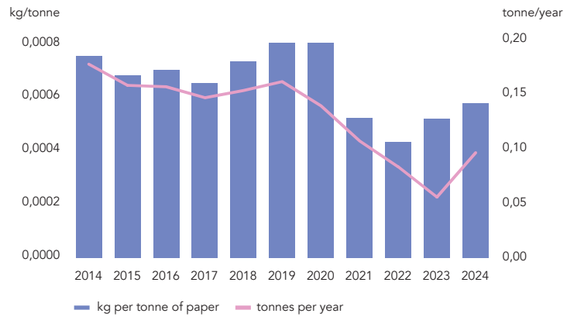


Printed on Arctic Volume Ice 150 g/m²

Core Indicators – Emissions to Water

Phosphorus (P) and Nitrogen (N)

High concentrations of phosphorus and nitrogen compounds, together with organic matter, can lead to increased biological activity in water, which in turn may cause eutrophication and the overgrowth of water bodies. Phosphorus and nitrogen are present in our raw materials, including pulp, and end up in the wastewater. These substances are also added through nutrients required to achieve effective results in biological treatment – see also page 7.



Suspended Solids

Fiber fragments and other solid particles in wastewater are referred to as suspended solids. These contribute to oxygen consumption and sedimentation at the discharge site.

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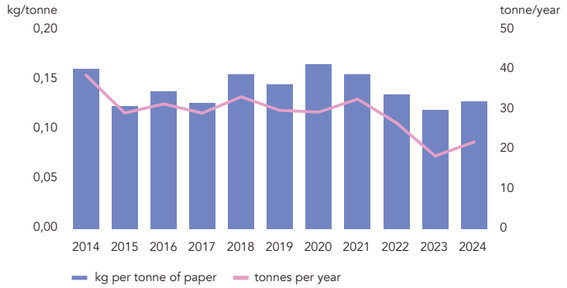
Core Indicators – Emissions to Water

BOD_7

Biological oxygen demand is a measure of the amount of biodegradable organic material present in water, determined over a period of seven days. It reflects the oxygen required by microorganisms to break down organic matter.

TOC

Total Organic Carbon is a measure of the total amount of organic carbon present in a given medium, such as wastewater. It represents the organic content that consumes oxygen during decomposition.



AOX

The amount of chlorinated organic substances in the water is measured as AOX (Absorbable Organic Halogens). These substances can be harmful to aquatic animals and may accumulate in fish and fish-eating birds.

Biodiversity

The total land area used by the facility is 145,000 m². Of this, 137,000 m² consists of hardened (built-up) surfaces, and 8,000 m² is designated as nature-oriented area within the facility.

There is no nature-oriented area located elsewhere.

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Environmental Incidents

Environmental Incidents

In 2024, a total of five incidents were recorded that were assessed as having potential environmental impact. All cases were reported to the County Administrative Board of Dalarna and have since been closed.

- 2024-02-15: Elevated level of suspended solids in outgoing water following a maintenance shutdown of the pre-flotation stage at the treatment plant. During the shutdown, wastewater was treated via bow screen, biological treatment, and post-flotation, but results were suboptimal. A suspended solids value of 248 kg/day was recorded for the production day of 14 February.

- 2024-03-27: Elevated TOC in outgoing water. Due to operator error, approximately 400 m^3 of process water was directed to the treatment plant over a few hours. The resulting hydraulic overload reduced the efficiency of the treatment process.

- 2024-04-13: A brief overflow of untreated process water (a few liters) into the stream. This occurred due to issues with two of the pumps in the sump where wastewater is collected before being pumped to the first buffer tank. While repairing the pumps, the third pump tripped, causing a short overflow before the operator restarted it.

- 2024-04-26: Exceedance of the monthly reference value for BOD_7 in March. The likely cause was an event on 27 March, previously reported as an operational disturbance due to high TOC levels. Despite extensive investigation, including analysis and trend reviews, the exact cause could not be definitively identified.

- 2024-08-28: During unloading of a system cleaning agent, an IBC container ruptured, spilling approximately 100 liters of liquid onto asphalt. The environmental impact was minimal as the spill was contained on a paved surface and was immediately absorbed using absorbent material.

- 2024-10-31: A plastic fitting connected to a dosing pump in the incoming water system leaked. A few deciliters of stabilizing agent were released into a bunded area. The product was flushed through a floor drain (normally with a closed valve) and was eventually treated in the wastewater treatment plant.

Complaints from Local Residents

No complaints were received during the year.

Environmental and Energy Targets

Environmental Objective 2024 & Outcome	Environmental Objective 2025
Strategic suppliers must reach a minimum of 70% fossil-free road transport (ton*km) by 2027. **Interim target for 2024:** 58% ✓ **Outcome:** Target achieved — actual result was 58%	Reduce the amount of combustible waste by 10 tonnes, from approximately 100 tonnes to 90 tonnes.
Energy Objective 2024	**Energy Objective 2025**
Save 1,500 MWh of energy (electricity or heat). < 1.749 MWh/tonne as energy intensity value. ✓ **Outcome:** Approx. 1,698 MWh of energy savings achieved. Actual energy intensity: 1.664 MWh/tonne. Despite several market-adjusted production stops during the year, the target was met. These interruptions led to heating of facilities and chemical water using direct steam instead of recovered energy, but energy efficiency efforts ensured the objective was reached.	Save 1,700 MWh of energy (electricity or heat). < 1.668 MWh per tonne as energy intensity.

Environmental Verifier and Contact Information

For Further Information and Requests for Environmental Reports

Arctic Paper Grycksbo AB
Box 1
SE-790 20 Grycksbo
Tel: +46 10 451 80 00
arcticpaper.com

Arctic Paper Grycksbo's environmental report is also available in English and in digital format.

The next environmental report will be published in Spring 2026.

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Environmental Verifier

Bureau Veritas Certification AB
Accreditation number: 1236

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT
S-000061

Printed on Arctic Volume Ice 150 g/m²

Glossary

AOX
The amount of chlorinated organic substances in water is measured as AOX (Absorbable Organic Halogens). These compounds can be harmful to aquatic animals and may accumulate in fish and fish-eating birds.

ACCREDITED COMPANY
A company approved by a supervisory authority to perform specific analyses and inspections within industry.

COATED PAPER
Paper treated with coating agents to improve its printability. Common agents include clay or chalk-based pigments.

BIOLOGICAL TREATMENT
The breakdown of pollutants in water using microorganisms.

BLEACHING
A method of increasing for example the pulp's brightness. Bleaching is undertaken using chemical compounds without elementally bound chlorine, ECF, or without any chlorine compounds, TCF.

BOD_7
Biological Oxygen Demand. The amount of oxygen required for natural decomposition of wastewater. BOD is low in relation to COD if remaining substances are hard to decompose and the biological treatments functioning well.

dB(A)
Decibel A, a measure of the amount of sound measured with a filter that takes account of the human ear's sensitivity to various sound frequencies.

EMAS
Eco-Management and Audit Scheme. A voluntary EU decree and requirement document for an environmental management system. EMAS requires, in addition to the fact that ISO 14001 or equivalent is fulfilled, that an official environmental report is compiled. The environmental report is examined and approved by an accredited environmental audit company.

HAZARDOUS WASTE
Waste containing pollutants that are directly hazardous to the environment, such as certain chemicals, waste oils, batteries, fluorescenttubes,mercurylampsandelectronicscrap.

FINE PAPER
A generic term for graphic paper, writing paper and printing paper, and certain special types of paper.

FSC®
The Forest Stewardship Council (FSC) ensures traceability of raw material and excludes wood sourced through illegal logging, from areas with high conservation values, severe social conflict, or involving genetically modified trees or unsustainable forestry.

EMISSION LIMIT VALUE
A regulatory limit for emissions from industrial activities, established by the environmental authority and not to be exceeded.

SUSTAINABILITY CRITERIA
To be considered sustainable, biofuels must meet specific criteria throughout the entire value chain – from raw material to end use. These requirements ensure compliance with Sweden's legislation on sustainability.

ISO 14001
An international standard for environmental management systems. Certification is valid for three years, subject to compliance and annual audits.

ISO 50001
An international standard for energy management systems. Certification is valid for three years, provided requirements are met and annual audits are successfully completed.

CHEMICAL PRECIPITATION
A process that chemically binds pollutants, allowing them to be removed from wastewater via sedimentation.

CHEMICAL PULP
A general term for kraft and sulfite pulps, where wood fibers are separated using chemical processes.

CORE INDICATORS
Environmental indicators used to summarize and facilitate the management and communication of environmental data. By measuring environmental impact, organizations can improve and track environmental performance in reports.

MECHANICAL PULP
Pulp produced by mechanically separating wood fibers.

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Glossary

PEFC
The Programme for the Endorsement of Forest Certification (PEFC) assures customers and the public that certified forests are managed sustainably according to officially adopted criteria under the Forest Europe initiative.

GUIDE VALUE
A threshold which, if exceeded, obliges the permit holder to take corrective measures.

SS – SUSPENDED SOLIDS
Fiber fragments and other solid particles in wastewater that consume oxygen and may cause sediment buildup at discharge points.

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ARCTIC PAPER

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