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The Sustainable Development Goals: An opportunity for seaports to drive business value - A practical guide



A report from the innovation project I.Hamn within the Swedish Transport Administration's industry programme Sustainable shipping (Hållbar sjöfart), managed by Lighthouse. Published June 2023

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The Sustainable Development Goals: An opportunity for seaports to drive business value - A practical guide



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This effort was carried out by the innovation project I.Hamn within the Swedish Transport Administration's industry programme Sustainable shipping (Hållbar sjöfart), managed by Lighthouse.



AGENDA 2030

Summary

On September 25, 2015, the United Nations introduced the 2030 Agenda for Sustainable Development, consisting of 17 interconnected Sustainable Development Goals (SDGs), 169 targets and 244 indicators. While these goals offer worldwide guidance to governments for establishing relevant national targets, they go beyond the public sector and extend to all societal actors, placing particular importance on non-state actors, such as businesses. The SDGs provide an exceptional opportunity for companies to align their strategies and business models with global sustainable development needs. As vital transport nodes, ports have a critical role to play in achieving many of the goals and are already contributing to several of the primary targets. Although the SDGs were designed to be achieved by 2030, significant gaps still exist, highlighting the need for all organizations to take action. While many organizations have invested in reporting frameworks like global reporting initiative (GRI) or integrated reporting (IR), using the SDGs in parallel or as a replacement can be challenging. These goals are complex by nature and often address global policy issues, making it difficult for corporations to align with their current sustainability frameworks.

Therefore, this report examines how ports can contribute to achieving the SDGs and presents a framework for the ports to integrate these goals into their business operations. The report begins by discussing how the ports are already contributing to the SDGs and looks towards emerging opportunities. A survey of Swedish ports is also included, which assesses the relevance of each SDG for the port sector, the advantages of working with the SDGs, and the resources required to integrate them into port business operations. The SDGs are 17 interconnected goals that apply universally and serve as a blueprint for a better and more sustainable future. They address various global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. The report categorizes the SDGs and their relevance to ports into three interconnected categories: goals related to the biosphere, goals related to society, and goals related to the economy.

According to the report's findings, sustainability strategies and reporting are now prevalent among businesses. The SDGs are widely recognized by various stakeholder groups, including customers, investors, employees, and government organizations. This is not only to comply with legal requirements, but also to mitigate sustainability-related risks, capitalize on business opportunities, and address the concerns and interests of stakeholders. Therefore, it is advisable for companies to integrate SDGs into their strategies and reporting, and there are benefits for companies in aligning with the SDGs.

Utilizing online publications, exemplary practices within the Swedish ports, and surveys and interviews with professionals employed in ports throughout Sweden, this report concludes that while various obstacles must be surmounted, the SDGs can aid companies in effectively communicating their sustainability practices and meeting the constantly changing expectations of stakeholders. By incorporating the SDGs, companies

can experience advantages such as better business performance, greater capital returns, increased energy efficiency, a positive impact on the environment and society, the attraction of new investments, customers, and future employees, the establishment of new business areas and operations, and improved risk management via compliance with new regulations and guidelines. The SDGs aim to create shared value by addressing societal issues and generating business value. This represents a novel approach compared to philanthropy and CSR. The report indicates that effectively integrating the SDGs necessitates collaboration with suppliers, customers, and port management/owners, as well as competence supply, increased exchange of knowledge and experience regarding the SDGs, more financial resources, and support from the government to enhance understanding of the SDGs.

Additionally, the findings underscore that safeguarding the biosphere is a crucial precondition for social justice and economic development. Failure to achieve the goals related to clean water and sanitation, life below water, life on land, and climate action would impede the achievement of the remaining goals.

Sammanfattning

Den 25 september 2015 introducerade FN 2030-agendan för hållbar utveckling, bestående av 17 sammanlänkade mål för hållbar utveckling (SDG), 169 mål och 244 indikatorer. Även om dessa mål erbjuder världsomspännande vägledning till regeringar för att fastställa relevanta nationella mål, går de utöver den offentliga sektorn och sträcker sig till alla samhällsaktörer, samt lägger särskild vikt vid icke-statliga aktörer, såsom den privata industrin. SDG:erna ger en exceptionell möjlighet för industrins företag att anpassa sina strategier och affärsmodeller till globala behov av hållbar utveckling. I sin roll i transportsystemet har hamnar en avgörande roll att spela för att uppnå många av målen och bidrar redan till flera av de primära målen. Även om SDGerna utformades för att uppnås till 2030, finns det fortfarande betydande luckor, vilket understryker behovet av att alla organisationer vidtar åtgärder. Även om många organisationer tillämpar olika rapporteringsramverk såsom globalt rapporteringsinitiativ (GRI) eller integrerad rapportering (IR), är det utmanande att använda SDGer parallellt eller som alternativ. Dessa mål är komplexa till sin natur och tar ofta upp globala policyfrågor, vilket gör det svårt för företag att anpassa sig till sina nuvarande hållbarhetsramverk.

Denna rapport undersöker hur hamnar kan bidra till att uppnå FN:s klimatmål och presenterar strategier för svenska hamnar för att integrera dessa mål i sin affärsverksamhet. Rapporten börjar med att diskutera hur hamnarna redan bidrar till SDGerna och identifierar nya möjligheter. En kartläggning av svenska hamnar redovisas också och som bedömer relevansen av varje SDG för hamnsektorn, fördelarna med att arbeta med SDGer samt de resurser som krävs för att integrera dem i hamnverksamheten. SDGerna består i 17 sammanlänkade mål som gäller universellt och fungerar som en plan för en bättre och mer hållbar framtid. De tar upp olika globala utmaningar som fattigdom, ojämlikhet, klimatförändringar, miljöförstöring, fred och rättvisa. Rapporten kategoriserar också SDGerna och deras relevans för hamnarna i tre sammanlänkade kategorier: mål relaterade till biosfären, mål relaterade till samhället och mål relaterade till ekonomin.

Rapportens visar att hållbarhetsstrategier och klimatrapporering blir allt vanligare bland Sveriges hamnar. SDGerna är allmänt erkända av olika intressentgrupper, inklusive kunder, investerare, anställda och statliga organisationer. Detta inte bara för att följa lagkrav, utan också för att mildra hållbarhetsrelaterade risker, dra nytta av affärsmöjligheter och ta itu med intressenters oro och intressen. Därför bör hamnarna integrera SDGer i sina strategier och rapportering.

Med hjälp av online publikationer, föredömliga exempel från svenska hamnar, samt undersökningar och intervjuer med yrkesverksamma i Sveriges hamnar, drar denna rapport slutsatsen att även om olika hinder måste övervinnas, kan SDGer hjälpa företag att effektivt kommunicera sin hållbarhetspraxis och möta de ständigt förändrade förväntningar hos intressenterna. Genom att införliva SDGer kan företag uppleva

fördelar som bättre affärsresultat, högre kapitalavkastning, ökad energieffektivitet, positiv påverkan på miljö och samhälle, attrahera nya investeringar, kunder och framtida anställda, etablering av nya affärsområden och verksamheter samt förbättrad riskhantering genom efterlevnad av nya regler och riktlinjer. SDGerna syftar till att skapa delat värde genom att ta itu med samhällsfrågor och skapa affärsvärde. Rapporten pekar på att en effektiv integrering av SDGerna kräver samarbete med leverantörer, kunder och hamnledning/ägare, såväl som kompetensförsörjning, ökat utbyte av kunskap och erfarenheter om SDGerna, mer ekonomiska resurser samt stöd från regeringen för att öka förståelsen för SDGerna.

Dessutom understryker resultaten att skyddet av biosfären är en avgörande förutsättning för social rättvisa och ekonomisk utveckling. Om målen relaterade till rent vatten och sanitet, liv under vattnet, liv på land och klimatåtgärder inte uppnås skulle det hindra att de återstående målen uppnås.

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1 Introduction

In this section, the background to the sustainable development goals (SDGs) is described. The purpose, focus and structure of the report are presented here.

1.1 Background

Undoubtedly, global sustainability issues have become the paramount challenge of our era and a critical concern for generations to come. In addressing these challenges, the Swedish government has set ambitious targets to establish Sweden as the first fossil-free welfare state. The parliament has also committed to a climate target for the transportation sector, aiming to reduce greenhouse gas emissions from domestic transport (excluding domestic aviation) by at least 70% by 2030 compared to 2010 levels. The national climate goal for Sweden is to achieve net-zero greenhouse gas emissions by 2045 at the latest (Bergdahl, 2020).

Furthermore, in September 2015, the United Nations (UN) adopted the Agenda 2030 and 17 global goals for sustainable development, which must be implemented nationally and internationally. These goals address various areas, such as sustainable transport systems, sustainable industry, innovations, and infrastructure, as well as the integration of climate measures into policies, strategies, and planning to combat climate change. The Swedish government has made it clear that the country aims to be a world leader in implementing the 2030 Agenda, which has been included in every Statement of Government Policy since its adoption in 2015. To achieve this, the government has taken several political initiatives and decisions, such as appointing a Delegation for the 2030 Agenda, issuing an action plan for the 2030 Agenda, appointing a national coordinator for the 2030 Agenda, and developing a government bill on the implementation of the 2030 Agenda.

The 2030 Agenda and its 17 goals with 169 targets is a powerful tool in demonstrating the interconnectedness of different areas of development. For instance, eradicating hunger (SDG 2) necessitates the eradication of poverty (SDG 1) and ensuring the protection of the planet and its natural resources (SDGs 12, 13, and 14, among others). Similarly, gender equality and empowerment of women and girls (SDG 5) require both equality (SDG 10) and good education (SDG 4). These 17 SDGs are goals in themselves and also means of achieving other goals. They are indivisible, integrated and strike a balance between the economic, social, and environmental dimensions of sustainable development.

However, the critical question is how and if we will achieve the Sustainable Development Goals of the 2030 Agenda within the limited time frame. As the deadline approaches, with less than 7 years remaining, the 2020s have been designated as the "Decade of Action and Delivery." Nevertheless, the climate crisis, conflicts, rising

“...all businesses can provide essential solutions and resources that put our world on a more sustainable path” UN Secretary-General

inequality, and ethnicity and gender-based discrimination are hindering progress (GoS 2020).

Politicians and governments alone cannot bring about the necessary change and sustainable solutions. It requires a concerted effort by different actors in society, sharing knowledge and commitment. All actors in society, including civil society, social partners, the business sector, research, higher education, regions, municipalities, young, and old, have an essential role to play in building a sustainable society. To this end, the potential and transformative capacity of businesses should be leveraged to tackle environmental, climate, and energy challenges while promoting competitiveness and business development in all sectors. The business sector, therefore, plays a crucial role in driving sustainability issues forward.

Sweden is a pioneer in sustainable and innovative solutions, with numerous companies leading the way in achieving the 2030 Agenda. The business sector is an essential and indispensable part of society and comprises a wide range of companies in the manufacturing and service sectors, including both large and small enterprises that are critical to Sweden's competitiveness and sustainable development.

40% of the world's largest companies already reference the Sustainable Development Goals in their corporate reporting, suggesting that business interest in the SDGs has grown quickly since their launch in September 2015 (KPMG, 2018)

Given that the port sector is a globally connected entity and a hub of significant economic activity, it is ideally situated to lead in making a significant contribution to the global agenda. As stakeholders place increasing expectations and pressures on businesses, the SDG platform presents an exceptional opportunity for ports to increase transparency, establish trust, demonstrate responsible leadership, and build partnerships. Individual ports can use the SDG platform to showcase how their local actions can make a significant contribution to the broader global agenda. By aligning business strategy with the SDGs, ports can add substantial economic, human, and capital value to their businesses.

In a previous smaller study, Styhre and Gustavsson (2021) looked into how the Swedish ports could benefit from using the SDGs solely through literature reviews and industry reports. However, in order to facilitate each port business's ability to make a positive impact towards achieving "Agenda 2030," a thorough and comprehensive analysis of the SDGs is required, which should incorporate direct input from ports through surveys and interviews. Consequently, this study aims to fill this void by exploring the significance of SDGs for ports and providing a framework for integrating SDGs into the everyday operations of ports, serving as a practical guide for ports. This study will be valuable when striving for sustainability, corporate responsibility, as well as for communications professionals in the port sector with responsibility for shaping their ports SDG work. It will also help investors, asset managers and ratings agencies with an interest in environmental, social and governance (ESG) information to understand SDG relevance

for the port sector and to make investment decisions in the port sector. Some of the key objectives of this report are outlined below:

- » Describing SDGs and their role in creating business value for the ports.
- » Identifying the most and least relevant SDGs for ports.
- » Defining each SDG, relevant targets, and port actions per SDG.
- » Providing examples of current port practices related to each SDG.
- » Identifying the resources needed by the ports to align the business with SDGs.
- » Providing a framework and step-by-step guide to integrate SDGs in ports' business operations.

1.2 Report structure and limitations

The report consists of six chapters; introduction with the background and purpose is described in chapter 1, followed by chapter 2 “Methodology” describes the methods and work processes such as interviews, survey with port experts and a review of industry reports and scientific literature that are used to collect and analyze data. The outcome of interviews, a questionnaire survey and a review of literature and Swedish ports' websites are the basis for “Results” which are presented in chapter 3 and 4. In chapter 5 “SDG framework and a step-by-step guide” framework is presented aiming to help ports to integrate SDGs in ports' business practices.

In this report, the term ‘port’ is used to represent port authorities as well as the (private and public) actors engaged in the port ecosystem governed by the port authority. A port authority is an organization responsible for the administration and management of a port or group of ports (Notteboom et al., 2022). This may include tasks such as maintaining the infrastructure of the port, regulating transport activities, ensuring compliance with safety and environmental standards, and collecting fees from visitors that use the port. Globally, port authorities are typically established by government agencies or local municipalities (e.g., in Sweden) to oversee the operation of ports within their jurisdiction.

While primarily aimed at Swedish port authorities, the findings and underlying framework of this report are applicable to ports in diverse geographical contexts. The report draws upon a foundation that is also influenced by international advancements.

Teams and used an open-ended questionnaire, allowing the interviewer to ask follow-up questions and explore new topics. The interviews covered various aspects of port operations, including sustainability strategies, cargo handling processes, and ongoing and planned efforts related to sustainability goals. Based on the interviews and literature review, a survey of 17 questions was developed and distributed to public ports and terminal operators, receiving responses from 25 ports representing 33 Swedish ports, which is a good response rate given the scope of the survey. The survey focused on drivers and benefits of sustainability work, the relevance of SDGs for Swedish ports, ongoing and planned SDG-related efforts, and challenges and needs for working with the SDGs. The report analyzed the results in different areas. Interview and survey respondents held various positions, such as CEO, sustainability manager, development manager, marketing/sales manager, representative from the Swedish port association (Sveriges Hamnar) and technical manager, and the respondent ports played different roles as landlord, port authority, terminal operator, and collaboration partner and customer as shown in figure 2. Swedish ports, as both landlords and port authorities, have a unique position to strategically plan and enable sustainability initiatives.

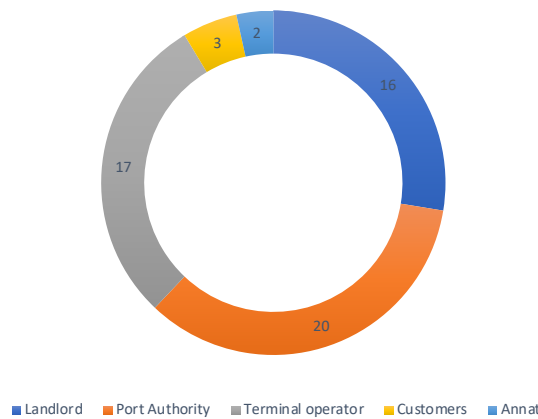


Figure 2: Different roles of surveyed ports

The ports involved in this study serve various types of cargo and traffic, including bulk, container, RoRo, Tank, RoPax, and others such as general cargo, cruise traffic, archipelago traffic, wood, pulp, and chemicals (as shown in Figure 3).

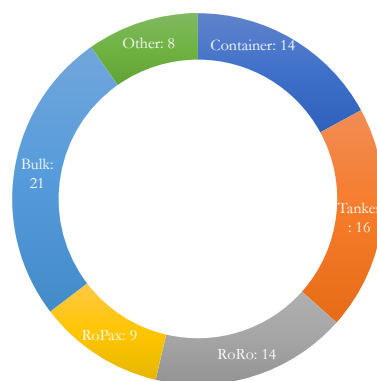


Figure 3: Goods/traffic type served by surveyed ports.

The responding ports have estimated annual turnovers ranging from 10 to over 500 million Swedish kronor, reflecting the varying sizes of Swedish ports. Annual turnover is a significant factor as it can impact the ports' capacity to invest in sustainability and energy-related initiatives (Figure 4).

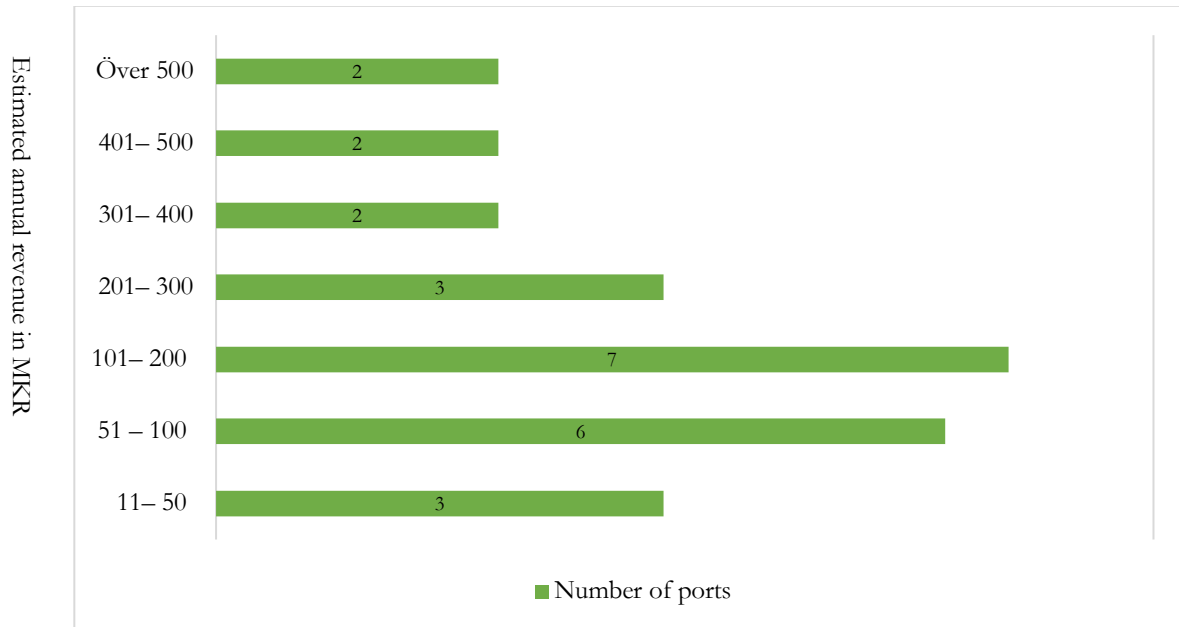


Figure 4: Estimated annual revenue of surveyed ports (in Million SEK (Swedish Kronor))

To identify potential opportunities for the ports to contribute to the SDGs, a three-step approach was followed (as shown in figure 5). Firstly, the relevant targets for ports and their current contribution to each SDG were identified. Secondly, the potential for the ports to contribute to each SDG was analyzed based on the identified targets. This mapping served as the basis for the framework presented in section 5. These two steps were performed for each of the SDGs presented in chapter 4. Finally, a framework for SDG integration was presented in chapter 5 of this report.

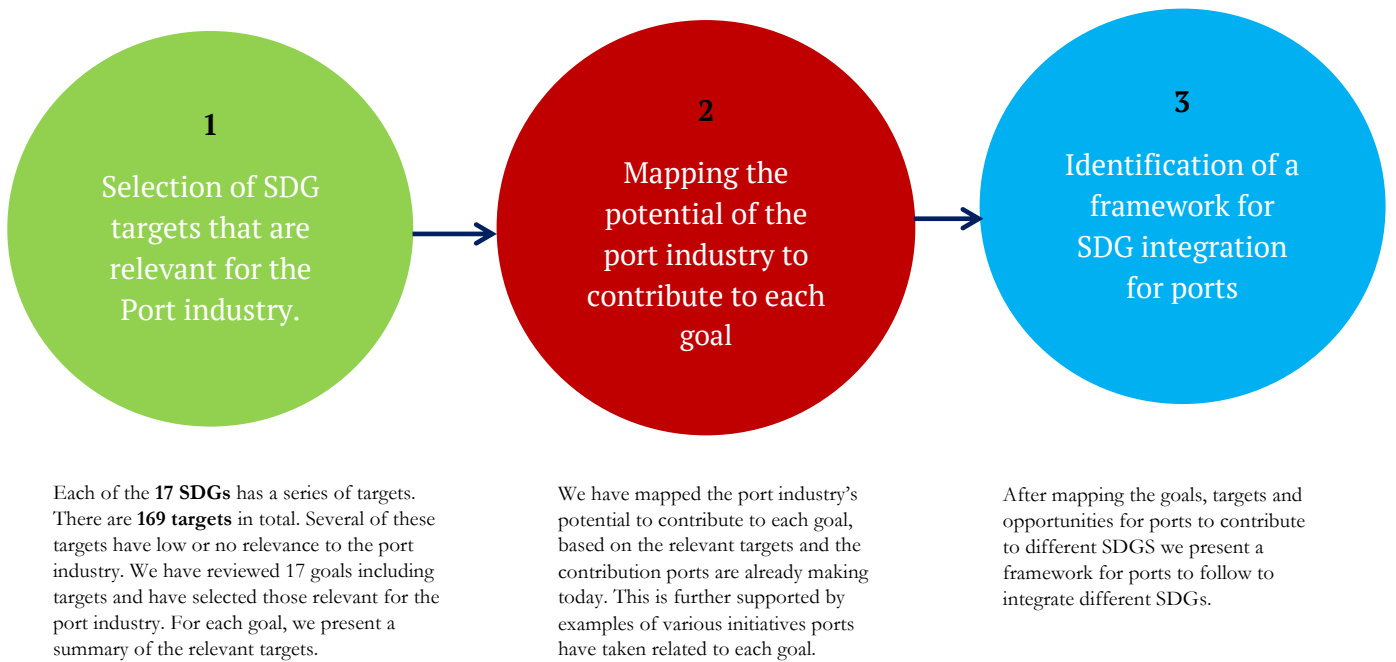


Figure 5: The process followed to identify opportunities related to SDG work for ports

3 Ports and SDGs

In this section, the importance of port is described. The role of SDGs in driving business value and the relevance of different SDGs for the port sector is presented here.

A port is a crucial node in global supply chains that primarily involves maritime activities and is associated with transportation, transformation, and information processes. While previously viewed only as a point where goods are loaded and unloaded, modern ports are now seen as value-adding transit points. In addition to being transportation and digital nodes, ports are also significant energy hubs in the global energy ecosystem (Haraldson et al., 2023). About 40% of the goods passing through ports are energy-related, and they are typically located near industrial clusters, providing opportunities for synergies and co-creation. Ports serve as central nodes for sector coupling and energy system integration, facilitating the operation of multiple industries, including oil and gas facilities, maritime supply chains, road haulage, rail transports, cruise tourism, manufacturing sites, power stations, and electricity grid and offshore wind operators (Bach et al., 2022). These factors highlight the critical role played by ports in facilitating economic activity.

Regarding Sweden, Swedish ports play a vital role in the country's economy, with approximately 95% of all imported and exported goods passing through them. Without the ports, Sweden's industry would come to a standstill, as it would not receive raw materials and fuel needed for transports and heating, and various consumer goods and food items would no longer be available. Competitive ports play a crucial role in promoting economic development and employment in Sweden, as the entire logistics sector depends on goods being imported through ports and then further distributed by land-based or coastal transportation. Therefore, competitive ports have a significant impact on promoting a more sustainable society (Sveriges Hamnar, 2011).

In a broader context, ports play a significant role in generating employment. For example, there are 2,200 port operators in the EU who employ 1.5 million workers. Additionally, an equal number of individuals are employed indirectly across the 22 EU maritime member states. Ports are considered as gateways to international trade, and there exist thousands of seaports worldwide that handle seaborne trade. In 2018, approximately 98,140 ships were responsible for carrying 11 billion tons of seaborne trade, which accounts for approximately 80% of the world trade volume and 60-70% of its value. Moreover, in 2019 alone, ships weighing 100 gross tons or more made 4,362,737 port calls (Alamouh et al. 2021). Additionally, on average 400 million passengers embark and disembark in European ports every year. The ocean economy contributed around 1.5 trillion USD, or 2.5%, to the global gross value added (GVA) in 2010, providing around 31 million full-time jobs. Most workers are employed within industrial fisheries and tourism. The OECD projects GVA from the ocean economy will grow to more than 3 trillion USD in 2030. The output of the maritime industry in 2030 is estimated at 510 billion USD GVA and 6.5 million full-time jobs. As such, the ocean space will be a significant contributor to the SDGs related to social and economic development (EC, 2023).

As central nodes in global transport and industrial ecosystems, ports can significantly contribute to global sustainable development by supporting the achievement of the Sustainable Development Goals (SDGs). The SDGs are a call to action for all members of society, with particular emphasis on non-state actors such as businesses. This presents a unique opportunity for companies to align their strategies and business models with the needs of sustainable development on a global scale.

Ports have a crucial role to play in achieving the SDGs and are already making contributions towards several of them. Below, we explore how ports can contribute to achieving the SDGs through various means, such as:

- managing their own operations sustainably.
- influencing and setting requirements for suppliers and port visitors, and
- facilitating the growth of other industries, including the energy sector, while ensuring the preservation of natural resources for future generations.

3.1 Driving business value through SDGs

In recent years, non-financial reporting and incorporating sustainability criteria into corporate strategies and roadmaps has become a widespread practice across sectors and countries. This approach assists companies in innovating, discovering new opportunities for innovative products and services, and managing risks associated with social and environmental factors. Numerous established frameworks and methods exist for setting environmental, social, and governance (ESG) targets and indicators and for reporting on them. While most companies already have a system or strategy in place, adopting a new framework based on the SDGs or integrating the SDGs into the existing system requires an investment of time and resources. However, the SDGs can assist in engaging various stakeholders within the company. CEOs and boards of directors may be more receptive to the language of business opportunities, while employees can be motivated by addressing global challenges. Additionally, companies' sustainability efforts can be more effectively communicated to customers, resulting in facilitated stakeholder dialogues on sustainability issues, and leading to customer satisfaction, positive corporate image and increased profitability (Raza and Woxenius, 2023).

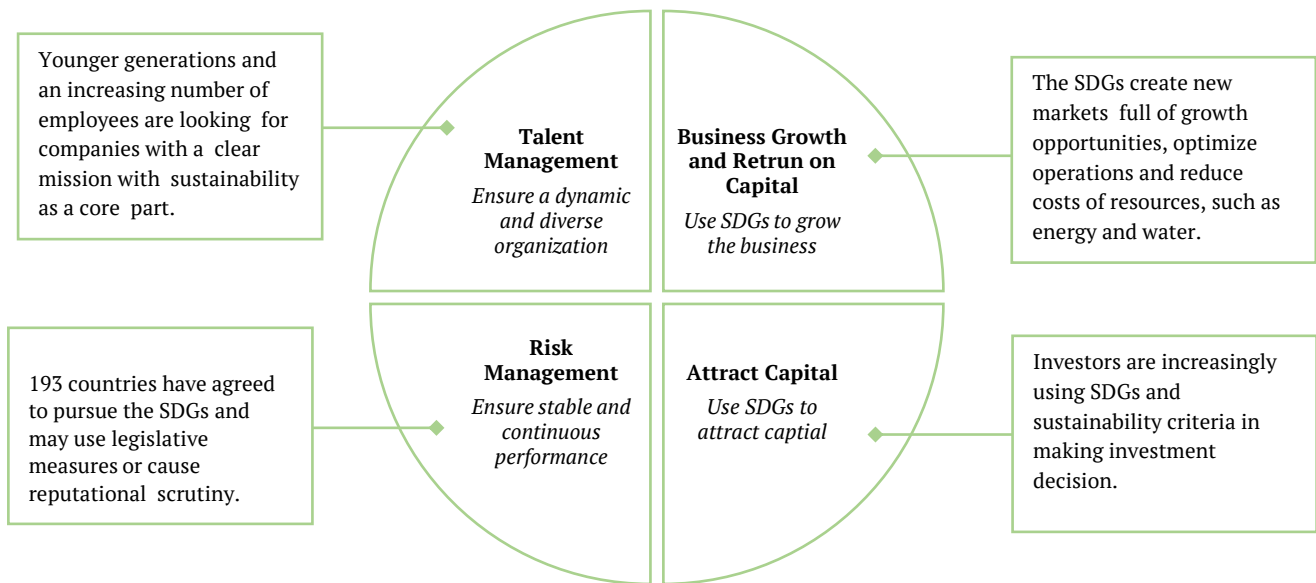


Figure 6: How the SDGs can drive business value from 4 strategic directions (Source: adapted from McKinsey & Co, 2019)

Compared to other frameworks like global reporting initiative (GRI), the SDGs are more widely recognized. Therefore, the SDGs can serve as a common language not only in sustainability reporting across different countries and sectors, but also across organizational types. Governments and other public agencies understand the SDGs, enabling businesses to communicate more effectively with them. Ports face a multitude of challenges that hinder their growth, including evolving customer expectations, regulatory pressures, resource constraints, conflicts, inflation, and a shortage of skilled talent. However, studies conducted by reputable firms such as McKinsey and Co. (2019) and EY (2017) reveal that leveraging the Sustainable Development Goals (SDGs) can help companies tackle these challenges and generate business value in four key areas: business growth, return on capital, risk management, and organizational performance (as shown in figure 6). This was also verified in the Swedish ports survey conducted by RISE. The results of the survey as shown in figure 7 reveal that port sector can achieve various benefits by working with SDGs and implementing sustainability related measures and these benefits include positive brand image, attracting new customers, new talent, new investments, reduced costs, increased revenues, and compliance with existing and forthcoming regulations. These advantages are also in line with the survey conducted by McKinsey & Co (2019) among the Danish companies in multiple business sectors.

Sustainable business models related to the SDGs could open economic opportunities worth up to US\$12 trillion and increase employment by up to 380 million jobs by 2030 (EY, 2017).

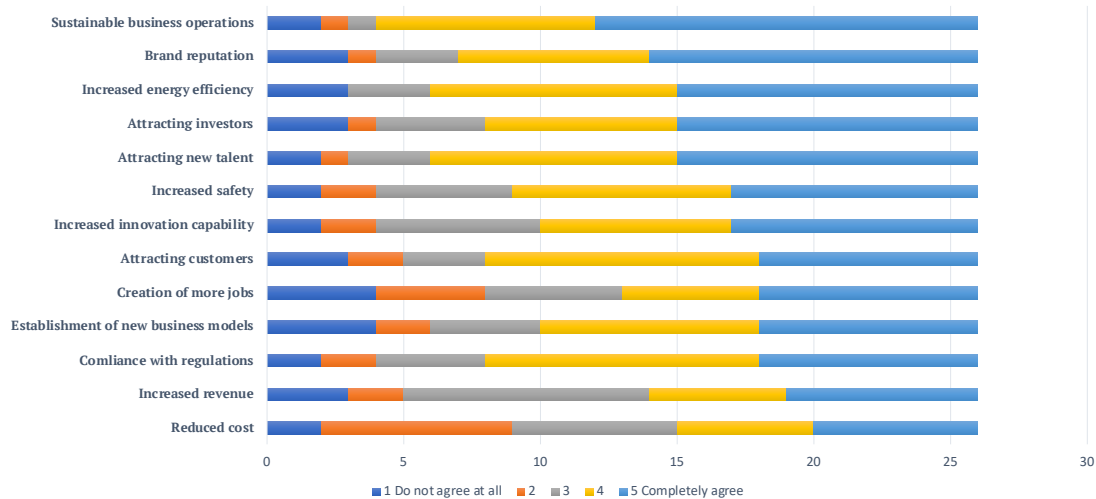


Figure 7: How SDGs can drive business values for ports (Source: RISE ports survey)

3.2 Business growth and return on capital

In general, the achievement of the SDGs is closely linked to business growth at a macro level. However, to take action at a local level, companies need to identify ways in which they can contribute to achieving the goals while driving financial performance in their respective markets. Companies can achieve business growth by offering sustainable products and services at premium prices, as more and more customers are willing to pay for them. The Boston Consulting Group’s research (BCG, 2022) shows that a vast majority of customers in the shipping sector are willing to pay a premium for carbon-neutral shipping, and this willingness is growing rapidly. Furthermore, the research conducted by Raza and Woxenius (2023) highlights the importance of proactive resource allocation by managers in the shipping industry to implement sustainable business practices. This approach not only enhances environmental performance but also enables better responsiveness to stakeholders' expectations. As a result, it leads to increased customer satisfaction and a positive corporate image. These outcomes bring benefits to all stakeholders within the European freight transport ecosystem.

While SDGs 8, 9, and 12 are directly related to economic growth, employment, sustainable industrialization, innovation, and sustainable production, many other SDGs also offer business advantages such as expanding into new markets, attracting talent, and reducing operational risks. All companies can benefit from more resilient communities, reliable access to natural resources, and an educated and healthy population to support their workforce. By driving progress toward these outcomes and creating shared value, companies can secure their ability to generate capital and shareholder value over the long term (EY, 2017).

According to the findings of our report, the driving forces behind sustainability initiatives in ports include customer requirements, internal objectives set by port owners, national and international regulations, and advancements in technology and cost savings. In interviews with port representatives, it was found that for example investing in solar cell

installations and electric vehicles can result in cost savings compared to using diesel. This is supported by McKinsey & Co, (2019) research, which highlights that implementing sustainable practices can lead to significant energy savings, often exceeding 10%. Thus, meeting customer expectations regarding sustainability and complying with regulations can help ports enhance their business value by retaining and attracting customers while also managing risks.

3.3 Attract capital

Investors rely on various nonfinancial information when making investment decisions. Publicly committing to the SDGs, aligning strategic priorities with the SDGs, and measuring, communicating, and reporting on progress towards the SDGs signal to investors a company's ability to manage ESG risks and gain competitive advantages in ESG performance. Supporting communities in achieving the SDGs also offers investors opportunities to manage risks and expand their portfolios. Redirecting investment flows towards the SDGs is expected, given the estimated cost of achieving them and the increasing commitment by organizations such as the World Bank to fund SDG-aligned projects. Therefore, ports, like all organizations, must prioritize addressing the SDGs to attract future investments (Nacke, 2020).

3.4 Risk management

Businesses that integrate the SDGs into their operations can effectively manage sustainability-related risks, including those related to operations, reputation, and regulation (Raza 2020). Neglecting to address the natural, social, financial, and manufactured capital risks associated with each SDG may undermine a company's ability to create long-term capital. In fact, the risks presented by each SDG are already challenging businesses and society and are expected to grow if left unaddressed. Consequently, investors are increasingly factoring in environmental, social, and governance (ESG) risks when making investment decisions (McKinsey & Co, 2019; EY, 2017). Poor environmental performance, resource scarcity, human rights risks, and weak corporate governance are among the risks that could affect investor decision-making. Moreover, regulatory changes may present additional risks for ports, as noncompliance may result in penalties.

Companies have a unique chance through the SDGs to transform societal challenges into opportunities that can boost their business growth and enhance their long-term competitiveness.

3.5 Talent management

The younger generation has a large focus on sustainability when selecting where to work. Millennials who were born between 1980 and 1994 with Gen Z being the following generation born between 1995 and 2015 are increasingly considering the sustainability aspects while choosing their employers. The data indicates that the younger the generation, the larger the focus is on sustainability when choosing an employer. This

means the employees of the future will set higher demands for their employers (McKinsey & Co, 2019).

3.6 Relevance of SDGs for ports

When incorporating the Sustainable Development Goals (SDGs) into business strategy, there are multiple ways to achieve this. It's essential to recognize that it's not always necessary to incorporate all 17 SDGs, as not all of them and their 169 underlying targets apply to every company, industry, or location. Therefore, most businesses are expected to prioritize specific SDGs to address. In fact, reporting on all 17 SDGs may be viewed negatively by investors, as it's virtually impossible to significantly impact all of them. Focusing on the most relevant goals to a company can streamline reporting and make it more targeted. It's crucial to acknowledge not just the 17 SDGs but also their underlying targets, which can help companies understand how their operations relate to the SDGs and provide direction on establishing their objectives (Nacke, 2020).

Not every SDG will be relevant for every business, however every SDG should be considered. Recognizing every port is different, the approach to aligning SDGs would need to be tailored to each port business to optimize outcomes.

Due to the significant scale of their activities, ports act as crucial nodes within global supply chains and serve as major gateways for passenger transportation, but they also give rise to social and environmental externalities. Typically, ports produce environmental impacts due to their involvement in diverse functions such as cargo handling, connectivity to maritime and land transport networks, industrial and semi-industrial operations, logistics and distribution activities, and energy generation and distribution (Notteboom et al., 2020). The operations and expansion of ports, as well as shipping and land transportation, result in severe environmental harm and pose threats to marine ecosystems (World Bank, 2017).

Therefore, it is imperative for ports to function as transport, energy, and digital nodes, actively contributing to the sustainable development of supply chains and aligning with the global goals of sustainability, as emphasized by Haraldson et al. (2023). The port is considered an energy node because it can enable the acquisition, storage, and supply of sustainable energy not only for its own operations but also for bunkering purposes across various modes of transport. Furthermore, ports act as central energy hubs by providing infrastructure and land, developing safety regulations, and facilitating the production, storage, and transportation of sustainable energy for communities and industries, thereby playing a vital role in transitioning from fossil fuels to renewable energy carriers. To ensure sustainable port operations and support the port's dual function as a transport and energy node, various digitalization initiatives need to be implemented to establish the port as a digital node. Ports, in their capacity as transport nodes for all modes of traffic, can contribute significantly to achieving several Sustainable Development Goals (SDGs), including 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, and 17, while meeting customers' evolving

demands for sustainability, advanced and optimized infrastructure, and sustainable energy supply. Furthermore, ports can play a crucial role as energy nodes by producing, storing, and supplying renewable and sustainable energy not only to visitors but also to neighboring communities and industries, aligning with SDGs 7, 9, 11, 12, and 17. By investing in digital infrastructure and optimizing port operations, ports as digital nodes can also contribute to SDGs 8, 9, 13 and 17.

Although research indicates that the majority of reporting companies focus on relevant SDGs, there's no consistent trend regarding the number of SDGs these companies prioritize. In the port sector, the significance of the SDGs will vary from port to port. Our survey of ports reveals that SDGs 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 are highly relevant to the port business, with nearly all surveyed ports having active or planned initiatives related to these SDGs. SDGs 4, 15, 16, and 17 are moderately relevant, while SDGs 1 and 2 have low relevance (Figure 7).

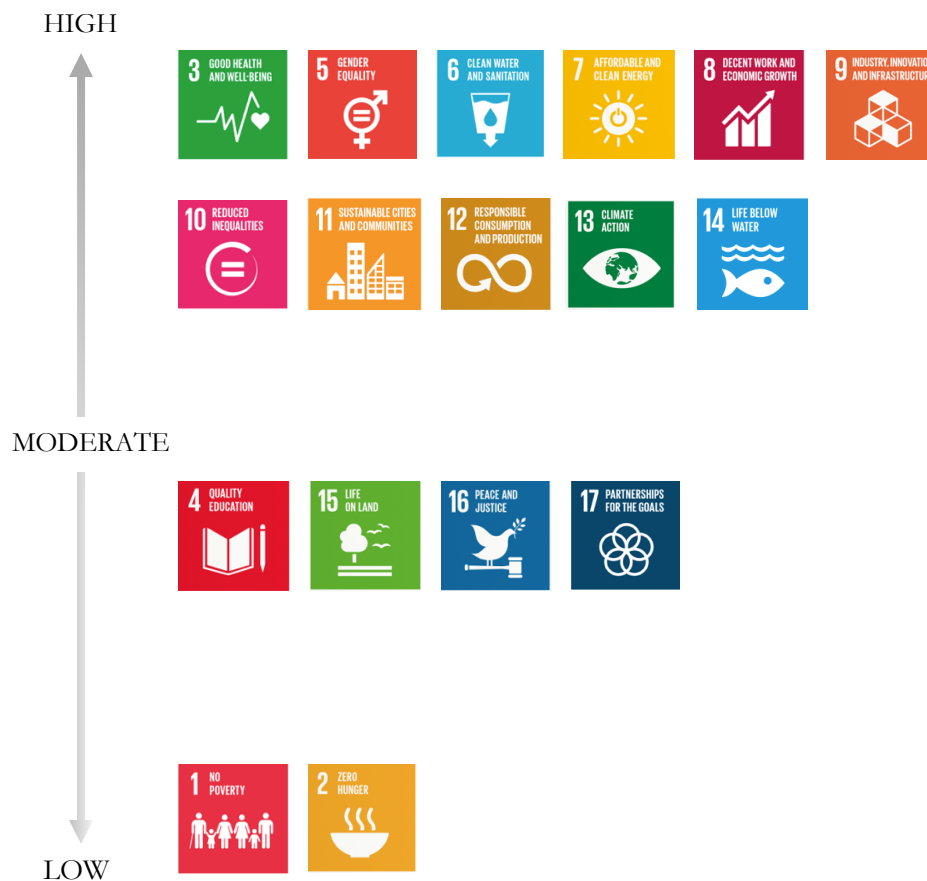


Figure 8: SDGs relevance for ports (Source: RISE port survey)

4 Ports' contribution to SDGs: Targets and initiatives

In this section, all the 17 SDGs along with the relevant targets for ports are described. The relevant measures port can take to address the SDGs and related examples from the port sector are also presented here.

The 17 Sustainable Development Goals (SDGs) represent global aspirations for sustainability across the biosphere, society, and the economy. These goals are interrelated and cannot be achieved in isolation. Society and the economy are intricately connected to the biosphere and depend on its resources, while also having the ability to impact it at both local and global levels.

As we enter the third decade of the 21st century, it is essential to recognize that the environment can no longer be viewed as an external factor but must be treated as a critical component for human well-being and sustained economic growth. It is no longer acceptable to prioritize economic development at the expense of the environment, and sustainable development must become the guiding principle for decision-making at all levels. Only by recognizing the interdependence of society, the economy, and the biosphere, and taking a holistic approach to sustainability, can we hope to achieve the SDGs and create a better future for ourselves and future generations.

Therefore, in line with previous reports on SDGs (e.g., SRC, 2017; DNV 2018, DNV, 2017) the analysis of the 17 Sustainable Development Goals and their relevance for the ports is structured into three interconnected categories: goals related to the biosphere, goals related to society, and goals related to the economy. The description of each SDG and respective targets can be found at <https://www.globalgoals.org/goals/>.

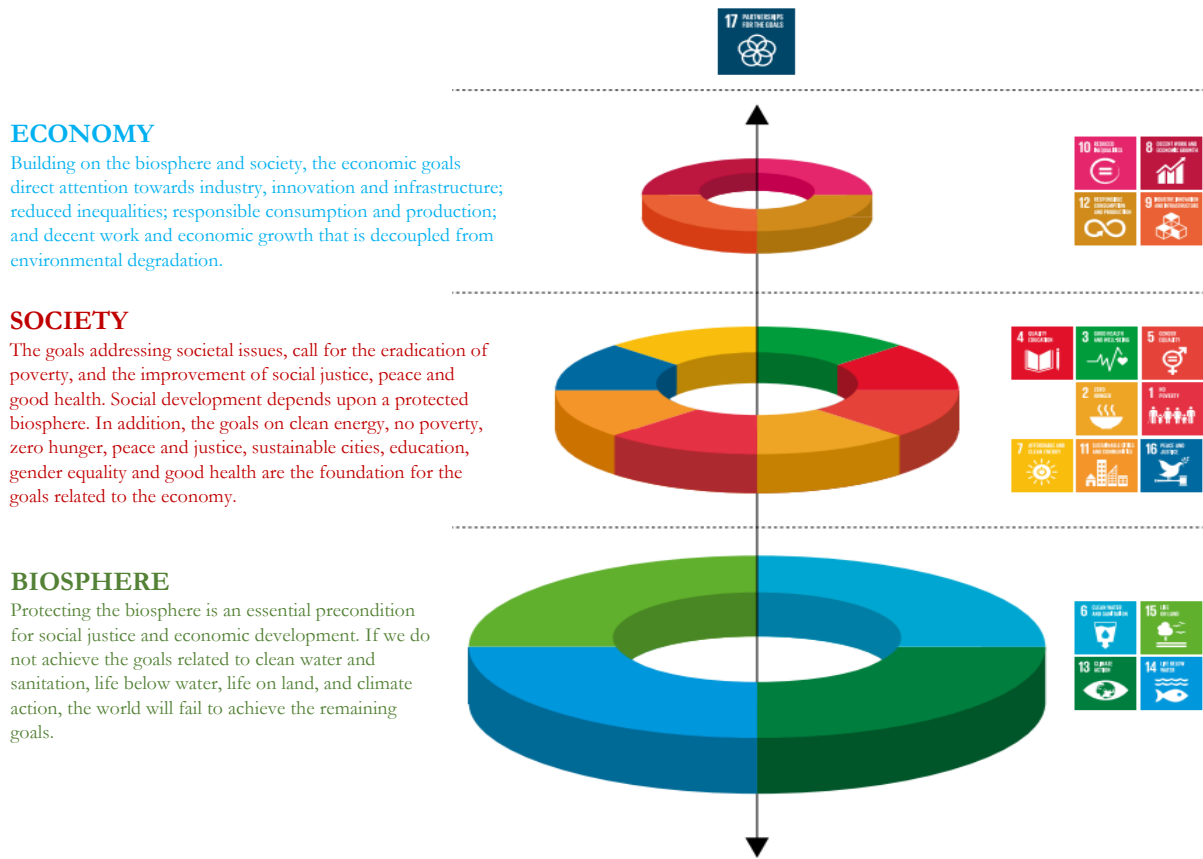


Figure 9: The interconnected nature of SDGs (Source: Stockholm Resilience Center, 2017; DNV, 2018)

BIOSPHERE



The safeguarding of the biosphere is a crucial requirement for both economic advancement and fairness within society. Failure to attain objectives pertaining to climate action, life on land, life below water, and clean water and sanitation would impede the accomplishment of other goals (SRC, 2017). The shipping industry, specifically port operations, adversely affects the biosphere due to air and sea pollution. Based on predictions for traffic growth leading up to 2050, the demand for global trade is expected to increase significantly along with the expansion of the global trucking and vessels fleet which requires immediate attention to protect biodiversity.



The goal aims to ensure availability and sustainable management of water and sanitation for all.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Improve water quality by reducing pollution, eliminating dumping, and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and substantially increasing recycling and safe reuse globally (Target 6.3)</p> <p>Substantially increase water-use efficiency and ensure sustainable withdrawals and supply of freshwater (Targets 6.4)</p>	<ul style="list-style-type: none"> › Reduce harmful discharges to sea from own operations as well as from port visitors’ operations. › Improve water-use efficiency directly in the ports’ own operations. › Set requirements related to water protection and freshwater use for port tenants and visitors. › Provide and maintain rock revetments to protect water quality. 	<ul style="list-style-type: none"> › Share knowledge and technology within and across industries for desalination of saltwater for drinking water purposes. › Develop cost-efficient solutions to transport water from areas with abundant supply to areas with water scarcity. › Provide digital platforms for any water pollution incidents to be reported and actioned.

EXAMPLE

The measures taken by Swedish seaports, as illustrated below, are primarily driven by regulations imposed by domestic and regional authorities, rather than the specific focus on SDG 6. However, these examples serve as valuable models for ports globally, illustrating responsible practices that can be adopted even in the absence of legal mandates.

› For instance, the Port of Karlshamn driven by the regulations facilitates the receiving and handling of sludge disposal, including oil residues and waste from ship engine rooms, which should not be released into the ocean. By emphasizing compliance with the waste and sludge related regulations, the Port of Karlshamn showcases the significance of following proper waste management protocols, thereby protecting marine ecosystems and these efforts are also aligned with SDG 6.

› Likewise, Swedish ports are legally obliged to treat wastewater generated on their premises before it is discharged into the sea. It is crucial to emphasize that compliance with regulatory requirements serves as the primary motivation behind these practices. By emphasizing the influence of regulations on shaping port operations and emphasizing the necessity of wastewater treatment, ports in Sweden serve as examples of responsible water management practices that are in line with SDG 6.



The goal calls for urgent action to combat climate change and its impacts. It acknowledges the UNFCCC as the main international intergovernmental forum for negotiating the global response to climate change.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Strengthen resilience and adaptive capacity to climate-related hazards (Target 13.1)</p> <p>Integrate climate change measures into policy, strategy, and planning (Target 13.2)</p> <p>Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning (Target 13.3)</p>	<ul style="list-style-type: none"> » Promote understanding and create awareness among the port stakeholder of possible climate risks (physical, policy and legal, technological, market and reputation- related) and their financial impacts for stakeholders. » Reduce GHG emissions from its own operations, for example through use of alternative fuels, increased energy efficiency and optimized port operations. » Enhance adaptive capacity to enable actors in the port ecosystem to adapt and respond to climate change and related risks such as floods and drought. 	<ul style="list-style-type: none"> » Contribute to GHG emission reductions in other transport sectors by transferring transport work from road to sea and by increasing efficiency of port operations and reducing costs. » Assess and disclose climate-related risks based on the recommendations from environmental agencies. » Provide employees with knowledge and training to enable them to understand their environmental footprint, create environmental solutions and opportunities, and generate cultural change within port organization. » Advocate and encourage port tenants, visitors, and contractors to incorporate climate change-related initiatives into their activities where possible.

EXAMPLE

- » The Port of Helsingborg is actively contributing towards SDG 13 by adopting eco-friendly practices such as utilizing cleaner fuels for equipment and effectively managing waste.
- » The Port of Karlshamn takes steps to promote environmental awareness among its employees by means of dialogue, information sharing, and training programs. The emphasis is placed on raising awareness of environmental issues that are relevant to the employees' own work areas and encouraging them to actively consider the environment

in their daily work. In addition, the port invites suggestions from its employees for potential improvements that can be made to further minimize the environmental impact of its operations.

» The Port of Trelleborg, in collaboration with its project partner Peab, places a strong emphasis on environmental sustainability for its construction projects. For instance, in one of its projects, Peab employs in-house developed products like ECO-concrete and ECO-Asphalt to reduce the environmental impact. ECO-Asphalt, in particular, helps in minimizing carbon dioxide emissions by approximately 50% when compared to traditional asphalt. Furthermore, the project aims to transport a significant portion of steel supplies through rail and boat transportation to further reduce the carbon footprint.

» A partnership initiative called ClimAID was launched at Copenhagen Malmö Port in collaboration with the Amager Resource Center in Copenhagen to carry out carbon dioxide capture. This project is the first of its kind in Denmark and aims to not only support Copenhagen's objective of becoming the world's first carbon dioxide neutral capital but also to aid Denmark in achieving its national target of reducing carbon dioxide emissions by 70% by the year 2030. The project's primary focus is to capture around 500,000 tonnes of carbon dioxide, which is presently emitted through chimneys at ARC's waste-to-energy plant in Copenhagen. Once captured, the carbon dioxide is transformed into a liquid state and transported via pipelines to CMP's terminal.



The goal aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development. Healthy oceans and seas are essential to our existence. They cover 70 percent of our planet, and we rely on them for food, energy and water.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution (Target 14.1)</p> <p>By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans (Target 14.2)</p>	<ul style="list-style-type: none"> › Incorporate environmental strategies during construction works within the port to prevent harmful materials, waste, oil, sewage and chemicals from entering port waters. › Reduce emissions to air from its own operations as well from port visitors including vessels, such as NO_x, SO_x, and CO₂. Reduced emissions will lower the contribution to ocean acidification and eutrophication. › Provide facilities to receive garbage, and black and grey water from shipping. › Make policies and take actions to prevent transfer of alien species by ships which can affect terrestrial ecosystems. 	<ul style="list-style-type: none"> › Contribute to clean-up activities in the ocean space, for example, collection of plastic and other waste. › Advance knowledge about the ocean and marine life by compiling and sharing operational data about ocean conditions. Such increased knowledge can inform more effective governance of the oceans. › Reduce disturbance of marine life by minimizing acoustic noise from construction and port operations. › Avoid significant negative consequences of port operations for the oceans, e.g., counteracting erosion caused by ships, minimizing environmental impact during dredging, re-planting eelgrass, etc.

EXAMPLE

›› The Port of Gothenburg has commenced the replantation of eelgrass meadows as a compensatory measure for the eelgrass that will be lost during the expansion of a new terminal. This undertaking represents the most extensive eelgrass replanting effort ever undertaken in Sweden. Eelgrass beds play a vital role in safeguarding and providing habitat for various fish species, while also aiding in enhancing water quality. Moreover, they act as a natural barrier, shielding beaches from erosion, thereby making a significant contribution towards achieving Sustainable Development Goal 14.



The goal aims to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Ensure the conservation, restoration and sustainable use of terrestrial ecosystems and inland freshwater ecosystems and their services (Target 15.1)</p> <p>Introduce measures to prevent the introduction of and significantly reduce the impact of invasive alien species (Target 15.8)</p>	<p>» Make policies and take actions to prevent transfer of alien species by ships which can affect terrestrial ecosystems.</p> <p>» Minimizing environmental impact during the construction projects to protect the biodiversity and marine.</p>	<p>» Support production of food and energy in the oceans to alleviate pressure on ecosystems on land.</p>

EXAMPLE

» The Port of Helsingborg is exploring ways to incorporate environmental considerations into its container terminal construction project. One such approach is the use of textured tiles on the quay walls to create more favorable conditions for marine animals like mussels and crabs. By offering nooks and crannies, these plates enable the animals to settle in and transform the straight quay wall into a living sea wall that promotes biodiversity and contributes to a more sustainable ocean. This effort aligns with SDG 15.

» Several ports in Sweden are playing their part in supporting SDG 13 by providing an environmentally differentiated fee structure. Under this system, vessels that have lower emissions are eligible for discounts of up to 30% on port charges. This initiative serves as an incentive for shipping companies to adopt sustainable practices and reduce their environmental footprint, thereby contributing towards the goal of mitigating climate change.



Source: Volunteermatch (2017)

The succeeding tier of the Sustainable Development Goals (SDGs) concentrates on societal concerns that require the elimination of poverty, promotion of social justice, maintenance of peace, and enhancement of health. The attainment of social development is reliant on the preservation of a secure biosphere. Moreover, the SDGs pertaining to clean energy, poverty reduction, hunger eradication, peace and justice, sustainable urbanization, education, gender parity, and good health constitute the groundwork for the goals associated with the economy.

The primary way in which the ports contribute to societal objectives is by promoting public health and facilitating affordable access to global markets for various goods, including food. Additionally, ports play a role in promoting cross-cultural interactions by facilitating travel and tourism. However, the provision of these services often leads to environmental deterioration, which can ultimately undermine the same social benefits they aim to achieve.



The goal aims to end poverty in all its forms everywhere. Nearly half of the world’s population lives in poverty, and lack of food and clean water is killing thousands every single day of the year.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Eradicate extreme poverty, reduce by half the proportion of people living in relative poverty, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate related risks (Targets 1.1, 1.2, 1.5)</p>	<ul style="list-style-type: none"> » Create jobs within ports’ own business operations. » Facilitate job creation and growth within the port ecosystem. » Facilitate affordable and sustainable transportation of goods and people through optimized and efficient port operations. 	<ul style="list-style-type: none"> » Contribute to affordable and cheap energy through facilitating energy production, storage, and transportation. » Continue providing access to basic goods for vulnerable groups to build resilience and in cases of emergencies such as for people living in Ukraine and other war affected areas.

EXAMPLE

» Ports are a crucial factor in the reduction of poverty by enabling affordable transportation for both goods and passengers. For instance, in Sweden, the port sector provides jobs for more than 20,000 individuals, which aligns with the Sustainable Development Goal 1.



The goal aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. Our planet has provided us with tremendous resources, but unequal access and inefficient handling leaves millions of people malnourished.

Relevant SDG Targets For Ports	How can ports contribute?	
End hunger and ensure access to safe, nutritious, and sufficient food, and adopt measures to ensure the proper functioning of food commodity markets, facilitate timely access to market information and limit extreme food price volatility (Targets 2.1, 2.c)	<ul style="list-style-type: none"> › Facilitate harvesting and production of sustainable food from the ocean space by supporting sea food supply chain and investing in related infrastructure. › Facilitate the affordable and sustainable transportation of food. 	<ul style="list-style-type: none"> › Prevent port congestions and optimize operations and thereby reduce food price volatility. › Provide access to food for vulnerable groups to build resilience and provide assistance in cases of emergencies. › Participate in fundraising activities contribute to charities for poor people.

EXAMPLE

› While SDG number 2, which focuses on zero hunger, may seem less directly relevant to seaports, especially in a Swedish context, these vital transportation hubs can still make significant contributions towards achieving this goal. An illustration of this is the Port of Norrköping’s active involvement in raising funds for charitable organizations such as Save the Children and MusikHjälpen, dedicated to providing support for children. By actively participating in these fundraising efforts, the Port of Norrköping not only demonstrates its commitment to social responsibility but also makes a positive impact on the lives of children affected by war. This initiative is aligned with the objectives of SDG 2, ultimately contributing to the global efforts to eradicate hunger and ensure access to nutritious food for all.



The goal aims to ensure healthy lives and promote well-being for all at all ages.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and wellbeing (Target 3.4)</p> <p>Prevent and treat substance abuse, including narcotic drug abuse and harmful use of alcohol (Target 3.5)</p> <p>Halve the number of global deaths and injuries from road traffic accidents (Target 3.6)</p> <p>Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination (Target 3.9)</p>	<ul style="list-style-type: none"> » Support ports’ own employees if they experience any substance abuse. » Coordinate with custom authorities to prevent drugs and narcotics imports. » Develop and optimize port infrastructure to facilitate a shift to shipping from road haulage and thereby reducing traffic accidents. 	<ul style="list-style-type: none"> » Set requirements and incentivize port visitors to reduce GHG emissions and use of chemicals. » Provide facilities to receive garbage, and black and grey water from shipping. » Continue to minimize discharges to sea from ports’ own operations, such as chemicals, oil, and sewage. » Continue to reduce GHG emissions from own operations.

EXAMPLE

» Copenhagen Malmö Port (CMP) provides its staff with informal conversations with their manager to identify potential health risks early on. Additionally, CMP has a company health care agreement in place and offers healthcare insurance as an added benefit to ensure prompt treatment for employees. Through these efforts, CMP is supporting the achievement of SDG 3.



The goal aims to ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Ensure equal access to technical, vocational and tertiary education, and substantially increase the number of people who have relevant skills (Targets 4.3, 4.4)</p> <p>Ensure that all learners acquire the knowledge and skills needed to promote sustainable development (Target 4.7)</p>	<ul style="list-style-type: none"> » Provide employees with professional learning and development training opportunities to enhance skills and knowledge. » Develop global standards for skills and education to help accelerate education and training globally in the port and logistics sector. 	<ul style="list-style-type: none"> » Introduce and implement a Diversity and Inclusion policy, which acknowledges national and international dates and events of cultural significance. » Provide staff with professional development opportunities, including attendance of conferences and events relating to sustainability.

EXAMPLE

» The Port of Norrköping provides its employees with engaging lectures that offer valuable insights and inspiration related to various aspects, such as the significance of protective clothing, the importance of functional protective equipment, effective teamwork, and the understanding that we all share a common work environment. Through these efforts, the Port is contributing to the achievement of Sustainable Development Goal 4.

» The Port of Södertälje provides environmental training to its staff who are deeply committed to environmental initiatives and encourages them to propose ideas for improvements. Additionally, to minimize their environmental impact, the Port has trained its employees in Eco Driving and encouraged the use of bicycles and electric cars within the harbor area. These efforts demonstrate the Port's support towards the attainment of Sustainable Development Goal 4.



The goal aims to achieve gender equality and empower all women and girls. Gender bias is undermining our social fabric and devalues all of us. By denying women equal rights, we deny half the population a chance to live life at its fullest.

Relevant SDG Targets For Ports	How can ports contribute?	
End all forms of discrimination against women and ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making (Targets 5.1, 5.5)	<ul style="list-style-type: none"> » Improve gender equality in its own operations. » Develop gender-neutral hiring and remuneration policies. 	<ul style="list-style-type: none"> » Implement a Diversity and Inclusion Policy to ensure highest governance level oversight and support. » Support opportunities and develop leadership pathways for all genders.

EXAMPLE

» The port sector has historically been dominated by men, with only a small number of female dock workers. To promote a more inclusive workplace regardless of gender, gender identity or expression, ethnic affiliation, religion or other belief, disability, sexual orientation, or age, at the port of Helsingborg as a part of an organizational restructuring, the management team now comprises four men and four women, including the CEO's assistant, demonstrating the port's commitment to supporting the achievement of Sustainable Development Goal 5.



The goal aims to ensure access to affordable, reliable, sustainable, and modern energy for all. Implementing new energy solutions as fast as possible is essential to counter climate change, one of the biggest threats to our own survival.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Ensure universal access to affordable, reliable, and modern energy services, increase the share of renewable energy and double the rate of improvement in energy efficiency.</p> <p>(Targets 7.1, 7.2, 7.3, 7.A)</p>	<ul style="list-style-type: none"> › Adopt energy-efficient practices across port sites and assets including plant machinery, installation of solar units and LED lighting, and hybrid vehicle fleet for employee use. › Increase the use of renewable energy solutions in its own operations, such as biofuels, hydrogen, solar and wind. 	<ul style="list-style-type: none"> › Provide land and coordination for the production, storage, and transportation of clean and renewable energy. › Improve energy efficiency of all parts of port operations. › Supply alternative energy solutions to port visitors.

EXAMPLE

› The Port of Gävle has implemented various measures to align with SDG 7. These include electrifying the rail connection within the port area to enable emission-free transportation, employing cargo handling equipment that uses electricity or fossil-free fuels like HVO, powering tugboats without fossil fuels and connecting them to electricity while in berth position. Furthermore, the port intends to provide hydrogen and emission-free charging options for the vehicles, arriving trucks, trains, and ships using the port.

› The installation of solar cells at the Port of Karlstad has resulted in significant benefits. Approximately 800 solar panels have been installed on the warehouse's roof, producing enough energy to power the warehouses, electric machines on the quay, and the port's tugboats. These solar panels cover a roof surface of around 1300 m² and generate over 240,000 kWh of electricity annually. The investment in solar panels has helped the port save costs, reduce emissions, and support SDG 13.



The goal aims to make cities and human settlements inclusive, safe, resilient and sustainable.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Provide access to safe and sustainable transport systems for all and reduce adverse environmental impacts of cities, including adverse impacts on air quality (Targets 11.2, 11.6)</p>	<ul style="list-style-type: none"> › Reduce negative impact from freight transport to/from the port area and work for increased traffic safety. › Conduct air and noise monitoring program across various port locations and within the surrounding residential communities. › Undertake dust monitoring of tenanted sites where dry bulk cargo is present. 	<ul style="list-style-type: none"> › Commence infrastructure projects that will promote more freight by ship or rail ease congestion and reduce truck movements within inner city residential areas that border the Port. › Provide shore-based electricity for vessels when in port to reduce emissions in the city which will help ports to comply with EU's Fit for 55 regulations.

EXAMPLE

› Klintehamn, in its commitment to achieving SDG 11, actively oversees the noise levels in the port vicinity and implements measures to reduce noise from various sources, including port-related transportation and auxiliary machinery on docked ships. It is worth emphasizing that the driving force behind these actions lies in the regulatory framework established by domestic and regional authorities. Nonetheless, ports across the globe can choose to adopt these practices proactively, irrespective of legal obligations. By actively monitoring and curbing noise pollution, ports can contribute to a peaceful and harmonious coexistence with neighboring communities, aligning with the objectives of SDG 11.

› The Port of Lidköping and the municipality have collaborated to design multiple initiatives aimed at enhancing the port's infrastructure and promoting sustainable cities and communities in line with SDG 11. The Hamnstad project, which is a significant undertaking, entails the creation of new residential and leisure zones to improve the quality of life of the local populace.



The goal aims to promote peaceful and inclusive societies, to provide access to justice for all and to build effective, accountable, and inclusive institutions at all levels.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Significantly reduce illicit financial and arms flows, and combat all forms of organized crime (Target 16.4)</p> <p>Substantially reduce corruption and bribery (Target 16.5)</p> <p>Develop effective, accountable, and transparent institutions at all levels (Target 16.6)</p>	<ul style="list-style-type: none"> » Require all tenants to comply with relevant legislation relating to the safety and security of the premises they lease. » Strengthen global and national regulatory institutions to reduce opportunities for corruption, bribery and flow of drugs and weapons. 	<ul style="list-style-type: none"> » Reduce corruption and bribery through effective compliance systems and proper training. » Implement mechanisms for internal reporting and safeguards for whistle-blowers. » Ensure that the military is given rights of access within the Port.

EXAMPLE

» Swedish ports play a crucial role in achieving the targets of Sustainable Development Goal 16 by adhering to both domestic and international regulations. The compliance with regulations, such as the International Ship and Port Facility Security Code (ISPS) and the Maritime Security Act in Sweden, ensures the security of port areas and the protection of ships and facilities. These regulations strictly prohibit unauthorized activities such as boarding ships without proper clearance, fishing from restricted areas, or engaging in smuggling. It is important to emphasize that the driving force behind these actions is the regulatory framework imposed by domestic, regional or global authorities, rather than the SDG itself. By implementing similar security measures and protocols, ports worldwide can enhance their operational resilience and contribute to maintaining a secure environment. While the SDGs may not be the direct driving force, these proactive measures align with the principles of sustainable development and foster a safer and more secure maritime industry globally.

ECONOMY



The last set of Sustainable Development Goals (SDGs) pertains to economic progress, focusing on industry, innovation, and infrastructure; decreased inequality; sustainable consumption and production; and fair employment opportunities and inclusive economic growth that does not harm the environment, building on the biosphere and society.

The main way that ports contribute to economic objectives is by providing and facilitating secure, equitable, and safe working environment for its employees, suppliers, and those working within the port ecosystem. Additionally, ports contribute to promoting sustainable economic development by adopting sustainable procurement practices and providing a sustainable and innovative infrastructure for travelers, shippers, and transport providers.



The goal aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Achieve higher levels of economic productivity, improve global resource efficiency and decouple economic growth from environmental degradation (Targets 8.2, 8.4)</p> <p>Achieve full and productive employment and decent work, eradicate forced labour, modern slavery, human trafficking and child labour, protect Labour rights and promote safe working environments (Targets 8.5, 8.7, 8.8)</p> <p>Promote sustainable tourism (Target 8.9)</p>	<p>» Provide affordable, effective, and optimized port services facilitating economic growth and job creation across industries.</p> <p>» Continue to develop and implement occupational health and safety regulations.</p> <p>» Prioritize and promote health, safety and wellbeing programs for port employees.</p>	<p>» Remove risky or physically demanding work elements to create a safe working environment for all employees.</p> <p>» Provide required infrastructure and facilities to support sustainable tourism.</p>

EXAMPLE

- » Ports play a crucial role in promoting economic development and are instrumental in achieving SDG 8. The Port of Helsingborg is a prime example, as it contributed around SEK 9.2 billion to the regional economy in 2020, providing employment opportunities for more than 10,000 individuals who were either directly or indirectly dependent on the port.
- » Smålandshamn AB is certified as per the OHSAS 18001 work environment standard. The port provides a competitive salary package and attractive employment terms, along with incentives for skill development programs. The port has a strict policy of treating its employees with respect, sensitivity, and empathy to establish trust.



The goal aims to build resilient infrastructure, to promote inclusive and sustainable industrialization and to foster innovation.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Develop sustainable and resilient infrastructure to support economic development and human well-being, with a focus on affordable and equitable access for all (Target 9.1)</p> <p>Upgrade infrastructure and retrofit industries to make them sustainable (Target 9.4)</p>	<ul style="list-style-type: none"> » Commence infrastructure projects to facilitate the shift from trucking to shipping, bringing environmental and social benefits for port stakeholders. » Invest in digitalization of port equipment and assets to optimize port operations and reduce emissions. 	<ul style="list-style-type: none"> » Undertake dredging campaigns to ensure the safe and reliable navigation of vessels through Port waterways. » Contribute to improving the infrastructure and adapting operations for increased sustainability, with more efficient use of resources and more clean and environmentally friendly technologies and industrial processes.

EXAMPLE

Ports in Sweden have taken various measures to support the SDG 9 which is evident from the examples below:

- » The Port of Luleå is making a significant contribution towards Sustainable Development Goal 9 by collaborating with other stakeholders to invest in infrastructure projects. A notable example of this is the Malmporten project, which is currently the largest dredging project in Sweden. The objective of this project is to enhance the port's capacity to handle vessels that can carry up to 160,000 tonnes of cargo, as opposed to the current maximum of 50,000 tonnes during the ice-free period. The use of larger vessels is beneficial to the environment due to lower fuel consumption and emissions per tonne of goods transported. The Malmporten project is anticipated to lower sea transport's fuel consumption, environmental emissions, and shipping costs by up to 40 percent on its way to and from Luleå Harbor.
- » The Copenhagen Malmö port is employing drone technology to conduct more frequent and closer inspections of various structures such as quays, buildings, rooftops, gutters, electric coils, lighthouses, and facades. Moreover, the port has become the first in the

world to utilize Autonomous Surface Vessel technology, which is an electric torpedo capable of blocking off Malmö's oil port within 10 minutes in case of any oil spillage. This technology helps in rapidly containing the spread of any oil spillage, thereby minimizing the environmental damage caused by such incidents.

» In order to enhance the port's emissions performance, the port of Helsingborg has installed optimized Yard Planning functions, which has replaced the existing terminal systems. The new technology is designed to minimize the number of lifts, shorten driving routes, and container movements, thereby reducing emissions. Moreover, to further improve their environmental impact, the port has installed noise IoT sensors at strategic locations in the city and port area. The data collected from these sensors is used to analyze and access information that can be utilized for improvements. By constantly monitoring the noise emissions, the port can report on them and identify possible improvement measures to minimize their impact on the environment.

» The Port of Trelleborg is actively investing in digitalization and new IT solutions to enhance its operations. One such project, developed in collaboration with Hogia, is the implementation of a fully automated gate-in solution for the port entrance. This new system allows trucks to enter the port without having to stop to show their ticket, creating a constant flow and improving efficiency. This not only has a positive impact on the environment, but also on road safety. By introducing such initiatives, the port is contributing to SDG 9 by utilizing technology to optimize their operations and reduce their environmental impact.

» The Port of Gävle has partnered with various stakeholders, such as the Swedish Energy Agency, Tärntank, Preem, VTI, and Gävle Oil Terminal, to implement a new queuing system called the "Time Slot Gävle" for ships arriving at the oil terminal. This system replaces the traditional "first-come-first-serve" approach that has been used in the port sector worldwide for calls where berths are shared by multiple terminals. The primary goal of Time Slot Gävle is to enable ships to reduce emissions by practicing eco-driving. By doing so, the environment can be spared a significant amount of GHG emissions. The Port Activity App is the tool used to search for queue placement and verify scheduled times with automatic vessel positioning data.



The goal aims to reduce inequality within and among countries. For nations to flourish, equality and prosperity must be available to everyone – regardless of gender, race, religious beliefs, or economic status. When every individual is self-sufficient, the entire world prospers.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Empower and promote social, economic, and political inclusion of all (Target 10.2)</p> <p>Facilitate orderly, safe, regular, and responsible migration and mobility of people (Target 10.7)</p>	<ul style="list-style-type: none"> » Ensure diversity within its own operations and for suppliers. » Achieve equality within the port independent of gender, origin, belief, conviction etc. 	<ul style="list-style-type: none"> » Ensure that all port operations are safe to promote transport safety for ferry and cruise travelers and employees. » Develop social background-neutral hiring and remuneration policies

EXAMPLE

» Ports such as Oskarshamn, Hargs Hhamn, and Helsingborgs Hamn have developed a clear code of conduct that emphasizes the ports’ commitment to continuously work for equality, diversity, and inclusion while preventing and countering discrimination and abuse in all forms. Additionally, their workplace policies show that the port must be a good workplace for everyone, regardless of gender, gender identity or expression, ethnic affiliation, religion or other belief, disability, sexual orientation, or age. These initiatives contribute to SDG 5, which promotes gender equality, and SDG 10, which aims to reduce inequalities.



The goal aims to ensure sustainable consumption and production patterns. Our planet has provided us with an abundance of natural resources. But we have not utilized them responsibly and currently consume far beyond what our planet can provide.

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Achieve environmentally sound management of chemicals and all their wastes throughout their lifecycles, and significantly reduce their release to air, water and soil (Target 12.4)</p> <p>Substantially reduce waste generation (Target 12.5)</p> <p>Encourage companies to adopt sustainable practices and integrate sustainability information into their reporting cycles (Target 12.6)</p> <p>Promote sustainable public procurement practices (Target 12.7)</p>	<ul style="list-style-type: none"> » Support relevant stakeholders in the appropriate management and handling of dangerous goods through the port. » Reduce waste generation, including food waste, from its own operations. » Introduce responsible waste management and recycling systems in the workplace. 	<ul style="list-style-type: none"> » Conducted routine emergency response training exercises with relevant emergency services personnel to assess planning and preparedness as part of our whole of port emergency maritime procedures. » Implement reporting on sustainability performance based on recognized standards. » Adopt sustainable procurement practices.

EXAMPLE

» Swedish ports, such as Norrköping and Oxelösunds, have implemented waste management policies in alignment with Sustainable Development Goal 12. These ports have established specific regulations for the handling of ship-generated waste, including sorting glass, paper, plastic, landfill, metal, combustible waste, and food waste at the Port of Norrköping. In addition, Oxelösunds port provides disposal stations for both normal and hazardous waste and takes sludge and bilge water from ships without charging extra fees, as it is already included in the port fee. The port aims to create a sustainable cycle by recycling what they can and sending the remaining waste to landfill. Oxelösunds port recycles approximately 225 tons of scrap per year. It is important to note that the primary driving force behind some of the measures such as waste management initiatives is the regulatory framework imposed by domestic and regional authorities, rather than the SDG itself. Ports are obliged to follow these regulations to ensure responsible waste management practices. By adopting proactive waste management practices, ports globally

can contribute to environmental sustainability, irrespective of legal mandates. Taking cues from Swedish ports, other ports can prioritize waste sorting, recycling, and appropriate disposal, contributing to the principles of SDG 12 and fostering a more sustainable maritime industry.

» The Port of Helsingborg prioritizes sustainable procurement practices and endeavors to eliminate child labor from its supply chain by primarily sourcing materials and services from Sweden. However, the port also purchases machines and vehicles from other regions, predominantly Europe. The port actively contributes to SDG 12 by imposing social and environmental criteria in its procurement processes, wherever feasible and appropriate.



The goal aims to revitalize the global partnership for sustainable development. The Global Goals can only be met if we work together. International investments and support are needed to ensure innovative technological

Relevant SDG Targets For Ports	How can ports contribute?	
<p>Promote the development, transfer, dissemination, and diffusion of environmentally sound technologies to developing countries and encourage and promote effective public, public-private and civil society partnerships (Targets 17.7, 17.17)</p> <p>Enhance policy coherence for sustainable development (Target 17.14)</p>	<p>» Develop and enable partnerships with stakeholders that mobilize and exchange knowledge, expertise, technology, and financial resources, to help the port and its stakeholders to achieve SDGs.</p> <p>» Develop port-specific sustainability policies and mechanisms through the industry-specific collaborative initiatives.</p>	<p>» Contribute with advice and information to state government planning and infrastructure projects to ensure an integrated planning solution is achieved to accommodate port growth and trade forecasts.</p>

EXAMPLE

Multiple ports in Sweden are actively engaging in partnerships with various stakeholders to devise inventive solutions to improve the efficiency of their operations and decrease emissions throughout the supply chain, in support of SDG 17.

» This is exemplified by the Ports of Stockholm and nine other ports in the Nordic region signing a declaration of cooperation in 2019 to address environmental challenges related to the UN’s SDGs. The declaration underscores the significance of sharing knowledge, information, and best practices in areas such as energy consumption and alternative energy sources, air and water pollution, biodiversity, and innovative solutions. The ten Nordic ports that have signed the declaration are Copenhagen Malmö Port, Helsingborgs Hamn, Faxaports Island, Port of Aarhus, Port of Helsinki, Port of Esbjerg, Port of Gothenburg, Port of Stockholm, Port of Torshavn, and Port of Oslo.

» The Volvo Group, Scania, Stena Line, and the Port of Gothenburg have established a partnership called the Tranzero Initiative to accelerate the transition of the transportation industry towards fossil-free alternatives and significantly decrease carbon dioxide emissions associated with the largest Nordic port. The objective is to cut down climate-

damaging emissions by 70% by 2030 through a cross-border collaboration that incorporates various modes of transport. The primary emphasis is on building knowledge and implementing concrete measures to initiate the transformation and demonstrate to other industry players that it is feasible. The project partners have different roles; for instance, the Port of Gothenburg will provide the required infrastructure and access to alternative fossil-free fuels, such as electricity, HVO, biogas, and hydrogen, for heavy vehicles. The Volvo Group and Scania will offer their customers commercial heavy vehicles that facilitate fossil-free land transport in the long run, consistent with the port's aspirations. Additionally, Stena Line, for its part, guarantees that new fossil-free ships will be deployed on the Gothenburg-Fredrikshamn line before 2030 and is presently transitioning from concept to reality with the Stena Elektra, an electrically powered ship.

5 SDG integration framework for ports

In this section, recommendations, and a framework for SDG integration for the port sector are presented. The resources required by ports to work with sustainability and SDGs are also described here.

The framework provides key recommendations for ports to consider when developing or up-dating their port-specific and ambitious strategies for SDG integration. In recent years, the significance of integrating and reporting on SDGs has substantially increased. However, it is essential to avoid “SDG washing” as it may lead to reputational damage if scrutinized by policymakers or NGOs. Rodas-Martini (2020) highlights that a considerable number of companies in the maritime industry engage in “SDG washing” a practice similar to greenwashing, but with a focus on the SDGs. “SDG washing” refers to companies that utilize the SDGs as a form of “window dressing” to present a deceptively positive image of their environmental and social impact. It is thus essential that ports proactively incorporate the SDGs ambitions in their practices.

However, there are certain challenges associated with incorporating SDGs into an already established sustainability strategy and reporting framework. To overcome this obstacle, we recommend that each port creates a port-specific roadmap based on the insights from this report. The strategies presented here should offer a clear direction for integrating relevant SDGs while considering the port's resources and circumstances. To aid the ports in this endeavor, we propose a framework (Figure 10) that can serve as a guide to initiate and implement the SDG integration process. The framework outlines crucial recommendations for ports to consider when developing or revising their port-specific and ambitious roadmap for SDG integration.

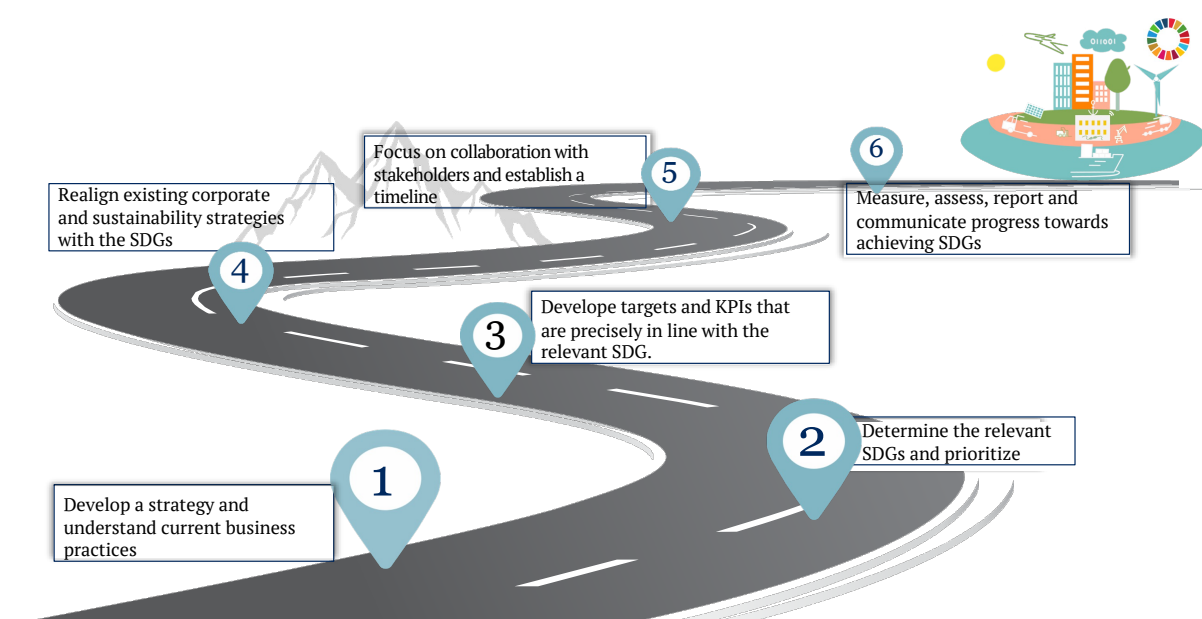


Figure 10: A framework for SDGs integration in ports (Source: RISE)

1. Develop a strategy and understand current business practices

According to our research, the process of integrating SDGs into a port's operations begins with developing or revising a strategy and vision. This strategy and vision should aim to create shared value by utilizing the port's position as a transportation, energy, and digital node to identify new opportunities. For this process to be successful, it is essential for top leadership within the organization to demonstrate a strong commitment to driving the SDG integration. The role of top leadership cannot be overstated in accelerating the pace of change. They can achieve this by setting clear aspirations, developing a strategy and vision, allocating investments, and acquiring the necessary infrastructure and capabilities to support the SDGs integration across the entire business.

Ports should consider:

- Establishing or revising the organizational strategy and enlist senior leadership to obtain support for the SDG program from the top of the organization.
- Conducting an extensive program to fully comprehend the port's current impacts on the SDGs, both positive and negative, as well as its likely future impacts based on the current business practices.
- Forming a cross-functional working group to evaluate the feasibility of the SDGs from a business perspective.
- Determining the potential advantages of addressing SDGs for relationships with crucial stakeholders such as investors, policymakers, regulators, customers, labor organizations, NGOs, and others.
- Identifying the risks to the business if the economic, social, and environmental problems related to different SDGs are left unresolved or if the company appears inactive on the SDGs.

The results of our study indicate that in order to incorporate sustainable practices and align with SDGs, ports may require a range of resources, such as strong partnerships with suppliers and customers, backing from port owners or management, as well as adequate financial resources. These findings were underscored by the data obtained from our port survey, as depicted in Figure 10.

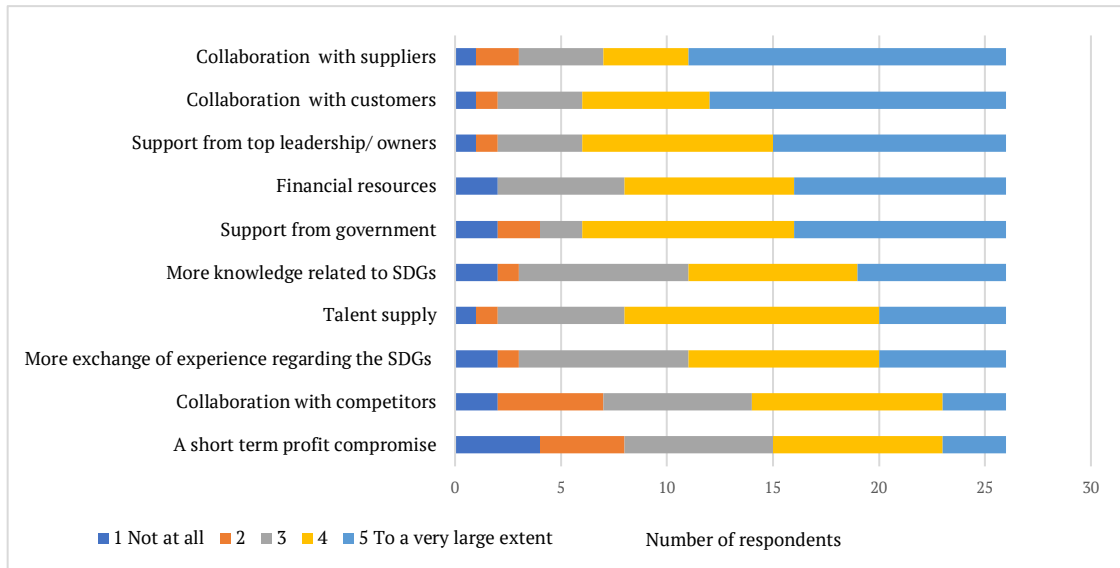


Figure 11: Resources required by ports to address SDGs (Source: RISE port survey)

2. Determine the relevant SDGs and prioritize

A vital aspect for ports to achieve successful SDG integration would be to discern the direct and indirect correlations of various SDGs with their business. Ports must adopt a strategic outlook and synchronize their corporate objectives with the pertinent SDGs to effectively engage with their customers, employees, and stakeholders, thereby creating a constructive influence.

Ports should consider:

- Exploring beyond the 17 umbrella SDGs and carefully evaluate the 169 underlying SDG targets that make sense for the port to concentrate on. This approach will add precision and focus to your SDG program.
- Identifying the SDGs that hold the most significant impact in terms of risks and opportunities over the long term, and where the port can contribute the most to the goals' progress.
- Determining the levers available to amplify the impact through changes to business models, procurement strategies, products, and services.
- Publicly committing to the SDGs to address relevant goals.
- Conducting a business case assessment and impact analysis as crucial groundwork to inform the port's prioritization of the SDGs. Prioritizing the goals without a clear understanding of the port's existing impact and the opportunities and risks they bring to the business is not logical.
- Choosing the most efficient and effective methodology to prioritize the SDGs, which may involve a combination of existing methods such as value chain mapping and materiality assessment, or a novel approach tailored to your port's specific requirements.

The SDGs offer a framework for ports to not only tackle societal and environmental challenges but also to create new revenue streams, stimulate business growth, and promote innovation in their services. By identifying novel business models or services that contribute to achieving the SDGs, ports can foster the development of more prosperous and resilient communities, expand, and create new markets, and grow their consumer base.

3. Determine targets and KPIs

The 169 targets that accompany the 17 SDGs are globally and universally applicable. Ports, as they identify their priority SDGs and develop their strategy, should establish their own specific targets and Key Performance Indicators (KPIs) to track and report their progress.

Ports should consider:

- Developing targets and KPIs that are precisely in line with the relevant SDG.
- Coordinating any current objectives and monitoring and assessment procedures with these fresh targets and KPIs.

4. Realign corporate and sustainability strategies with the SDGs

To ensure alignment with the SDGs, ports must first identify the most relevant goals and set targets and KPIs. This requires a reassessment of existing practices to determine how well they align with the SDGs. The SDGs can be integrated with existing sustainability and business goals. For instance, conducting a mapping exercise to understand which organizational goals match each SDG or target can be a good starting point. Subsequently, the relevant SDGs can be added to the sustainability or integrated report in relation to the already relevant goals.

Ports should consider:

- Reviewing the existing systems, documentation, policies, operations, and strategies to determine existing alignment with SDGs.
- Identifying and developing new services or revenue streams.
- Realigning existing sustainability corporate strategies to achieve both corporate goals and the SDGs.
- Modifying existing business models to integrate the SDGs.
- Exploring and creating new services or revenue streams that support the achievement of SDGs.

5. Collaborate and establish a timeline

Effective collaboration is essential for addressing the challenges highlighted by the SDGs as well as the opportunities presented by the SDG platform. Given the multifaceted nature of these challenges, it is unlikely that any single port can achieve significant progress on its own. Instead, ports should seek to collaborate with other stakeholders, both within and outside of their ecosystem, to achieve common goals. Such collaboration will enable the pooling of resources, knowledge, and expertise, and facilitate the sharing of best practices. Ultimately, this will lead to greater efficiency and effectiveness in achieving the SDGs.

Ports should consider following:

- Mapping out the stakeholders involved and their respective roles and responsibilities, identifying who should be responsible for what tasks.
- Collaborating with governmental bodies, urban centers, and non-governmental organizations to utilize corporate financial, technological, and human assets for advancing progress on SDGs.
- Developing a clear timeline and milestones for each of the priority targets and SDGs to ensure accountability.

6. Measure, assess, report, and communicate

All businesses, including ports, may face accountability for their activities and progress towards SDGs. Integrating the SDGs into their core business practices and reporting cycles can aid in creating visible shared value and focusing on sustainability.

Ports should consider:

- Measuring progress towards the SDGs by setting tangible steps and communicating progress transparently to stakeholders.
- Transparently communicating any shortcomings or obstacles encountered in achieving the SDGs.
- Aligning existing reporting and communication with the SDGs to establish a common language and discuss performance in the context of the SDGs' expectations.
- Developing systems to integrate the management of SDG issues into everyday business decision-making processes.

In conclusion, we acknowledge that achieving the SDGs may require a paradigm shift in thinking. The SDGs are intricate and interrelated, and their success hinges on forging new partnerships among businesses, governments, and civil society. Nonetheless, ports now have access to valuable tools that enable them to comprehend how they can holistically contribute to the SDGs. We are optimistic that the SDGs offer a blueprint for the port sector to engage with both internal and external stakeholders, fostering sustainable strategies that can revolutionize not only their business models, products, and services but also the communities in which they operate.

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