



Annual and Corporate Sustainability Report

2023





ARCTIA
IN 2023

OPERATING ENVIRONMENT,
STRATEGY, BUSINESS OPERATIONS

SUSTAINABILITY AS PART
OF SERVICE PRODUCTION

CORPORATE GOVERNANCE
AND FINANCES

STAFF
WELL-BEING

SUSTAINABLE
DEVELOPMENT

Forerunner in sustainable maritime services

Arctia is tasked with facilitating safe, smooth and environmentally sustainable waterborne transport operations.

Arctia engages in icebreaking, fairway maintenance and hydrographic surveying, all of which offer a wealth of experience, expertise and equipment suitable for these operations.

Arctia Ltd is a wholly state-owned company.



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2023 reports

Arctia Group's 2023 Annual Report comprises the Annual and Corporate Sustainability Report, the Corporate Governance and Remuneration Report as well as the Financial Statements.

The reports are posted on the company's website at www.arctia.fi/en.

ANNUAL AND CORPORATE SUSTAINABILITY REPORT



CORPORATE GOVERNANCE AND REMUNERATION REPORT



FINANCIAL STATEMENTS



Key indicators

TURNOVER

82,7 MEUR
(80,2 M€ 2022, 71,2 M€ 2021)

OPERATING PROFIT

3,4 MEUR
2,9 M€ 2022, 0,2 M€ 2021

RETURN ON CAPITAL INVESTED %

1,8 MEUR
1,1 M€ 2022, 0,1 M€ 2021

RESULT FOR THE FINANCIAL YEAR

1,4 MEUR
1,2 M€ 2022, -0,5 M€ 2021

INVESTMENT

7,6 MEUR
8,6 M€ 2022, 4,3 M€ 2021

PERSONNEL IN TOTAL

423 419 persons in 2022
415 persons in 2021

OFFSHORE PERSONNEL

254 241 persons in 2022
229 persons in 2021

ONSHORE PERSONNEL

169 178 persons in 2022
186 persons in 2021

	2023		2022		2021	
	Offshore personnel	Onshore personnel	Offshore personnel	Onshore personnel	Offshore personnel	Onshore personnel
Icebreaking	224	12	208	7	197	7
Fairway maintenance	9	104	9	123	9	125
Hydrographic surveying	9	34	11	27	10	33
Arctia Karhu	12	1	12	1	12	1
Administration	0	18	0	21	0	21

Events in 2023

Major changes in the fairway maintenance sector



The fairway maintenance business was adapted to respond to the new demand situation, the organisation was streamlined, and a major action programme was launched to secure competitiveness in this business area.

Skills development and continual learning

Arctia's training plan for 2023 was implemented as planned with a total of

643 training days completed within the Group.

Customer targets were achieved



During the 2022–2023 winter season, the quality targets set for icebreaking, in terms of average waiting times and the percentage of ships passing through without waiting, were met. The Net Promoter Score (NPS) for Fairway Maintenance and Hydrographic Surveying was over 60.

2023

Hydrographic survey vessels switched to lower-emission marine fuel



The use of renewable fuels in marine surveying increased considerably. More than one third of all fuel used in hydrographic operations was renewable.

Icebreaker chartered to Canada

Arctia carried out icebreaking and assistance operations in Canada under a three-year contract.



Excellent standard of occupational safety

In 2023, the Arctia Group had a record low number of occupational accidents and its Lost Time Injury Frequency (LTIF) rate was excellent.

LTIF **6.2**

CEO's review

Arctia's mission is to facilitate safe, smooth and environmentally sustainable waterborne transport operations throughout the year. In 2023, we were able to complete these core tasks successfully while at the same time the key operational, customer satisfaction and safety indicators developed in the right direction.

The consolidated operating income was EUR 3.4 million (4.1%) based on the revenue of EUR 82.7 million. Several years of determined efforts are beginning to bear fruit and the operating profit is at its highest since 2018, when Arctia and Meritaito merged. However, as far as financial performance is concerned, we had set our sights higher. Hence, we will, together with the entire personnel, continue to pursue the 8% profit target as defined in the corporate strategy.

Aside from implementing sustainability thinking across the organisation, we continued in-house development efforts focusing on the requirements imposed by the Corporate Sustainability Reporting Directive (CSRD) and other new regulation. Achievements on the sustainability front in 2023 include the best ever occupational safety performance and a significant increase in the use of renewable fuels in hydrographic surveying operations, where more than one third of all the fuel consumed was renewable.

Finland's changed security situation and the growing importance of maintaining the stocks of critical supplies will only underline Arctia's role in the future. The government programme published in the summer of 2023 includes an entry saying that icebreaking operations will be re-organised and a programme to modernise the icebreaker fleet will be launched. For years now, Arctia has systematically argued for the need for such modernisation. In order to clarify the roles of the various parties involved, optimize operational activities and to upgrade the fleet, the best solution would be to adopt an all-around service contract model. During 2023, we updated the strategies for group operations, icebreaking and hydrographic surveying to reflect the changes in the operating environment.

In the icebreaking business, we returned to the international chartering market in autumn 2023 after a long break. Accordingly, we carried out icebreaking and assistance operations in Canada under a three-year contract. The final outcome was overwhelmingly positive: job satisfaction improved, security of supply was enhanced in terms of both the fleet and human resources, while profitable chartering helped ease the financial burden of icebreaking for Finland. International charter operations using part of the fleet support our core mission, which

is to provide icebreaking services in Finnish waters. The resumption of international chartering operations called for major efforts on the part of the entire staff, for which I wish to express my heartfelt gratitude.

Hydrographic surveying was characterized by close customer cooperation, development of new partnering models and the expansion of the business. Revenue reached an all-time high. As foreseen in our marine surveying strategy, we will seek additional revenue and growth in the offshore wind farm and marine infrastructure market. For fairway maintenance operations, 2023 was a challenging year due to the changes in the operating environment and fierce competition on price. As a result, our market share shrank. A major project to overhaul the business was launched, which will continue until at least the end of 2024. Contracts for port icebreaking were renewed and extended, which will give added stability and continuity to the business.

Arctia's mission is a clear-cut and tangible goal that all Arctia employees work for on a daily basis. The changes in the operating environment serve to further underline the importance and impact of our work. Finland is an island totally dependent on maritime logistics, which must run smoothly and safely under all circumstances.

Heartfelt thanks to all Arctia employees for

excellent performance in 2023. At the same time, I wish to express my gratitude to customers and stakeholders for great cooperation.

Maunu Visuri
President and CEO





Operating environment, strategy and business operations

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Operating environment and strategy

Reliable and efficient performance in safeguarding the strategic interests defined by the State of Finland lies at the heart of Arctia's mission.

OPERATING ENVIRONMENT

The pace of change in the world has only accelerated in recent years. Technological advancement as well as the growing importance of artificial intelligence, the climate crisis and other sustainability issues are reflected not only in the media but also in the concrete actions taken by companies. Unfortunately, this is also a time of uncertainty – wars, trade wars, protectionism

and extremism are gaining ground.

Arctia operates in traditional areas of business critical to maintaining stocks of critical supplies. For Arctia, the most relevant future drivers of change are the business opportunities provided by the green transition, the fight against climate change, Finland's new security position and the precarious state of the economy.

Demand for icebreaker assistance services on the Baltic Sea is expected to grow. As the greenest mode of transport, sustainable carriage by sea will help combat the climate crisis. Growing transport volumes, increasing vessel sizes, the declining ability of merchant ships to navigate in ice and the construction of offshore wind farms will all increase demand for icebreaker assistance. The challenging winter conditions brought about by climate change in the form of wind, sleet and drifting ice will also increase the need for assistance. A policy decision is likely to be announced in 2024 to re-organise icebreaking and modernise the fleet as foreseen in the government programme.

Given the green transition, there are plans to construct several hundred megawatts of wind

power capacity in Finnish territorial waters. The importance of maritime infrastructure hit the headlines when the Balticconnector gas pipeline was damaged. Both developments suggest a growing market for marine services, in which hydrographic surveying will play a pivotal role. For a couple of years now, the business environment in fairway maintenance has been undergoing a transition as a result of the introduction of new forms of competitive tendering.

STRATEGY

Forerunner in sustainable maritime services

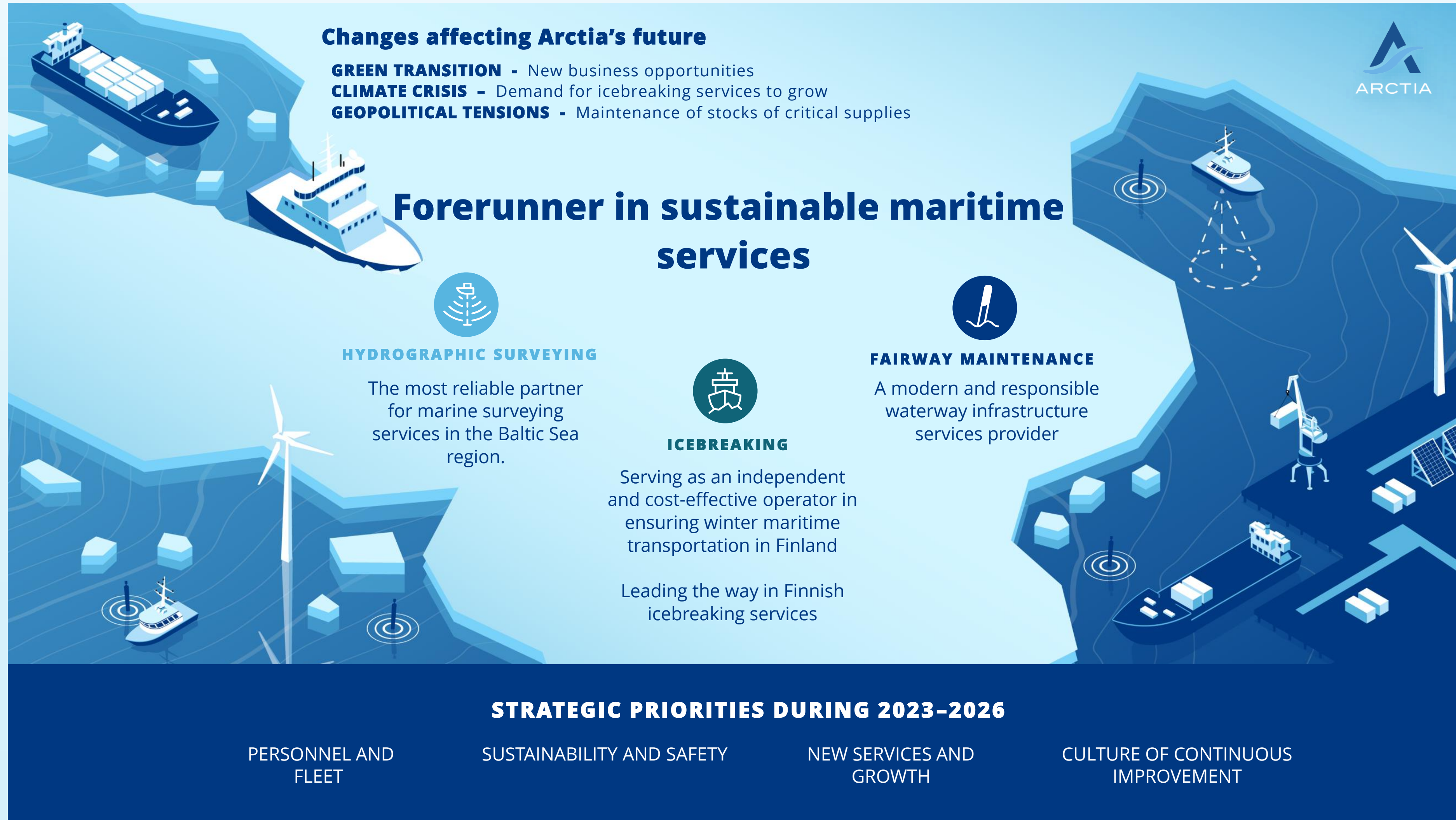
Arctia seeks to increase shareholder value sustainably in the long term. Reliable and efficient performance in safeguarding the strategic interests defined by the State of Finland lies at the heart of its mission. Aside from the services we provide for the Finnish society, we are actively involved in the commercial market seeking to achieve profitable growth and improve the utilisation rate of in-house resources. In the 2023-2026 strategy period, the Group-wide themes focus on human resources and skills development, new services, sustainability and safety. In addition to the foregoing, we will continue

to develop in-house operations in all business areas, strengthen the Arctia brand as well as leverage and develop digitalisation.

Society-related objectives

Arctia play a central role in society in contributing to the maintenance of stocks of critical supplies. The current geopolitical situation underlines the importance of the strategic interests associated with icebreaking and hydrographic surveying. Smooth year-round commercial shipping is a necessity for Finland; at the same time, it is the most environmentally friendly mode of transport. Arctia actively participates and contributes to current issues, development projects and research that affect our operations.






Changes affecting Arctia's future


- GREEN TRANSITION** - New business opportunities
- CLIMATE CRISIS** - Demand for icebreaking services to grow
- GEOPOLITICAL TENSIONS** - Maintenance of stocks of critical supplies

Forerunner in sustainable maritime services



HYDROGRAPHIC SURVEYING


The most reliable partner for marine surveying services in the Baltic Sea region.



ICEBREAKING

Serving as an independent and cost-effective operator in ensuring winter maritime transportation in Finland

Leading the way in Finnish icebreaking services



FAIRWAY MAINTENANCE

A modern and responsible waterway infrastructure services provider

STRATEGIC PRIORITIES DURING 2023-2026

- PERSONNEL AND FLEET
- SUSTAINABILITY AND SAFETY
- NEW SERVICES AND GROWTH
- CULTURE OF CONTINUOUS IMPROVEMENT

Business operations

ICEBREAKING

Long winter in the Bay of Bothnia

As such, the 2022–2023 icebreaking season lasted quite long. The first icebreaker sailed on 11 December, and icebreaker assistance was required until the end of May. The ice sheet on the Baltic Sea was at its largest on 12 March, covering an area of 81,000 km².

Five of the eight Arctia icebreakers were in operation during the season. On the Bay of Bothnia, merchant vessels were assisted by icebreakers Otso, Kontio, Polaris and Sisu. By contrast, the need for assistance on the Gulf of

Finland was low, with the icebreaker Urho operating at sea for only 35 days.

In 2023, Arctia signed a three-year contract with Baffinland Iron Mines Corporation on the provision of icebreaking services in the Arctic regions of Canada. From 6 September to 15 November 2023, the multi-purpose icebreaker Fennica operated in the north-eastern parts of the Baffinland Island, assisting merchant vessels bound for the port of Milne.

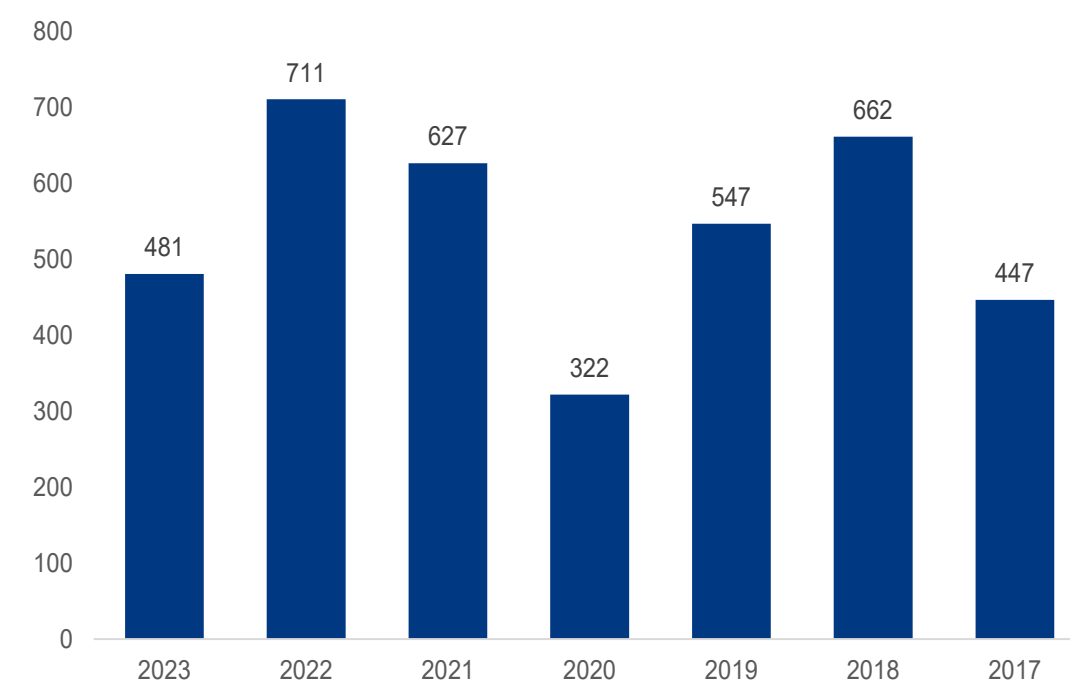
In 2023 it was Nordica's turn to go to the dock for the regular five-year overhaul.

PORT ICEBREAKING AND ESCORT TOWAGE SERVICES

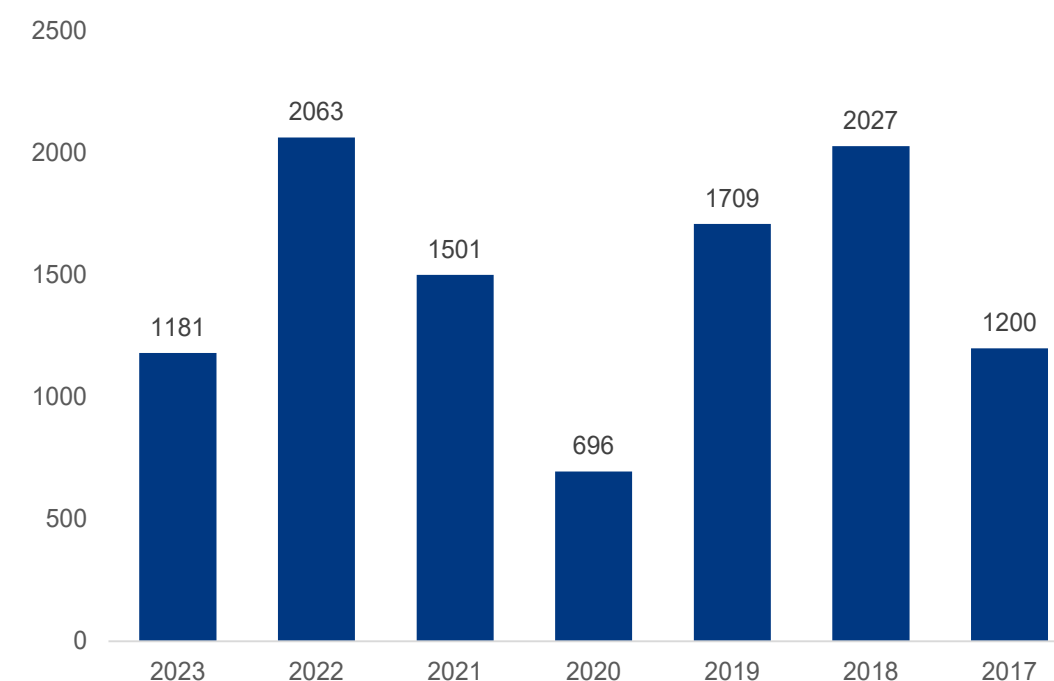
Arctia Karhu Oy is a company jointly owned by Arctia (90%) and Kemi Port Ltd (10%), providing port icebreaking, assistance and towage services across the Bothnian Sea. In 2023, the port icebreaker Ahto assisted vessels in the port of Røyttä in Tornio and the port icebreaker Jääsalo in Ajos, Kemi.

The 2023 port icebreaking season was short, coming to a close as early as the end of March. Revenue and profits remained more or less unchanged relative to the previous year. However, revenue is expected to grow as of 2024 as a result of the additional traffic volumes to be generated by the new bio-pulp mill in Kemi. The company's oil spill response agreement with the Lapland Rescue Department was extended until spring 2024.

Total operating days (qty)



Total assistance operations (qty)



FAIRWAY MAINTENANCE

New measures required to maintain competitiveness in the face of the changed operating environment

In 2023, the fairway maintenance business was adapted to respond to the new demand situation, the organisation was streamlined, and a major action programme was launched to secure competitiveness in this business area. The efficiency drive will continue throughout 2024, if not longer.

In 2023, Arctia was responsible for fairway maintenance in contracted areas on the Bay of Bothnia, the Gulf of Bothnia, the Archipelago Sea, the Bothnian Sea, the Sea of Åland and certain areas on the Gulf of Finland, put out to open tender by the Finnish Transport Infrastructure Agency. Additionally, the company is responsible for fairway maintenance on behalf of the Provincial Government of Åland. On inland lakes, Arctia managed fairway maintenance operations in Lappeenranta, Kuopio and Keitele.

Revenue decreased relative to 2022 and the future outlook is challenging.

Remote-monitored safety devices improve maritime safety

Online data on the performance of safety devices improves maritime safety, while remote monitoring allows preventive maintenance, making it possible to carry out servicing more efficiently. Additionally, remote monitoring is environment-friendly, reduces emissions and

offers major savings in the costs of conventional fairway maintenance. Currently, over 2000 safety devices and navigational aids are covered by the remote monitoring and management system.

Little traffic on the Saimaa Canal

In 2023, Arctia operated the Saimaa Canal, its eight locks and seven lifting bridges, and was responsible for the maintenance of the electrical, structural and engineering systems of the canal. Freight traffic on the Saimaa Canal stopped almost completely after Russia invaded Ukraine in February 2022. Only a dozen leisure boats passed through the canal in 2023.

Life-cycle efficient products from the buoy factory

The Joensuu Buoy Factory has been manufacturing buoys and spar buoys from HD polyethylene for over 40 years. Based on long-term development efforts, the products are second to none in the industry. Our products withstand ice conditions and are by far the best investment in terms of life cycle costs to safeguard waterborne transport.

Recently, the factory opened a special station for disassembling used buoys and sorting the waste fractions.





HYDROGRAPHIC SURVEYING

Year of growth

Hydrographic Surveying generated record revenue. The 2023 season started early, as soon as the ice was gone, and work was not finished until the sea froze again in the archipelago. Arctia's entire surveying fleet was deployed simultaneously throughout the summer, making full use of all the marine measurement and surveying methods and equipment available. Hydrographic surveying was carried out in all of Finland's territorial waters and in the exclusive economic zone.

Arctia's strategic mission is to provide the hydrographic surveying services necessary for naval preparedness in all conditions. Under the Territorial Surveillance Act, a hydrographic surveying permit is required for all surveying carried out in Finnish territorial waters. Arctia Meritaito and the Finnish Defence Forces have signed a security agreement on high-level security processes and operating models. Audited procedures and the security agreement provide for smooth authorisation processes for high-security hydrographic surveying.

Arctia operates one of the largest surveying fleets in Northern Europe. Every year, Arctia surveys thousands of square kilometres of seabed to the highest international quality standards in Finnish and European waters. The expertise acquired over the years has made it possible to extend the activities to respond to the surveying needs of offshore wind farms.

In 2023, Arctia carried out high-security surveys for the Finnish Transport and Communications Agency (Traficom) for fairway maintenance purposes. As foreseen in the corporate strategy, we increased our market share in offshore surveying in Finland for various wind farm development companies. Other than these efforts, the year was strongly characterized by skills and services development to meet the needs of project developers.

Also, a large number of geotechnical seabed surveys were carried out to support marine urban construction and infrastructure development. The demand for surveying services has been growing considerably, and the revenue from geotechnical surveys is expected to increase further in 2024 with the growing needs of offshore wind farm customers.

A range of hydraulic structures, piers, ports, ferry lanes, dredging surveys and fairways were modelled and designed for the authorities, municipalities, ports and energy companies. Shipping channel design, expertise and consultancy services were provided in a total of around twenty projects.

In 2023, Arctia switched to renewable fuels on its marine survey vessels in all projects and vessels where this was possible. More than 35% of all the fuel used during the 2023 season was renewable, and the resulting reduction in CO2 emissions was around 30%.

3. Sustainability as part of service production

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3. Sustainability as part of service production

Around 95 per cent of Finland’s exports are carried by sea. Together with our stakeholders, we guarantee that the Finnish society works smoothly throughout the year, while continuing to develop the maritime infrastructure to meet future needs.

Safe shipping is a sum of numerous factors. It is affected by the quality of hydrographic survey data, fairway design, construction, marking and management as well as icebreaking in winter. Efficient logistics ensure that the country remains competitive while low-emission waterborne transports contribute to a lower environmental impact.

Arctia’s special strengths include regional presence and close familiarity with local waters. Arctia operates 20 stations that provide expert services along the coastal and inland waters. Aside from in-house product development, we engage in research cooperation with universities of applied sciences, universities and other organisations to contribute to the future of Finnish shipping. We are involved in the activities of Merenkulun Harjoittelumylly, a coordinator of onboard training established jointly by the Finnish Shipowners’ Association and nine maritime institutions for the purpose of promoting onboard training on ships.

Arctia’s impact is greater than its size as a company would imply.



Arctia’s head office, the Helsinki fairway station, and the base for conventional icebreakers are located in Katajanokka in Helsinki. The home port of multipurpose icebreakers Fennica and Nordica is Kotka, and Arctia Karhu Oy is domiciled in Kemi. The services of Arctia Meritaito Ltd cover the coast and inland waters

SUSTAINABILITY MANAGEMENT

Daily operations at Arctia are governed by its Code of Conduct, corporate policies and other in-house guidelines. An essential aspect of sustainability performance is that it makes a real difference and that all Arctia employees are genuinely committed to it. Each employee can contribute to improving the company’s sustainability performance. Primarily, responsibility for sustainability and its management rests with the Board of Directors, CEO and management team. Sustainability is integrated into operations, management, strategy, objectives, policies, guidelines and key performance indicators.

ROLES AND RESPONSIBILITIES

Owner

- Overall policies and requirements set out in the Government Resolution on State Ownership Policy.
- Monitoring by way of reports and meetings of shareholders.

Board of Directors

- Responsible for ensuring that sustainability is incorporated into the strategy and risk management policy.
- Establishment of objectives and performance monitoring.

CEO and Executive Management Team

- Coordination, development and reporting on sustainability efforts in compliance with the instructions issued by the Board of Directors.
- Tools including monitoring of sustainability targets, policies and guidelines; establishment of targets and related monitoring; management and monitoring of development projects; stakeholder relations and materiality analyses.

Normally, the standard procedure for sustainability reporting and review is as follows:

- annual corporate sustainability report
- objectives as part of the strategy development process and sustainability targets as part of the remuneration plan



- quarterly sustainability report for submission to the Board of Directors
- presentation of topical sustainability issues to every meeting of the Executive Management Team
- review of stakeholder expectations and materiality analyses at appropriate intervals.

The point of departure for sustainability reporting is based on the issues we have recognised as material. Arctia reports on its sustainability performance with reference to the UN Global Compact principles on human rights, labour, the environment and anti-corruption policies as applicable. Reporting is carried out in compliance with the Government Resolution on State Ownership Policy and the related requirements for sustainability reporting by state-owned companies (Government Decree of 8 April 2020).

SUSTAINABILITY PRIORITIES

Arctia's approach to sustainability is crystallised in nine key themes (Fig. 1) based on a materiality analysis carried out in consultation with stakeholders. Of these objectives, it is pertinent to highlight the strategic interests of the State of Finland: we are tasked to ensure winter navigation to meet the sea transport needs of Finnish business and industry as well as to provide the hydrographic surveying services necessary for maintaining naval preparedness under all circumstances. In terms of impact, securing these strategic interests constitutes the core of our

sustainability efforts. In 2024, these priorities will be assessed using a double material analysis.

Securing winter navigation and icebreaking services

Arctia ensures shipping operations in winter conditions. Ultimately, it is the number, beam and engine power of our icebreakers that determine the type of vessels that can call in Finnish ports in winter, and specify the ice restrictions that need to be imposed in order to ensure a smooth flow of traffic.

Hydrographic surveying performance in all conditions to meet customer requirements

We provide the marine cartography authorities and other customers with reliable hydrographic data of the highest standard. For our stakeholders, it is of utmost importance to have access to accurate, up-to-date data on watercourses.

Compliance with fairway maintenance obligations and development of smart fairway infrastructure

Arctia is responsible for maintaining Finnish waterways in contracted areas in accordance with the applicable quality requirements. At the same time, the fairway infrastructure is being developed by making use of digital technology. Oil spill response and post-incident preventive action are part of fairway maintenance and risk management in the marine environment.

Long-term profitability

Continual improvement of financial performance is one of our key objectives as it permits sustained development efforts and investments.

Cost-efficiency

Our ambition is to be the most competitive company in this line of business.

Operational reliability and development

Operational reliability is one of the key elements in securing the strategic interests related to the maintenance of critical emergency supplies.

Safety, data security and data protection

All products and services, such as buoys, towing, icebreaker assistance and canal lock operations, must be safe. This also applies to the infrastructure because all the fairways must provide safe passage. All hydrographic data needs to be processed and saved without compromising data security. Similarly, the occupational safety of employees and suppliers is of utmost importance.

Securing winter navigation and icebreaking services	Hydrographic surveying performance in all conditions to meet customer requirements	Compliance with fairway maintenance obligations and development of smart fairway infrastructure
Long-term profitability	Cost-efficiency	Operational reliability and development
Safety, data security and data protection (Katakri)	Competent and committed staff and appropriate allocation of resources	Support for sustainable shipping and the environmental impacts of own operations

Fig. 1. Arctia's key sustainability objectives

Competent and committed staff and appropriate allocation of resources

In many respects, Arctia operates in narrow, highly specialised segments. Consequently, we need to have access to qualified and committed employees on a long-term basis.

Support for sustainable shipping and the environmental impacts of own operations

Carriage by sea is the most environmentally friendly mode of transport for which there is no viable alternative. In the big picture, Arctia’s role is all about supporting and enabling environmentally friendly waterborne transports. At the

same time, we seek to improve the management of our own environmental impact and reduce our ecological footprint.

STAKEHOLDER RELATIONS

Safe and problem-free navigation calls for cooperation between a number of parties. Aside from employees, we engage in stakeholder interaction with customers, shipping lines, authorities, ports, charterers, business and industry, research organisations, institutes of education and other sea cluster operators. Outside Finland, our stakeholders include customers, authorities, maritime operators, NGOs and research entities.

Arctia’s stakeholders, their expectations and the ways in which we respond to those expectations are listed in Table 1.

Arctia is a member of the following associations and advocacy organisations:

- Finnish Shipowners’ Association
- Service Sector Employers Palta
- The Finnish Maritime Society
- Meriturvallisuuden ja -liikenteen tutkimusyhdistys ry (Merikotka), a maritime safety research society
- Harjoittelumylly Onboard Training Association
- Association of Finnish Waterways
- Finnish Wind Power Association
- International Association of Marine Aids to Navigation and Lighthouse Authorities

CREATING ADDED VALUE FOR CUSTOMERS AND CUSTOMER SATISFACTION

Arctia’s single most important customer is the Finnish Transport Infrastructure Agency, which is responsible for maintaining most of Finland’s waterways and canals as well as for facilitating winter shipping. The Agency procures the services primarily through open tendering.

Icebreaking

A sea transport system that enables winter navigation for Finnish industry and merchant shipping calls for close cooperation between a number of partners. Serving as competent authorities responsible for general oversight are the Finnish Transport Infrastructure Agency

and the Finnish Transport and Communications Agency (Traficom). The former places orders for icebreaking services and defines the assistance limits and exemptions for merchant vessels, whereas the latter conducts national port inspections, etc., to ensure that the vessels and crews meet the ice class and other regulatory requirements. Additionally, to work properly, the system requires regular communications between pilots, ports, charterers, shipowners and other operators.

Arctia creates value by ensuring the performance of the winter transport system and meeting customer expectations. During the 2022–2023 winter season, the quality targets set for icebreaking in terms of average waiting times and the percentage of ships passing through without waiting were met. 96.8% of merchant ships were able to reach their ports of call subject to restrictions without having to stop and wait. The average waiting time in assistance operations was 3.6 hours.

Fairway maintenance

Arctia provides fairway maintenance services on coastal and inland waters. Other services include canal operation and maintenance, marker and buoy manufacturing, digital safety equipment and products as well as oil spill response. Fairway maintenance services are provided for the Finnish Transport Infrastructure Agency as well as for ports, cities, municipalities and other fairway operators.

A number of specific targets are established for each fairway maintenance project, such as



the response times for checking the positions of floating safety devices. Performance in attaining these targets is closely monitored together with the Agency.

In 2023, the position checks were carried out within the agreed-upon response times and the Net Promoter Score (NPS) for fairway maintenance was 60. In fairway services, the Net Promoter Score (NPS) – a measure of customer satisfaction and the willingness of customers to recommend a company’s products or services to others – was 64, which can be considered excellent.

Hydrographic surveying

Hydrographic surveys provide data for maritime cartography and the design, construction and maintenance of underwater structures as well as cable and pipe routes. The requirements concerning the quality of hydrographic surveys and the qualifications of the surveyors are set out in the standards (IHO S-44 6th Edition) published by the International Hydrographic Organization IHO and its national application guidelines (FIS44/2021). Where applicable, these standards are also followed in other marine surveys. Aside from these standards, projects are governed by a number of other minimum requirements and objectives related to timetables, occupational safety, quality, vessels, crews, working conditions, the environment, data security and ESG performance.

Hydrographic Surveying’s 2023 NPS was 63, which can be considered excellent.

NEW PRODUCTS AND SERVICES AND PRODUCT SAFETY

Arctia engages in active marketing efforts in respect of offshore wind farm developers, offering geophysical surveying and waterborne transport services for monitoring environmental and maritime conditions. Arctia’s digital sea marker and remote monitoring services enable customers to make their waterways safer and more environmentally friendly.

Safety of services

Maritime safety is one of the primary considerations in all of Arctia’s operations. We manage and develop the safety culture as part of the safety management systems of our shipping lines and vessels. Arctia’s subsidiary, Arctia Meritaito Ltd, has in place ISO 9001 quality management, ISO 14001 environmental management and ISO 45001 occupational health and safety management systems.

Safety of the buoy factory products

Arctia is the only company in the world to manufacture plastic spar buoys for harsh conditions. The products are exported worldwide to over 20 countries, specifically for applications requiring high ice resistance. All buoys and spar buoys are manufactured to SFS-5908 requirements. The trunk pipe is made of HD polyethylene (EPS), both recyclable materials. The buoys are equipped with steel mooring sinkers and fixing points, lifting lugs or sleeves, reflectors,

aluminium radar reflectors as well as lanterns complete with a battery compartment. We engage in ongoing R&D to improve the handling characteristics of the buoys to ensure a high standard of safety in use. Thanks to in-house design and manufacture, supported by continual product development, we are in a position to offer customised solutions to meet every need.

ENERGY EFFICIENCY AND THE CIRCULAR ECONOMY

Energy efficiency is an important aspect of Arctia’s operations and the services provided for customers as part of sustainable development and the company’s ESG policy. Arctia’s goal is to decrease its energy consumption and switch to renewable energy sources whenever possible. Improved energy efficiency will enable us to cost-effectively reduce our impact on the environment.

By promoting the circular economy, we seek to create maximum value added using fewer resources while minimising the environmental effects. For example, Arctia’s buoy factory recycles materials and harnesses production side streams to reduce the consumption of raw materials and lower production costs. Another way in which Arctia promotes the circular economy is that, instead of owning all its equipment, the company uses rental equipment in customer projects where possible.



Stakeholders and their expectations

STAKEHOLDERS	EXPECTATIONS	RESPONDING TO EXPECTATIONS	COMMUNICATION CHANNEL
Owner	<ul style="list-style-type: none"> • Steady financial performance • Safeguarding strategic interests • Increasing ownership value. • Sustainable operations • Capabilities for managing strategic, financial, operational and environmental risks 	<ul style="list-style-type: none"> • Operational strategy and vision • Transparent communication in respect of the company owner • Monitoring of regulatory compliance and conformance 	<ul style="list-style-type: none"> • Regular reporting • One-on-one meetings with the owner • Meetings of shareholders
Company personnel	<ul style="list-style-type: none"> • Sustainability and equal treatment • Sound long-term HR policy • Measures to promote wellness at work and occupational safety • Training and development opportunities • Incentive remuneration • Organisational transparency 	<ul style="list-style-type: none"> • Continual improvement of occupational safety • Development of incentive plans • Training • Transparent communications • Improving the quality of manager and supervisor performance • Arctia Code of Conduct 	<ul style="list-style-type: none"> • Daily work and communications • Performance appraisals • Regular personnel surveys • In-house training programmes and induction sessions • Intranet and Viva Engage, Arctia News
Customers	<ul style="list-style-type: none"> • Reliable and sustainable solutions, products and services of the highest standard • Understanding customer needs and smooth customer cooperation • Efficient project management • Reliability and transparency of operations 	<ul style="list-style-type: none"> • Quality assurance through in-house processes and audits • Using external (objective) audits and certificates (e.g. ISO 9001) • Employee competence and skills development 	<ul style="list-style-type: none"> • Personal meetings • Newsletters, websites, webinars • Marketing communications • Customer satisfaction surveys and feedback • Calls for tenders and contracts • Exhibitions and other events

Stakeholders and their expectations

STAKEHOLDERS	EXPECTATIONS	RESPONDING TO EXPECTATIONS	COMMUNICATION CHANNEL
Partners	<ul style="list-style-type: none"> • Sustainability of operations • Reliability and continuity of cooperation • Operational conformance 	<ul style="list-style-type: none"> • Reliable cooperation • Clear instructions and processes • Supplier-related requirements (Contractor responsibility reports) • Audits 	<ul style="list-style-type: none"> • Meetings and direct contacts • Supplier audits
Cities, municipalities, central and local governments	<ul style="list-style-type: none"> • Transparency of operations and minimisation of detrimental impacts • Job creation • Payment of taxes • Establishment, measurement and monitoring of environmental objectives 	<ul style="list-style-type: none"> • Cooperation with the authorities • Designated contact persons • Transparent and timely communications • Compliance with law and regulations • Operational conformance 	<ul style="list-style-type: none"> • Websites • Partner meetings and working groups • Reporting • Direct contacts • Audits
Other stakeholders (local communities, organisations, educational institutions, media)	<ul style="list-style-type: none"> • Timely and transparent flow of information • Various partner meetings • Local knowledge including the understanding, support and development of regional activities • Establishment, measurement and monitoring of environmental objectives 	<ul style="list-style-type: none"> • Partner meetings, joint working groups, designated contact persons • Active involvement in organisational activities • Statements in the context of seminars and events • Transparent and timely communications to people involved in the project 	<ul style="list-style-type: none"> • Seminar and events • External communications • Social media • Public hearings



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Corporate governance and finances

Financially profitable operations enable us to provide competitive services, ensure the continuity of operations, maintain the ability to invest and to continue to deliver on corporate responsibility.

Relative to 2022, the revenue increased to EUR 82.7 million (80.2m) and the financial result amounted to EUR 1.4 million (1.2m). The Group's solvency ratio remained sound at over 50 per cent. The consolidated cash flow was positive and liquidity remained good. At the end of the

year, the consolidated cash assets amounted to EUR 25.0 million (31.9m). Gross capital expenditure in 2023 totalled EUR 7.6 million (8.6m). Most of the investments were used for maintaining the icebreaker fleet.

FINANCIAL INDICATORS

	2023	2022	2021	2020	2019
Turnover, MEUR	82.7	80.2	71.2	80.8	79.1
Operating profit/loss, MEUR	3.4	2.9	0.2	2.4	0.0
% of turnover	4.1	3.6	0.3	3.0	0.0
Profit/loss for the fiscal period, MEUR	1.4	1.2	-0.5	0.9	-2.0
% of turnover	1.7	1.5	-0.7	1.1	-2.5
Equity, MEUR	143.8	142.8	141.6	142.1	141.2
Equity ratio, %	59.2	54.3	53.5	50.2	49.1
Net gearing, %	36.8	45.4	53.1	60.2	72.6
Interest-bearing liabilities, MEUR	78.0	96.5	102.8	119.3	125.3
Return on capital invested, %	1.8	1.1	0.1	0.9	0.1
Return on equity (ROE), %	1.0	0.9	-0.4	0.6	-1.4
Investments, MEUR	7.6	8.6	4.3	6.8	9.5
% of turnover	9.2	10.7	6.0	8.5	12.0
Balance sheet total, MEUR	243.4	263.2	265.1	283.7	288.0



REVENUE FLOWS TO STAKEHOLDERS, MEUR

	2023	2022	2021
ADDED VALUE PRODUCED			
Turnover	82.7	80.2	71.2
Other operating income	1.5	0.7	1.2
Financial income	0.4	0.1	0.0
Total	84.6	80.9	72.4
DISTRIBUTED FINANCIAL ADDED VALUE			
Suppliers			
Materials and supplies, services, and other operating expenses	25.5	25.3	22.4
Investments	7.6	8.6	4.3
Employees			
Salaries, wages and pension expenses	36.7	34.8	31.9
Payments to owners and lenders			
Dividends	0.4	0.0	0.0
Financial expenses	2.3	1.0	1.7
Public sector			
Income taxes and real estate taxes	0.1	0.1	0.1
Social insurance contributions	1.2	1.1	1.0
Total	73.9	70.8	61.4
FINANCIAL ADDED VALUE RETAINED IN THE DEVELOPMENT OF OPERATIONS	10.7	10.1	11.2

PAID AND REMITTED TAXES, MEUR

	2023	2022	2021
TAXES PAID, MEUR			
Employer's contributions	0.43	0.38	0.42
Income tax	0.06	0.05	0.03
Real estate tax	0.04	0.04	0.04
Taxes paid in tota	0.53	0.47	0.49
TAXES REMITTED, MEUR			
Withholding tax	7.44	7.37	7.15
Value added tax, sales	9.06	9.41	8.25
Value added tax, purchases	-6.86	-6.87	-6.28
Other taxes	0.04	0.04	0.04
TAXES REMITTED IN TOTA	10.21	10.42	9.65

CHARITY AND SPONSORSHIP, EUR

	2023	2022	2021
Children and youth	0	0	0
Science, research and education*	7,500	7,500	7,500
Arts	0	0	0
Sports and exercise	0	0	0
Political subsidies	0	0	0
Civic and environmental organisations**	1,000	1,000	1,000

ARCTIA AS A TAXPAYER

In 2023, Arctia Group companies paid a total of EUR x.x million (2022: EUR 10.42m) in taxes and parafiscal charges. Additionally, we contributed to the tax revenues of central and several local governments indirectly by employing a total of 420 people. All taxes are paid and accounted for in Finland.

SUPPORT FOR PUBLIC INTEREST PURPOSES AND SPONSORING

Arctia does not support or sponsor political parties, politicians, political institutions, sports or culture, nor does it enter into any cooperation agreements in this regard. In 2023, we donated Christmas gift funds to Save the Children to support children affected by the crisis in Ukraine** and paid a membership fee to Meriturvallisuuden ja -liikenteen tutkimusyhdistys ry (a maritime research organisation)*

ETHICAL BUSINESS PRACTICES

The Arctia Code of Conduct governs the activities of the company and each employee, director, the CEO and every member of the Board of Directors. Accordingly, the company operations are based on the principles of integrity, professionalism, commitment to the staff, health and safety, the environment and continual improvement. We are committed to continuous improvement and to promoting ethically sustainable practices and solutions. We comply with all applicable local, national and international legislation as well as in-house policies and guidelines. The Code of Conduct is available [on our website](#).



RESPONSIBLE PROCUREMENT

A responsible and ethical procurement policy creates long-term value for both Arctia and its stakeholders. Arctia is committed to responsible conduct and ethical principles, which are also binding on our suppliers and subcontractors when acting on Arctia's behalf. In 2023, we extended the scope of monitoring in respect of suppliers and subcontractors to include sustainability issues and compliance with EU-imposed sanctions.

RISK MANAGEMENT

Risk management is divided into strategic, financial and operative risks. One major strategic risk is posed by changes in the operating environment, which may have a negative impact on revenue and operational reliability. This risk is addressed by anticipating the impact of changes in the business environment, influencing decision-making and effecting changes in the in-house operations.

The main operative risks and uncertainties relate to the management and profitable execution of customer projects. Key elements include risk assessments, efficient processes and qualified project staff.

An ageing fleet raises the risk of technical problems and increased maintenance costs. To manage the risk, Arctia has in place long-term servicing plans and annual maintenance

schemes. Accident risks are managed through comprehensive insurance policies.

Arctia has in place an ISM safety management system, while other group operations are governed by ISO 9001 quality management, ISO 14001 environmental management and ISO 45001 occupational health and safety management systems. Additionally, the company complies with the provisions of the 'Katakri' information security auditing tool applied by the Finnish Defence Forces.

Due to the nature of Arctia's operations, most of the time devoted to risk management is used for addressing operative risks and, in particular, ensuring occupational safety. Major resources have been allocated to improving the safety culture and procedures.

The management of sustainability risks is an integral part of regular risk management. Given the impact of Arctia's operations, any materialised risk usually reflects on sustainability risks as well.

Staff well-being

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Staff well-being

Safety is the first priority for Arctia. Allocation of resources to occupational safety is positively reflected on the safety indicators.

HUMAN RESOURCES MANAGEMENT AND OBJECTIVES

In the 2023-26 strategy period, the Group's key development themes will focus on human resources and skills improvement. To support these efforts, Arctia will define a group-wide corporate culture and values, manage talent and improve skills development as well as create a HR pool and promote career advancement.

In 2023, leadership and management development continued in the form of Deep Lead training with the aim of developing interpersonal skills and creating sustainable learning practices. The programme aims to contribute to wellness at work and improve performance throughout the organisation.

Efforts to improve interaction are closely related to overall workplace community skills. A number of training days were held on this theme in 2023. The programme will continue in 2024 as part of the HR and skills development efforts.

Forward-looking HR planning proved increasingly important in 2023 because operating volumes increased and the number of people going into retirement exceeded the forecasts.

WELLNESS AT WORK AND THE EMPLOYEE EXPERIENCE

Arctia conducts annual surveys to learn about staff well-being and the factors that affect their performance at work. The findings are used as a basis for drawing up and implementing development plans to promote our objectives at both the Group and unit level. The 2023 index illustrating the staff's motivation levels remained more or less unchanged relative to 2022. According to the survey, the biggest motivators were the significance and relevance of the work the employees carried out and the special expertise they possessed. Employee well-being plays an important role in attaining the company's goals, which is why we will continue to invest in maintaining our strengths.

Work capacity managements shifted its focus more on preventive measures and the Group-wide occupational health action plan was extensively updated in 2023. Underlying these efforts were, inter alia, seafarers' increasingly stringent health requirements and ageing employees. A plan was drawn up to systematically develop the early intervention model. The foreseen practical measures will include raising staff awareness of



NUMBER AND STRUCTURE OF PERSONNEL

	2023	2022	2021	2020	2019
Number of personnel (31.12.)					
Onshore personnel	169	178	186	209	219
Offshore personnel	254	241	229	218	223
Employment contract distribution (31.12)					
Onshore personnel, permanent	159	167	175	197	203
Offshore personnel, permanent	215	220	210	216	223
Temporary	48	32	30	14	16
Share of full-time and part-time employment contracts (%)					
Onshore personnel, part-time	1.8	1.7	1.6	5.3	2.6
Offshore personnel, part-time	0	0	0	0	0
Average length of employment contract / years (31.12.)					
All employees	12.1	13.2	13.7	12.9	13.3
Average age of personnel / years (31.12.)					
All employees	47.4	47.9	49.9	48.7	48.5
Offshore personnel, men	47.2	49.0	51.9	50.3	50.3
Offshore personnel, women	48.9	49.9	49.9	48.3	48.0
Onshore personnel	48.8	47.9	46.0	47.6	48.1
Retired employees	11	3	14	8	22
Average age of retirement	63.8	63.6	64.4	61.5	62.1

All members of personnel employed by Arctia in 2023 were Finnish nationals.

maritime health requirements, healthy diets and exercise opportunities.

EQUALITY AND NON-DISCRIMINATION

Arctia complies with its equality and non-discrimination plan in all its operations. The plan provides information on staff structure, pay surveys and work-life balance. Additionally, the gender equality plan addresses the principles and promotion of equality and the company's performance in implementing the necessary measures.

We monitor the progress of the measures set out in the equality and non-discrimination plan in cooperation with staff representatives.

SKILLS DEVELOPMENT AND CONTINUAL LEARNING

Arctia has qualified employees, whose skills are maintained through varied tasks and training corresponding to job-specific requirements. On-the-job learning plays an important part in skills development. Aside from versatile duties, projects and development schemes provide ample opportunities for continual learning. Induction programmes and instruction ensure healthy and safe working conditions, both for new employees and for those assuming new duties or relocating to other positions.

Arctia's training plan for 2023 was implemented as planned with a total of 643 training days completed within the Group, consisting mainly of refresher training in fire-fighting and rescue operations and medical care in order to maintain seafarers' additional qualifications. Other

GENDER DISTRIBUTION

	2023	2022	2021
Offshore personnel (31.12.)			
Men	214	208	194
Women	35	20	23
Onshore personnel (31.12.)			
Men	156	172	169
Women	18	19	29
Total	423	419	415

GENDER DISTRIBUTION IN MANAGEMENT TEAM

	2023	2022	2021
Men	6	4	4
Women	1	1	1
Total	7	5	5

BOARD OF DIRECTORS' GENDER DISTRIBUTION

	2023	2022	2021
Men	3	3	3
Women	3	3	3
Total	6	6	6

training related to occupational safety and health include the training required for health & safety and hot work certificates as well as first aid training.

OCCUPATIONAL HEALTH AND SAFETY

Safety is the first priority for Arctia. We are

committed to ensuring the physical and psychological safety of our employees in all operations. We also see to it that every employee, subcontractor and partner has the necessary skills, tools and instructions to be able to work safely. Our safety management system is based on the International Safety Management (ISM) Code and Arctia Meritaito's ISO 45001-compliant

occupational health and safety standard.

Other development projects along with occupational safety included improved vessel safety, updated operative documentation and upgraded cybersecurity management. Positive risk management and safety-related findings continued to serve as important priorities. A new information system was deployed for managing safety-related reports.

Arctia's targets for occupational safety are zero serious accidents at work, zero occupational diseases and a continuously declining trend in the accident frequency rate across the organisation. In 2023, the Arctia Group had a record low number of occupational accidents and its Lost Time Injury Frequency Rate (LTIFR) was excellent.

Arctia's occupational safety organisations convened regularly in 2023.

Moreover, Arctia plays an active role in improving occupational safety in the entire industry. The company is active in the Maritime Committee established by the Centre for Occupational Safety, which is tasked to promote occupational safety and health and safety cooperation as well as to improve wellness at work, including the general awareness of these issues and productivity at workplaces.

Arctia is also part of the logistics sector designated by the National Emergency Supply Agency, forming part of the joint preparedness organisation. Arctia also participates in the activities of the Waterborne Transport Pool, which is tasked,

NUMBER OF ACCIDENTS

	2023	2022	2021
Accidents resulting in absence from work	5	10	9
Accident frequency / million working hours	6.2	12.8	13.8

SICK LEAVE

	2023	2022	2021
Absence rate due to illness, all personnel	6.1	6.5	4.9
Number of suspected cases of occupational illness	0	0	0

inter alia, to safeguard shipping in collaboration with sector organisations and the authorities as well as to promote preparedness cooperation between waterborne transport and other logistics companies and government agencies. Additional resources were allocated to preparedness, for example, by providing training.



RESTRUCTURING AND TERMINATIONS

A total of three rounds of change negotiations were carried out in the company during 2023. They mainly concerned the fairway maintenance business. The negotiations led to employee relocations, reorganisation of activities, changes to job descriptions, mergers and closures, as well as seasonal lay-offs. A total of 37 employees had to be made redundant on financial and production-related grounds.

COLLECTIVE LABOUR AGREEMENTS

The following collective agreements were in force in 2023. All land-based collective agreements and part of the collective agreements for seafarers were renegotiated during 2023:

1. Collective agreement for Arctia Group deck and engineering departments as well as financial staff
2. Collective agreement for Arctia Group engineering officers on conventional and multi-purpose icebreakers
3. Collective agreement for Arctia Group icebreakers' deck officers
4. Arctia Icebreaking Ltd's collective agreement for offshore operations
5. Collective agreement for port icebreakers' deck and engineering officers and crew
6. Collective agreement for fairway maintenance personnel
7. Collective agreement between Meritaito Ltd and the Trade Union for the Public and Welfare Sectors JHL
8. Collective agreement for clerical staff

- between Meritaito and the Trade Union for the Public and Welfare Sectors JHL, the Federation of Salaried Employees Pardia and the Federation of Professional Staff YTN
9. Collective agreement for merchant vessels in cross-border trade
 10. Collective agreement for crew serving on Meritaito's fairway maintenance vessels
 11. Collective agreement for employees governed by the agreement made by Service Sector Employers Palta

During 2023, a total of three meetings of the cooperation committee were held at which all the business units of the company were represented.

SUPPLIERS AND SUBCONTRACTORS

The efforts to improve procurement and purchasing were continued in 2023. Compliance with contractor liability requirements, etc., is ensured through a supplier approval process. Supplier evaluations will be continued and updated to increase relevance and incorporate sustainability considerations into the process, which will contribute to meeting the growing reporting and development needs of stakeholders in the value and supply chain.

Supplier selections will increasingly be based on environmental considerations. Suppliers and subcontractors will be instructed in Arctia's safety policies and required to comply with its Code of Conduct. All suppliers are required to follow Arctia's safety, occupational safety and environmental policies.



Sustainable development

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Sustainable development

Arctia's main environmental focus relates to the indirect impact of its operations, the most important aspect being the assurance of winter navigation, which contributes to a reduction of total emissions from merchant shipping.

ARCTIA'S ENVIRONMENTAL PERFORMANCE

During 2023, Arctia continued to implement the measures foreseen in the environmental programme and CO2 roadmap. Most of the company's CO2 emissions are generated by icebreakers, while absolute emissions vary according to the severity of the winter. We continued to make technical improvements to measure the fuel consumption of icebreakers, which will allow us to optimise assistance operations. The use of biofuels in hydrographic surveying was increased. Additionally, we continued to develop waste management to support the circular economy as well as intensify risk management efforts to prevent environmental damage. Arctia did not cause any environmental accidents in 2023.

ENVIRONMENTAL OBJECTIVES

Arctia, like other shipowners, is committed to IMO, EU and national emission reduction targets, although legally speaking, they do not directly apply to icebreakers. Arctia's ambitious goal is

to reduce emissions by 20% by 2030 relative to 2020 levels. To this end, the company has prepared a CO2 roadmap which specifies concrete emission reduction measures. To achieve these objectives, it will be necessary to commence the modernisation of the icebreaker fleet, take steps to modify the winter maritime transport system and intensify cooperation with the Finnish Transport Infrastructure Agency and other stakeholders. Also, the requisite technology needs to mature, and the price and availability of alternative fuels need to be assured.

In the longer term, digitalisation will make it possible to optimise overall transport emissions. Aside from CO2 reductions, the environmental programme focuses on supplier management, improved waste recycling and reuse, reduced energy consumption and lower environmental risks.

A new environmental programme is under preparation. In addition to the foregoing objectives, the new programme period will pay closer attention to biodiversity and ecosystems, including operating models that support the circular

economy. Similarly, the methodology and quality of sustainability reporting will be developed to comply with the new EU directive.

IMPACT OF ARCTIA'S OPERATIONS - GREEN HANDPRINT

The positive effects of an efficient and disruption-free sea and inland lake transport far outweigh the direct negative environmental impacts of Arctia's operations. Finnish shipping accounts for almost 95 per cent of import and export transports while generating only 2.6 per cent of total emissions. This ratio underlines Arctia's positive net impact on the environment.

As far as icebreaking is concerned, the most important environmental impact is the facilitation of winter navigation. In the future, emissions from merchant ships will decrease as a result of the environmental efficiency requirements (EEDI/EEXI), which will lead to an impaired ability to navigate in ice and an increased need for icebreaker assistance. On the whole, emissions will decrease.



Oil spill response and clean-up services prevent environmental disasters and help restore the natural environment after accidents. Arctia's product range also includes buoys for monitoring emissions of pollutants, such as sulphur or oil.

The increasingly accurate hydrographic data on the seabed, sound fairway design and efficient fairway management will prevent accidents at sea, improve maritime safety and speed up fairway passage, thereby increasing fairway throughput.

ENVIRONMENTAL IMPACT OF THE OPERATIONS

As far as icebreaking is concerned, the most significant impact is CO2 emissions (see the environmental report), which will be reduced through the proper use of equipment and technical modifications. When the icebreakers are moored at the Katajanokka Icebreaker Base, they are connected to district heating, shore power and utility services. Icebreaker Polaris uses the overflow from its LNG system for heating.

With fairway maintenance, the main impact, aside from fuel consumption, is generated by the batteries powering the navigational aids and safety devices. We are currently in the process of improving the performance of buoy batteries. When at berth, fairway maintenance vessels, the port icebreaker Ahto and other tugboats are connected to shore power and their waste waters are discharged to a road tanker.

Another source of CO2 emissions is travel in connection with crew rotation.

The materials used for the provision of services are primarily related to vessel operation and maintenance, fairway management and hydraulic engineering services. For example, Arctia uses building materials, paints, solvents, detergents and cleaning products every year. The Joensuu Buoy Factory manufactures around 1500 plastic buoys and spar buoys annually. Being highly resistant products with a long service life, they have a clearly lower environmental impact than, say, iron buoys.

PREPAREDNESS FOR ENVIRONMENTAL RISKS

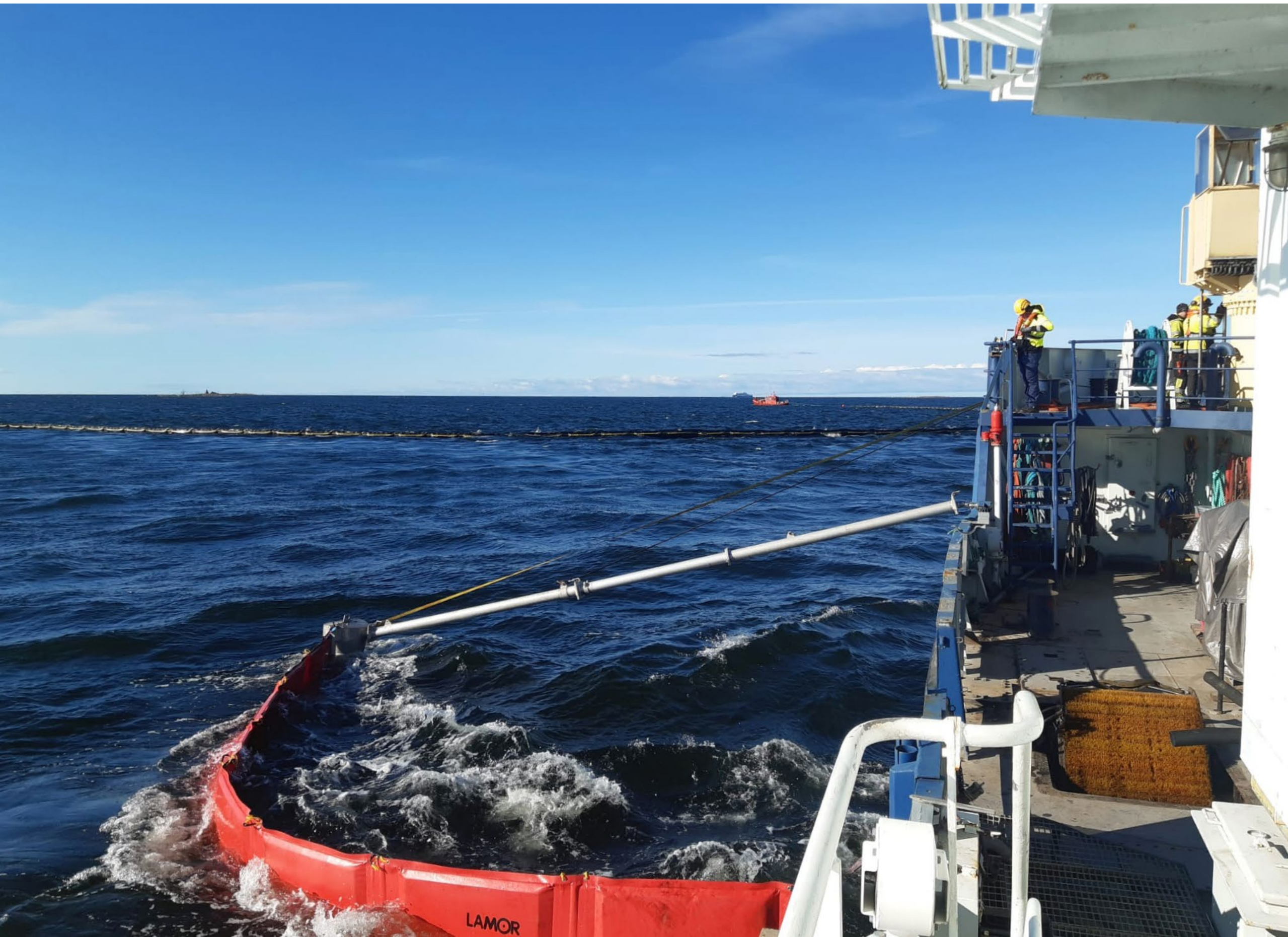
As far as in-house operations are concerned, environmental risks are addressed through risk assessments, preparation of operational guidelines, technical modifications and investments.

On a larger scale, we provide post-incident oil-spill response services, something in which Arctia Meritaito possesses extensive experience, expertise and equipment.

Fairway Maintenance and Hydrographic Surveying have in place an ISO 45001 environmental management system to manage the multiple environmental aspects of the operations. The safety management systems of icebreakers and other large vessels include a special section devoted to the environment.

ENVIRONMENTAL INVESTMENTS

In 2023, the biggest environmental investments were made in fuel consumption measurements. As part of the project, specific operating modes were defined to ensure more reliable monitoring and optimization of fuel consumption in varying conditions.



Environmental Report

ATMOSPHERIC AND GREENHOUSE GAS EMISSIONS

Atmospheric emissions from Arctia's operations consist of carbon dioxide (CO₂), carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x), methane (CH₄), nitrous oxide (N₂O) and fine particulate matter (PM). Consumable resources include fuel, water, electricity, buoy batteries, buoy raw materials, heating oil and district heating.

By far the largest single source of emissions is the fuel consumed by icebreakers, which varies

from year to year depending on the severity of the winter and the number of icebreakers in operation.

ELECTRICITY CONSUMPTION

Outside the season, conventional icebreakers are connected to the Helsinki City electricity grid, making it possible to shut down the engines to avoid emissions and noise. Similarly, Nordica and Fennica moored in Kotka draw shore power, just like the tugboats in Kemi and Tornio and the fairway maintenance vessels along the coast. In

the spring of 2021, Arctia signed a carbon-neutral power supply contract ensuring that 100% of all electricity is produced using renewable resources.

DISTRICT HEATING

District heating is used to heat both properties and icebreakers when at berth in Helsinki. When the icebreakers call in a port, they are connected to the district heating network and the onboard heater boilers are shut down. The Icebreaker

Polaris makes use of vaporised LNG fuel for onboard energy production. The Katajanokka Icebreaker Base switched to renewable district heating as of 2023.

OTHER MATERIALS

Paints, solvents, detergents and cleaning agents are used annually for the maintenance, servicing and repair of the fleet. Buoys are manufactured using plastic and metal and equipped with imported batteries. Paints, solvents, detergents and cleaning agents are used annually for the

ARCTIA GROUP'S CO₂ EMISSIONS ACCORDING TO THE GHG STANDARD (TONNES)

	2023	2022	2021
Scope 1, Direct emissions	42,046	55,330	43,741
Scope 2, Purchased energy, district heat 1)	0	647	752
Scope 2, Purchased energy, electricity 2)	113	160	445
Scope 3, Trave	62	33	3
Total CO₂ emissions	42,221	56,170	44,942

FUEL OIL CONSUMPTION OF VESSELS AND BOATS (TONNES)

	2023	2022	2021
Icebreakers, light fuel oil	11,445	15,606	10,696
Other vessels, light fuel oil *	814	822	1,065
Co-Processed (80% CO ₂ emission reduction)	114	0	0
Icebreakers, LNG	115	70	1,364
Boats	734	579	506
Motor vehicle	84	96	104
Total CO₂ emissions of fuel consumption	42,578	55,330	43,741

PURCHASED ENERGY: ELECTRICITY (MWh)

	2023	2022	2021
Katajanokka icebreaker pier	3,751	3,339	4,885
Kotka icebreaker pier **	2,315	2,034	2,408
Other ships ***	672	705	1,204
Other places of business	2,730	3,260	3,209
Calculated total CO₂ emissions of purchased electricity (t)	113	160	445

DISTRICT HEAT, WEATHER-ADJUSTED (MWh)

	2023	2022	2021
Katajanokka ****	4,418	3,554	4,133
Calculated total CO₂ emissions of district heat	0	647	752

ICEBREAKERS' CO₂ TONNES PER OPERATING DAY AND PER ASSISTED MERCHANT VESSEL

	2023	2022	2021
Vessels, tonnes/operating day (icebreakers)	77	71	61
Vessels, tonnes/assistance (icebreakers)	31	24	25

* HIB Ahto, HIB Jääsalo, MPV Pohjanmeri, MSV Seili
 ** Consumption measured from vessels
 *** HIB Ahto, MPV Pohjanmeri, MSV Seili
 **** Include Laivastokatu 3

1) As of January 1, 2023, Arctia switched to CO₂-neutral district heating.

2) As of March 1, 2021, the company switched to CO₂-neutral electricity for electricity use sites managed by Arctia.

maintenance of real estate properties. Materials consumption is monitored by each cost pool.

TRANSPORT AND TRAVEL

As far as Arctia's operations are concerned, transport and travel are negligible in terms of environmental impacts, the single biggest item being the trips made in connection with crew rotation. The number and length of the crew trips depend on the area in which the vessels operate and the number of days they spend at sea.

TRAVEL

	2023	2022	2021
All flights (kg CO ₂) *	62,060	33,411	2,760
Rail traffic **	0	0	0

* Source CWT: Emission factor 0.138 CO₂e kg/km, determined according to DEFRA methodology

** Rail transport is emission-free in Finland; electrified tracks with hydro-electric power, diesel-powered rolling stock (5%) emission-compensated.

WASTE

All waste from ships and sites is sorted where possible. Additionally, Arctia's operations generate construction and liquid wastes that are collected and sorted in accordance with waste management regulations. We seek to reduce waste and increase sorting and recovery rates in all operations. Our current waste management agreement allows us to accurately monitor and report on our waste volumes by type and site. When icebreakers, fairway maintenance and hydrographic survey vessels are in operation,

waste is delivered to port collection bins, from where it is transported to recycling or other reuse facilities. Icebreakers keep a waste log and report on waste removed from the ships in accordance with international regulations. This also ensures that waste that is not processed by Arctia's waste management supplier is reported accurately.

Hazardous waste is sorted and delivered to appropriate collection bins or points at all sites. Waste generated by onboard machinery is removed in compliance with applicable (MARPOL) regulations. Most of the hazardous waste consists of bilge water and waste oil. Ozone-depleting refrigerants previously used in onboard refrigeration systems have been replaced by substitute refrigerants.

Arctia's carbon footprint generated by its waste management operations is measured, and the measured emissions are offset through certified afforestation projects by the waste management contractor.

WASTE MANAGEMENT TRAINING AND PLANS

New employees are informed of the shipowner's waste management system as part of their induction training. All waste is sorted at land-based sites and onboard ships in accordance with the instructions issued by the company. Waste management reporting is audited internally and externally once a year.



Reporting procedures and calculation methodology

This Corporate Sustainability Report is based on elements that Arctia has identified as being material. Reporting is carried out in compliance with the Government Resolution on State Ownership Policy and the related requirements for sustainability reporting by state-owned companies (Government Decree of 8 April 2020). We report on our sustainability performance with due regard to the UN Global Compact principles on human rights, labour, the environment and anti-corruption policies as applicable. The reporting period is one calendar year from January 1st to December 31st, and the report is released annually.

The financial indicators have been calculated in accordance with the Finnish Accounting Act, while tax footprint reporting is based on the guidelines issued by the Government Ownership Steering Department. Additionally, the determination of key HR indicators is governed by the general guidelines for disclosures in annual reports issued by the Accounting Board.

KEY HR INDICATORS

The reported indicators reflect the situation on the reporting date (31 Dec 2023). The figures

also include part-time employees and employees under a fixed-term contract.

Lost-Time Injury Frequency

The Lost-Time Injury Frequency (LTIF) rate is calculated by counting all accidents at work resulting in at least one day of absence from work. Frequency is determined by dividing the LTIF by the hours worked and multiplying the result by one million.

The number of daily working hours used in the formula was 8 hours for the land-based organisation and 12 hours for ship-based crews. The LTIF includes all injuries incurred by both land-based employees and maritime crews divided by the total number of hours worked within the entire organisation.

CARBON DIOXIDE AND PARTICULATE EMISSIONS

Carbon dioxide emissions from the ships were determined using the formula presented in the IMO publication MEPC/Circ.471, 29 July 2005; "INTERIM GUIDELINES FOR VOLUNTARY SHIP CO2 EMISSION INDEXING FOR USE IN TRIALS".

Air travel carbon dioxide emissions were

determined using the factor 0.138 kg CO₂/km (DEFRA). Rail transport is emission-free in Finland; electrified tracks with hydro-electric power, while diesel-powered rolling stock is emission-compensated (State Railways).

Other atmospheric emissions from ships were calculated using VTT's MEERI calculation system and, where applicable, the emission factors defined in the European Environment Agency's (EEA) EMEP/EEA air pollutant emission inventory guidebook 2019.





Arctia Ltd

Laivastokatu 9, 00160 Helsinki, Finland

Tel. +358 30 620 7000

arctia.fi/en