



# Sustainability Report 2022





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# Annual Report for 2022

Arctia Group’s Annual Report 2022 comprises the report of the Board of Directors, corporate governance and remuneration report, sustainability report as well as financial statements. The reports are posted on the company’s website at [www.arctia.fi/en](http://www.arctia.fi/en).

## ANNUAL REVIEW



## CORPORATE GOVERNANCE AND REMUNERATION REPORT



## SUSTAINABILITY REPORT



## FINANCIAL STATEMENTS





IMPACT OF  
OPERATIONS

SUSTAINABILITY OBJECTIVES  
AND MANAGEMENT

SUSTAINABLE APPROACH  
TO BUSINESS

FINANCIAL  
RESPONSIBILITY

SOCIAL  
RESPONSIBILITY

ENVIRONMENTAL  
RESPONSIBILITY

# Reliable service in challenging conditions

Arctia is tasked to facilitate safe, smooth and environmentally sustainable waterborne transport operations.

Arctia's three lines of operation are icebreaking, fairway maintenance and hydrographic surveying. Aside from the wealth of experience and expertise in these core areas, Arctia engages in oil spill response, hydraulic engineering, pipe and cable laying, towing as well as the manufacture of plastic buoys and spar buoys.

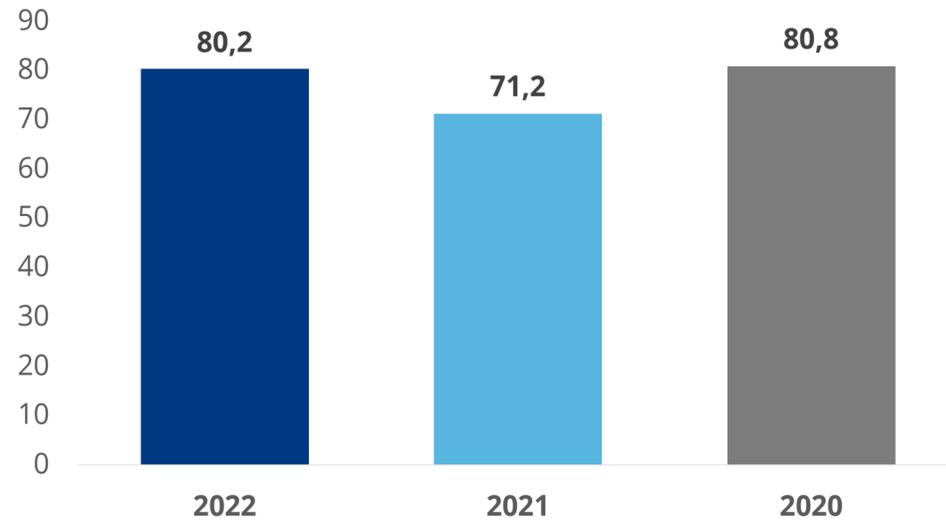
Arctia Ltd is 100 % state-owned.





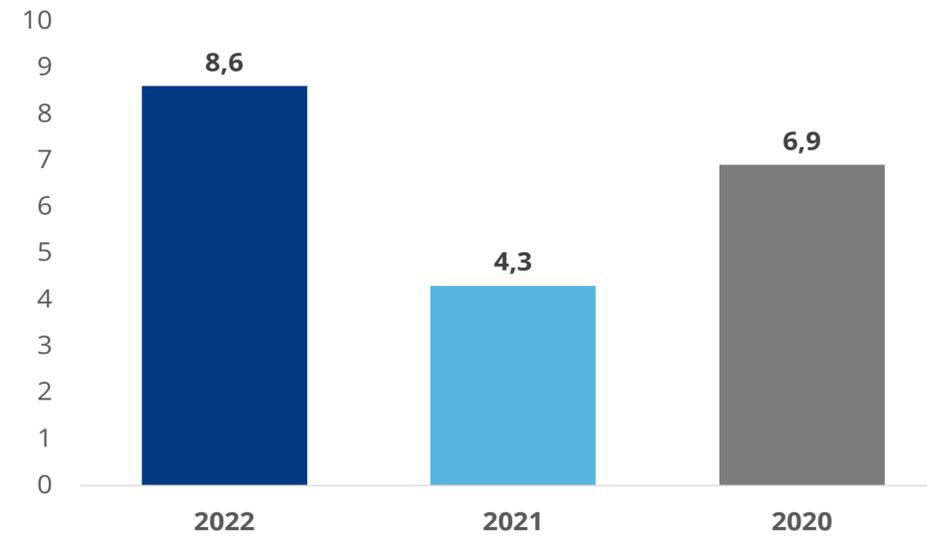
# Key financial indicators

Turnover MEUR



**80.2** 71.2  
80.8

Investment MEUR



**8.6** 4.3  
6.9

Result for the financial year MEUR

**1,2** -0,5  
0,9

Operating profit MEUR

**2,9** 0,2  
2,4

Return on capital invested %

**1,1** 0,1  
0,9



# Personnel in 2022

## Personnel in total



## Offshore personnel

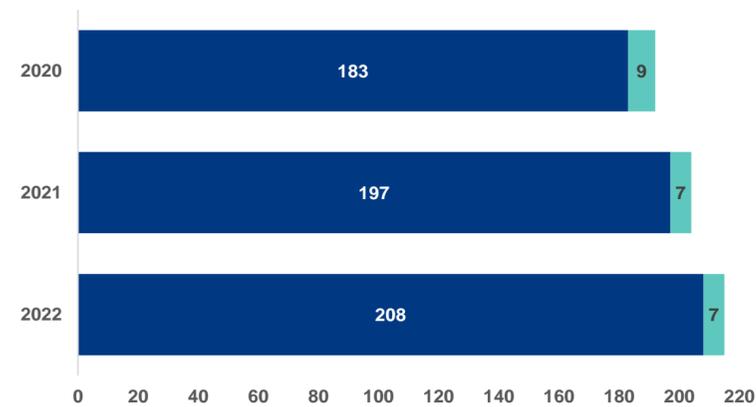


## Onshore personnel

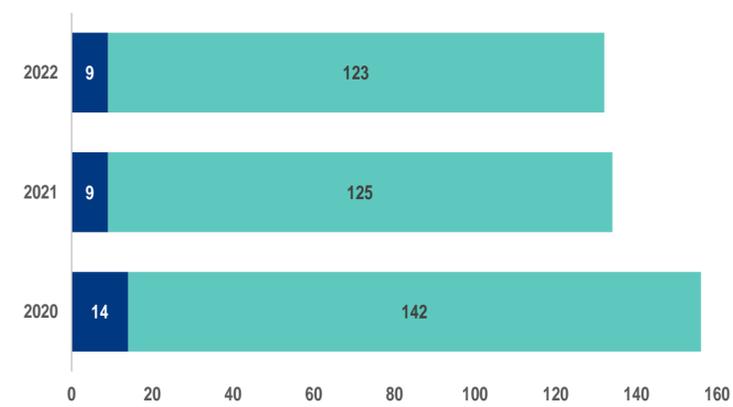


## Personnel by business area

### Icebreaking



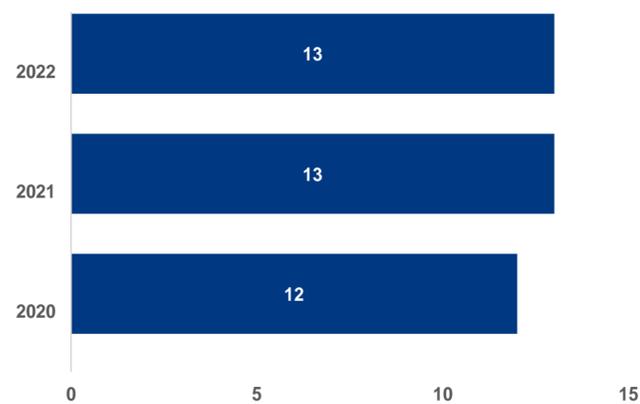
### Fairway maintenance



### Hydrographic surveying



### Arctia Karhu



### Administration





## CEO's review

# Sustainability in daily operations

Arctia's mission is to facilitate safe, smooth and environmentally sustainable waterborne transport operations throughout the year. It is a clear-cut and tangible goal which all Arctia employees work towards on a daily basis. It is easy to understand why sustainability lies at the heart of the company's operations, as our efforts affect the safety and performance of Finland's entire marine logistics infrastructure. Moreover, we operate close to nature in a unique and vulnerable environment.

Efforts to implement corporate social responsibility in all areas related to environmental, social and governance (ESG) performance were

continued in 2022 throughout the organisation as foreseen in the corporate strategy. Among the wide range of activities carried out, mention may be made of the successful experiment with renewable fuel in hydrographic surveying, which will serve as a basis for substantially increased use in 2023. Additionally, the investments required for recycling plastic spar buoys were completed and recycling got off to a successful start. Steps were also taken in the programme to reduce in-service emissions from icebreakers. Arctia's key role in maintaining emergency stocks of critical supplies was further underlined by the geopolitical situation, to which the company responded by raising its level of preparedness.

As a provider of icebreaking, fairway maintenance and hydrographic services, Arctia plays an important role in enabling waterborne transports in Finnish and international waters. We are committed to performing our valuable service by improving our ESG performance even further. Through our sustainability efforts, we aim to have a positive impact on society at large.

**Maunu Visuri**  
President and CEO





# Impact of operations

Together with our stakeholders, we guarantee the functioning of Finnish society throughout the year.

For over 140 years, icebreaking, fairway management and hydrographic surveying services have facilitated Finland's foreign trade, as carriage by sea accounts for 90% of all exports and 80% of imports. 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. Fairway safety starts with the quality of the hydrographic data and fairway design, followed by fairway construction, sea marking and fairway maintenance 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.

As Arctia's impact on society is clearly greater than its size would entail, it is only natural that the central government sees a number of strategic interests associated with the company's operations.

Arctia's vision is to be the Preferred Value-Adding Partner. Aside from value-adding inputs and products, performance in this respect can be measured in terms of customer satisfaction and product safety.

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 Oy cover the coast and inland waters.



## 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 public 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.



During the 2021/2022 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.

**Fairway maintenance**

Arctia provides fairway maintenance services on coastal and inland waters. Other services include hydraulic engineering, 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 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 2022, the position checks were carried out within the agreed response times and the NPS for fairway maintenance was 60. It was the first year that an NPS measurement was carried out and the score exceeded expectations.

**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 Organizations IHO and its national application guidelines (FIS44/2021). Where applicable, these standards are also followed in other maritime 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.

In 2022, hydrographic surveying services achieved an NPS of 55. It was the first year that an NPS measurement was carried out and the score exceeded expectations.

**PRODUCT SAFETY**

**Safety of services**

Maritime safety is one of the primary considerations in all of Arctia's operations. As far as in-house operations are concerned, safety is managed and improved as part of the safety management systems of our shipping lines and vessels. Arctia's subsidiary, Arctia Meritaito Ltd, has in place the ISO 9001 quality management, ISO 14001 environmental management and ISO 45001 occupational health and safety management systems.

**Safety of the buoy factory products**

Arctia has been manufacturing maritime safety devices, plastic buoys and spar buoys at its Buoy Factory in Joensuu, Finland, for over 40 years. Currently, there are around 27,000 Arctia made buoys and navigational aids on Finnish





waterways.

At present, the annual output is 1,500 items. From the outset, the goal was to create a low-maintenance, cost-effective design capable of withstanding the harshest winter conditions. Our factory is the only manufacturer of plastic spar buoys designed for ice environments. The products are exported worldwide to over 20 countries, specifically for applications requiring

high ice resistance.

All buoys and spar buoys are CE-marked and manufactured to IALA type specifications. We engage in ongoing R&D to improve the handling characteristics of the buoys to ensure a high standard of safety in use. Given in-house design and manufacture, supported by continual product development, we are in a position to offer customised solutions to meet every need.

Made from HD and MD polyethylene and polystyrene, the buoys and spar buoys are fully recyclable. The buoys are equipped with steel mooring sinkers and fixing points, lifting lugs, reflectors, aluminium radar reflectors as well as lanterns complete with a battery compartment.

As part of the efforts to promote digitalisation, Arctia's remote-controlled and -managed markers and buoys improve fairway safety and reduce environmental pollution.

- Association of Finnish Waterways
- Finnish Wind Power Association
- International Association of Marine Aids to Navigation and Lighthouse Authorities

**NEW SERVICES AND PRODUCTS**

June 2022 saw the completion of Intelligent Sea, an Arctia-coordinated project involving Arctia as well as the Port of Stockholm and Port of Naantali. Intelligent Sea was a three-year project aimed at developing smart digital solutions for the sea, ports and fairway users from a sustainable development perspective. The project received CEF funding from the European Commission. The project generated positive outcomes in terms of the technical performance of energy solutions related to rechargeable lithium batteries and solar cells, fuel cell backup power supply and remote monitoring and control of safety devices.

Arctia's in-house projects included a study of potential new opportunities available to Arctia's business units in the offshore wind farm market.

**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
- Meriturvallisuuuden ja -liikenteen tutkimusyhdistys ry (Merikotka), a maritime safety research society
- Harjoittelumyly Onboard Training Association





## Stakeholders and their expectations

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



## Stakeholders and their expectations

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



# Sustainability objectives and management

## SUSTAINABILITY POLICY

Arctia's sustainability policy and ESG reporting are based on matters recognised as being of key importance to these efforts as well as the Government Resolution on State Ownership Policy (VNK/8.4.2020).

## OBJECTIVES

Arctia's approach to sustainability is crystallised in nine key themes (Fig. 1) based on a materiality analysis carried out in consultation with stakeholders. Measurable targets are established for each theme every year to serve as a guideline for business operations. 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. In terms of impact, securing these strategic interests constitutes the core of our sustainability efforts.

**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.

### 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.

The utilisation rate and operation of icebreakers depends not only on the harshness of the winter (ice volume, winds, slush, pack ice and compression), but also on how merchant vessels are capable of coping unaided and to what extent they need assistance or towing. Another factor affecting the operation of icebreakers is the performance of other stakeholders, such as ports, and the reliability of the timetables reported by them.

**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 goal is to be the most competitive company in this line of business.

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



**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.

**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.

**SUSTAINABILITY MANAGEMENT**

A key element of sustainability management is to integrate it into the daily duties of all Arctia employees. Each employee can contribute to improving the company's sustainability performance. Of course, the primary responsibility for promoting corporate sustainability rests with the board of directors, CEO and the executive management team. Sustainability is an integral part of operations, management, strategy, objectives, policies and guidelines. Performance in attaining the sustainability targets is monitored as part of the in-house scoring system.

**ROLES AND RESPONSIBILITIES**

**Owner**

- Overall policies and requirements set out in the Government Resolution on State Ownership Policy.
- Monitoring based on attendance at general meetings of shareholders and corporate reports.

**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:

- summary for submission to the Annual General Meeting
- annual public 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 a materiality analysis at least once every three years





IMPACT OF OPERATIONS

SUSTAINABILITY OBJECTIVES AND MANAGEMENT

SUSTAINABLE APPROACH TO BUSINESS

FINANCIAL RESPONSIBILITY

SOCIAL RESPONSIBILITY

ENVIRONMENTAL RESPONSIBILITY

## OVERVIEW OF ARCTIA'S SUSTAINABILITY MANAGEMENT

### IMPACT OF OPERATIONS

- Role in society
- Managing the strategic interest
- Security of supply and meeting contractual obligations

### STAKEHOLDER COOPERATION

- Active cooperation
- Materiality analysis

### PRODUCING ADDED VALUE

- Customer satisfaction
- Product safety

### T&K

- Uudet palvelut ja tuotteet

### RESPONSIBLE WAY OF WORKING

- Conduct in accordance with the laws and standards
- Good governance
- Combatting bribery and corruption
- Risk management
- Corporate responsibility management
- Information security

### FINANCIAL RESPONSIBILITY

#### PROFITABILITY AND COMPETITIVENES

- Safeguarding the future
- Investment ability

#### FINANCIAL RESPONSIBILITY

- Laws, regulations, taxation, reporting

### SOCIAL RESPONSIBILITY

#### EMPLOYEES

- Health, safety and wellbeing of employees
- Work satisfaction
- Commitment, equality
- Good HR policy
- Development of competence
- Rewarding

#### SUPPLIERS AND SUBCONTRACTORS

- Responsible procurement
- Safety

#### SOCIAL AND REGIONAL IMPACTS

- Good corporate citizenship

### ENVIRONMENTAL RESPONSIBILITY

#### EMISSIONS AND CONSUMPTION

- Impact of Arctia's operations on total emissions in maritime transport in the Baltic Sea
- Own emissions, CO2 roadmap

#### WASTE

- Reducing and sorting of waste

#### OTHER ENVIRONMENTAL

- Nature conservation

#### EFFECTS

- Biodiversity

Fig. 2. Overview of Arctia's sustainability management





# Sustainable approach to business

The benefits offered by a sustainable approach to business can be illustrated in the form of a pyramid, where the base represents compliance with laws, regulations and ethical principles necessary for successful risk management, resource efficiency and a high standard of occupational safety.

## ARCTIA CODE OF CONDUCT

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. The Code of Conduct is available on [Arctia's website](#).

Arctia has in place a Whistle Blower Channel.

## RISK MANAGEMENT AND SUSTAINABILITY RISKS

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. The 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 some 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 ensuring occupational safety. Major resources have been – and will be – allocated to improving the safety culture and procedures.

Instead of being addressed separately,

sustainability risks are managed as part of regular risk management efforts. Given the impact of Arctia's operations, any materialised risk usually reflects on sustainability risks as well.

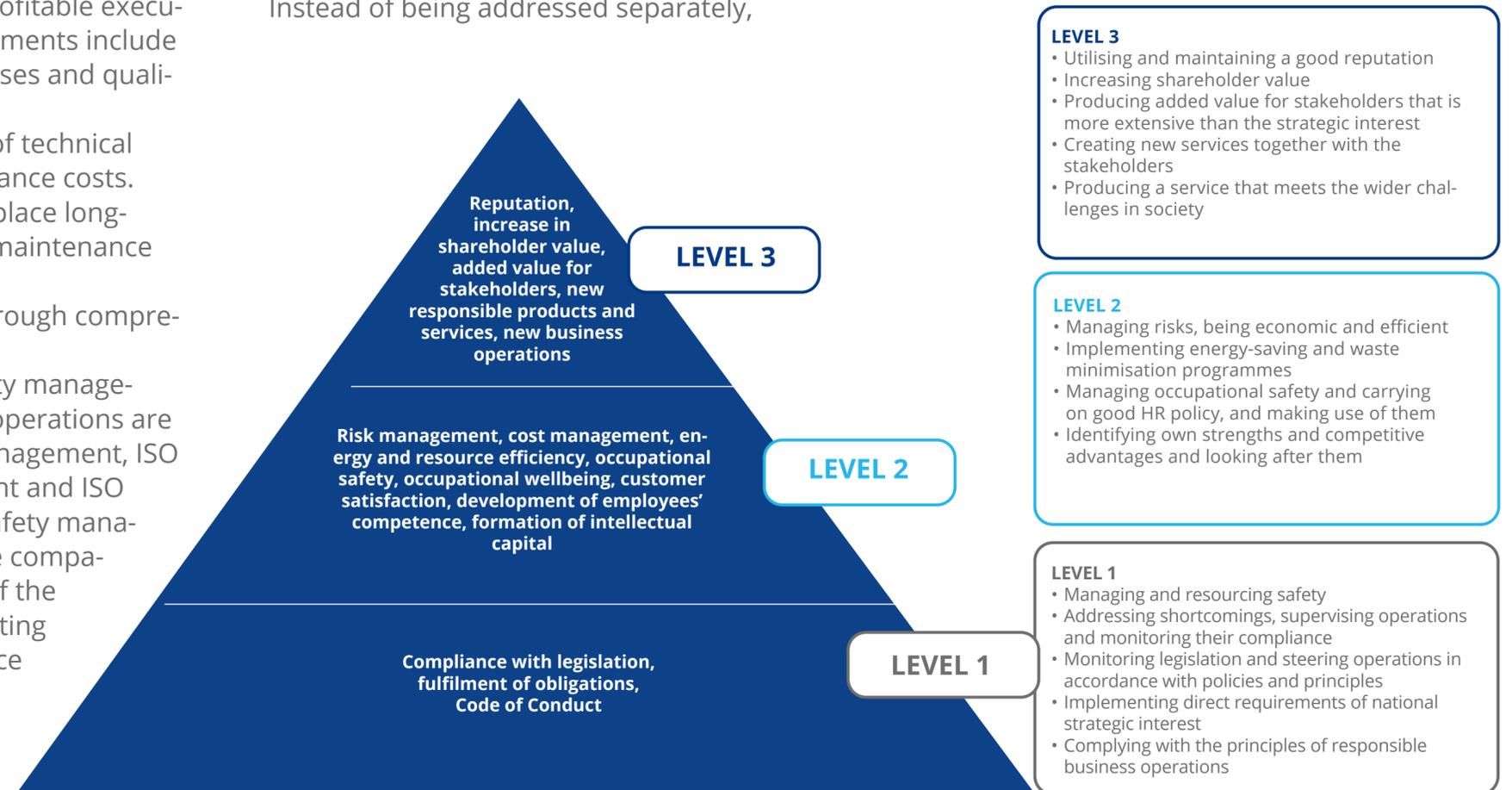


Fig.3. Corporate social responsibility pyramid (source: Audit report by the National Audit Office 5/2017)



# Financial responsibility

At Arctia, financial responsibility means ensuring profitability and competitiveness.

Financially profitable operations enable us to provide competitive services, ensure the continuity of operations, maintain the ability to invest and continue to deliver on corporate responsibility. Currently, the primary challenges to the company's profitability are related to the volume of revenue, an inflexible cost structure and the high cost of maintaining the ageing fleet.

Relative to 2021, the revenue increased to EUR 80.2 million (71.2m) and the financial result

amounted to EUR 1.2 million (-0.5m). The solvency ratio remained sound at 50 per cent. The consolidated cash flow was positive and liquidity remained good. At the end of the year, the consolidated cash assets and cash equivalents amounted to EUR 31.9 million (27.5m). The 2022 investments totalled EUR 8.6 million (4.3m). Most of the investments were used for maintaining the icebreaker fleet.

## FINANCIAL INDICATORS

	2022	2021	2020	2019	2018
Turnover, MEUR	80.2	71.2	80.8	79.1	50.9
Operating profit/loss, MEUR	2.9	0.2	2.4	0.0	2.2
% of turnover	3.6	0.3	3.0	0.0	4.4
Profit/loss for the fiscal period, MEUR	1.2	-0.5	0.9	-2.0	1.4
% of turnover	1.5	-0.7	1.1	-2.5	2.7
Equity, MEUR	142.8	141.6	142.1	141.2	147.3
Equity ratio, %	54.3	53.5	50.2	49.1	49.2
Net gearing, %	45.4	53.1	60.2	72.6	70.4
Interest-bearing liabilities, MEUR	96.5	102.8	119.3	125.3	130.0
Return on capital invested, %	1.1	0.1	0.9	0.1	0.8
Return on equity (ROE), %	0.9	-0.4	0.6	-1.4	1.0
Investments, MEUR	8.6	4.3	6.8	9.5	12.7
% of turnover	10.7	6.0	8.5	12.0	25.9
Balance sheet total, MEUR	263.2	265.1	283.7	288.0	300.1

The figures for 2018 are not comparable with years 2019 and 2022 due to the merger of Meritaito with the Group on 13 December 2018.





**REVENUE FLOWS TO STAKEHOLDERS, MEUR**

	2022	2021	2020
<b>ADDED VALUE PRODUCED</b>			
Turnover	80.2	71.2	80.8
Other operating income	0.7	1.2	1.6
Financial income	0.1	0.0	0.0
<b>Total</b>	<b>80.9</b>	<b>72.4</b>	<b>82.4</b>
<b>DISTRIBUTED FINANCIAL ADDED VALUE</b>			
<b>Suppliers</b>			
Materials and supplies, services, and other operating expenses	25.3	22.4	31.4
Investments	8.6	4.3	6.8
<b>Employees</b>			
Salaries, wages and pension expenses	34.8	31.9	29.5
<b>Payments to owners and lenders</b>			
Dividends	0.0	0.0	0.0
Financial expenses	1.0	1.7	1.6
<b>Public sector</b>			
Income taxes and real estate taxes	0.1	0.1	0.1
Social insurance contributions	1.1	1.0	1.3
<b>Total</b>	<b>70.8</b>	<b>61.4</b>	<b>70.7</b>
<b>FINANCIAL ADDED VALUE RETAINED IN THE DEVELOPMENT OF OPERATIONS</b>	<b>10.1</b>	<b>11.2</b>	<b>11.7</b>

**PAID AND REMITTED TAXES, MEUR**

	2022	2021	2020
<b>MAKSETTAVAT VEROT, M€</b>			
Employer's contributions	0.38	0.42	0.33
Income tax	0.05	0.03	0.03
Real estate tax	0.04	0.04	0.04
<b>Taxes paid in tota</b>	<b>0.47</b>	<b>0.49</b>	<b>0.40</b>
<b>TAXES REMITTED, EUR MILL.</b>			
Withholding tax	7.37	7.15	6.34
Value added tax, sales	9.41	8.25	11.46
Value added tax, purchases	-6.87	-6.28	-7.56
Other taxes	0.04	0.04	0.00
<b>Taxes remitted in tota</b>	<b>10.42</b>	<b>9.65</b>	<b>10.64</b>

**ARCTIA AS A TAXPAYER**

In 2022, Arctia Group companies paid a total of EUR 10.42 million (2021: EUR 9.65m) 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 Arctia-affiliated companies are Finnish. All taxes are paid and accounted for in Finland.

**CHARITY AND SPONSORSHIP, EUR**

	2022	2021	2020
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

**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 2022, we donated Christmas gift funds to Save the Children to support children affected by the crisis in Ukraine\* and paid a membership fee to Meriturvallisisuuden ja -liikenteen tutkimusyhdistys ry (a maritime research organisation)\*\*



# Corporate social responsibility

Maintaining and developing staff skills and engaging the employees in developing corporate operations are of great strategic importance.

Based on the findings of the 2022 workforce survey, Arctia launched a project to develop leadership and management systematically by employing the methods offered by Deep Lead coaching. The goal is to improve interactive skills and establish lasting learning processes. The programme, which will continue in 2023, aims to contribute to wellness at work and improve performance throughout the organisation.

During 2022, we also provided practical refresher training for managers and other key personnel representing the various professional categories on the subject of the rights and responsibilities of supervisors.

Optimum allocation of human resources and dialogue with staff members are an integral part of corporate social responsibility. The year 2022 saw extensive collective bargaining negotiations involving the Group's entire marine and onshore personnel, and the talks were concluded in a constructive spirit. A key point addressed in the talks on collective agreements and business operations was how to achieve a better match between work and workers. Many of the talks were conducted as an ongoing process. As a result of the negotiations, a major change was

initiated, inter alia, in the permanent rotation of personnel in the icebreaking business in order to expand the skills base and prepare for amendments to the Pilotage Act that will affect Arctia's operations in the future.

Operational activities continued unchanged despite the Covid-19 pandemic. However, important face-to-face interaction with the staff was still limited.

## RESTRUCTURING AND TERMINATIONS

As a result of the impacts of the war in Ukraine, Arctia Meritaito conducted negotiations in the spring of 2022 regarding changes to the organisation of work and related arrangements on the Saimaa Canal. Similar change negotiations took place in Arctia Meritaito on restructuring the hydrographic surveying operations and the HR organisation at Arctia Management Service in matters falling under the employer's powers of direction. None of the negotiations resulted in any staff reductions.

In December 2022, Arctia started change negotiations concerning the canal traffic business and the buoy factory. The negotiations were prompted by the seasonal nature of canal





## NUMBER AND STRUCTURE OF PERSONNEL

	2022	2021	2020	2019	2018
<b>Number of personnel (31.12.)</b>					
Onshore personnel	178	186	209	219	32
Offshore personnel	241	229	218	223	243
<b>Employment contract distribution (31.12)</b>					
Onshore personnel, permanent	167	174	197	203	31
Offshore personnel, permanent	220	210	216	223	220
Temporary	32	30	14	16	24
<b>Share of full-time and part-time employment contracts (%)</b>					
Onshore personnel, part-time	1,7	1,6	5,3	2,6	3,1
Offshore personnel, part-time	0	0	0	0	0
<b>Average length of employment contract / years (31.12.)</b>					
All employees	13,2	13,7	12,9	13,3	11,5
<b>Average age of personnel / years (31.12.)</b>					
All employees	47,9	49,9	48,7	48,5	47,5
Offshore personnel, men	49,0	51,9	50,3	50,3	48,0
Offshore personnel, women	49,9	49,9	48,3	48,0	44,3
Onshore personnel	47,9	46,0	47,6	48,1	48,0
Retired employees	3	14	8	22	12
Average age of retirement	63,6	64,4	61,5	62,1	62

The figures for 2018 are not comparable with years 2019-2022 due to the merger of Meritaito with the Group on 13 December 2018. All members of personnel employed by Arctia in 2022 were Finnish nationals.

operations; the impact of the war in Ukraine on the duration of the traffic break on the Saimaa Canal and the expiry of the service contract on the Rautalampi-lisalmi Canal, as well as the fall in production at the buoy factory. The talks were concluded in January 2023. Arctia was compelled to lay off employees on the Saimaa Canal during the 2022/2023 winter season. At the buoy factory and the Rautalampi-lisalmi Canal, the company resorted to redundancies scheduled for early 2023 as a necessary response to the changed circumstances.

## COLLECTIVE AGREEMENTS

The following collective agreements were in force during 2022:

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 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 crews serving on Meritaito's fairway maintenance vessels
11. Collective agreement for employees governed by the agreement made by Service Sector Employers Palta

During 2022, a total of three meetings of the cooperation committee were held at which all the business units of the company were represented.



### EQUALITY AND NON-DISCRIMINATION

Arctia operates in compliance with a gender equality plan approved by the Ombudsman for Equality. The plan provides information on staff structure, pay surveys and work-life balance. Additionally, the gender equality plan addresses the measures taken to improve equality and the company's performance in promoting equality and non-discrimination at work. The Ombudsman for Equality has not found any evidence of unjustified disparity between men

and women. The gender equality plan is currently being updated.

### SKILLS DEVELOPMENT AND CONTINUAL LEARNING

Training to maintain professional qualifications plays an important part in developing and maintaining the professional skills of our staff. Aside from training, on-the-job learning is of great importance, as versatile duties, projects and development projects provide ample opportunities

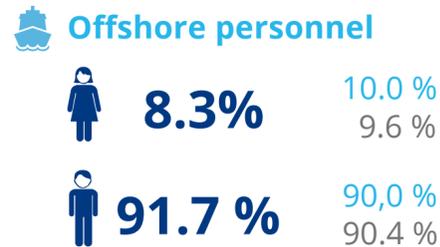
for continual learning and skills development. Induction programmes and instruction ensure healthy and safe working conditions, both for new employees and for those assuming new duties or relocating to other positions.

Arctia's training plan for 2022 was implemented as planned with a total of 559 training days completed within the Group, mainly including refresher training in fire-fighting and rescue operations and medical care in order to maintain seafarers' additional qualifications, as well as other training related to occupational safety and health, such as the training required for health & safety and hot work certificates as well as first aid training.

The biggest single training event of the year was the health & safety certificate training for icebreaker crews, which took place during the autumn maintenance period. Training related to the special skills required on board icebreaker Polaris was completed according to plan. Fairway maintenance personnel received the training in oil spill response necessary for oil-spill duties.

Our goal is to have a performance appraisal discussion with each employee every year. As part of the supervisor training provided in the autumn, a plan was drawn up to update the content of performance appraisal interviews and target setting in order to achieve greater correlation with actual work duties.

### GENDER DISTRIBUTION



### Board of Directors' gender distribution\*

<b>Women</b>	<b>3</b>	<b>Men</b>	<b>3</b>
	3		3
	3		3

2022	2021	2020
------	------	------

### Gender distribution in senior management (Management Team)\*

<b>Women</b>	<b>1</b>	<b>Men</b>	<b>4</b>
	1		4
	1		3

\*Members at the turn of the year

### FROM WORDS TO ACTION

Performance appraisal discussions were continued following the existing procedure. It calls for both performance monitoring and feedback on the progress made in attaining the objectives and consideration of the factors related to competence development and wellbeing to support successful work performance and the achievement of objectives.





### STAFF SURVEYS TO CREATE A COHERENT CORPORATE CULTURE

Annual staff surveys include questions on themes related to wellness at work in terms of the organisation and the employees' immediate working environment as well as individual skills and capabilities. The findings help allocate development resources systematically to areas that contribute to the attainment of the established objectives.

The 2022 staff survey was the third completed using the same concept. A total of 215 Arctia employees responded to the survey (2022 response rate 56%, 2021 rate 62%), which gives a fair idea of how they perceive their situation. The index number for motivation levels for the entire Group was satisfactory (3.4), close to that of 2021 (3.5).

Among the main strengths that emerged in the survey were the meaningfulness of the work; one's own state of health in terms of continued service; as well as special skills that make one stand out from the rest. As these strengths play an important role in supporting the organisation and the attainment of its business objectives, it is of paramount importance to uphold and safeguard them in the future.

Areas where improvements were called for included leadership, executive communications and the company's capacity for renewal. In response to the findings of previous surveys, measures were taken to improve interaction, communications and the general level of strategic thinking among staff members. Development

efforts will continue on a long-term basis in the form of management and key project reviews, executive and supervisor training programmes, Group-wide joint events and the integration of skills development into the activities of every Arctia employee.

### MOTIVATION LEVELS AT ARCTIA

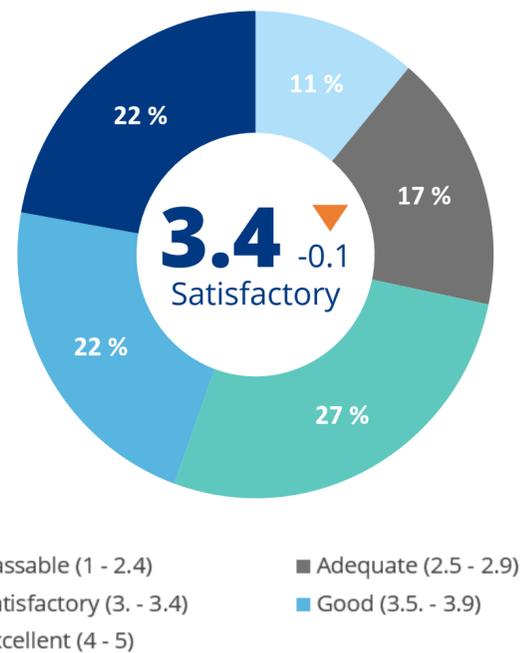


Fig. 4. Motivation levels at Arctia.

### OCCUPATIONAL HEALTH AND SAFETY

"Acting Safely", Arctia's flagship project, was continued in 2022, culminating in the adoption of the Arctia Safety Programme with its specific measures and performance indicators. The goal is to achieve improvements in specific areas that contribute to the overall level of safety, the main emphasis, however, being placed on occupational safety. Other development projects unrelated to occupational safety included improved vessel safety, updated operative documentation and upgraded cybersecurity management.

Through the project, an effort was made to raise general awareness of the importance of risk management within the organisation as well as to improve capabilities for making risk assessments of various work operations and conducting Safety Walk tours.

One of the project's main objectives was to create a uniform safety culture throughout the Group. To this end, two safety culture surveys were conducted during the project to establish a baseline. Several measures to improve the safety culture were identified in response to the survey.

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 2022, Arctia's Lost-Time Injury Frequency (LTIF) fell slightly relative to the previous year, being 12.8 (2021 LTFI 13.7). An analysis of the individual business areas shows that the number of occupational accidents grew

### NUMBER OF ACCIDENTS

	2022	2021	2020
Accidents resulting in absence from work	10	9	13
Other accidents	0	3	3
Accident frequency / million working hours	12.8	13.8	12.7

### SICK LEAVE

	2022	2021	2020
Absence rate due to illness, all personnel	6.5	4.9	4.8
Number of suspected cases of occupational illness	0	0	0

slightly in Icebreaking with an LTIF score of 13.9 (2021 LTIF 8). Fairway Maintenance put in an excellent performance as the number of accidents resulting in absence from work declined. Fairway Maintenance's LTIF score was 18.8 compared to 32.50 in 2021. Hydrographic Surveying and Administration scored zero accidents for the fourth year running.

Arctia's two occupational safety bodies, the central occupational safety organisation and Arctia Meritaito's organisation, convened regularly in 2022. Additionally, one joint occupational safety meeting was held. The meetings addressed a wide range of operational issues.

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 appreciation of these issues and productivity at workplaces. The Maritime Committee elects a president and a vice president from among the representatives of the various parties for a period of two years at a time. Currently, Arctia holds vice presidency of the Committee, to assume presidency for the years 2024–2025.

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

**SUPPLIERS AND SUBCONTRACTORS**

The efforts to improve procurement and purchasing were continued in 2022. Procurement training was continued and the guidelines were updated in response to the feedback from customers to meet the procurement needs of the business areas. Compliance with contractor liability requirements, etc., was ensured through a supplier approval process. Suppliers were vetted with a view to any sanction list hits, and alternatives to a systematic supplier evaluation were explored in support of risk management. 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. We are also developing a Supplier Code of Conduct to set out our expectations regarding supplier performance on key ESG themes. All suppliers are required to comply with Arctia’s safety, occupational safety and environmental policies.





# Environmental responsibility

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.

During 2022, 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. Currently, Arctia purchases emission-free electricity and district heat. We continued to make technical improvements to measure the fuel consumption of icebreakers, which will allow us to optimise assistance operations. Additionally, we invested in recycling plastic spar buoys, 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 2022.

## ENVIRONMENTAL PROGRAMME

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, onboard digitalisation will make it possible to monitor fuel consumption in real time and optimize overall transport emissions. As far as other vessels and boats are concerned, new investments will focus on fleet modernisation and maintenance. With fairway maintenance contracts, the responsibility and opportunities for energy-efficient operation and production are far greater than in case of isolated purchases. 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 transports far outweigh the direct negative environmental impacts of Arctia's operations. Finnish shipping





accounts for almost 90 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 environmental efficiency requirements (EEDI/EEXI), leading to an impaired ability to navigate on ice and increased need for icebreaker assistance. On the whole, emissions will decrease.

With digitalised fairway maintenance operations, nautical mileage and hence fuel consumption will be reduced. Remote control of safety devices will also make it possible to locate and recover buoys that are adrift.

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 environmental emissions, 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 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 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 1,500 plastic buoys and spar markers 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.

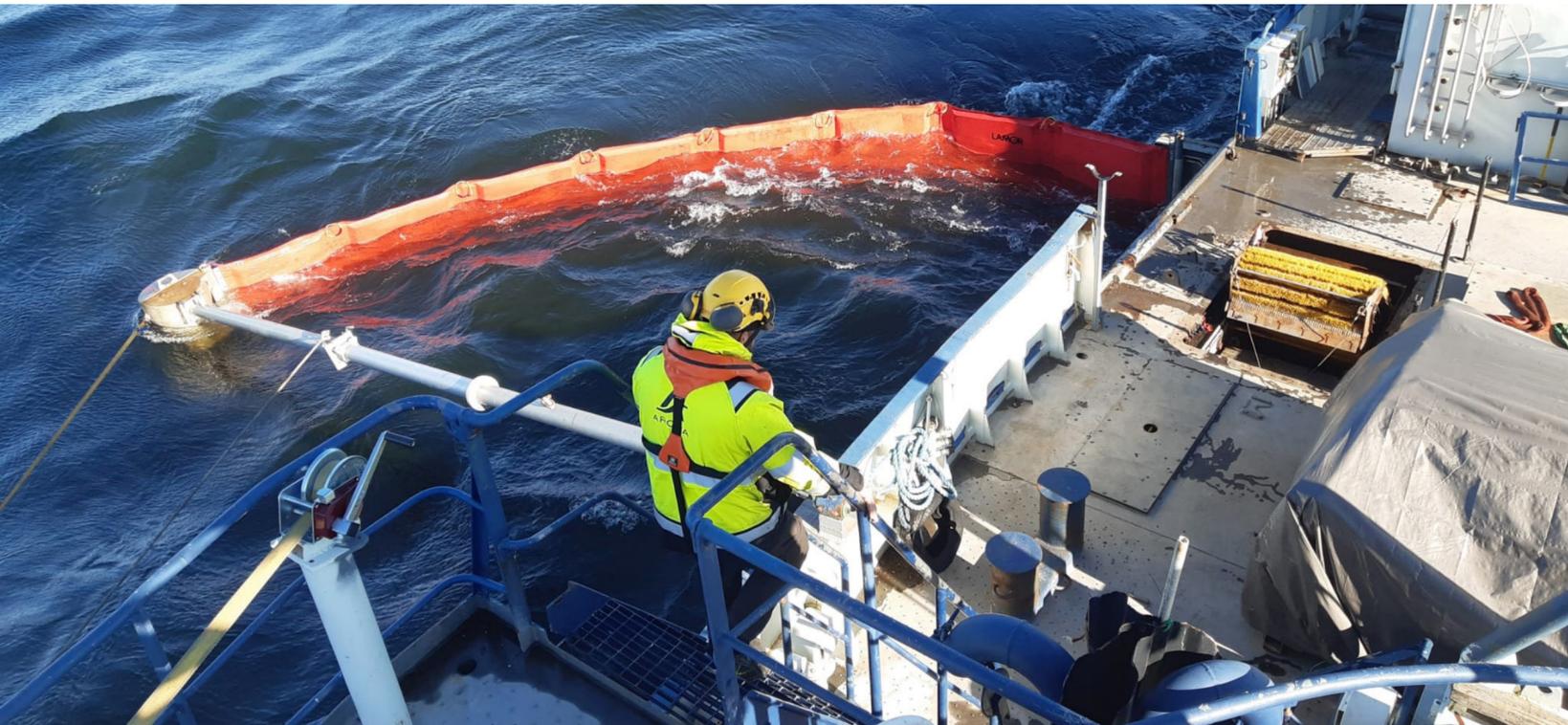
Arctia Meritaito has in place an ISO 45001 environmental management system to manage the multiple environmental aspects of its operations. The safety management systems of icebreakers and other large vessels include a special section devoted to the environment.

### ENVIRONMENTAL INVESTMENTS

In 2022, 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.

With regard to the smaller fleet, we modernised the hoisting equipment onboard fairway maintenance vessels that will reduce environmental risks thanks to the state-of-the-art hydraulic systems. In hydrographic surveying, tests were carried out with a renewable fuel.

At the Joensuu Buoy Factory, we invested in a buoy disassembly unit, site and tools to ensure efficient recycling and reuse of buoy materials. As part of the energy audit carried out in the summer of 2022, the energy consumption of the buoy factory was reviewed. A number of energy-saving measures suggested by the audit were implemented towards the end of the year.





# Environmental report

## ATMOSPHERIC AND GREENHOUSE GAS EMISSIONS

Atmospheric emissions from Arctia's operations consist of carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO<sub>x</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) 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. The annual power consumption by the icebreaker base depends on the severity of the winter. 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 the port, they are connected to the district heating network and the on-board heater boilers are shut down. Icebreaker Polaris makes use of vapourised LNG fuel for onboard energy production. During 2023, the Katajanokka Icebreaker Base will switch to a district heating system that uses origin-certified wood-based biomass for heat generation.

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

## OTHER AERIAL EMISSIONS (TONNES)

	2022	2021	2020
CO	66.3	65.1	26.5
HC	45.9	32.5	18.0
NO <sub>x</sub>	985.1	704.4	386.0
Particulates	18.2	12.9	7.1
N <sub>2</sub> O	1.3	0.9	0.5

## ARCTIA GROUP'S CO<sub>2</sub> EMISSIONS ACCORDING TO THE GHG STANDARD (TONNES)

	2022	2021	2020
Scope 1, Direct emissions	55,022	43,409	22,190
Scope 2, Purchased energy, district heat	647	752	1,104
Scope 2, Purchased energy, electricity 1)	160	445	726
Scope 3, Travel	33	3	10
<b>Total CO<sub>2</sub> emissions</b>	<b>55,863</b>	<b>44,609</b>	<b>24,030</b>

## FUEL OIL CONSUMPTION OF VESSELS AND BOATS (TONNES)

	2022	2021	2020
Ultra-light	-	-	-
Icebreakers, light fuel oil	15,606	10,696	5,340
Other vessels, light fuel oil *	822	1,065	1,116
Icebreakers, LNG	70	1,364	70
Boats	579	506	300
Motor vehicle	96	104	104
<b>Total CO<sub>2</sub> emissions of fuel consumption</b>	<b>55,022</b>	<b>43,409</b>	<b>22,190</b>

## PURCHASED ENERGY: ELECTRICITY (MWh)

	2022	2021	2020
Katajanokka icebreaker pier	3,339	4,885	4,437
Kotka icebreaker pier **	2,034	2,408	2,575
Other ships ***	705	1,204	876
Other places of business	3,260	3,209	2,198
<b>Calculated total CO<sub>2</sub> emissions of purchased electricity (t)</b>	<b>160</b>	<b>445</b>	<b>726</b>

## DISTRICT HEAT, WEATHER-ADJUSTED (MWh)

	2022	2021	2020
Katajanokka ****	3,554	4,133	6,064
<b>Calculated total CO<sub>2</sub> emissions of district heat</b>	<b>647</b>	<b>752</b>	<b>1 104</b>

## ICEBREAKERS' CO<sub>2</sub> TONNES PER OPERATING DAY AND PER ASSISTED MERCHANT VESSEL

	2022	2021	2020
Vessels, tonnes/operating day (icebreakers)	71	61	54
Vessels, tonnes/assistance (icebreakers)	24	25	25

\* HIB Ahto, HIB Jääsalo, MPV Pohjanmeri, MSV Seili

\*\* Consumption measured from vessels

\*\*\* HIB Ahto, MPV Pohjanmeri, MSV Seili

\*\*\*\* 2022 ja 2021 include Laivastokatu 3

1) As of March 1, 2021, the company switched to CO<sub>2</sub>-neutral electricity for electricity use sites managed by Arctia.



### 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. Air travel for this purpose was restored to the pre-Covid-19 levels.

#### AIR TRAVEL

	2022	2021	2020
All flights (kg CO2) *	33,411	2,760	6,865
Rail traffic **	0	0	2,666

\* Source CWT: total air mileage 241,709 km; 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 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 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).

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 Ownership Steering Department. Additionally, the determination of HR key indicators is governed by the general guidelines for disclosures in annual reports issued by the Accounting Board.

## HR KEY INDICATORS

The reported indicators reflect the situation on the reporting date (31 Dec 2022). The figures also include part-time employees and employees under a fixed-term contract.

### Lost-Time Injury Frequency

The Lost-Time Injury Frequency (LTIF) was calculated by counting all accidents at work resulting in at least one day of absence from work. The frequency was 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 staff 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 CO<sub>2</sub> EMISSION INDEXING FOR USE IN TRIALS”.

Air travel carbon dioxide emissions were determined using the factor 0.138 kg CO<sub>2</sub>/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.





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