thyssenkrupp Marine Systems

Sustainability Brochure 2022/2023

thyssenkrupp

Content

Dear reader,

at our company, the financial year 2022/2023 was characterized by transformation. Caused by geopolitical crises around the world, we face new paradigms and tasks. We are striving to become the leading partner for maritime security – your maritime powerhouse. To achieve this goal, forward-looking and innovative solutions are indispensable in all areas of our business. Sustainability is undoubtedly one key to this success. We follow ambitious targets and achieved a lot the last years – from energy efficiency and CO_2 reduction to anchoring a strong ESG organization and continuous excellent health and safety conditions. We are proud to take you along the most recent progress in terms of sustainability and wish you interesting moments with our new sustainability brochure.

Oliver Burkhard
CEO

Paul Glaser
CFO

Dr. Dirk Steinbrink
COO

Bernd Hartmann
CHRO

Dear reader,

since our first disclosure of non-financial sustainability information in March 2023, we have further developed our sustainability strategy and will start right into the phase “Fitting for the future” in 2024. The publication of the first European Sustainability Reporting Standards in July 2023 enabled us to improve our management system and gave us an orientation for disclosing information on FY 2022/2023 in this short sustainability brochure. We are happy to present the status and progress of our sustainability activities to you.

Dr. Marlene Fischer
Head of ESG

Introduction

1

At thyssenkrupp Marine Systems, sustainability in all three dimensions – Environment, Social and Governance (ESG) – is seen as a license to operate. After the publication of the first sustainability report in March 2023, the journey went on and achievements were made. Time and effort were spent to strengthen the ESG strategy among others with the cross-functional sustainability committee. The upcoming year 2024 will mark the starting point of the phase "Fitting for the Future" that will be filled with new measures targeting the goals (see figure 1.1). The progress and success will be tracked using selected key performance indicators (KPIs) based on the European Sustainability Reporting Standards (ESRS).

The publication of the ESRS and the International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards in 2023 will ensure greater transparency and comparability of the reporting in an international business environment and enable improvements in the upcoming reporting period. The responsible bodies European Financial Reporting Advisory Group (EFRAG) and the International Sustainability Standards Board (ISSB) confirmed the interoperability of their respective climate-related disclosure requirements.

This brochure is published in the interim period to give stakeholders and interested parties the most recent status of major KPIs with focus on the FY 2021/2022 and the recently closed FY 2022/2023. The next extensive sustainability report will be published at the end of 2024 based on the ESRS and IFRS regulations.

"The upcoming year 2024 will mark the starting point of the phase 'Fitting for the Future' that will be filled with new measures targeting the goals."

CEO

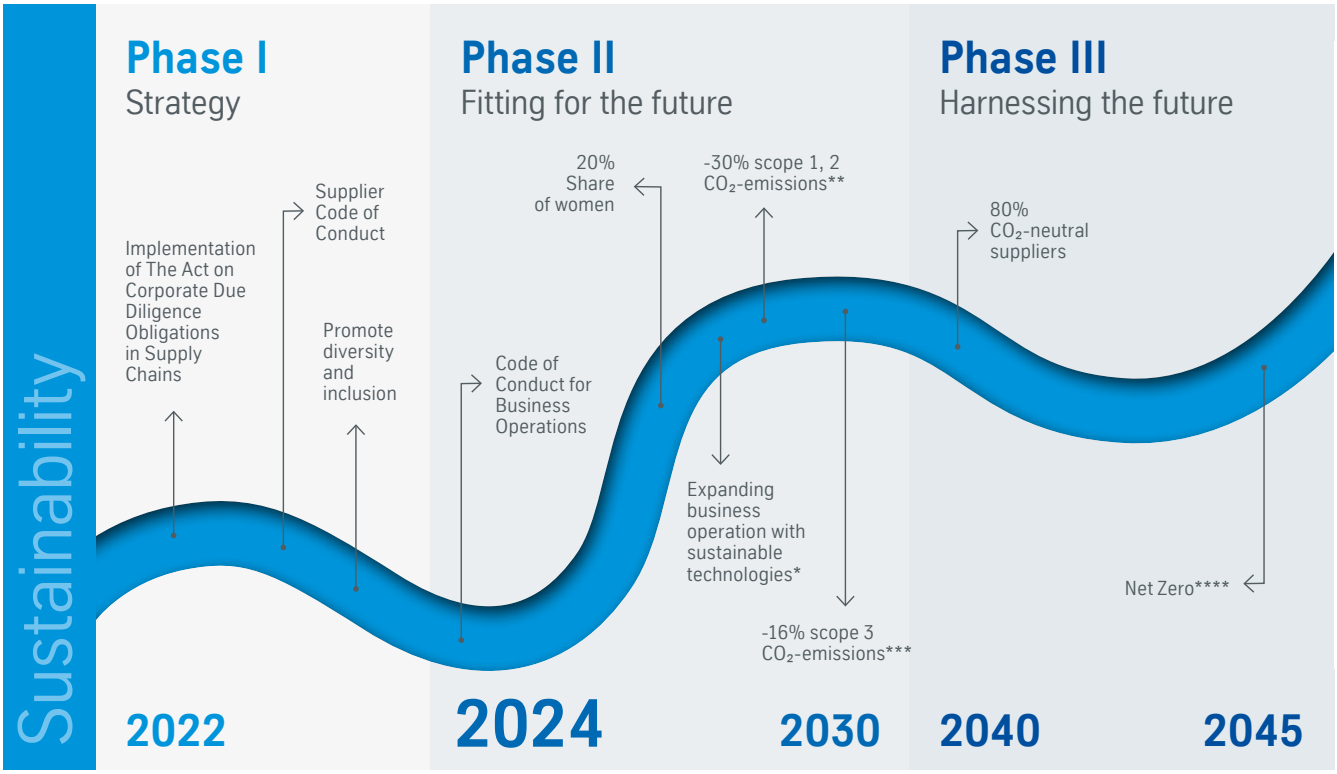


Figure 1.1: * technologies that promote environmental objectives according to the European Union's Taxonomy Regulation 2020/852 | ** scope 1, 2 = direct emissions from own plants and indirect emissions from electricity consumption | *** scope 3 = upstream and downstream value chain activities | **** according to the Net Zero Standard from the Science Based Targets initiative

The four sustainability pillars Governance & Management, Labour & Human Rights, Environment and Sustainable Innovation & Technology are aligned with the company's commitments. The table below shows the interconnection between these commitments and the ESRS materiality issues.

The Company's Commitments	Material Topics	ESRS Reference
Expanding business operation with sustainable technologies to reduce climate impact	• Technology & innovation • Marine ecosystem • Climate change & GHG emissions	ESRS E1 ESRS E2 ESRS E3 ESRS E4 ESRS E5
Transparent and comprehensible sustainability strategy and actions	• Business ethics & integrity • Risk management & business continuity	ESRS 2 ESRS G1
Active promotion of climate and environment protection	• Sustainable & responsible supply chain • Material sourcing & resources efficiency • Climate change & GHG emissions • Marine ecosystem • Waste management & recycling	ESRS E1 ESRS E2 ESRS E3 ESRS E4 ESRS E5
Long-term and secure employment	• Diversity, inclusion & equality • Health & safety in workplace and workers' rights • Involvement & upskilling of employees	ESRS S1 ESRS S3
Fair working conditions in system of suppliers, partners and customers	• Business ethics & integrity • Sustainable & responsible supply chain	ESRS S2 ESRS S4
Corporate policy and governance compliant with the highest ethical standards	• Business ethics & integrity • Sustainable & responsible supply chain • Risk management & business continuity	ESRS 2 ESRS G1

Highlights in 2023

THYSSENKRUPP ESTALEIRO BRASIL SUL IS THE ONLY SHIPYARD IN THE REGION **CERTIFIED BY THE ITAJAÍ SOCIAL SEAL PROGRAM**

FAMILY DAY
AT THE SHIPYARD IN KIEL WAS A BIG SUCCESS WITH AROUND
9,000 EMPLOYEES,
THEIR FAMILIES AND FRIENDS VISITING

REMARKETING OF IT HARDWARE:
2,380 DEVICES
HAVE BEEN RETURNED TO THE MARKET AND REUSED SINCE MARCH 2021 IN THE SPIRIT OF THE CIRCULAR ECONOMY

FURTHER IMPROVEMENT OF OUR SCOPE 3 CALCULATION
AND EXTERNAL AUDIT OF SCOPE 1 & 2 CALCULATION

SHARE OF WOMEN IN ENGINEERING ROSE TO
19.5%
BY OPTIMIZED RECRUITING

START OF THE NEW DIGITAL LEARNING PLATFORM
FOR EMPLOYEE TRAINING

TREE PLANTING CAMPAIGN
TO MARK THE 20TH ANNIVERSARY OF THE BREMEN ENVIRONMENTAL PARTNERSHIP

ESG TRANSPARENCY AWARD 2023
INITIATED BY EUPD RESEARCH INSTITUTE

E-LEARNINGS **"AWARENESS FOR GENDER EQUALITY"**
FOR ALL EMPLOYEES

THE BRAZILIAN PROJECT "OPTIMIZATION OF WASTE RECYCLING TECHNOLOGIES - THE PATH TO ZERO LANDFILL" WAS AMONG THE **WINNERS OF THE 24TH FRITZ MÜLLER AWARD**

NO IDENTIFIED AND REPORTED VIOLATIONS OF HUMAN RIGHTS OR ENVIRONMENTAL PROTECTION WITHIN THE MEANING OF THE SUPPLY CHAIN ACT IN FY 2022/2023

The Group's Profile and Business Model

2

thyssenkrupp Marine Systems is one of the world's leading naval companies with approximately 7,500 employees, and is active as a systems supplier for submarines and naval surface vessels as well as for maritime electronics and security technologies. Around 3,100 people work at the Kiel site, making it one of the largest shipyard locations in Germany. 185 years of history and the constant striving for improvement allow the company to set new standards again. thyssenkrupp Marine Systems offers its customers worldwide tailored solutions to meet the highly complex challenges of a changing world. The driving forces behind this innovative energy are the company's employees, who shape the future of thyssenkrupp Marine Systems with passion and commitment.

As shown in figure 2.1, the Business Unit Marine Systems is part of the thyssenkrupp AG. It is further divided into four various operating units (OU) comprised under two major legal entities: thyssenkrupp Marine Systems and ATLAS ELEKTRONIK (Naval Electronic Systems). The Business Unit Marine Systems operates in fifteen countries all around the world, see figure 2.2. Each location is highly specialized and offers technical expertise within the vast field of naval technology and shipbuilding.

In this report, the expression "thyssenkrupp Marine Systems" always means the Business Unit Marine Systems. thyssenkrupp Marine Systems GmbH and ATLAS ELEKTRONIK GmbH are named explicitly, if differentiation is needed.

Figure 2.1

"Our strategy sets clear points of reference for all areas of our organization. We will enable the individual operating units to manage and develop their respective business areas holistically."

Head of Strategy

Locations

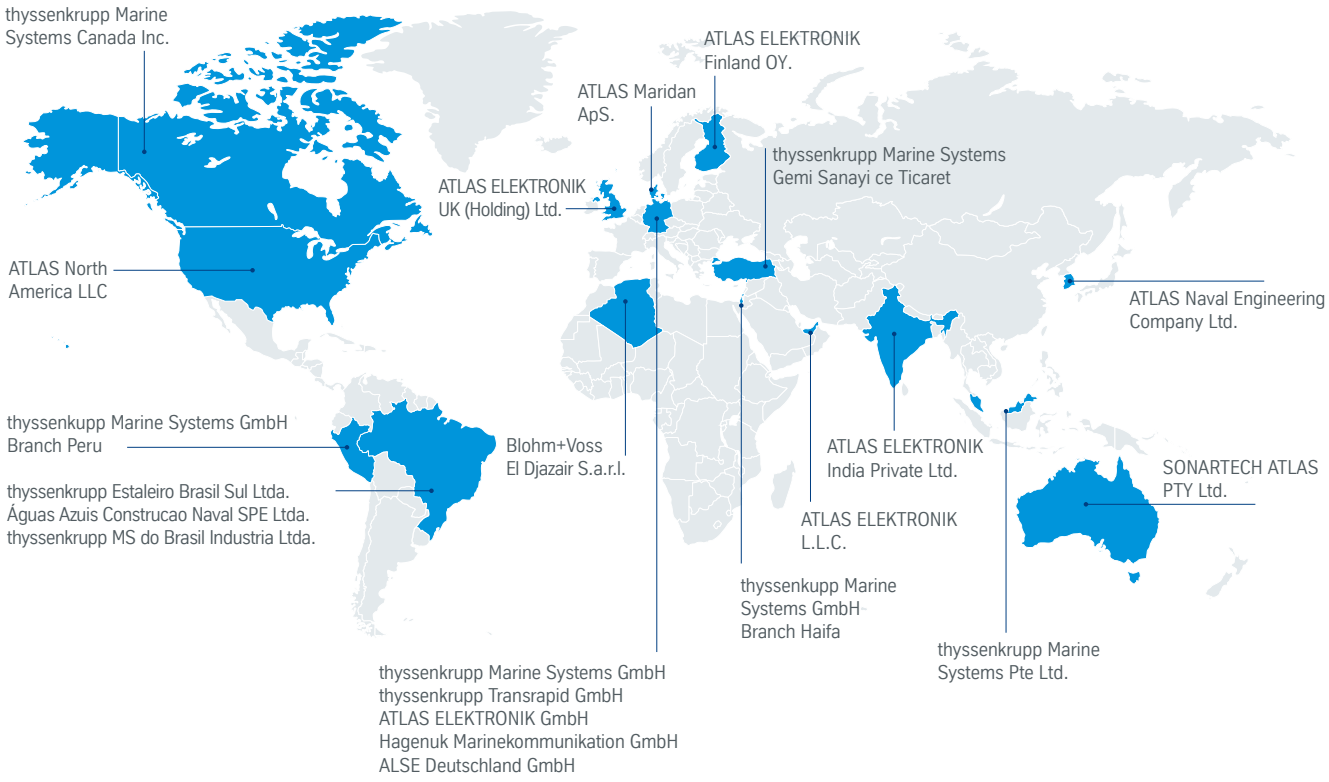


Figure 2.2

thyssenkrupp Marine Systems in Kiel

Organizational Structure

The business of Marine Systems is divided into the four areas Executive, Financial, Operating and Human Resources, each of which is represented by its respective Chief Officer.

Cross-company tasks and responsibilities have been combined in centralized functions for the whole business unit as shown in figure 2.3. The specific functions and those which do not overarch the whole of the company are distributed thematically across the relevant business areas. The business activity, on which project business has had a lasting impact, is controlled by the four different operating units representing the core business of the company:

		CEO	CFO	COO	CHRO
Cross-company functions		 e.g. Strategy	 e.g. Compliance		 e.g. Occupational Safety & Health (OSH)
Not cross-company functions				 e.g. Engineering	
Operating Units	SUB	Head of OU Submarines	Commercial Head of OU SUB		
	SVE	Head of OU Surface Vessels	Commercial Head of OU SVE		
	NXTGEN	Head of OU NXTGEN	Commercial Head of OU NXTGEN		
	NES	CEO OU Naval Electronic Systems	CFO OU NES		

Figure 2.3

Operating Unit Submarines

with overall responsibility for the (further) development, cost-effectiveness, pricing, submarine product portfolio, products and product architecture and platforms including all the relevant research and development work, receipt of orders for all submarine products and platforms, and realisation and responsibility for profit-making on all new submarine building projects.

Operating Unit Surface Vessels

with overall responsibility for the further development, cost-effectiveness, pricing, surface vessel product portfolio and product architecture and platforms including all the relevant research and development work, receipt of orders for all surface vessel products and platforms, and realisation and responsibility for profit-making on all new building projects for surface vessels.

Operating Unit NXTGEN

NXTGEN Engineering is thyssenkrupp Marine Systems' next generation of innovative civil products and services. In the areas of maritime security, underwater vehicle (UxV) surveying, explosive ordnance disposal and special shipbuilding & platform construction, a wide range of technologically advanced products and services will be offered to the civil market.

With the newly founded NXTGEN Engineering and an expanded product range, a big step towards a diversified and sustainable future is taken, further strengthening the company's position in the maritime industry and as an innovation leader. Innovative products and services will contribute to ensuring the protection of critical maritime infrastructure and to shaping the German energy transition.

The aim is to bridge the civilian and military worlds and to combine longstanding expertise in maritime engineering and construction with the current and future needs of the civilian market. A wide range of highly innovative products – including uncrewed underwater vehicles, platforms for ordnance disposal and offshore converter platforms – is ready to enter the market.

Operating Unit Naval Electronic Systems

As a business area, the Operating Unit Naval Electronic Systems (NES), ATLAS ELEKTRONIK and its subsidiaries form part of the business unit. ATLAS ELEKTRONIK has a wide range of sonars and sensors, command and control systems for submarines and surface vessels, mine countermeasures systems, uncrewed water vehicles, radio and communications equipment, naval weapons and coastal protection. In addition, ATLAS ELEKTRONIK continues to offer a wide range of services after the delivery of its products.

"With NXTGEN, we will establish a central innovation greenhouse and pursue civilian opportunities along side it."

Head of OU NXTGEN

Sustainability Governance & Compliance

3

The world around is changing in many ways. To further contribute to the development of nations and the well-being of the supported navies, an understanding of the trends that are shaping the society and the environment, particularly the ocean, is a necessity to become more resilient.

Integrity, reliability, credibility, and consistency are the principles that guide the company in the creation of corporate governance processes. Compliance is a must and all interactions are based on transparency and mutual respect. The rules summarized in the thyssenkrupp Code of Conduct ensure that all collaborators and partners, inside and outside of the Group, always act ethically and lawfully.

"We find ourselves in a changing environment - the geopolitical relevance of the maritime domain is increasing, customer requirements are changing. Standing up for our values is one part of success for us."

COO

Integration of Sustainability Governance & Reporting

ESG governance is a cornerstone to good governance. The company has established a strong line of responsibilities to further stimulate commitments across the operating units and sites, see figure 3.1. Continuous improvement in mind, in 2023, the focus of the ESG department was on the internal dialogue, participation, and upskilling of employees.

Internal Cross-Functional Sustainability Committee

Below the board level, the Cross-Functional Sustainability Committee provides further oversight and strategic guidance and engages leadership across business units, regions, and functions. Thereby, it is directly mobilising the working level to implement the strategy. The functions involved may include procurement, communications & marketing, product management, operating units, human resources, environment, and health & safety. Participants may vary depending on focus of the work. The aim is to integrate environmental, social, and governance principles in the daily operations, helping to reduce the environmental footprint, enhance social responsibility, and strengthen governance practices. As part of the committee, successes of the year are highlighted and the ESG targets for the coming period are discussed and adjusted.

ESG Transparency Award 2023

In December 2023, thyssenkrupp Marine Systems was honoured with the ESG Transparency Award 2023 initiated by the EUPD Research Institute. The award values organizations that are already on the way to more corporate social responsibility and have implemented forward-looking sustainability concepts in their corporate strategies. A transparent presentation of all sustainability measures in examinable ESG reports makes these companies to pioneers acting as role models. That ambition deserves a broad public attention looking from the perspective of the award sponsor, because the role model companies show that ESG reporting is not only a question of law, but primarily driven by protection of human beings and the environment.

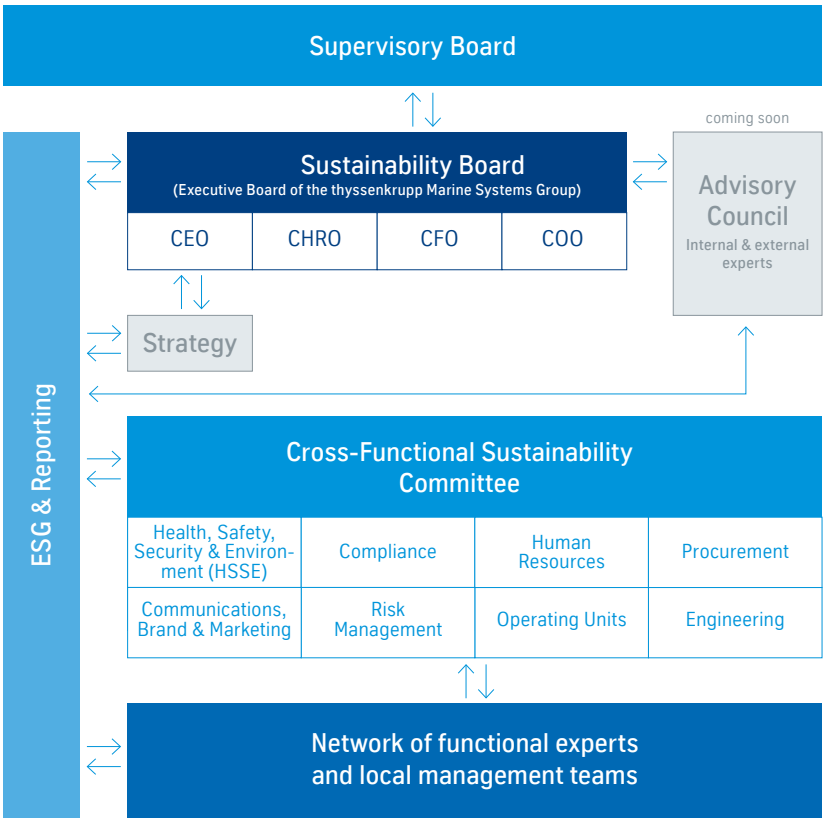


Figure 3.1: Organization chart of ESG governance

Business Ethics & Integrity

Respect, cooperation, and social responsibility are the cornerstones for sustainable business success. At thyssenkrupp Marine Systems, a strong compliance system guarantees highest standards in ethics and integrity. More information on the activities are shown in the Sustainability Brochure published in March 2023.

Human Rights

The Mission Statement, the Compliance Commitment, and the Code of Conduct form the principal framework for the Executive Board as well as for all thyssenkrupp leaders and employees. The Code of Conduct contains all the fundamental principles and rules for responsible and ethical behavior towards people inside and outside the company. This naturally includes respect for human rights as a core value.

thyssenkrupp Marine Systems is committed to the United Nations International Bill of Human Rights and its implementation throughout the group. The commitment is also demonstrated by signing the ten principles of the United Nations Global Compact. An extensive supplier management system ensures that direct suppliers respect human rights and are committed to safeguarding that this is also the case for indirect suppliers.

thyssenkrupp Marine Systems is also committed to the highest sustainability standards, which include good corporate governance as well as environmental and social responsibility. To secure the sustainable success of the customers with innovative product and service solutions, the necessary raw materials, goods and services are sourced worldwide. The basis for this is responsible corporate management geared to long-term value creation.

In addition, thyssenkrupp AG has set up an international committee with the participation of the Group's Works Council, the European Works Council, and trade unions that is tasked with intervening in cases of violations or disputes that cannot be resolved locally. As agreed, incoming reports are processed in consultation between the International Committee and thyssenkrupp.

Whistleblowing System

An open communication culture is a key component of a functioning compliance program. Employees must be able to speak openly about mistakes and, above all, in good time. Bona fide reports help counteract violations at an early stage and limit the damage for the company, its employees and business partners. Therefore, several channels to report infringements anonymously have been set up. The primary point of contact for employees is their supervisor. Non-employees may contact their business partner. In other cases, the compliance department is to be contacted:

whistleblowing@thyssenkrupp.com
or
+ 49 201 844 505050

The company's electronic whistleblowing system on the internet is available in 34 languages and is open to all thyssenkrupp employees, but also to customers, suppliers, and other third parties.

The reports received are reviewed and handled by the Compliance Officers of thyssenkrupp AG (exception North America/Canada: NAVEX Global). Follow-up communication between the Compliance Officer/NAVEX Global and the whistleblower is possible, anonymously if desired, by setting up a secure mailbox.

thyssenkrupp safeguards the interests of the whistleblower also by providing assurances that all information received by Group Function Legal & Compliance at thyssenkrupp AG remain confidential and that all means will be used to protect whistleblowers acting in good faith from any disadvantages as a result of their disclosures.

During its investigations, thyssenkrupp will also strive to protect the legitimate interests of other persons affected by a disclosure.

Embedding Compliance in International Business Relationships and Export

Exports of military equipment differ from general exports that are usually an instrument of economic policy. For this reason, the German government has imposed particularly strict rules on itself in this sensitive area and pursues an extremely restrictive licensing policy. Applicable laws the defence industry has to comply with are:

- "Kriegswaffenkontrollgesetz" - War Weapons Control Act
- "Anti-Folter-Verordnung" - Anti-Torture Regulation
- "Außenwirtschaftsrecht" – Foreign Trade Law
- EU-Dual-Use-VO (Verordnung (EU 2021/821) - EU Dual-Use Regulation (Regulation (EU) 2021/821)
- Embargos
- "Feuerwaffenverordnung" - Regulation (EU) No 258/2012: implementing the United Nations' Protocol against the illicit manufacturing of and trafficking in firearms
- "Verteidigungsgüterrichtlinie" - Directive 2009/43/EC of the European Parliament and of the Council of 6 May 2009 simplifying terms and conditions of transfers of defence-related products within the Community

There are no simple solutions and certainly no "black and white" decisions for exports of military equipment. Beyond the governmental restrictions, thyssenkrupp Marine Systems pays particular attention to ensuring that the goods sold are not misused to violate human rights or to exacerbate a crisis. Good Governance strongly supports the compliance with highest ethical standards. An extensive internal due diligence prior to all business activities is conducted.

The company does not produce weapons of mass destruction (nuclear, chemical, and biological weapons) nor is it involved in the production or use of such weapons.

Whistleblowing System

whistleblowing@thyssenkrupp.com
Telephone: +49 201 844 505050

→ The electronic whistleblowing system can be reached via internet.

→ In North America and Canada, the TKNA Ethics Hotline can be contacted.

"Beyond the governmental restrictions, thyssenkrupp Marine Systems pays particular attention to ensuring that the goods sold are not misused to violate human rights or to exacerbate a crisis."

CEO

Stakeholder Engagement

The double materiality assessment is a powerful tool for identifying material topics impacting a company's operations and business, as well as their significance to stakeholders. Identified materialities can be addressed with clearly defined targets and taken into strategic account. At the end of 2022, thyssenkrupp Marine Systems conducted its first materiality assessment to report on the extent to which sustainability aspects pose financial risks to the company (financial materiality) and how the company impacts people and the environment (impact materiality).

The material topics surveyed included the following aspects:

Environment

Climate change & GHG emissions

Climate change refers to the change of climate which is attributed directly or indirectly to human activity altering the composition of the global atmosphere by emitting greenhouse gases (GHG).
Companies take responsibility for global climate protection and commit to the Paris Agreement. Based on a comprehensive analysis of its GHG emissions, they are able to consistently align their actions with climate protection targets. Technical innovations make it possible to reduce greenhouse gas emissions in many areas. At the same time, companies are striving to significantly reduce their own carbon footprint as part of their ESG strategy.

Waste management & recycling, incl. hazardous materials

Waste management includes the collection, transport, recovery, and disposal of waste, including the supervision of such operations and the aftercare of disposal sites.
The aim of waste management is to avoid waste, protect the soil, and thus reduce the impact of economic activity on people and the environment to a minimum. Companies are increasingly aligning their actions with the principle of the circular economy. This includes, for example, the increased use of recycled and recyclable materials in production, the reprocessing of operating materials or the expansion of capacities for the recovery of (precious) metals at the end of the products' useful life.

Marine ecosystems & biodiversity

Biodiversity describes the number and variety of life forms on Earth. If the diversity of flora and fauna is low, the resilience of ecosystems to changes such as climate change is weakened. Manufacturing companies depend on ecosystem services such as the availability of renewable raw materials or the high quality of air, water and soil, and at the same time they have an influence on them. Marine ecosystems are a particular concern for companies with coastal locations and shipyards.

Energy management & source of energy

Energy management is the proactive and systematic monitoring, control, and optimization of an organization's energy consumption to conserve use and show responsible use of resources. Energy-intensive companies take responsibility for the efficient use of energy and the expansion of the utilization of renewable energies.

Environmental footprint of products & services

Environmental footprint is a multi-criteria measure used to calculate the environmental performance of a product, service or organization based on a life cycle approach. It takes into account the total supply and demand of goods and services for the planet. Customers should be able to make their purchasing decision not only based on qualitative and economic criteria, but also with regard to the environmental impact of a product.

Social

Involvement and upskilling of employees

Learning and development are essential success factors for a positive corporate culture. The skills and competencies of employees are crucial for profitable growth and lasting success. Upskilling is about closing specific skill gaps among employees and providing appropriate training opportunities.
Involvement means the direct participation of employees to help an organization fulfill its mission and to meet its objectives by applying their own ideas, expertise, and efforts towards solving problems and making decisions.

Diversity, inclusion & equality

Diversity means having a range of people with various racial, ethnic, socioeconomic, and cultural backgrounds and various lifestyles, experience, and interests. Seizing the opportunity diversity offers means, among other things, that people with different backgrounds are employed in a company and contribute their individual perspectives and skills to the development of its business.
The same applies to the practice of providing equal access to opportunities and resources for people who have physical or intellectual disabilities and members of other minority groups.
Equality is also the belief that no one should have poorer life chances because of the way they were born, where they come from, what they believe, or whether they have a disability.

Health & safety in workplace and workers' rights

Health & safety concepts serve to protect employees, contractors, and neighbors, prevent damage to property and the environment, and protect information. Employers must set up and maintain the entire workplace, so that employees are protected from safety and health risks and accidents. Health management serves to maintain and promote the health and performance of employees.
Responsible behavior includes compliance with international labor and social standards, such as those set out in the Universal Declaration of Human Rights of the United Nations (UN), the OECD Guidelines for Multinational Enterprises, and the "fundamental principles and rights at work" of the International Labor Organization (ILO).

Local community engagement

Companies have a special responsibility for the neighborhood at their production sites. With targeted support measures and regional social engagement, an open dialogue between local communities and company management can be supported to strengthen the trust in company activities.

Customer satisfaction/intimacy

Customer intimacy centers on having a true understanding of customer values and needs. It requires awareness of customer perceptions and aligning the business strategy accordingly.

Corporate Governance & Compliance

Business ethics & integrity

Business ethics is acting with honor regardless of whether the actions are public. It is about an ethical culture that permeates the entire organizational ecosystem. Especially managers should live up to their role as role models by having a positive influence on the commitment and development of their employees and by developing and implementing business strategies– guided by the company values.

Cyber security, information security & privacy

Cyber security is critical to business and involves the protection of IT systems and data from cyber threats such as computer-assisted fraud, espionage, sabotage or vandalism. Information security protects sensitive information from unauthorized activities, including inspection, modification, recording, and any disruption or destruction. The goal is to protect employees, locations, systems, and the company's know-how against interference from third parties.

Risk management & business continuity

Risk management is the process of identifying, assessing, and controlling threats to an organization's capital and earnings. These risks stem from a variety of sources, including financial uncertainties, legal liabilities, technology issues, strategic management errors, accidents, and natural disasters.
Business continuity includes strategies, plans, measures, and processes to minimize damage caused by business interruptions in a company. It is intended to ensure operations under crisis conditions and to enable internal processes to be restarted quickly and easily after a failure. The general goal is to ensure the continued existence of the company and its economic activities.

Management of the regulatory environment

Regulatory management is a set of policies, processes, controls, and tools employed by an organization to comply with local and/or global regulatory policies, laws, and standards. Regulatory management helps companies to coordinate their complex regulatory and compliance activities and to improve the efficiency of their processes.

Products & Supply Chain

Solutions quality, safety & performance

Solutions quality refers to how well a solution satisfies customer needs, serves its purpose, and meets industry standards.
Product safety is the capacity of a product to be considered safe for its intended use. In this context, policies aim to safeguard individuals from the dangers of goods.
Solutions performance is described as the response of a solution to external actions in its working environment. The performance of a product is realized through the performance of its constituent components.

Technological development & innovation

Innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services.
Innovations can make a decisive contribution to reducing emissions or decoupling growth from resource consumption. Targeted research and technological development is a prerequisite for sustainable solutions and an important growth driver for companies.

Material sourcing & resources efficiency

Material sourcing is the process of acquiring the raw materials needed to create a final product. When certain raw materials become scarce, companies are faced with the uncertainty of whether they will have adequate raw materials needed for production in the long run. With this risk, the company may have to stop production at any time and cannot meet consumer demands.
Resource efficiency stands for the relationship between material use and benefits, whether in production or consumption. The aim is to maximize the benefits of products or services while minimizing consumption and waste.

Sustainable & responsible supply chain

A supply chain is the network of all the individuals, organizations, resources, activities, and technology involved in the creation and sale of a product.
Through sustainable supply chain management, the company can secure competitive advantages, establish stable and reliable supply chains and at the same time meet high ethical and environmental requirements.

The perception of thyssenkrupp Marine Systems' alignment with the 18 pre-identified CSR issues (also referred to as "Materiality topics", see figure 3.2) has been analysed. The results of the assessment are used to support the sustainability strategy development and ESG governance and to facilitate strategic decision-making and stakeholder engagement.

Environment

- Climate change
- Waste management
- Marine ecosystem
- Energy management
- Products & services footprint

Social

- Upskilling of employees
- Diversity, equity & inclusion
- Health & safety in workplace
- Local community
- Customer intimacy

Governance

- Business integrity
- Cyber security & information
- Risk management
- Regulatory environment

Products & Supply Chain

- Solutions safety & performance
- Technology & innovation
- Material sourcing
- Responsible supply chain

Figure 3.2: ESG material topics

[1] These issues have been assessed before a panel of internal and external stakeholders between September 2022 and January 2023.

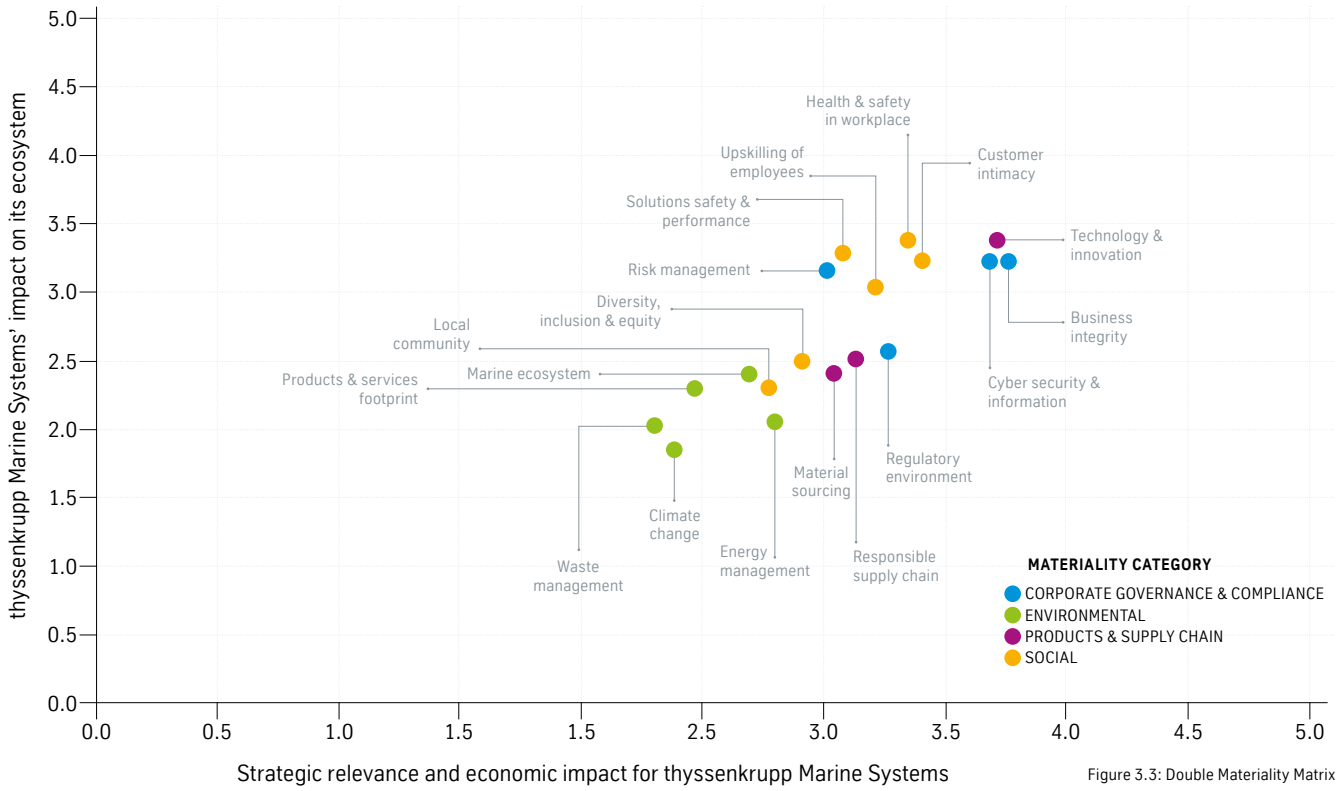


Figure 3.3: Double Materiality Matrix

Environment

Even though the materiality assessment did not reveal the highest relevance of climate-related topics for the stakeholders surveyed, the company recognizes its responsibility for environmental and climate protection. With an outstanding benchmark for a shipyard of its size, the company will further strive to fulfil the ambitious climate targets and sharpen its focus on biodiversity. In FY 2022/2023, the GHG calculation was further improved to increase transparency. Scope 1 and 2 calculations were approved by an external third party and new categories have been added to the scope 3 balance.

Read more about Environmental Impacts in Chapter 6.

Social impact

As a major employer in the maritime industry in Northern Germany, the company is aware of its high level of social responsibility. Good governance, strong compliance and health and safety of the workforce are core material topics, where the company sets high standards in order to ensure a secure and ethical workplace for all. The accident frequency rate decreased even more to 3.2 in the FY 2022/2023. As an international company, all locations are valued and the focus on social impacts around the world has been sharpened. thyssenkrupp Estaleiro Brasil Sul was honoured as only shipyard by the Itajaí City Social Seal program.

Read more about Social Engagement in Chapter 4 and People and Values in Chapter 5.

Culture & upskilling of employees as enablers for the future

The targeted culture development can only be achieved with a strong vision, time and clear communication. A dedicated organizational structure has been implemented to gather employees' feedback and focus on transformation and value creation. New recruitment processes were established to hire the most qualified profiles, taking into account the needs of Generation Z and the strong competition. Upskilling of the existing workforce is achieved by a vast offer of training. The next round of the tk talents program to develop future leaders started in Mai 2023. Both new employees and existing workforce, will be a determining factor when it comes to executing further complex projects that are waiting in the full order book of thyssenkrupp Marine Systems and ATLAS ELEKTRONIK.

Read more about People and Values in Chapter 5.

Sustainability in the Defence sector

Business integrity and cyber security rank under the most strategic and economic relevant material topics. The given trust in the company's sound governance enables to pursue new market opportunities beyond the already started efforts to achieve carbon neutrality and support governmental sustainability targets in defence industry. Considering today's unstable business and geopolitical environment, the protection of critical infrastructure became a major topic. As an expert in providing defence products, the company can benefit from its capabilities to explore new business opportunities in the field of maritime safety and security.

Read more about Business Integrity in Chapter 2.

Embedding diversity, equality and inclusion values across the whole company

thyssenkrupp Marine Systems strongly believes in diversity as a success factor for mastering a complex business. Setting up KPIs and a governance to achieve more diversity, shaped the past years - and there is still a way to go. Always in mind a company culture that fosters sustainable development, many events and measures were conducted in FY 2022/2023 – from the annual female leadership event up to a diversity themed e-learning for all employees.

Read more about People and Values in Chapter 5.

Strengthening thyssenkrupp Marine Systems' Technology & Innovation

The company is facing a changing environment - the geopolitical relevance of the maritime domain is increasing, customer requirements are changing ("systems thinking") and the competitive environment is becoming tougher at the same time. In a rapid moving and evolving environment, a strong technology and innovation power is a necessity to provide safety and performance to customers. Therefore, thyssenkrupp Marine Systems systematically expands technology leadership through strategic innovations. The R&D investments will be continuously increased to five per cent of annual sales. Technology gaps that arise through the consistent pursuit of technological trends will be closed through inorganic growth, among other things. The formation of the OU NXTGEN with its innovative power is one further step to strengthen innovation and technology at thyssenkrupp Marine Systems. Furthermore, at ATLAS ELEKTRONIK, the new Artificial Intelligence (AI) "Greenhouse" supports trendsetting innovation in the field of AI.

Read more about Sustainable Innovation & Technology in Chapter 4.

Responsible Procurement

thyssenkrupp Marine Systems enforces the requirements from all ESG categories in the supply chain. Suppliers are required to commit to the highest standards in the areas of working conditions, human rights, environmental protection, and compliance by agreeing on the Supplier Code of Conduct. From the first day of contact onwards, a clear process of supplier qualification process guarantees low risks in procurement. Figure 3.4 gives a schematic view of what happens prior to an order. The process ensures compliance with the Act on Corporate Due Diligence Obligations in Supply Chains (Supply Chain Act). Suppliers are categorized in five risk levels that provide a basis for a key performance indicator, see figure 3.5. High risk and very high risk suppliers are to be avoided. Three general steps support this target – the voluntary disclosure via the tool "Integrity Next", the supplier qualification process in the management system "Pronet", and dedicated workplace condition assessments. Suppliers with high risks have to undertake corrective measures that will be tracked and documented with an agile tool. A major success of this process has been the reduction of high risk suppliers to zero in FY 2022/2023, see figure 3.6. Furthermore, no violations of human rights and environmental protection have been reported. Five out of five targeted workplace conditions assessments by a third party have been successfully conducted.

Further improvements have been planned, e.g. by supportive supplier trainings and visits and more.

What Happens prior to the Order?

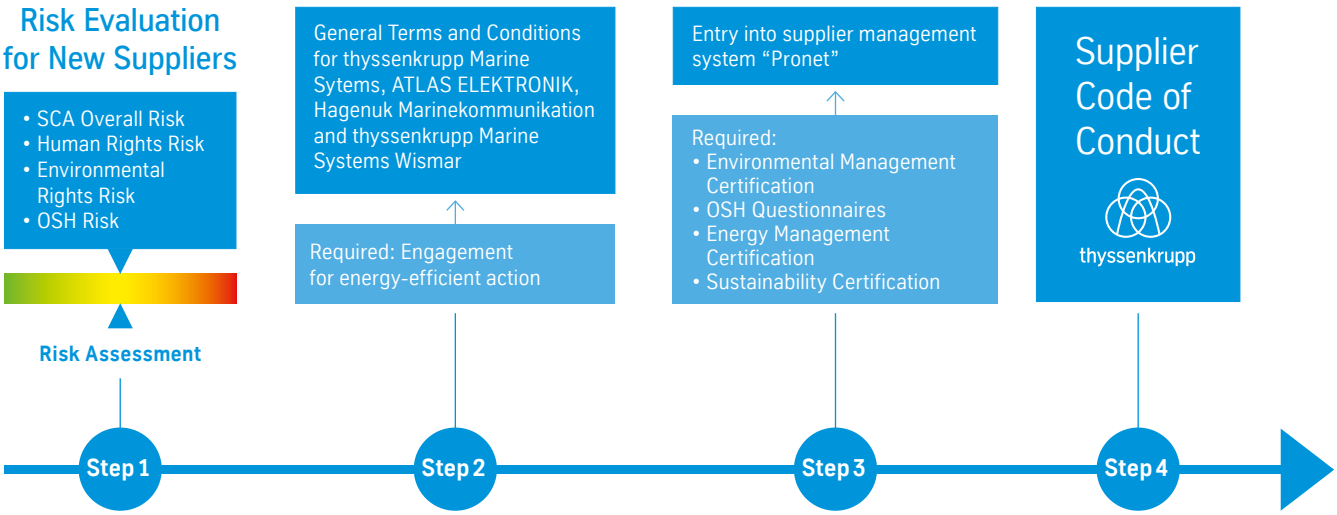
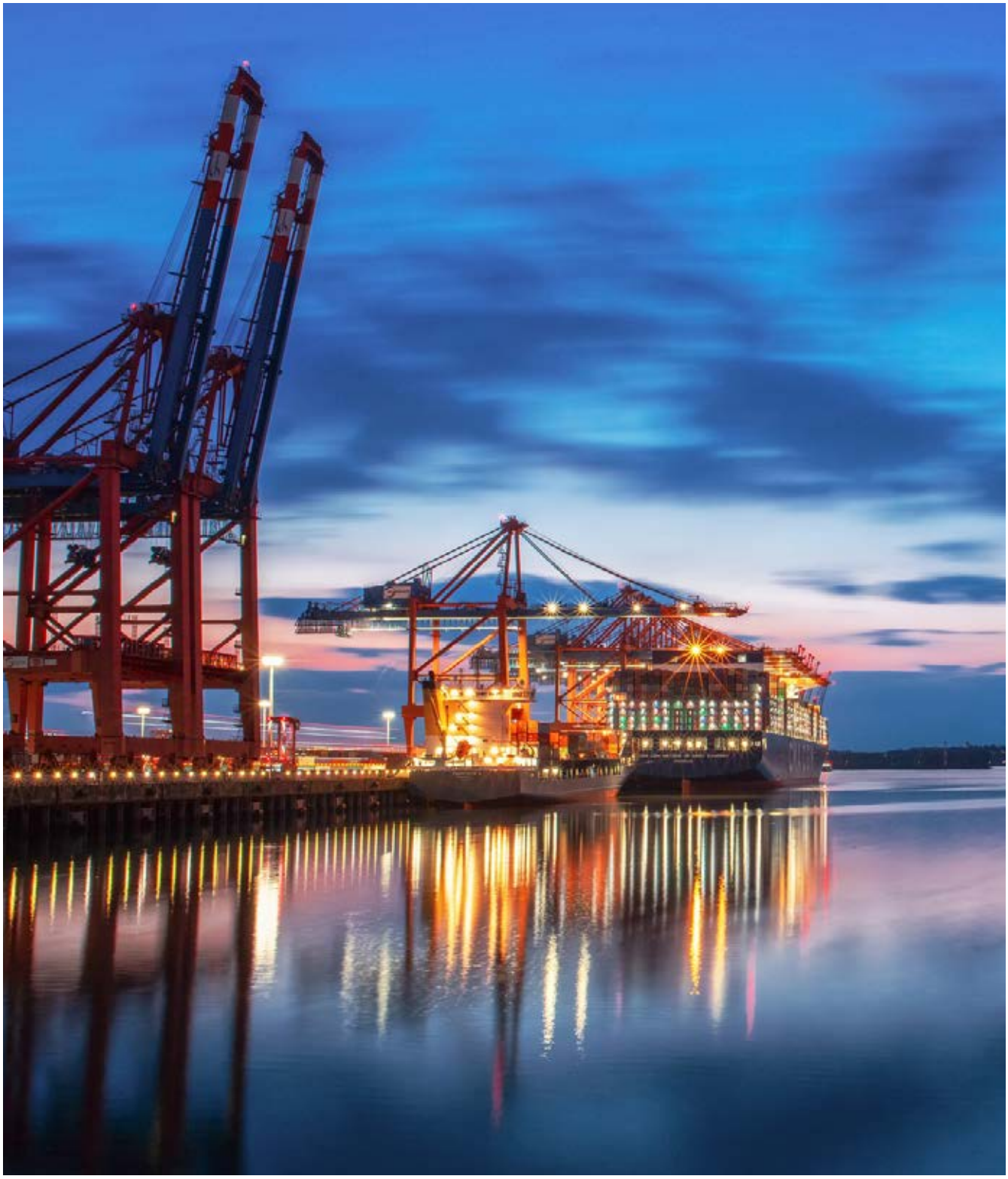


Figure 3.4: Schematic view of supplier qualification process



How to Handle High Risk Suppliers

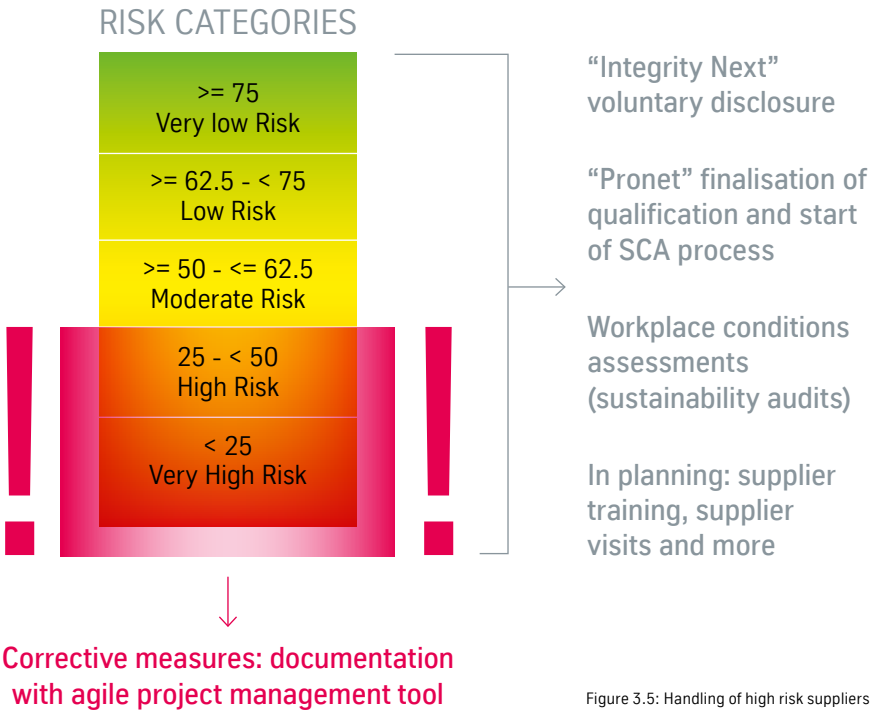


Figure 3.5: Handling of high risk suppliers

Number of Risk Suppliers

Risk Level	June 2023	December 2023	Target
Very high	2	0	0
High	51	34	< 30
Moderate		43	
Low		1,137	
Very low		1,561	

Figure 3.6

Putting the Needs of Citizens and Customers First

4

Social Engagement

In a world full of challenges, standing together as a society becomes of essence. Active participation to strengthen engagement and connection with local and regional communities is of high priority for thyssenkrupp Marine Systems. With the selection of social engagement, memberships, and donations, the company focuses on local, regional, and social aspects as well as on maritime ties.

Regional associations, initiatives, and institutions have been supported for many years. thyssenkrupp Marine Systems and ATLAS ELEKTRONIK were actively involved in 72 memberships and collaborations with different organizations and associations in FY 2022/2023.

Examples of Active Memberships in Organizations and Associations

CAPTN e. V.	Förderverein Technische Fakultät e. V.
Verein der Wirtschaft für das Maritime Technologie- und Transferzentrum e. V.	VDSI Verband für Sicherheit, Gesundheit und Umweltschutz bei der Arbeit e. V.
Norddeutsche Initiative Nanotechnologie Schleswig-Holstein e. V.	Förderverein Gaarden e.V.
WTSH GmbH Maritime Cluster Norddeutschland (Wirtschaftsförderung und Technologietransfer Schleswig-Holstein GmbH)	Förderverein bremen digitalmedia e.V.
Freundeskreis Yad Vashem e. V. Membership	Deutscher Jugendherbergsverband e.V.

SUM OF CURRENT MEMBERSHIPS IN ORGANIZATIONS & ASSOCIATIONS: 72

The following example illustrates the company-wide commitment to social responsibility.

The Environmental Business Partnership supports businesses in Bremen and Bremerhaven in profitably integrating sustainable management into their everyday operations. Targeted advice, specialist events, and partner meetings offer mutual networking. Under the motto "20 years of AKTIV in environmental protection – we are proud to be part of it!", a campaign was started in October 2023 to plant as many trees as possible with the participants. As part of the tree planting for the 20th anniversary of the Bremen Environmental Partnership (also: Partnerschaft Umwelt Unternehmen), ATLAS ELEKTRONIK GmbH planted three trees on its company grounds. The planted trees symbolize the company's connection with nature. The careful use of resources, waste avoidance as well as environmentally friendly waste disposal, and the reduction of CO_2 emissions are not only checked and continuously improved by the certifications DIN ISO 14001 (environmental management) and DIN ISO 50001 (energy management), but also firmly anchored in the energy and environmental policy.

Sustainable Innovation & Eco-design

Innovation & technology is one of the drivers for growth at thyssenkrupp Marine Systems. Besides exploring the opportunities on the civil market with the OU NXTGEN, the research and development activities in the four focus areas – climate protection, energy transition, mobility of the future, and digital transformation – opened up new business perspectives.

Technology management is monitoring new trends on the market in relation to hydrogen, fuel cells, batteries, alternative fuels, and digitalization.

The adjusted R&D intensity as indirect financial target refers to R&D costs as a proportion of sales, without trading and distribution.

Indirect Fincancial Target	FY 2021/2022	FY 2022/2023 Target	FY 2022/2023 achieved
R&D Intensity	**6.6%**	**6.7%**	**6.9%**

Energy transition, climate protection & naval products of the future

The EU Strategic Compass for Security and Defence states the target to increase energy and resource efficiency of the EU armed forces and to reduce their environmental footprint to meet the European Union's goal of climate-neutrality by 2050 under the European Green Deal, without reducing operational effectiveness. Due to the extensive lifespan of the EU naval fleets (exceeding 30 years on average), in the short-term, it is essential to green retrofit the existing EU fleets of vessels.

thyssenkrupp Marine Systems participates in international research tenders in which e.g. innovative future propulsion systems, energy management systems or Sustainable Military Fuel (SMF) for naval combustion engines and turbines are developed. The possibility of low-cost retrofitting and the dual-use interoperability are always kept in mind to enable a transition phase.

thyssenkrupp Marine Systems owns a sound knowledge for solving the challenges arising from retrofitting. Not only considering the propulsion system as such, but also downstream systems such as tanks, vents, and ventilation systems. Due to the indispensable required safety and security on board of marine vessels, there is also a special spotlight on security aspects.

Furthermore, experts of thyssenkrupp Marine Systems participate in project circles initiated by the Incubation Forum for Circular Economy in European Defence (IF CEED) as part of the European Defence Agency (EDA) initiative towards a circular economy in the defence industry. For example, the project circle "Circular Materials for Additive Manufacturing (AM)" aims to continuously investigate the possibilities of additive manufacturing …

- to develop military requirement for AM deployable solutions.
- to significantly reduce the "military logistic footprint" in terms of costs, infrastructure, personnel, and availability implementing deployable AM repair and maintenance solutions on site on missions.
- to improve the logistic supply chain for military assets where a large volume of inventory and supplies is constantly maintained in warehouses or deployed to ensure operational readiness.

Using AI in Sustainable Development

Artificial Intelligence refers to the ability of computers and machines to perform tasks that normally require human thought. This includes machine and deep learning, where algorithms learn from data to make predictions or recognize patterns. In many maritime application contexts, AI can help to reduce costs and resource consumption, optimize supply chains, and development and production processes and increase human safety in complex maritime environments. Various projects of the Business Unit Marine Systems are examining the potential applications of AI and preparing them for use in operational business. These include, for example, AI-assisted welding, the use of AI for software development, and the future optimisation of workflows using AI.

The company's greenhouse concept offers a protected space for innovation and ideas to explore new technologies quickly and agilely. The greenhouse AI was opened in November 2023 as the first instance for the trend topic of AI. Employees from different areas are working on new solutions for products with a focus on machine and deep learning.

People & Values

5

thyssenkrupp Marine Systems appreciates the value of the social environment and prioritizes health and safety of all humans involved in day-to-day business. The company is ambitious to contribute to a positive development of society and shaping the future starting from within by a value-oriented approach. The materiality assessment has shown a necessity to strengthen the company culture and to further promote diversity and gender equity.

Health & Safety in Workplace and Workers' Rights

Blue lights and sirens are an unpopular scene at the locations of the Business Unit Marine Systems – every accident is one too many. The Zero Accident policy is based on the belief that all accidents are preventable. Good health and safety performance is crucial for the daily business activities and supports efficient production. Performance is measured in the rolling average of lost time in accidents rate (accidents with at least one lost working day per 1,000,000 working hours completed). The company was able to further reduce the accident frequency rate from 3.6 in FY 2021/2022 to 3.2 in FY 2022/2023, see figure 5.1.

Accident Frequency Rate

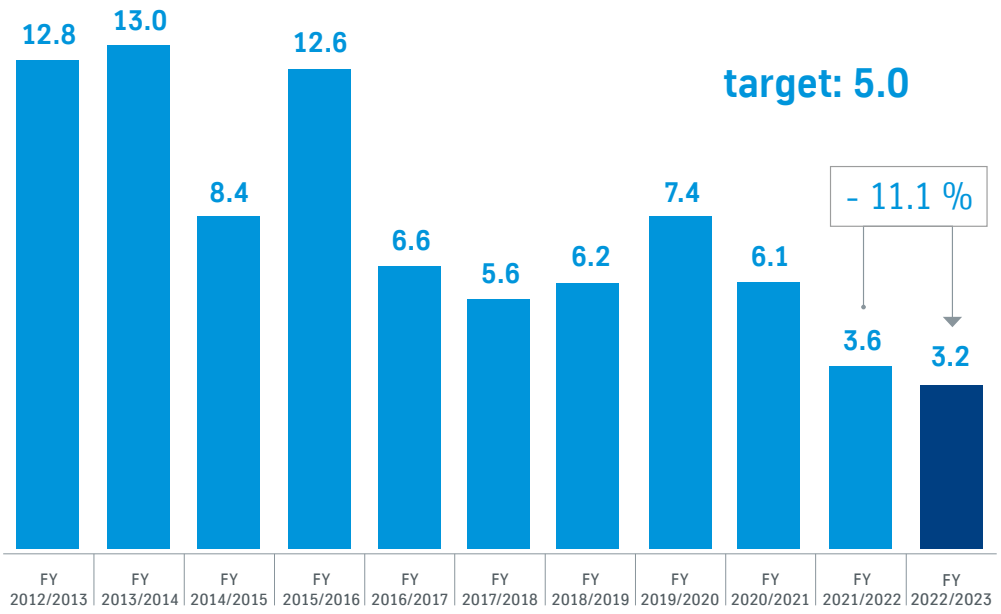


Figure 5.1

The target of an accident frequency rate of 5.0 was clearly exceeded at 3.2. This is the lowest value since being part of thyssenkrupp AG.

Both the reactive and the preventive approach help to improve the effectiveness of the health and safety management.

Reactive occupational health and safety (OSH) response
Every accident and every incident is a "window into the system", providing insights into areas and processes that can be improved. A comprehensive accident analysis with regard to behavioural patterns, environmental influences, and hazards to people during an incident is mandatory. The results of this analysis are applied to response effectiveness. This allows teams to focus on prerequisites for health and safety in the workplace.

Preventive occupational health and safety
When it comes to preventive OSH, the focus is on changing the attitudes and behaviour. The occupational safety specialists, in cooperation with the responsible managers, pay particular attention to the topic in numerous activities. From daily 15-minute- awareness trainings in the production area to the continuous detection of unsafe actions and conditions during inspection rounds, this topic is deeply integrated into the daily rhythm of each employee.

Managers, employees, specialist and work councils, management, and skilled workers form a community of responsibility in the area of OSH, sharing the goal of injury-free and healthy workplaces on the premises and on board of the product. Through cooperation in selection, instruction, and inspection as well as by the joint definition of standards and procedures in the contractor management system, the risk of serious or fatal accidents is comprehensively minimized. thyssenkrupp Marine Systems is proud to have completed the FY 2022/2023 without any serious or fatal accident.

Quality of Life at Work

With the implementation of a sustainable and strategic health management, thyssenkrupp Marine Systems has been able to achieve best health rates. Thanks to the recent revision of the company's information and prevention policy, the number of absences was kept extremely low again this year. With an average health rate of 95.2% in the last financial year, the annual average is relatively higher than last year's results (95.0%), see figure 5.2. Health promotion measures took place in the areas of exercise, nutrition, addiction, stress management as well as the topic of "healthy leadership" on site. The medical screenings e.g. for skin cancer prevention and the "Hansefit" exercise programme were particularly well received by employees.

In order to cope with the mental stress, caused e.g. through the multiple crises around the world, 98% of the workforce has had and still has access to an Employee Assistance Programme, a confidential counselling service provided by external psychologists, physicians, and educators. The resilience of the individual is yet considered the most important factor in being able to deal with external stress. In cooperation with numerous health insurance companies, thyssenkrupp Marine Systems has developed a comprehensive resilience offering to support all employees at all levels and across all units.

"Both the reactive and the preventive approach help to improve the effectiveness of the health and safety management."

Health & Safety Manager

Health Rate at BU Marine Systems

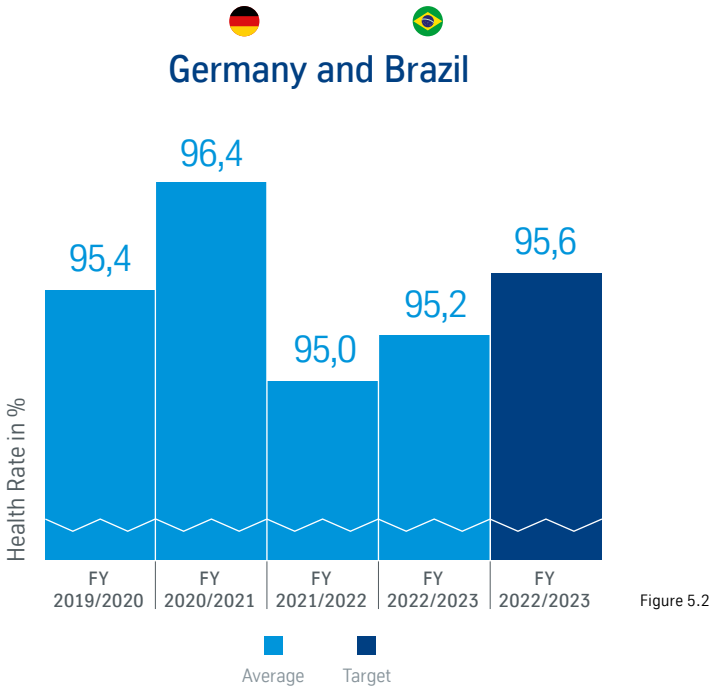


Figure 5.2

“we care days”: You are what you eat

The right nutrition has a strong influence on the individual well-being, fitness and health. In order to sensitize all employees to a balanced diet, the OSH department organized nutrition show courses at the locations in Kiel, Hamburg and Emden. The courses are an efficient method to motivate employees to look into different ways of nutrition and to question their own dietary and drinking habits. Different stations offered information and practical guidance to a variety of topics – from drinking enough water, small interim meals up to healthy menus in the canteen.

“The offers at the locations and the virtual nutrition course were very well received by many colleagues. We received a lot of great feedback and realized that many of them would like to see the special offers in the canteens as a permanent program.”

Health Manager

Occupational Health Care in Kiel

In the short term, occupational health care at the Kiel location will be strengthened by hiring new personnel as well as new examination methods that help to step reduce external examinations. It is further planned to obtain authorization for training of medical personnel and to hire medical specialists. On the long run, trained physicians shall have the opportunity to join the company after their training period. The aim is to create a comprehensive range of all occupational health services over the next two years and to expand the offer to other locations.

Family and Career at thyssenkrupp Marine Systems

Whether childcare or caring for relatives: the compatibility of work and family is an important factor for the future viability of a company. Family-friendly working conditions that are adapted to personal needs not only play a major role in attracting and retaining skilled workers, but also ensure lower staff absences, higher employee motivation, and better work results. As part of the "Work & Family" certification process, high standards and requirements were introduced and a wide range of offers was established for employees to achieve a better harmony of work and family for employees.
The use of flexible working hours is encouraged wherever possible in order to improve the possibility to fulfil personal needs, e.g. by using working time accounts, flexibility at the start and at the end of work, part-time, and temporary full-time work. After consultation with the managers, many needs can be addressed individually in order to better reconcile work and family.

With more than 80% male employees, fathers have increasingly come into focus in recent years. With their desire to spend extra time with the family, they can actively promote the change to a modern working environment. A respectable amount of more than half of the fathers in the company already take advantage of parental allowance months. The company happily supports this, offering new fathers the opportunity to support their partners' professional activity and their (re-)entry after the birth. In the company's father network, men find a neutral contact point with integrity on the topic of being a parent and are advised and accompanied by the network members.

Other services that parents can take advantage of are: free emergency childcare, parent counselling, child holiday care, annual children's holiday, childcare in the pre-Christmas period, breastfeeding room, parenting folder, further training and part-time employment during parental leave, counselling on parental leave, and much more.

"Family-friendly working conditions adapted to personal needs play a major role in attracting and retaining skilled workers, and also ensure lower absences, higher motivation and better work results."

HR Manager

“Family Day” in Kiel: It's been a blast!

Sharing the professional environment with the family is a special and proud moment. In September 2023, the shipyard gates in Kiel opened for the long-awaited corporate “Family Day”, which was also a thank you of the company for years of good work. Around 9,000 employees, their families and friends followed the invitation and enjoyed numerous attractions and an entertaining programme, e.g. the insight into the new shipbuilding hall before the official opening mid of September 2023. Many departments showed their skills and services there and made the company’s work see- and touchable. The shipyard band, brought together by employees many years ago and owning cult status, played in a marquee. For children, the plant fire brigade offered rides in the fire engine, demonstrations of heavy-duty transport took place, and bouncy castles and a go-kart course were installed. More than 800 internal and external helpers were involved ensuring a successful event, and helping to bridge the gap between work and personal life. The “Family Day” was a complete success regarding to the employees’ and their families’ feedback, and a great get-together, celebrating years of dedicated work and showing the employees that they are more than staff – but a team and a family.

To work by (e-)bike in Kiel

Commuting is one relevant emission source for a company with many locations and employees. thyssenkrupp Marine Systems promotes emission-free or emission-reduced mobility. All employees can lease bicycles, e-bikes or cargo bikes and have benefited from attractive leasing conditions since 2023. All job bikes are comprehensively insured and inspections are included. The goal is to motivate people to choose a CO_2-reduced way for commuting. On top of that, the use during leisure time is expressly desired. In FY 2022/2023, around 500 bikes were ordered and delivered to their new owners.

Diversity, Inclusion & Equity

thyssenkrupp Marine Systems follows a holistic view of diversity as determinant of success shown in engagement, innovation, and long-term value. The action plan includes measures to promote diversity in age, origin, sexual orientation, and inclusion across all sites. In FY 2022/2023, many events for the promotion of diversity, inclusion, and equity took place under the hastag #grauistbunt (#greyiscolorful).

Gender equity

One of the company's main goals is to attract more women and to bring them into leadership positions. By 2025, 16% of management positions shall be filled with women and the share of women in the entire company shall be increased to 20% (as of FY 2021/2022: 17%). All efforts bearing fruit in FY 2022/2023 – the share of women in management positions was increased by almost 3% to a value of 11% (compared to 8.1% in FY 2021/2022). The target of more than 10% women in management positions in FY 2022/2023 was slightly overachieved.

Targets to be reached by 2025 are

16%
of management positions
to be held by women (as of FY 2022/2023: 11%)

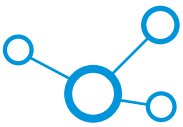
a proportion of
20%
of women
in the companies of the thyssenkrupp Marine Systems group (as of FY 2022/2023: 17%)

20%
of apprenticeships including dual studies
to be filled with women (as of FY 2022/2023: 14%)

Figure 5.3

Overview of Activities in FY 2022/2023

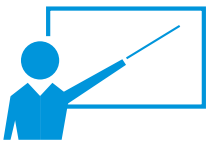
Female Leadership Event
Annual event to convey innovative power and motivational impulses for the female career path via speaker



Empowering Network
Establishment of the company-wide women's network to empower women in the organization

Women's Profiles in Regional Media
The focus of the profiles is on the different career paths of women in the company, which should inspire more external women to pursue a career path with thyssenkrupp Marine Systems.

Video Message from the Management
Positioning of the CEO on women and specifically on women in management positions



Awareness Training
Raising awareness of the management board, senior management and department leadership on the topic of equal treatment in the organization

Family Day at thyssenkrupp Marine Systems
Event at the shipyard in Kiel for all employees and their families - to present the workplace

Race or Ethnicity
On 21 March, the International Day for the Elimination of Racial Discrimination, signs against racism are installed at the entrances of all locations.

Gender Diversity
German Diversity Day - Experience with all senses: Employees are being provided with something for all five senses (smell, see, hear, taste, feel).

Age Diversity
Show tolerance - Using the Implicit Association Test (IAT) to test one's own tolerance towards other generations

Inclusion
Excursion - Special education students from various schools in Kiel have the opportunity to visit the ship-yard and get to know the training department

Figure 5.4

Recruitment & Human Resources Management

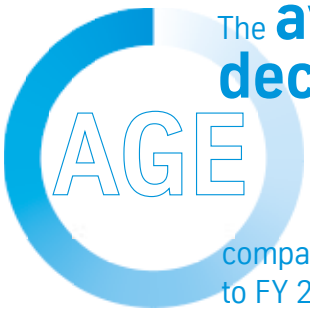
To be known as a European and global key player in the provision of integrated system solutions for maritime defence technology and thus becoming the leading partner for maritime security, highly skilled people are needed. The company has a long-term people strategy that, firstly, identifies the competences needed for future programs and, secondly, supports a planning of recruitment, training, engagement, and career development accordingly. In this way, the necessary skills for a successful business in Europe and worldwide are ensured.

Remaining a fair and attractive employer tomorrow
From FY 2021/2022 to FY 2022/2023, the amount of employees increased by 829 people worldwide, which represents a growth rate of 12%. The average age decreased by 0.7% compared from FY 2021/2022 to FY 2022/2023. In FY 2021/2022, the amount of employed women world-wide increased by 165.

From FY 2021/2022 to FY 2022/2023, the amount of **employees** increased by

829 **people worldwide**, which represents a growth rate of

12%



The **average age decreased** by

0.7%

compared from FY 2021/2022 to FY 2022/2023

In FY 2022/2023 the amount of **employed women world-wide** increased by

165


thyssenkrupp

Education and Science as a Driver to Attract Young Talents

In the tough competition for engineering talents, thyssenkrupp Marine Systems ranks among Germany's most significant employers. The recruiting team visits around 50 trade fairs and schools every year. The company's engineers and technology managers work with universities to adapt their degree programs to the future needs of the marine industry. Together with HR colleagues, many cooperations with universities were established.

99 HIRINGS IN 2023 (63 APPRENTICES / 36 DUAL STUDENTS)

The Outdoor Trainee Camp

A dozen trainers and around 60 trainees from the Kiel shipyard and Bremen-based ATLAS ELEKTRONIK with different professional backgrounds and nationalities met at the outdoor training center "Out into Nature" near Großenaspe in Schleswig-Holstein.
The young people, who had just recently started their training or dual studies, got to know each other in the outdoor camp under unfamiliar conditions, tested their skills, and grew together into a community. The trainee camp has taken place annually for twelve years. Team building is very important there and everyone, trainers and trainees, benefits from it throughout their entire training period.

Involvement & Upskilling of Employees

In the past years, the working environment has been shaped by digital challenges, new ways of working, and an increasing need for agility and flexibility. In order to be able to process orders efficiently and in a customer-friendly manner in the long term, almost all business areas are currently undergoing a transformation. High standards in the development and training of employees, and the strengthening of management and leadership skills are important pillars to meet both the company's and the customers' expectations and needs. The regular upskilling of employees is fostered on and along the job and in internal and external training courses. From new working methods, such as the use of augmented reality in production, to coaching for managers, employees, suppliers, external craftsmen, and customers can choose from a wide range of digital and on-site offers in the so-called "Learning Factory". It is an internal place where learning itself is the focus and is being implemented, an inspiring atmosphere with modern utilities in an environment close to the shipyard premises. The "Learning Factory" enables qualification in the areas of digitization and lean management using modular practical stations. A list of all upskilling measures is included in the sustainability brochure from March 2023.

High standards in the development and training of employees, and the strengthening of management and leadership skills are important pillars to meet both the company's and the customers' expectations and needs.

ESG Lunch & Learn

ESG becomes more and more important in the daily business. This digital format has been initiated to have informative talks in a relaxed atmosphere. It strengthens the dialogue with employees and helps the ESG department to figure out internal needs. The first two events have taken place with around 70 participants and the feedback on the topics "Why ESG?" and "Greenwashing and the consequences" was positive. The event is planned quarterly and open for all employees from thyssenkrupp Marine Systems and ATLAS ELEKTRONIK.

thyssenkrupp Estaleiro Brasil Sul Environmental Education and Social Communication Program

To promote communication and awareness among employees and the local community regarding actions that contribute to sustainability, thyssenkrupp Estaleiro Brasil Sul conducts ongoing environmental education with their employees and the neighbouring community through monthly leaflets and an annual Environmental Week featuring activities and lectures on environmental topics presented by guest professionals. These discussions cover issues like the high generation of plastic waste, water pollution, and global biodiversity loss, emphasizing how simple actions and conscious choices can contribute to improving environmental quality.

This program resulted in increased engagement from the community with the shipyard. Among the employees, there has been greater adoption of environmental themes, particularly in waste segregation.

Environmental Impacts

6

The promotion of environmental and climate protection measures in processes, products, and projects is of prime concern at thyssenkrupp Marine Systems. The environmental impact of production and products is considered over the entire lifecycle through to disposal or recycling. Products have always been developed and built with the efficient and effective utilisation of resources in mind. In the area of research and development, energy efficiency is continuously being developed and optimized. Production processes are constantly being optimized and tested to see how CO_2 emissions can be reduced further. This also includes environmentally friendly energy and heat supply. The aim is to reduce the carbon footprint by 30% with regard to scope 1 and 2 emissions and by 16% with regard to scope 3 emissions by 2030.

The following table gives an overview of the key environmental data for the Business Unit Marine Systems in FY 2021/2022 and FY 2022/2023. The increase of numbers is caused by higher production activities, especially at the new shipyard in Brazil.

Key Environmental Data	Unit	FY 2021/2022	FY 2022/2023
Energy			
Total energy consumption	MWh	79,148.4	79,600.4
Greenhouse gas emissions			
Scope 1	t CO_2e	4,751.0	4,978.1
Scope 2	t CO_2e	14,790.7	14,819.2
Scope 3	t CO_2e	no data for whole BU available	
Waste			
Total waste	t	4,254.8	4,708.7
Waste for recycling	t	3,804.6	4,257.9
- thereof hazardous waste	t	961.6	755.0
Waste for disposal	t	450.1	450.8
- thereof hazardous waste	t	92.1	164.9
Water			
Freshwater consumption	m³	216,492.4	179,387.3
Waste water production	m³	101,043.2	108,432.0

Table 6.1

"A solid, science-based data set is the prerequisite for the measurability of our climate and environmental protection measures."

Sustainability Data Manager

General remarks:

All figures are rounded. Absolute values may vary on a year-on-year comparison due to different production levels and are not a direct reflection of environmental performance.
Both activity data and emission factors are partially derived, simplified, grouped, and not 100% precise; this leads to uncertainties. Greenhouse gas accounting is based on the multiplication of activity data by an emission factor and the subsequent summation of all these processes to obtain an estimate of total greenhouse gas emissions. Therefore, every calculation is subject to a degree of uncertainty. Uncertainty does not mean that the result is inaccurate, but that the result of the emissions is likely to be in a range around the value.

Accounting of GHG Emissions

If you want to achieve your goals, you need to understand your current positioning. The aim of thyssenkrupp Marine Systems is therefore to establish a science-based and comprehensive assessment of its own direct and indirect emissions as a solid baseline against which future efforts can be measured. An initial baseline was established in 2018 for scope 1 and 2 and in 2021 for part of scope 3. The aim is to continuously improve data availability and quality and to enable balancing all categories in the future.

Scope 1 & 2 Emissions

The scope 1 and 2 emissions of the Business Unit Marine Systems are regularly recorded and have been published by thyssenkrupp AG for several years. CO_2 emissions are calculated using the GHG Protocol methodology. The emissions are calculated on the basis of energy consumption and process emissions applying generally accepted scope 1 and 2 emission factors from a selection of databases (see table 6.4 on page 61). For scope 2 emissions, both the market-based as well as the location-based approach have been applied. In accordance with the GHG Protocol Standard, the market-based calculation method is only used in addition to the standardized location-based calculation method. The location-based approach was chosen for further comparison.

In the reporting period, the greenhouse gas emissions (CO_2 equivalent emissions) of the Business Unit Marine Systems - i.e. scope 1 and scope 2 emissions - equalled just under 20,000 tonnes. The CO_2 emissions from direct combustion (scope 1) or from the purchase of energy and heat (scope 2) for the two financial years 2021/2022 and 2022/2023 are shown below in tonnes of CO_2 equivalent.

The majority of purchased electrical energy has already been converted to 100% green electricity contracts or is in the process of being converted.

Scope 1 and 2 GHG Emissions in t CO_2e

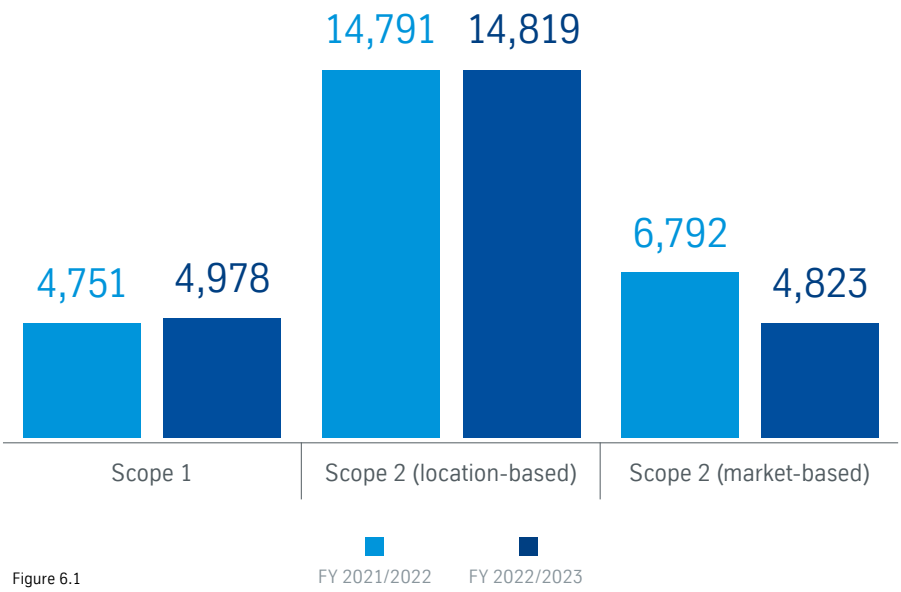


Figure 6.1

Three quarters of emissions (75%) in the past financial year resulted from the purchase of heat and electrical energy at the various locations. The majority of the purchased electrical energy has already been converted to 100% green electricity contracts or is in the process of being converted, meaning that the market-based emissions are significantly lower. A further 19% of emissions are caused by the use of gas for heat generation. The aim here is to switch to renewable-generated gas and fuel as soon as the suppliers are able to offer it.

Share of GHG Emissions per Energy in FY 2022/2023

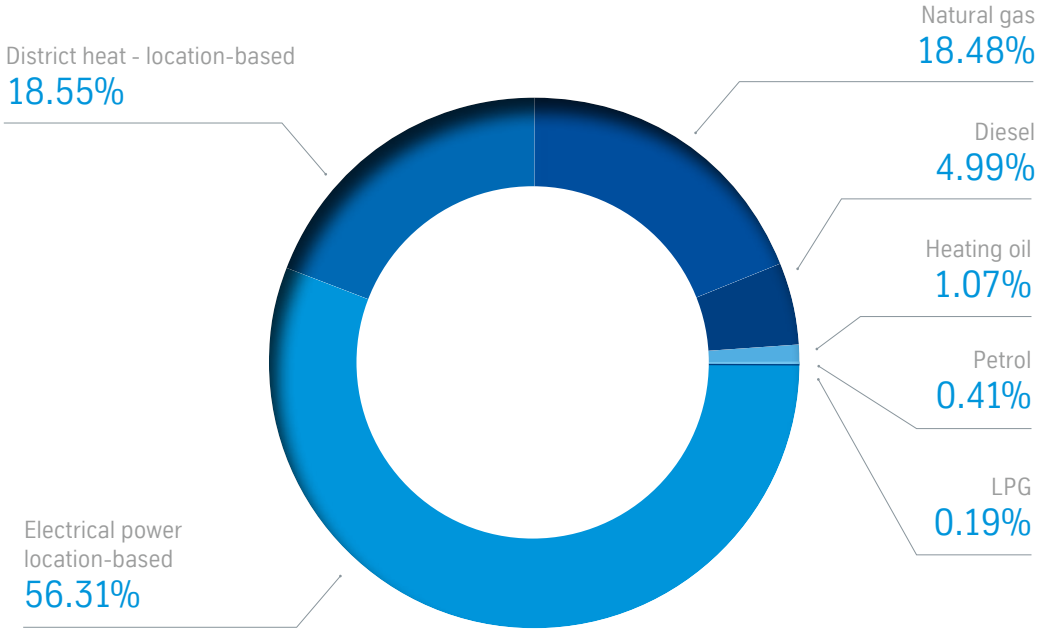


Figure 6.2

Share of GHG Emissions Scope 1 and 2 in FY 2022/2023

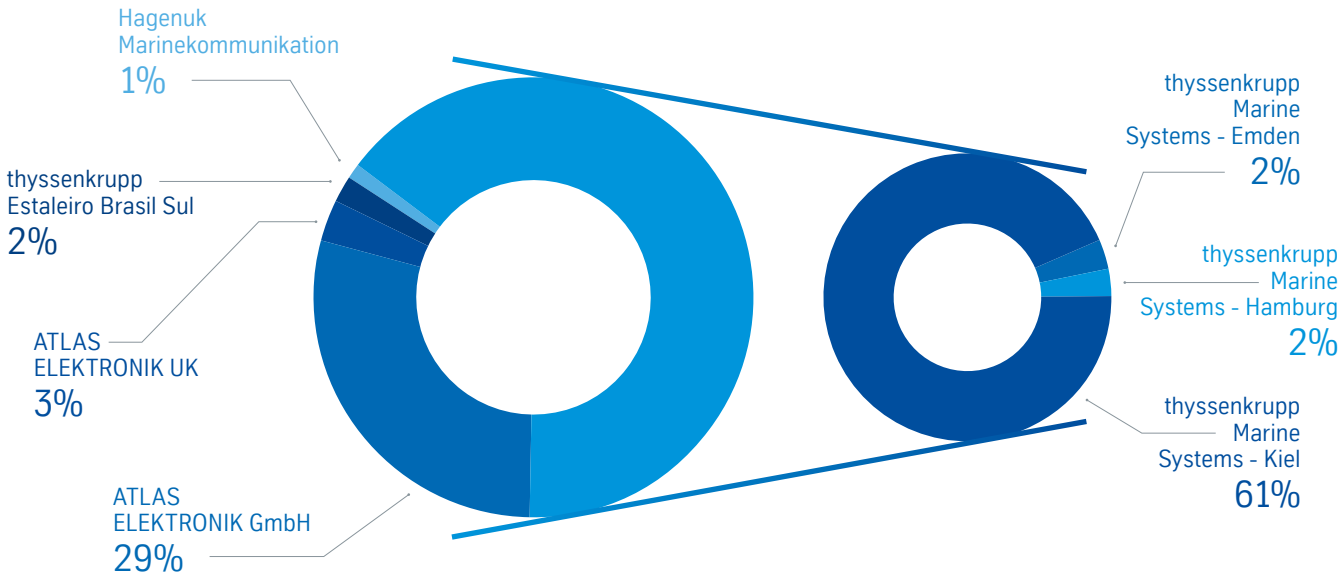


Figure 6.3

During the sea trials, produced ships are escorted by support vessels. This vessel operation corresponds to the selected limits of this GHG accounting. For the first time, the consumption of marine fuels by own vessels was accounted in this reporting period. The consumption of marine fuel and, where applicable, refrigerants has not been taken into account in overall scope 1 balance yet as the data collection is still being approved. In the following, scope 1 and 2 emissions at thyssenkrupp Marine Systems' site in Kiel are being analysed for a first impression of the impact.

Scope 1 & 2 Emissions at thyssenkrupp Marine Systems' site Kiel

Due to its size and relevance for the GHG balance, the Kiel site is analysed in more detail. For the market-based calculation of scope 2, all purchased electricity from 2022 onwards can be recognized as green electricity (electricity from hydropower) as thyssenkrupp Marine Systems GmbH holds an eco-certificate for the entire accounting period. However, following the GHG protocol, location-based emissions are presented below.

Initial successes in terms of emissions reduction have already been achieved in scope 2. Nevertheless, further measures to improve energy efficiency, switch energy sources and avoid emissions will be implemented in order to reduce emissions in the long-term despite the imminent increase in production in the coming years.

For the first time, the marine gas oil (MGO) consumption of the shipyard's own ships and ordered vessels during sea trials was also partially taken into account where data was available. These emissions make a significant contribution to scope 1 emissions. The large fluctuations between the financial years is caused by the different numbers of sea trials and operating times of ships depending on the project status. Therefore, a long-term conversion of ship propulsion systems to renewable fuels is a prerequisite for achieving the set reduction targets for 2030.

GHG Emissions in t CO_2e at the Kiel Site

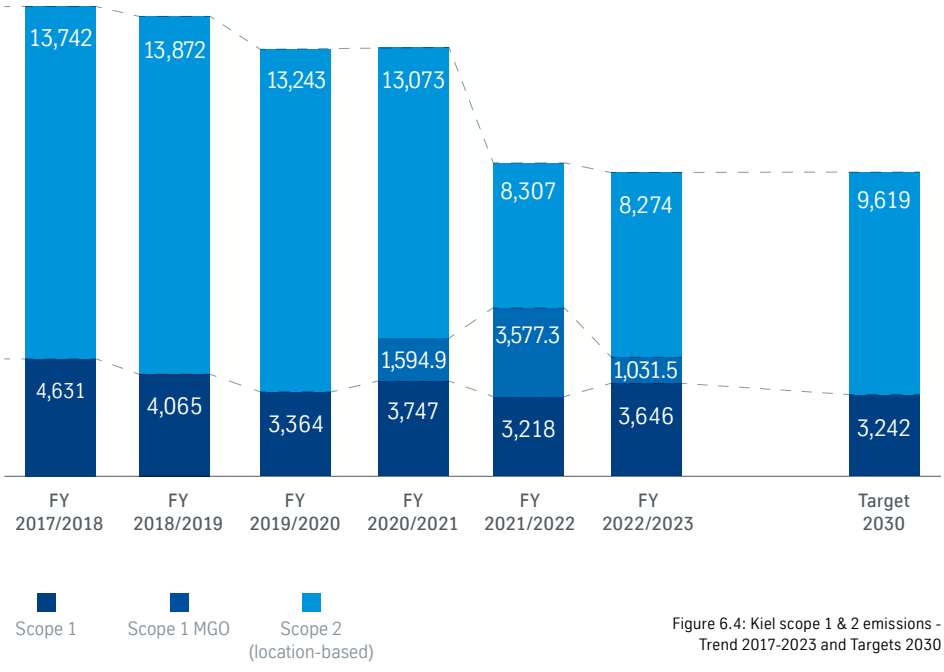


Figure 6.4: Kiel scope 1 & 2 emissions - Trend 2017-2023 and Targets 2030

Scope 3 Emissions - Focus on thyssenkrupp Marine Systems GmbH

The updated scope 3 assessment in this report focusses on six of the 15 categories of the GHG Protocol for the entire thyssenkrupp Marine Systems GmbH (including the sites in Kiel, Emden and Hamburg). Further categories are to be included in the future assessments. An inventory of the other business units of ATLAS ELEKTRONIK and thyssenkrupp Marine Systems' international sites is in preparation.

As in the previous report, the selection of categories was guided by the a priori estimated magnitude of these categories and the availability of information. The FY 2021/2022 and FY 2022/2023 were compared with previous calculation of FY 2020/2021. Due to the nature of the products with low quantities and long production times, high variability is to be expected in all six categories.

In FY 2020/2021 and 2022/2023, ships were completed, tested and delivered to the customer. These project phases are characterized by a high consumption of marine fuels and the high emissions associated with this (category 3.9). These ships were in FY 2021/2022 and numerous items of equipment were delivered. Several new shipbuilding projects were launched in FY 2021/2022 and the materials required for the coming years were purchased explaining high emissions in category 3.1.

Scope 3 Category	Unit	FY 2020/2021	FY 2021/2022	FY 2022/2023	Comment
1. Purchased goods and services	t CO_2e	31,220.0	35,267.1	20,148.0	All upstream (cradle-to-gate) emissions of purchased goods and services (weight-based and spend-based approach)
3. Fuel- and energy-related activities (related to consumption in scope 1 or scope 2 + purchased ship fuel)	t CO_2e	2,217.0	2,790.0	2,899.7	All upstream emissions of purchased fuels and electricity (extraction, production and transportation). FY 2020/2021: upstream emissions from ship fuel not included
4. Upstream transportation and distribution	t CO_2e	248.0	120.0	171.0	Transportation and distribution of products purchased from Tier 1 suppliers to gate
5. Waste generated in operations	t CO_2e	Data not available	292.1	331.3	Disposal and treatment of waste generated in the company's operations
6. Business travel	t CO_2e	3,659.0	6,950.7	6,238.0	Transportation of employees for business-related activities (in vehicles not operated by the company) and including hotel stays
9. Downstream transportation and distribution	t CO_2e	2,162.0	847.0	2,656.3	Transportation and distribution of sold products including self-delivery of ships: FY 2020/2021 and FY 2022/2023 including 1,500 t and 1,700 t CO_2e respectively, from self-propulsed delivery of ships. No self-delivery in FY 2021/2022. Sea trials not to be considered in scope 3.9 but in scope 1.
Sum	**t CO_2e**	**39,506.0**	**46,267.0**	**32,444.2**	

Table 6.2: GHG Protocol reporting table scope 3

Share of Scope 3 GHG Emissions in FY 2022/2023

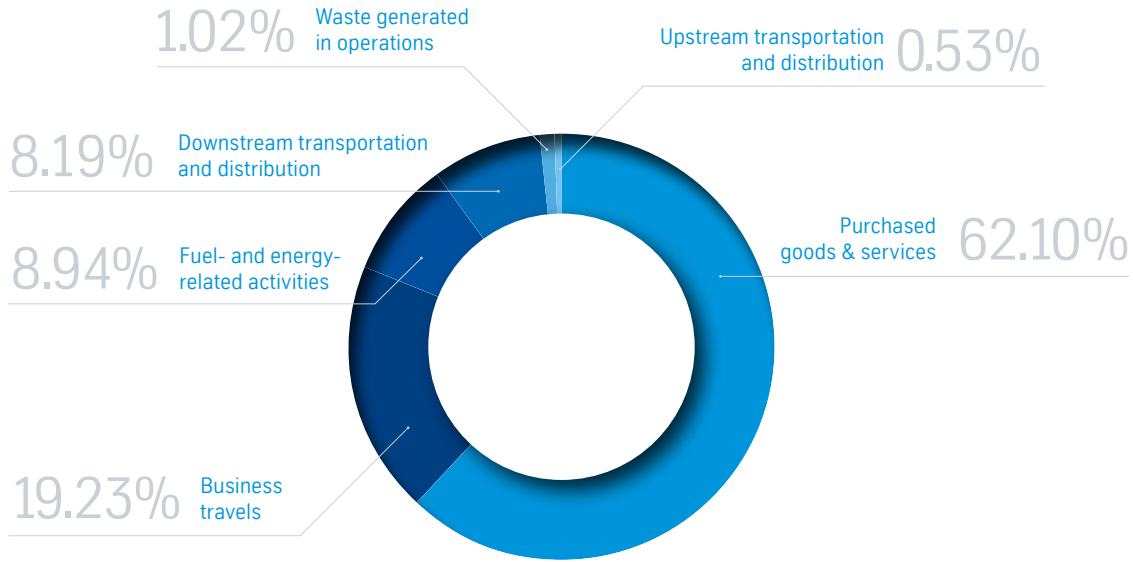


Figure 6.5

Share of Scope 3 GHG Emissions in FY 2021/2022

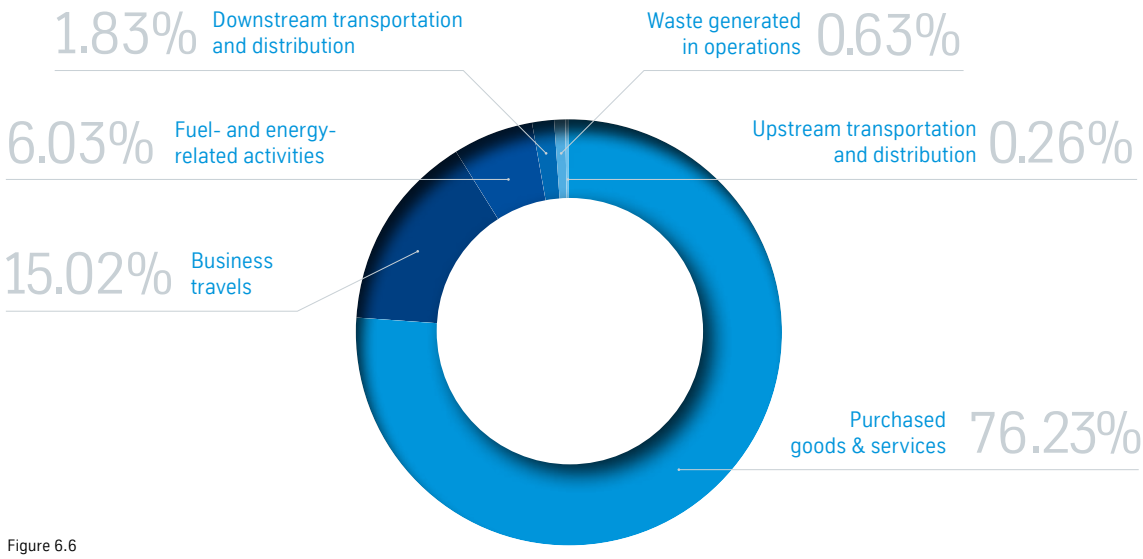


Figure 6.6

Purchased Goods and Services for thyssenkrupp Marine Systems GmbH

Scope 3 emissions were mainly caused by the production of purchased goods, which is to be expected for a manufacturing company. The majority of emissions is caused by the purchase of processed metal products, machinery and equipment as well as IT and electronic products. Pre-products, raw materials (mainly steel and other metals), building materials and plastic items cause less than 20% of emissions.

Furthermore, a quarter to a third of emissions in this category is caused by services in the areas of engineering services, consulting, R&D, construction, transport, storage, travel activities and ICT services.

CO_2e Emissions of Purchased Goods in FY 2022/2023

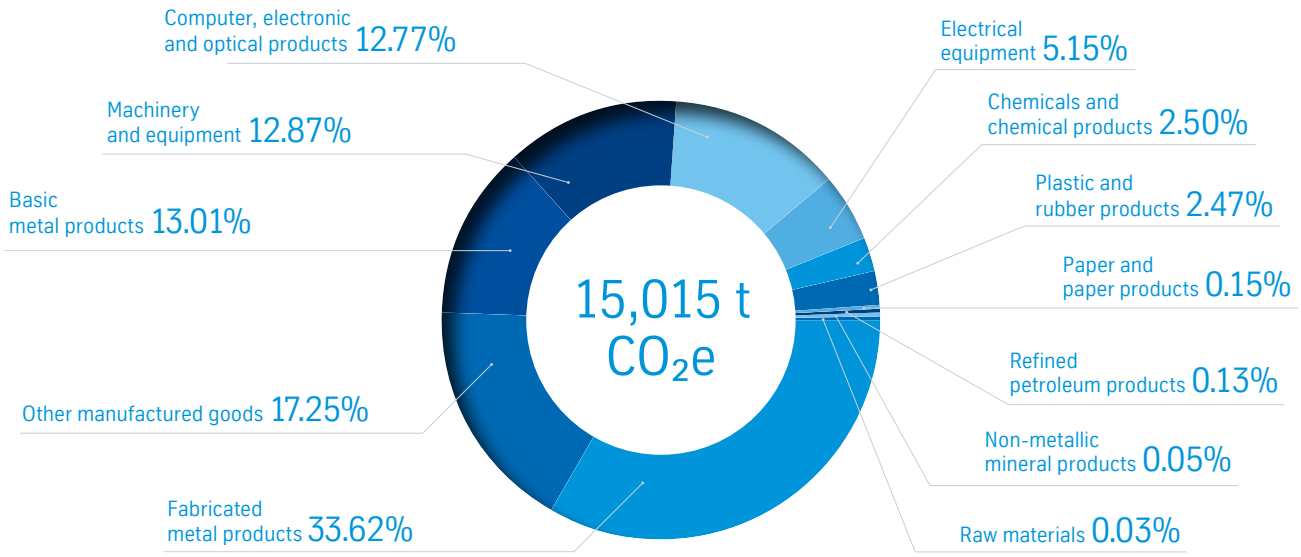


Figure 6.7

CO_2e Emissions of Purchased Services in FY 2022/2023

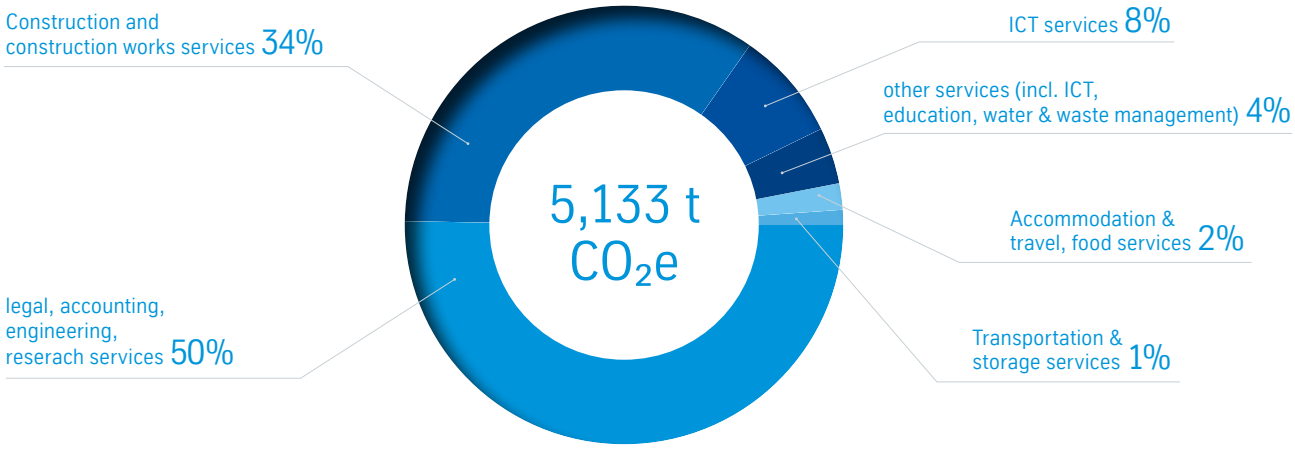


Figure 6.8

The Procurement department has taken up the challenge of reducing emissions in the future by working with suppliers and service providers, for example, to select less emitting materials or use them efficiently.

The research and development activities as part of thyssenkrupp Marine Systems' R&D programs with low carbon emissions also contribute to this – see chapter Sustainable Innovation on page 34.

CO_2e Emissions of Purchased Goods in FY 2021/2022

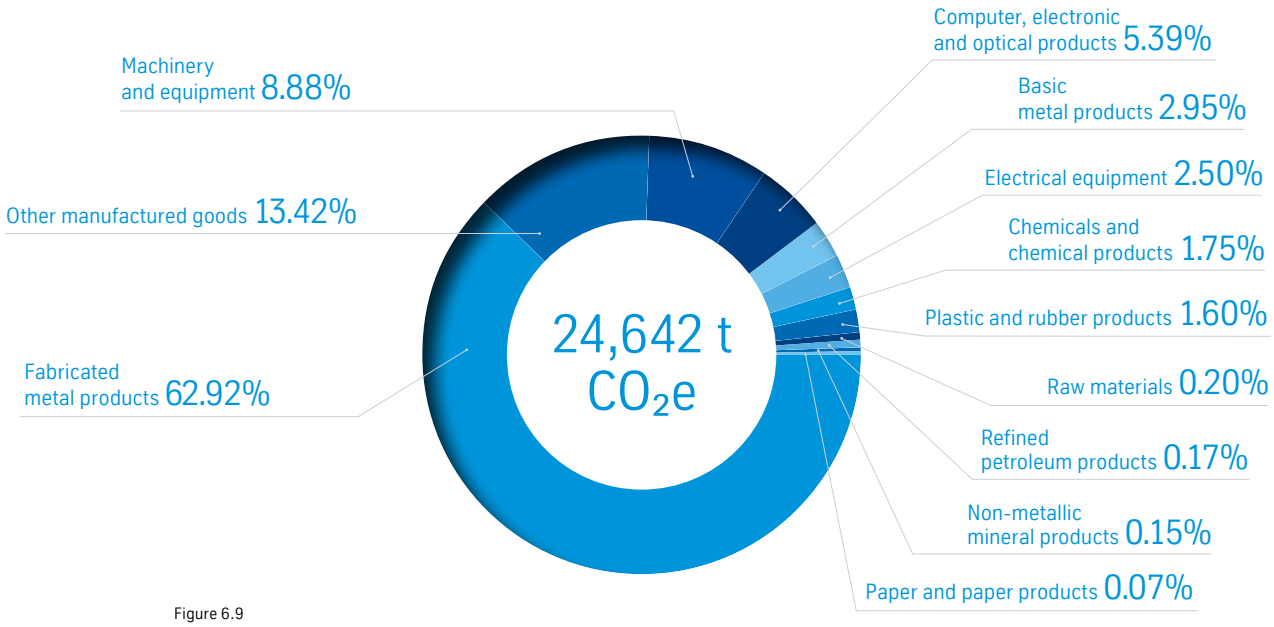


Figure 6.9

CO_2e Emissions of Purchased Services in FY 2021/2022

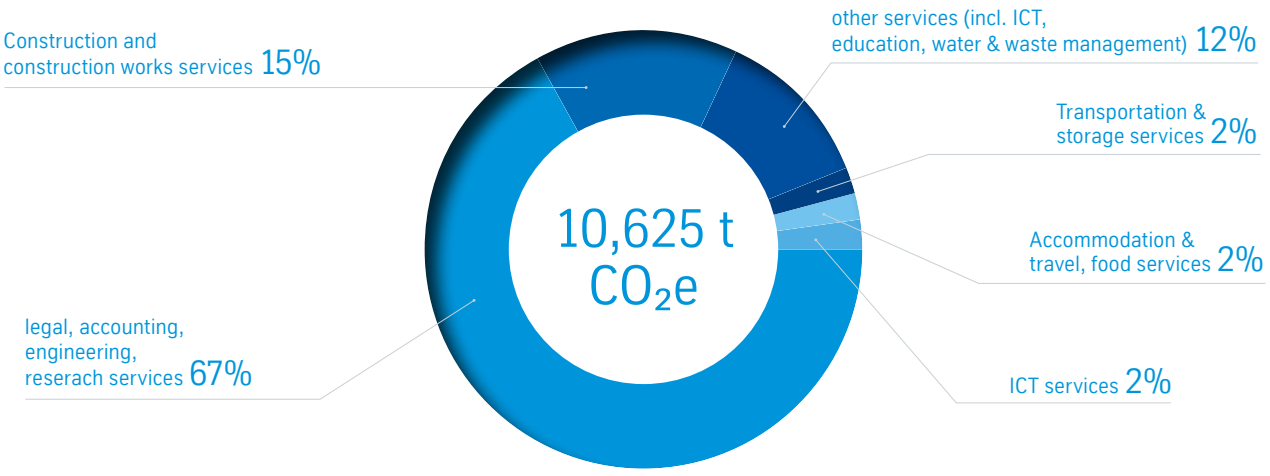


Figure 6.10

Scope 1, 2 & 3 - Summary of thyssenkrupp Marine Systems GmbH

In total, over 70% of thyssenkrupp Marine Systems GmbH's emissions are caused by scope 3 activities , see table 6.3.

Kiel	Unit	FY 2021/2022	%	FY 2022/2023	%
Scope 1	t CO_2e	6,795*	11	4,678*	10
Scope 2 (location-based)	t CO_2e	8,307	14	8,274	18
Scope 3 - total	t CO_2e	46,267	75	32,444	71
Sum	**t CO_2e**	**61,370**	**100**	**45,396**	**100**

Table 6.3

*including emissions from sea trials

GHG Emissions of thyssenkrupp Marine Systems GmbH (t CO_2e)

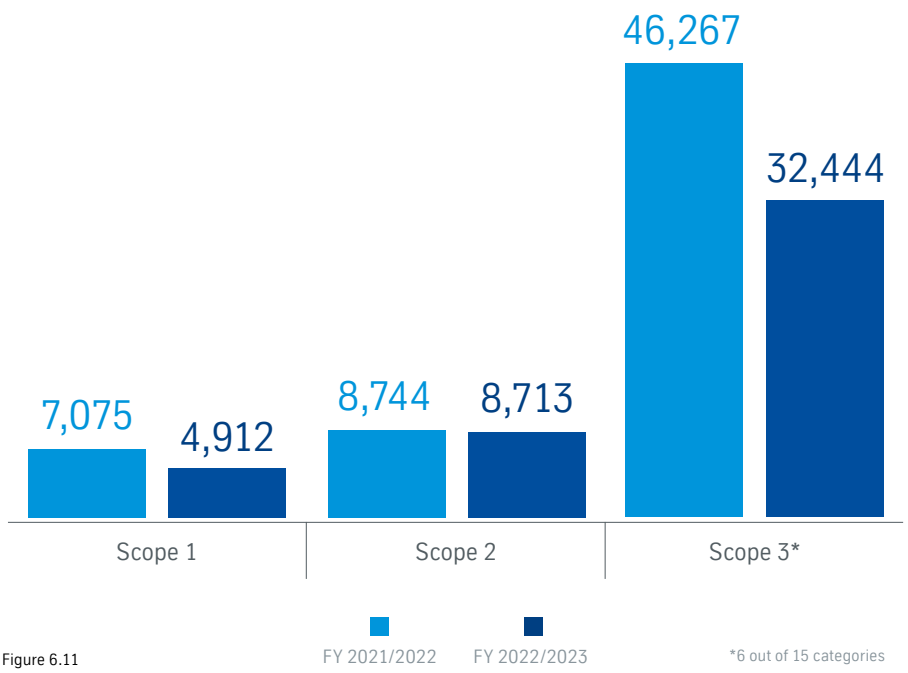


Figure 6.11

*6 out of 15 categories

Scope 1, 2 & 3 – Outlook

In future, the analysis of scope 3 emissions will be extended to the further operating units. The units with the highest number of employees will be addressed first and the categories with the highest emissions will be analysed in parallel to the procedure at thyssenkrupp Marine Systems GmbH.

Emission Factors

The choice of the emission factor (EF) is decisive for the emissions of the reporting company. The table below shows the selection of databases used as EF source for this report, sorted by priority.

Source for EF	Description	Regionality	Link
Customer-specific EF	EF of the supplier (e.g. energy supply company)	-	-
thyssenkrupp Marine Systems-specific EF	Self-modelled EF: Calculation of a (weighted) EF average for specific purchased goods using specific EFs from databases	-	-
GEMIS Version 5.0	Global Emissions Model of Integrated Systems, a German life cycle assessment and material flow analysis tool with public database of IINAS (access via UBA)	Germany	iinas.org
ProBas	The German web portal ProBas (process-orientated basic data for environmental management systems) of the Federal Environment Agency (UBA) is a library for life cycle data.	Germany	probas.umweltbundesamt.de
Informationsblatt CO_2-Faktoren	Emission factor information sheet by the German Federal Ministry for Economic Affairs and Climate Action	Germany	Bafa.de
EU freight modal split	Calculated modal split between the five main transport modes (maritime, road, rail, inland waterways and air) in the total freight transport in the European Union (EU)	EU	ec.europa.eu
ADEME	The French Empreinte® database is the official public database of emission factors and inventory data sets required for carbon accounting exercises by organizations and for environmental labelling of consumer products and services hosted by ADEME.	France	base-empreinte.ademe.fr
IDEMAT 2023 Rev A	IDEMAT (Industrial Design & Engineering MATerials database) is a Dutch compilation of life cycle inventory data of the Sustainable Impact Metrics Foundation, SIMF, a non-profit spin-off of the Delft University of Technology.	Netherlands	openlca.org
UK BEIS / DESNZ /DEFRA	UK government GHG conversion factors for company reporting represent the current official set of UK government conversion factors. Factors used for 2021-2023.	UK	gov.uk
US EPA	The Environmental Protection Agency's (EPA) GHG Emission Factors Hub was designed to provide organizations with a regularly updated and easy-to-use set of default emission factors for organizational greenhouse gas reporting.	US	epa.gov
US EPA	Supply chain GHG emission factors for US industries and commodities 2020, prepared using USEEIO models, which are a life cycle models of goods and services in the US economy	US	Data.gov
IEA	International Energy Agency (IEA) World Energy Outlook: annual GHG emission factors for world countries from electricity and heat generation provided by the IEA (electricity-based emissions only)	Global	Iea.org
International Maritime Organization (IMO)	Fourth Greenhouse Gas Study 2020: GHG emissions of shipping	Global	Imo.org
The Inventory of Carbon and Energy (ICE) Database v3	Circular Ecology offers resource efficiency services, including carbon footprinting, water footprinting, life cycle assessment (LCA), circular economy and general resource efficiency.	Global	circularecology.com
EXIOBASE	EXIOBASE is a spend-based global, detailed multi-regional environmentally extended supply-use table, estimating emissions and resource extractions by industry.	Global	zenodo.org

Table 6.4

Reduction Targets and Main Actions Taken

The Business Unit Marine Systems has set itself ambitious targets on the path to greenhouse gas neutrality. The long-term goal is to be net zero by 2045 and by 2030, the total of direct emissions (scope 1) and emissions from energy procurement (scope 2) are to be reduced by 30% compared to 2018. Indirect emissions in the value chain (scope 3), as they arise both in the supply chain and in the use of products by customers, are to be reduced by at least 16%. The Science-Based Targets initiative (SBTi) has reviewed the thyssenkrupp AG's targets and officially confirmed their compliance with the Paris Climate Agreement.

"Over the next six years, we want to reduce our direct emissions by 30% compared to the base year 2018."

Head of ESG

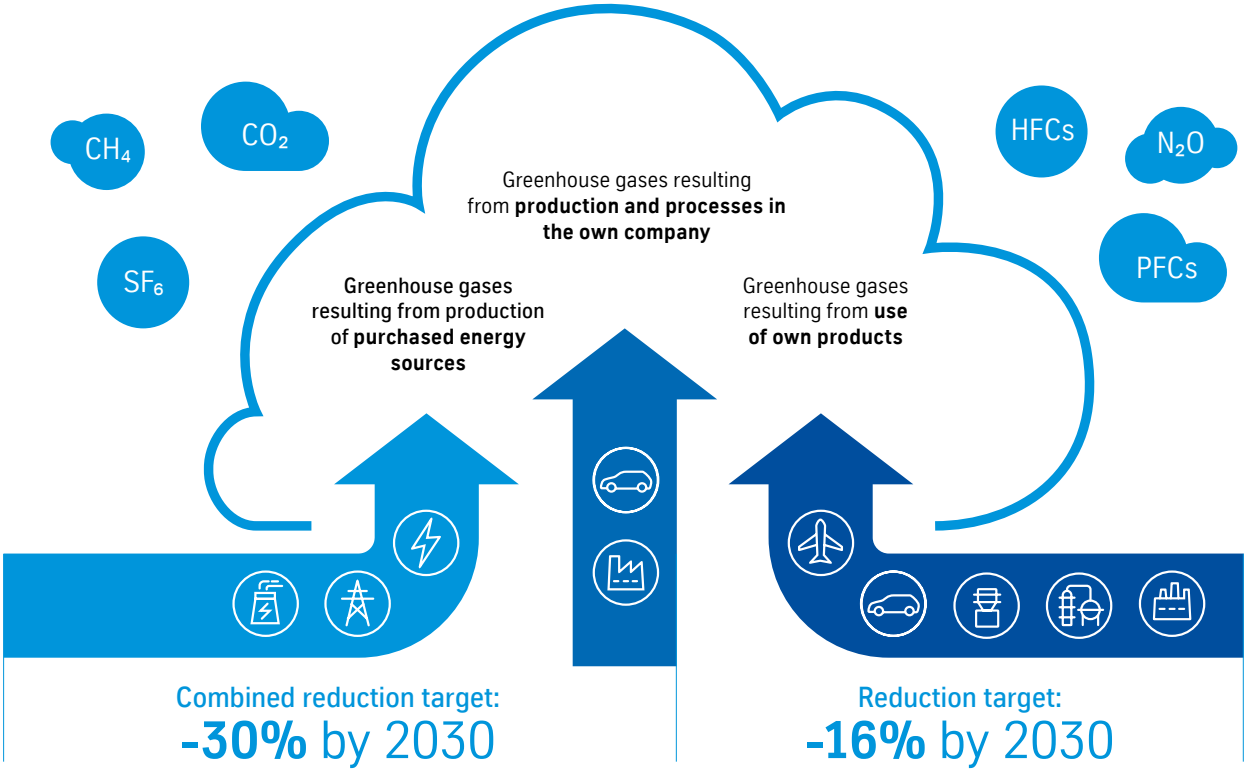


Figure 6.12

Based on this, the Business Unit Marine Systems developed a roadmap and dedicated action plans. Two examples on how CO_2 reduction measures are translated into practice are given below.

ATLAS ELEKTRONIK UK Committed to Net Zero Goal

Pioneering with a carbon reduction plan to comply with UK laws, more information on GHG emissions of ATLAS ELEKTRONIK UK (AEUK) has been available since 2022. The company is following targets along the sustainability pillars shown in figure 6.13.

In order to continue the progress to achieving net zero as defined under PPN 06/21, ATLAS ELEKTRONIK UK has adopted the following carbon reduction targets:

- AEUK is committed to achieve net zero emissions in scopes 1 and 2 by 2040.
- AEUK is committed to achieving net zero in scope 3 emissions by 2045 latest.

As a business which has consistently grown since 2009, the Energy Management Team has helped AEUK use its energy more effectively and reduced the energy consumption per employee that would otherwise have occurred by around 40%. Since 2014, dozens of environmental management measures and projects have been completed. The 2nd Version of the Carbon Reduction Plan identifies another 17 carbon reduction and potential offset actions that can be achieved by the end of the current decade. Among them are the following:

- Completion of a full assessment of scope 1, 2 and 3 carbon emissions for the last full FY 2021/2022
- Engagement with the top 60 suppliers from the supply chain to complete an initial assessment of their carbon emissions estimates and net zero strategies
- Implementation of ISO 50001 principles to the new restaurant, warehouse, and meeting rooms facility currently in construction and inclusion of heating solutions with reduced environmental impact (e.g. Air Source Heat Pump) and zero usage of natural gas
- Health check completed for the air handling and air conditioning systems confirming efficient operation and potential measures for further optimisation

ATLAS ELEKTRONIK UK Sustainability Charter - Pillars

Buildings & Infrastructure

To reduce the CO_2e produced by existing and future AEUK facilities

Materials & Supply Chain

Sustainable material sourcing and to reduce and/or remove material wastage from the production of AEUK products

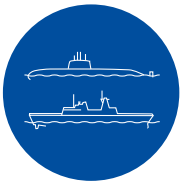
Transport

To reduce the carbon footprint of travel for business and commuting by AEUK employees, goods transport and suppliers

Climate

To reduce/remove any negative impact of AEUK operations on the world climate

Products



To ensure that all AEUK products have sustainability principles embedded within their design and support solutions

Workforce

To provide a work environment that develops its employees and cares about health and wellbeing

Figure 6.13

Sustainable Employee Mobility in Kiel

STADTRADELN (city cycling) is a competition in which the aim is to cycle as many everyday journeys as possible in a climate-friendly way for 21 days. In this way, STADTRADELN not only makes an active contribution to climate protection, but also to improving local cycle traffic planning. In the 2023 competition, the thyssenkrupp Marine Systems team, consisting of 268 active cyclists, covered the most kilometres in Kiel with 66,447 kilometres. This corresponds to a CO_2 saving of 10.8 tonnes.

Energy Management & Sources of Energy

In FY 2022/2023, the energy consumption of the Business Unit Marine Systems totalled around at 79.6 terawatt hours (TWh) as shown in figure 6.14.

Business Unit Marine Systems

	FY 2021/2022	FY 2022/2023
Electrical Power [MWh]	32,976	35,018
- electrical power generation from fuel [MWh]	2,754	2,616
Heat consumption [MWh] - District heating	21,507	23,997
Heat consumption [MWh] - Heating oil, Petrol, Diesel	4,162	4,788
Heat consumption [MWh] - Gas	17,970	18,119
Total [MWh]	79,148	79,600

Table 6.4

Energy Consumption at thyssenkrupp Marine Systems in FY 2022/2023

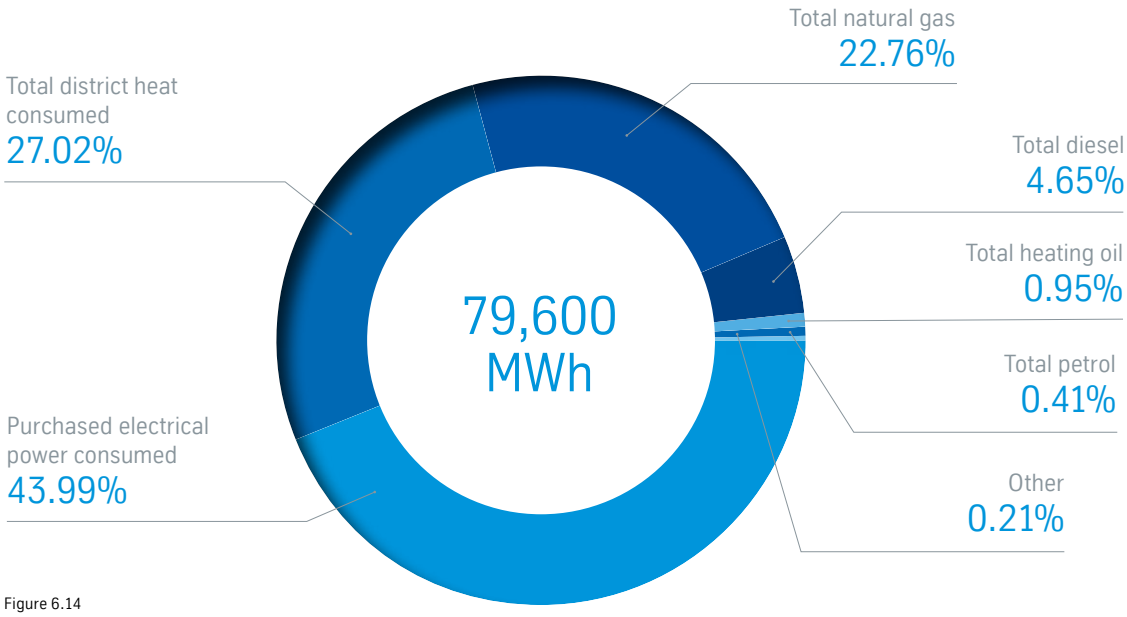


Figure 6.14

The three units thyssenkrupp Marine Systems Gmbh, ATLAS ELEKTRONIK GmbH, and the shipyard site in Brazil, thyssenkrupp Estaleiro Brasil Sul Ltda., account for the largest share of the energy consumption. The thyssenkrupp Marine Systems GmbH's total electricity consumption is a sum of electricity purchased externally from the energy supplier and electricity generated internally from fuel by the combined heat and power plant (CHP) unit at the Kiel site.

Due to the special nature of the product, it is not always possible to ensure that all areas of the company are utilized consistently and evenly throughout the project. Fluctuations in capacity utilisation and therefore also in energy consumption over the years are due to this fact. Additionally, thyssenkrupp Estaleiro Brasil Sul is currently building up production capacity for new projects, which explains the strong increase in energy consumption there.

To systemize efforts in pursuing climate targets, the company supports the group-wide Climate Action Program for Sustainable Solutions (CAPS). Furthermore, since 2013, a Group-wide Energy Efficiency Program (GEEP) including measurable targets, which are related to board compensation, has been in place.

Picture: Nikiko/Pixabay

thyssenkrupp Marine Systems GmbH

	FY 2018/2019	FY 2019/2020	FY 2020/2021	FY 2021/2022	FY 2022/2023
Electrical Power consumption [MWh]	22,557	20,212	18,392	16,023	17,116
- electrical power generation from fuel	609	2,430	3,052	2,660	2,715
Heat consumption [MWh] - District heating	15,500	16,593	18,844	16,609	14,504
Heat consumption [MWh] - Heating oil, Diesel (mobile & stationary consumption)	6,547	341	262	116	450
Heat consumption [MWh] - Gas	2,712	2,834	3,104	1,588	4,016
Total [MWh]	47,925	42,409	43,653	36,995	38,801

Table 6.5

ATLAS ELEKTRONIK GmbH

	FY 2018/2019	FY 2019/2020	FY 2020/2021	FY 2021/2022	FY 2022/2023
Electrical Power consumption [MWh]	12,045	11,974	11,595	11,258	11,090
Heat consumption [MWh] - District heating	6,635	6,642	8,078	7,319	6,858
Heat consumption [MWh] - Heating oil	448	445	395	403	307
Heat consumption [MWh] - Gas	2,554	2,154	3,227	2,963	2,008
Total [MWh]	21,682	21,215	23,295	21,943	20,263

Table 6.6

thyssenkrupp Estaleiro Brasil Sul Ltda.

	–	–	–	FY 2021/2022	FY 2022/2023
Electrical Power consumption [MWh]	–	–	–	1,592	2,619
Heat consumption [MWh] - LPG (mobile consumption)	–	–	–	44	168
Heat consumption [MWh] - Diesel (mobile & stationary consumption)	–	–	–	2	293
Total [MWh]	–	–	–	1,638	3,080

Table 6.7

Energy Reduction Measures in Kiel

Figure 6.15 shows a Sankey diagram of the various energy consumers at the Kiel site. Around 35% of the energy consumed is used for electrical power for shipbuilding, lighting, and machinery, while a further 60% of the total energy consumption is used to heat buildings and ships.

Since January 2022, 100% of the purchased electrical power in Kiel comes from renewable energy sources. Half of the thermal energy is obtained from district heating. Natural gas is used in the modern combined heat and power plant to generate heat and electrical power. As not all projects are always in the same production phase at a time, capacity utilisation in the respective halls fluctuates over the years. For this reason, as with electricity consumption, there are fluctuations in heat consumption over the years that cannot be attributed to energy efficiency.

The measuring infrastructure for regularly monitoring and analysing energy consumption in Kiel comprises more than 500 measuring points. Since 2022, all buildings and areas of the shipyard with a consumption share of >5% of total energy consumption have been regarded as significant areas of energy use and analysed in more detail.

"In addition to measures to increase efficiency, we ensure that our footprint is as small as possible by purchasing 100% renewable electricity and entering into a Power Purchase Agreement."

Energy Manager

Sankey Diagram of Energy Use in Kiel

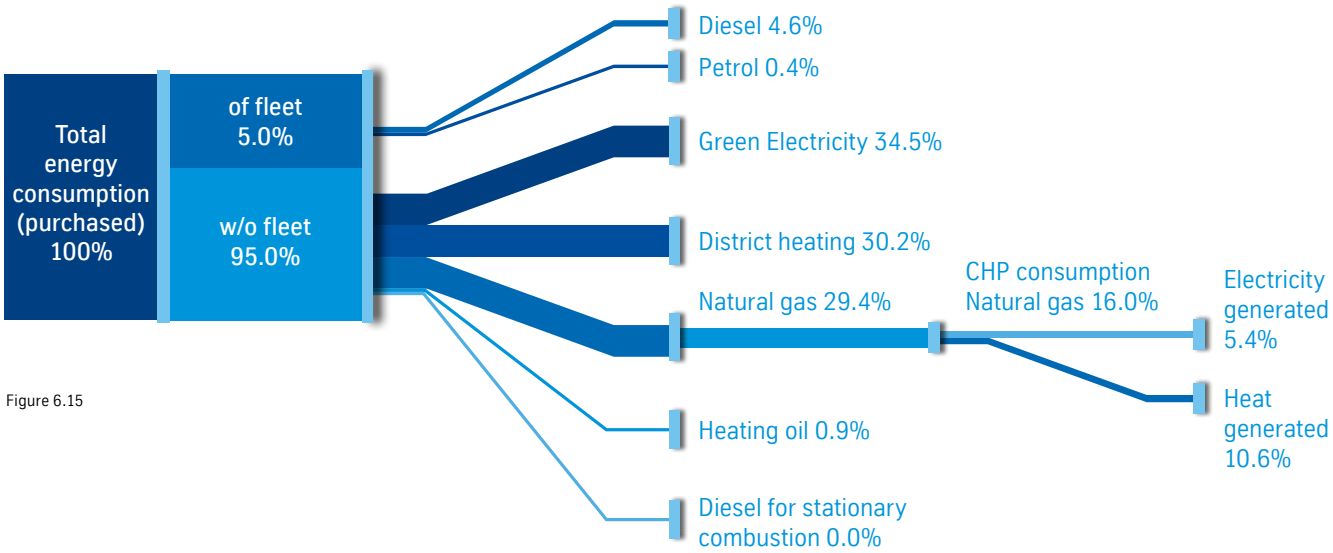


Figure 6.15

The following actions determined for the reporting and upcoming years aim to improve the energy efficiency in Kiel:

- On-going replacement of conventional lighting with LED lighting and motion detectors
- Modernization of heating systems and renewal of air conditioning systems
- Implementation of heat recovery
- Adjustment of ventilation times and renewal of the vacuum system
- Temperature reduction in certain buildings
- Raising of employees' awareness in terms of energy consumption and environmental aspects in regular trainings

Besides the control of the energy consumption through efficiency, it is ensured to limit the impact of purchased energy by procuring more renewable energies and engaging into Power Purchase Agreement to reduce the carbon intensity.

Itajaí Social Seal program

In August 2023, thyssenkrupp Estaleiro Brasil Sul was certified by the Itajaí City Social Seal program, which publicly recognizes and values initiatives by organizations that promote socioeconomic development for employees, suppliers, and the surrounding community. The company was the only shipyard to receive this recognition, with seals directly aligned with United Nations Sustainable Development Goals.

In total, 16 socio-environmental projects by thyssenkrupp Estaleiro Brasil Sul were considered for the certification. One example is the reduction of the carbon footprint through the procurement of renewable energy from Free Contracting Environment. Because of this initiative, the shipyard has avoided emitting nearly 139 tonnes of CO_2e in 2022, equivalent to planting about 1,000 trees in a 20-year reforestation project.

thyssenkrupp Estaleiro Brasil Sul is not only one of the most modern shipyards in Brazil, but also a pioneer in social and ecological management.

Waste Management Including Hazardous Materials

Avoiding waste conserves resources and protects people and the environment. Therefore, it is best if waste is not produced in the first place. In the second step, waste recycling always has priority over disposal.

Precise working methods, optimized processes for obtaining components from a raw material or the conscious use of commodities such as paper or packaging materials help to avoid waste from the very beginning. However, for a shipbuilding company, avoiding waste is a major challenge, only makes sense up to a certain point, and must not be done at the expense of quality, products or occupational health and safety. thyssenkrupp Marine Systems' products are designed for a long life cycle. Furthermore, the company provides services for refit and the modernization of existing vessels to extend the products' life cycles. These are important measures in terms of avoiding waste.

The separation of waste determines the further procedure and the life cycle of the waste. The company attaches great importance to the proper separation and delivery of waste materials to the disposal companies. Achieving this involved continual training on proper waste disposal for employees, providing different types of waste containers, inspecting waste containers, and monitoring waste types. Each waste container removed from the shipyard is documented. This document identifies the transporter, receiver, waste type, weight, and final destination technology. Recently, thyssenkrupp Estaleiro Brasil Sul received the Fritz Müller Award in the Recycling category for the "Optimization of Waste Recycling Technologies - The Path to Zero Landfill" project. Several measures are on-going in all sites in order to reduce waste in daily routines such as the canteen or the offices.

In total, 90% of the waste produced within the business unit is recovered and recycled. The figure and the table on the following page show the waste generation and recycling rates for the whole business unit as well as the main production sites.

Total Waste [t] and Recycling Rate [%] FY 2022/2023

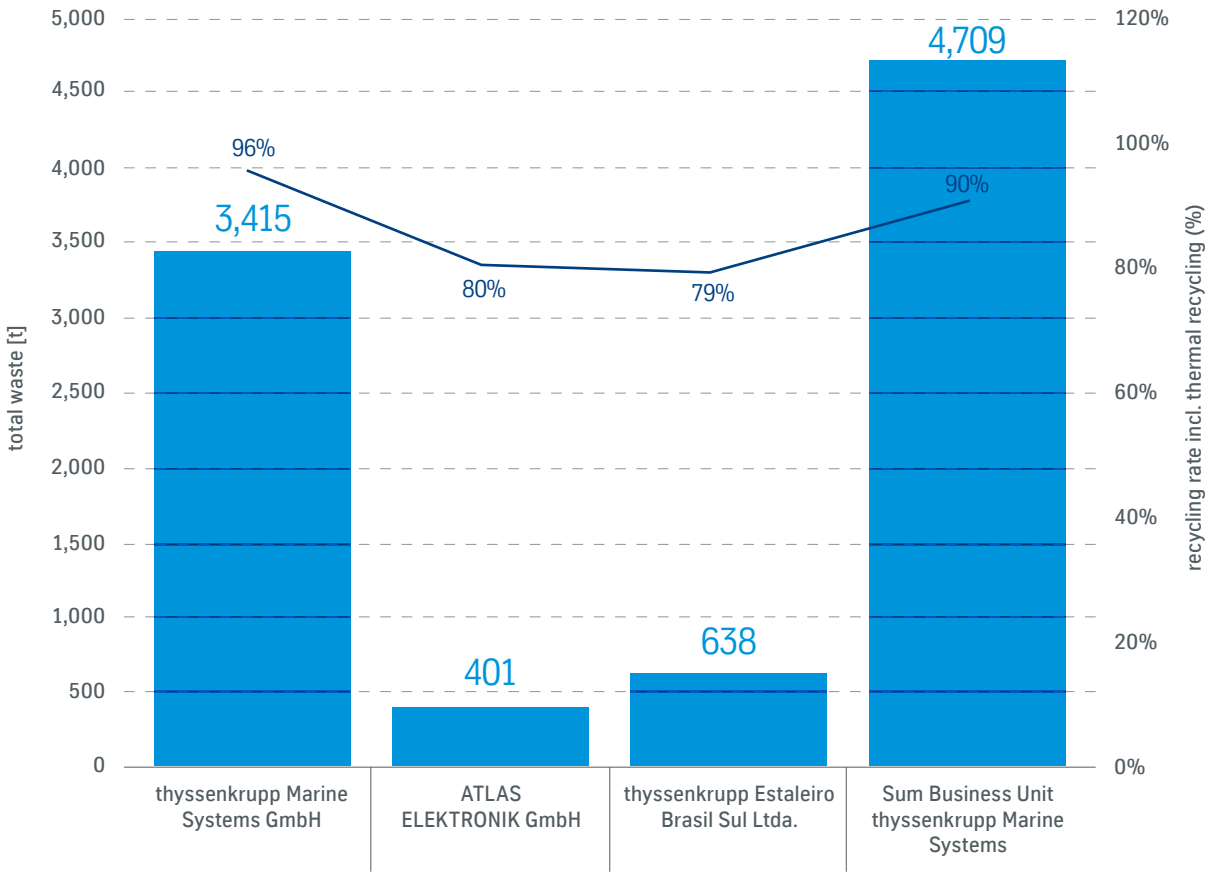


Figure 6.16

	Unit	thyssenkrupp Marine Systems GmbH	ATLAS ELEKTRONIK GmbH	thyssenkrupp Estaleiro Brasil Sul Ltda.	Business Unit thyssenkrupp Marine Systems
Total waste	t	3,451	401	638	4,709
Total waste FY 2021/2022	t	3,043	497	201	4,291
Total waste for recycling*	t	3,309	323	506	4,258
- Non-hazardous waste for recycling*	t	2,597	309	477	3,503
- Hazardous waste for recycling*	t	712	13	30	451
Total waste for disposal	t	143	78	132	451
- Non-hazardous waste for disposal	t	17	55	121	286
- Hazardous waste for disposal	t	126	23	11	165
Share of recycled waste*	%	96%	80%	79%	90%

Table 6.8

*including thermal recycling

Fritz Müller Award for thyssenkrupp Estaleiro Brasil Sul

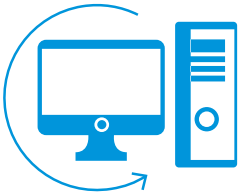
The Fritz Müller Award targets projects and initiatives that go beyond environmental regulations and yield advantages for sustainable development. The 24th edition saw a record-breaking 125 entries, with 12 winning cases. thyssenkrupp Estaleiro Brasil Sul received the recognition in the Recycling category for the "Optimization of Waste Recycling Technologies - The Path to Zero Landfill" project, initiated in 2022 and ongoing in its quest for enhanced environmental waste handling.

The project included five stages: identification of generated waste; exploration and implementation of recycling methods; employee training; establishment of recycling objectives and indicator monitoring; optimization of recycling techniques and waste reduction.

Currently, around 90% of waste generated at the shipyard is recycled or repurposed and no longer going to landfills.

"Through market research, waste characterization and classification, and conversations with potential suppliers, we have been able to recycle and reuse materials like abrasive waste, welding electrodes and steel shot, among others."

Sustainability Manager



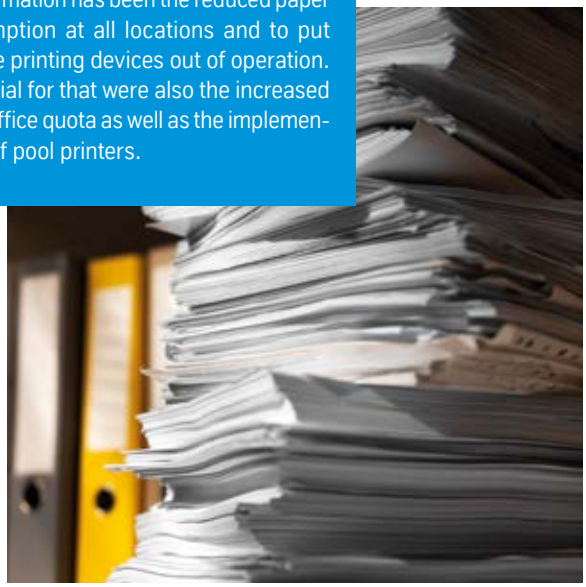
Remarketing of IT Hardware

The product life cycles of hardware in companies are becoming shorter and shorter. Due to constantly increasing performance requirements, notebooks, servers, monitors or desktop computers are replaced every four to five years, even though they are technically still working perfectly. Hardware that is defective is also full of functional components for further use.

The IT department ensures that the corresponding hardware is used for remarketing. 2,380 devices have been returned to the market and reused since March 2021 in the spirit of the circular economy.

Reduced Paper Consumption

One of the biggest successes in 2021 and 2022 in consequence of the ongoing digital transformation has been the reduced paper consumption at all locations and to put multiple printing devices out of operation. Beneficial for that were also the increased home office quota as well as the implementation of pool printers.



Food and Drinks to Go - Without Disposable Waste

The reusable packaging deposit system RECUP was introduced at the Kiel site in April 2021. As a first step, the old disposable coffee cups were exchanged for reusable cups for to-go hot drinks. Around 5,000 cups are now in circulation, having avoided more than 110,000 disposable cups since the project began. In April 2023, the system was expanded to include REBOWL cups. The new reusable bowls replace the disposable packaging for take-away food and save about 6,000 disposable cups per month. After use, the packaging can be returned. The containers are cleaned and returned to the cycle of use. A clean thing for the environment!

At the thyssenkrupp Estaleiro Brasil Sul site, a similar project was launched in 2022. Collapsible silicone cups that can be used in both operational and administrative areas have been provided for all employees. The adoption of this measure resulted in an 87% decrease in disposable cups in 2022, leading to a positive environmental impact by reducing solid waste and plastic consumption. Additionally, the estimated cost reduction stemming from this action was at approximately 40%.

Management of Water Resources

Industrial water management is an important concept for protecting the environment, nature, and the local population. It means utilising water resources as efficiently as possible with the help of technical and structural measures and processes. The usual freshwater withdrawal is caused by sanitation requirements and production needs such as tank tightness tests, cooling, and warming purposes as well as industrial cleaning.

thyssenkrupp Marine Systems' total water consumption in FY 2022/2023 was 179,387 m³ (FY 2021/2022: 216,492 m³). Main consumers are the large production units of thyssenkrupp Marine Systems GmbH, ATLAS ELEKTRONIK GmbH, and thyssenkrupp Estaleiro Brasil Sul Ltda.

Sustainable water management in the company also aims to avoid water contamination and thus protects the environment from water hazards, as many of the substances used in production are hazardous to water. thyssenkrupp Marine Systems attaches great importance to categorising the substances and mixtures used in the company according to their hazard class and is ensuring that these water-polluting substances are handled appropriately. The waste water is subject to strict controls. The impact of waste water discharge in compliance with applicable laws and regulations is carefully assessed. Both internal audits and local authorities regularly check whether the safety precautions at the sites comply with the guidelines and specifications.

Another important component of the company's sustainable water management is the continuous analysis and implementation of improvement measures. Constant monitoring and operational control, like improvements in water supply and drainage networks, are part of these activities. Sampling and laboratory analysis monitor and evaluate the quality of discharges in specific spots on the shipyards. One very recent example is the Groundwater Monitoring program at thyssenkrupp Estaleiro Brasil Sul.

Water management means not only efficient usage but also avoiding contamination and protection of environment from water hazards.

Freshwater Consumption and Waster Water Production [m³] in FY 2022/2023

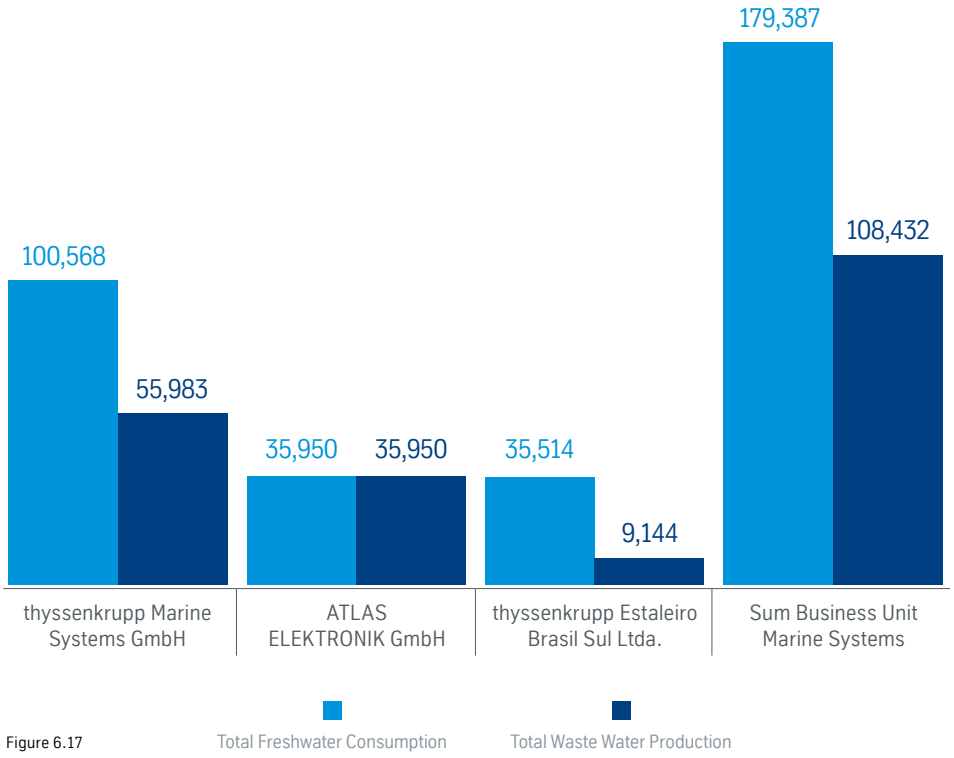


Figure 6.17

	Freshwater consumption [m³]			Waste Water production [m³]		
	FY 2021/2022	FY 2022/2023	Change	FY 2021/2022	FY 2022/2023	Change
thyssenkrupp Marine Systems GmbH	164,855	100,568	-39%	58,525	55,983	-4%
ATLAS ELEKTRONIK GmbH	29,173	35,950	23%	29,173	35,950	23%
thyssenkrupp Estaleiro Brasil Sul Ltda.	15,650	35,514	127%	6,541	9,144	40%
ATLAS ELEKTRONIK UK Ltd.	4,532	5,969	32%	4,532	5,969	32%
Other sites	2,282	1,386	-39%	2,271	1,386	-39%
Business Unit thyssenkrupp Marine Systems	216,492	179,387	-17%	101,043	108,432	7%

Table 6.9

"Our groundwater monitoring and river biota programs confirm effectiveness of our actions to safeguard the soil and groundwater and show no impact on the water quality of the Itajaí-Açu River."

Sustainability Manager

thyssenkrupp Estaleiro Brasil Sul Groundwater Monitoring & River Biota Programs

thyssenkrupp Estaleiro Brasil Sul monitors the quality of groundwater within the property boundaries to obtain indicators of its conditions. This includes evaluating and monitoring the concentration of chemicals in groundwater, identifying potential areas with altered quality, and providing support for actions to prevent and control soil and groundwater pollution. The monitoring reveals that thyssenkrupp Estaleiro Brasil Sul's activities are not impacting the soil and groundwater, with only natural variations observed in certain soil parameters. This confirms the effectiveness of actions taken to safeguard the soil and groundwater, preventing any negative impact.

At thyssenkrupp Estaleiro Brasil Sul, there is also a program for systematic monitoring the estuarine water quality and biodiversity. This program involves regular assessments of the water quality and the macrofauna in the Itajaí-Açu River every four months at four sampling points in front of the shipyard. The data obtained from this monitoring allows for the evaluation of potential changes in the physical and chemical characteristics of the water as well as to identify potential impacts on benthic macrofauna organisms. These changes can be correlated with potential sources of pollution, enabling the implementation of precautionary or remedial measures if necessary.

The analysis results indicate that thyssenkrupp Estaleiro Brasil Sul does not impact the water quality nor the macrofauna of the Itajaí-Açu River with its activities. This is attributed to various actions and control measures implemented, such as treating all sanitary effluents generated on-site, proper waste disposal, chemical product management, and employee training on environmental topics, among others. Nevertheless, this regular monitoring underscores the need for protective measures to safeguard benthic fauna of Itajaí-Açu River and ensures its ecological role in the aquatic ecosystem.

Nomenclature

7

Terms

CSRD – Corporate Sustainability Reporting Directive
The Corporate Sustainability Reporting Directive (CSRD) is the new EU legislation requiring all large companies to disclose in their management reports information on their environmental impact and social activities. The new rules and standards (ESRS) aim at helping investors, consumers, policymakers, and other stakeholders evaluate large companies' non-financial performance, and serve as a minimum set of (standardized) requirements across the EU.

ESRS – European Sustainability Reporting Standards
The EU Sustainability Reporting Standards (ESRS) are a set of standards that outlines the mandatory concepts and principles to which companies reporting under the Corporate Sustainability Reporting Directive (CSRD) must align their sustainability statements with.

Principle of Materiality
Materiality is an accounting principle which states that all items that are reasonably likely to impact investors' decision-making must be recorded or reported in detail in a business's financial statements using generally accepted accounting principles (GAAP) standards. Essentially, materiality is related to the significance of information within a company's financial statements. If a transaction or business decision is significant enough to warrant reporting to investors or other users of the financial statements, that information is "material" to the business and cannot be omitted.

DMM – Double Materiality Matrix
Financial materiality and impact materiality together under the umbrella of 'double materiality' are the only relevant forms of materiality, with both perspectives needed in a two-pillar structure - for financial and sustainability reporting - with a core set of common disclosures and each pillar on an equal footing. The DMM is a visualisation of the assesses double materiality.

- Financial materiality: "A sustainability impact may be financially material from inception or become financially material when it becomes investor relevant, including due to its present or likely effects on cash-flows, development, performance and position in the short-, medium- and long-term time horizons. Irrespective of their being financially material, impacts are captured by the impact materiality perspective." (ESRS 1)
- Impact materiality: "A sustainability matter is material from an impact perspective when it pertains to the undertaking's material actual or potential, positive or negative impacts on people or the environment over the short-, medium- and long-term time horizons. Impacts include those caused or contributed to by the undertaking and those which are directly linked to the undertaking's own operations, products, or services through its business relationships. Business relationships include the undertaking's upstream and downstream value chain and are not limited to direct contractual relationships." (ESRS 1)

Climate Change[1]
Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), which defines "climate change" as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

IFRS - International Financial Reporting Standards
In 2023, the International Sustainability Standards Board (ISSB) published the first two IFRS Sustainability Disclosure Standards IFRS S1 General Disclosure Requirements for Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures. The standards contain requirements for the disclosure of material information about a company's significant sustainability-related risks and opportunities that are necessary for investors to evaluate the company.

[1] IPPC Glossary - https://www.ipcc.ch/site/assets/uploads/2018/03/wg2TARannexB.pdf

Uncertainty[2]
An expression of the degree to which a value (e.g. the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behavior. Uncertainty can therefore be represented by quantitative measures (e.g. a range of values calculated by various models) or by qualitative statements (e.g. reflecting the judgment of a team of experts).

Science Based Targets Initiative[3]
Science-based targets provide a clearly-defined pathway for companies to reduce greenhouse gas emissions, helping prevent the worst impacts of climate change and future-proof business growth. More than 4,000 businesses around the world are already working with the Science Based Targets initiative (SBTi)

Climate Neutral(ity) or Net zero CO_2 emissions
Net zero carbon dioxide (CO_2) emissions are achieved when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period. In other words it consists of (1) reducing scope 1, 2, and 3 emissions to zero or to a residual level that is consistent with reaching net-zero emissions at the global or sector level in eligible 1.5 °C-aligned pathways as well as (2) neutralizing any residual emissions at the net-zero target year and any GHG emissions released into the atmosphere thereafter.

GHG - Greenhouse gases
GHG are gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapor (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), and ozone (O_3) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are several entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances which are dealt with under the Montreal Protocol. Beside CO_2, N_2O, and CH_4, the Kyoto Protocol deals with the greenhouse gases sulfur hexaflouride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Addition of greenhouse gases to the atmosphere by deliberate human activities, i.e. in addition to the removal that would occur via natural carbon cycle processes. GHG emissions can be accounted in the direct emissions of a company when they physically occur within the operational scope of the company (scope 1). They can also be accounted in the indirect emissions of the company, whether they arise from the emissions occurring at the site of the production of the energy purchased by the company (scope 2), or they arise from other upstream and downstream value chain activities (scope 3).

Method for Scope 2 Accounting
- Location-based: A method to quantify scope 2 GHG emissions based on average energy generation emission factors for defined locations, including local, subnational, or national boundaries.
- Market-based: A method to quantify scope 2 GHG emissions based on GHG emissions emitted by the generators from which the reporter contractually purchases electricity bundled with instruments, or unbundled instruments on their own.

SDGs – Sustainable Development Goals
The Sustainable Development Goals (SDGs) are a set of 17 global goals adopted by the United Nations General Assembly in 2015. The SDGs aim to address crucial global challenges such as poverty, inequality, climate change and environmental degradation. The over-arching goal of the SDGs is to provide a blueprint to achieve a better and more sustainable future for all.

[2] IPCC Glossary - https://www.ipcc.ch/site/assets/uploads/2018/03/wg2TARannexB.pdf
[3] SBTi Website

Abbreviations

Abbreviation	Description
AEUK	ATLAS ELEKTRONIK UK
AI	Artificial Intelligence
AM	Additive Manufacturing
CAPS	Climate Action Program for Sustainable Solutions
CAU	Christian-Albrechts-Universität (University of Kiel)
CH_4	Methane
CHP	Combined heat and power plant
CO_2	Carbon dioxide
CSR	Corporate sustainability reporting
CSRD	Corporate sustainability reporting directive
DMM	Double materiality matrix
EDA	European Defence Agency
EF	Emission factor
EFRAG	European Financial Reporting Advisory Group
EPA	Environmental Protection Agency
ESG	Environment, Social and Governance
ESRS	European Sustainability Reporting Standards
EU	European Union
FH	Fachhochschule
FY	Fiscal Year
GAAP	Generally Accepted Accounting Principles
GEEP	Group-wide Energy Efficiency Program
GHG	Greenhouse Gas
HEM	Health management
HFCs	Hydrofluorocarbons
HS	Hochschule (University)
HSU	HafenCity University Hamburg
IAT	Implicit Association Test
ICT	Information and communications technology
IEA	International Energy Agency
IF CEED	Incubation Forum for Circular Economy in European Defence
IFRS	International Financial Reporting Standards
ILO	International Labor Organization
IMO	International Maritime Organization
ISSB	International Sustainability Standards Board
IT	Information technology
KPI	Key Performance indicator
LED	Light-emitting diode
MGO	Marine gas oil
N_2O	Nitrous oxide
OSH	Occupational health and safety
OU	Operating Unit
PFCs	Perfluorinated compound
R&D	Research & Development
SBTi	The Science-Based Targets initiative
SCA	Supply Chain Act
SF_6	Sulfur hexafluoride
SMF	Sustainable Military Fuel
TU	Technische Universität (Technical University)
UBA	Umweltbundesamt (Federal Environment Agency)
UK	United Kingdom
US	United States of America
UxV	Underwater vehicle

Imprint

Published on 25th January 2024 by
thyssenkrupp Marine Systems GmbH
Werftstraße 112-114
D-24143 Kiel, Germany
www.thyssenkrupp-marinesystems.com

Contact:
Dr.-Ing. Marlene Fischer
Head of ESG
T: +49 431 700 -126219
marlene.fischer@thyssenkrupp.com

Stefan Ettwig
Head of Communications
T: +49 431 700 2610
stefan.ettwig@thyssenkrupp.com

Susanne Schmidt
Corporate Communications
susanne.schmidt2@thyssenkrupp.com

Design & Illustration:
André Illing Grafik & Design
buddelfisch@andre-illing.de
www.andre-illing.de

"Accepting the challenge, joining forces, not fearing the effort, but tackling it with determination is our motto. We will only succeed if each and every one of us makes his or her own contribution. We are ready."

CEO

thyssenkrupp Marine Systems GmbH

Werftstraße 112-114
D-24143 Kiel, Germany
www.thyssenkrupp-marinesystems.com

engineering. tomorrow. together.