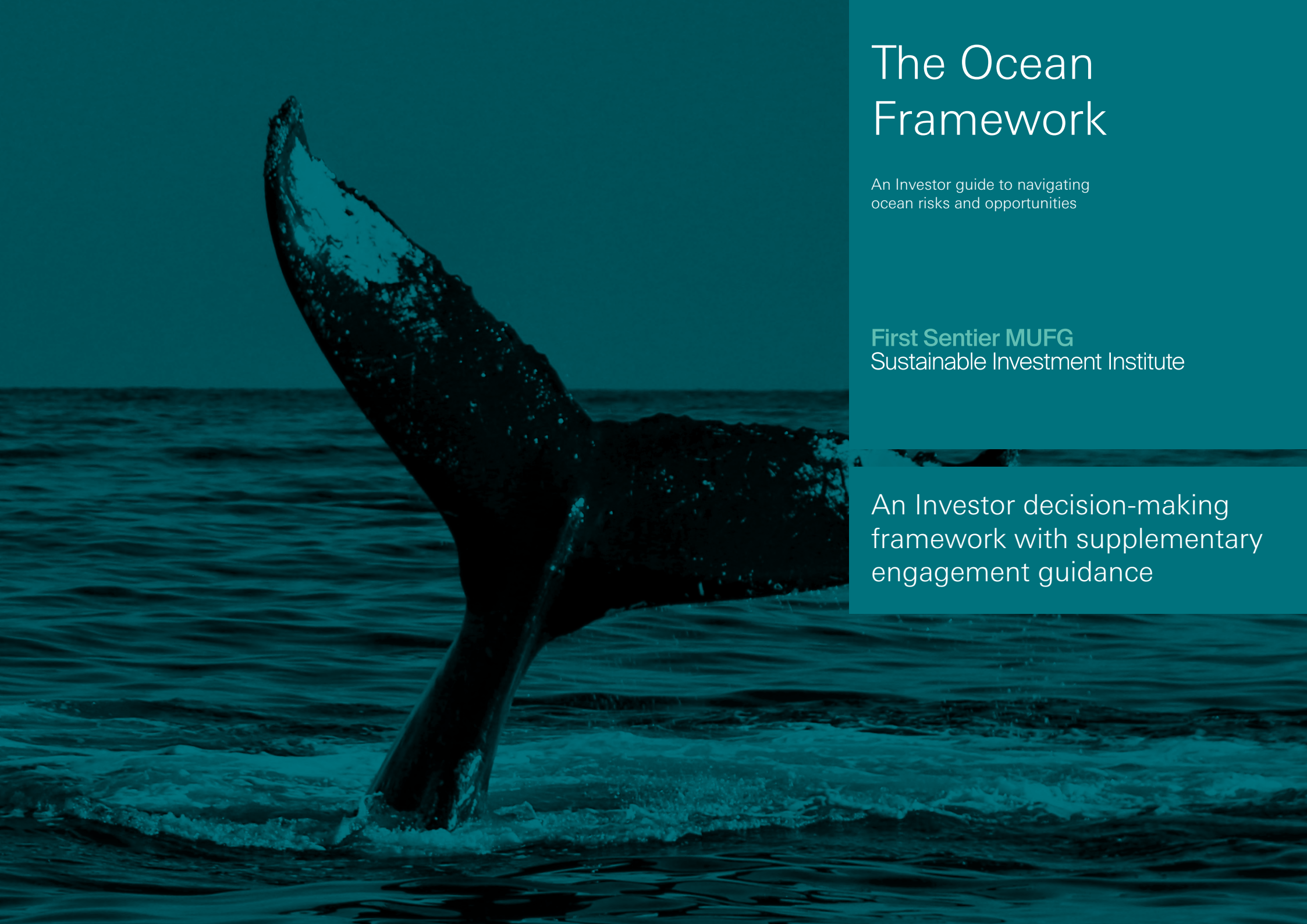

The Ocean Framework

An Investor guide to navigating ocean risks and opportunities

First Sentier MUFG
Sustainable Investment Institute

An Investor decision-making framework with supplementary engagement guidance

About the Institute

The First Sentier MUFG Sustainable Investment Institute (the Institute) provides research on topics that can advance sustainable investing. As investors, both First Sentier Group and MUFG recognise our collective responsibility to society and that investment decisions should be made with consideration to our communities both now and in the future.

The Institute commissions research on Environmental, Societal and Governance (ESG) issues, looking in detail at a specific topic from different viewpoints. The Institute recognises that investors are now looking in far greater depth, and with far greater focus, at issues relating to sustainability and sustainable investing. These issues are often complex and require deep analysis to break down the contributing factors. If as investors we can better understand these factors, we will be better placed to consider our investment decisions and use our influence to drive positive change for the benefit of the environment and society.

The Institute is jointly supported by First Sentier Group (FSG) and Mitsubishi UFJ Trust and Banking Corporation, a consolidated subsidiary of MUFG. Representatives of both organisations will provide input to the activities of the Institute.

An Academic Advisory Board advises the Institute on sustainability and sustainable investment research initiatives. The Academic Advisory Board comprises prominent leaders from academia, industry and nongovernmental organisations in the fields of Responsible Investment, climate science and related ESG endeavours. The Board provides independent oversight to ensure that research output meets the highest standards of academic rigour.

Contact

institute@firstsentier.com
www.firstsentier-mufg-sustainability.com
www.mufg-firstsentier-sustainability.jp

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About Chronos Sustainability

CHRONOS
INTELLIGENT SUSTAINABILITY

This report was produced by Chronos Sustainability Ltd for the First Sentier Investors MUFG Sustainable Investment Institute. Chronos Sustainability was established in 2017 with the objective of delivering transformative, systemic change in the social and environmental performance of key industry sectors through expert analysis of complex systems and effective multi-stakeholder partnerships. Chronos works extensively with non-profits, corporates, global investors and global investor networks to build their understanding of the investment implications of sustainability related issues, developing tools and strategies to enable them to build sustainability into their investment research and engagement. For more information visit www.chronossustainability.com.

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Part 3: The Ocean Framework

Recognising the increasing importance of ocean health and sustainability to long-term financial performance, Part 3 of this report introduces The Ocean Framework – a high-level, sector-agnostic framework for analysing the broad spectrum of ocean-related themes within their investment portfolios.

The framework, which includes detailed user guidance and highlights available tools and resources, is designed to support investors wanting to understand and manage relevant ocean sustainability issues (and potential risks) within their portfolios. The Ocean Framework have been intentionally drafted to align with existing investor frameworks and tools, particularly TNFD, Science Based Targets Network (SBTN), Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE), and Nature Action 100 (NA100) and guides the user through a series of seven steps to systematically identify, assess and prioritise key sectors, companies and issues that are most exposed to ocean-related risks and opportunities.

Using the guidance provided, investors will be able to screen for exposure to ocean-linked sectors and companies, pinpoint geographies most at risk, and prioritise companies exhibiting significant impacts and dependencies on ocean ecosystems. The framework also supports the evaluation of how companies are managing ocean-related risks, and highlights the essential data, indicators and tools required to carry out robust assessments.

By following this process, investors can better understand their portfolios' relationship with the ocean, enabling more informed decisions to drive positive change and mitigate risks in a rapidly evolving environmental landscape.

3.1 Description of the process

This framework sets out a process for investors to identify key ocean-related risks and opportunities in their portfolio, enabling them to prioritise particular sectors and/or companies.

Identifying risks and opportunities is an iterative process and will require returning to some steps to build and scale the assessment or to introduce new data as it becomes available.

The framework includes 7 steps, which entail an increasingly granular assessment of ocean-related risks and opportunities within portfolios (see Figure X.1). Each step in the process guides investors to answer the following questions:

Step 1: Objective setting

To begin, investors need to determine the core objectives of the assessment which may range from gaining a high-level understanding of portfolio-level ocean risks and opportunities to selecting target companies for in-depth engagement. The objective then determines the scope of the assessment.

Step 2: Assessing ocean exposure

Investors can then examine their direct and indirect exposure to ocean sectors and commodities, starting with a focus on sectors that have a physical presence on the ocean and/or involve high risk material commodities.

Step 3: Identifying sector-level impacts and dependencies

Once key sectors have been identified, investors can create a heatmap of the important impacts and dependencies across these sectors in order to identify the sectors with the greatest exposure to ocean-related impacts and dependencies.

Step 4: Screening and company-level prioritisation

Once the sector scope has been narrowed, investors can then identify the key companies in their holdings that are in each priority sector. This could be decided through size of holding as well as companies with the greatest potential exposure to ocean impacts and dependencies.

Step 5: Determining interface with sensitive locations

If location-specific data are available, investors can map the intersections between companies' operating locations (e.g. shipping routes, fishing ground, etc.) and areas of high biodiversity or sensitive locations.

Step 6: Assessing company impacts and dependencies

Based on this mapping and an assessment of the company's management of ocean risks, investors can identify the key impacts and dependencies that are relevant to a company's operations. Investors can also assess the extent to which companies have governance, risk assessment and management systems in place to address these potential risks.

Step 7: Understanding risks and opportunities

Finally, based on an understanding of sector, company and location-level impacts and dependencies, investors can determine the material ocean-related risks and opportunities which they may be exposed to (e.g. policy, reputational and physical risks).

It is important to note that this framework is intentionally designed for use by a broad range of investors, including investors with large, diversified portfolios with multiple asset classes and extending to those with smaller portfolios and assets limited to specific asset classes. Therefore, for certain investors some steps may be more relevant than others depending on the capacity for assessment, availability of data and the size of portfolio. Investors' ability to assess and act on ocean-related risks and opportunities will also depend on practical issues such as the availability of data/information, the investors' objectives and timeframes and the relationship (the form of investment, the scale of the investment, the access to the company) between the investor and the company.

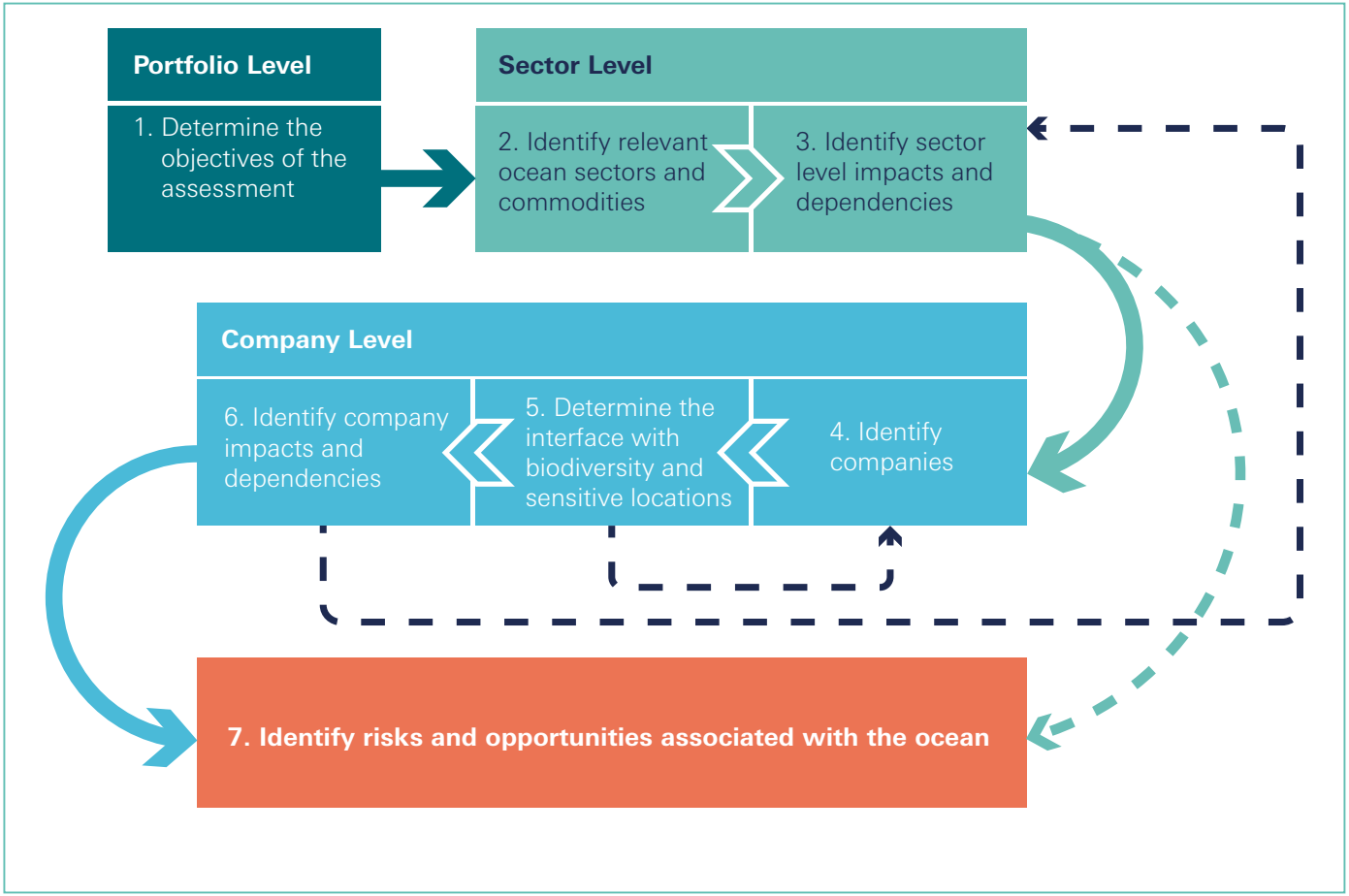


Figure X.1: *High-level framework for assessing ocean-related risks and opportunities. Note: Dotted arrows reflect the iterative nature of the assessment process, indicating areas when investors may need to revisit earlier stages of the process and evolve their approach as data availability improves. Image Source: Chronos Sustainability Ltd*

Applying the Ocean Framework to Support Positive Outcomes for Ocean Health

While this framework is primarily designed to support the assessment of financially material ocean-related risks and opportunities, it can also be used by investors who also wish to achieve positive outcomes for ocean health, alongside financial returns.

These investors should first define the ocean outcomes they want to contribute to, their objectives and capacities, and then use Steps 1-7 of the Ocean Framework to identify the sectors, geographies, companies and assets where capital allocation, stewardship or engagement could most effectively support those outcomes.

In line with the Five Dimensions of Impact, these investors might use the following questions to help shape their assessment priorities:

- What specific ocean outcomes are we seeking to achieve (e.g. recovery of fish stocks, reduction in marine pollution, protection or restoration of marine habitats)?
- Where are the most credible leverage points for change across value chains, sectors or regions (e.g. capital provision, governance reform, technology deployment, market access)?
- Who or what will benefit from the outcome (e.g. threatened species, coastal communities, threatened habitats)?
- What is the scale of impact intended to be secured (e.g. measurable threat reduction, increase in population numbers, area of restored habitat)
- How can investment, engagement or policy support contribute to these outcomes in a way that is additional, intentional and measurable and avoids unintentional consequences or negative trade-offs?
- What are the key drivers and structural barriers currently preventing these outcomes (e.g. what are the risks that impact is not achieved)?

Once these questions are clarified, these investors can proceed through the existing seven steps of the Ocean Framework to:

- identify priority sectors and companies (Steps 2–4),
- assess alignment with sensitive ecosystems and locations (Step 5),
- evaluate company-level impacts, dependencies and management responses (Step 6), and
- assess how investment activity may contribute positively to both social and environmental impact outcomes and long-term value creation (Step 7).

To support impact measurement processes, investors may also draw on established impact measurement resources such as GIIN's IRIS+ Catalog of Metrics, which provides standardised metrics relevant to ocean-related themes including sustainable fisheries, pollution reduction, ecosystem protection and livelihoods. These indicators can be used alongside the data sources referenced in this framework to define targets, track outcomes and communicate impact performance.

3.2 Assessing exposure to ocean-related risks and opportunities

Step 1: Determine the objectives of the risk assessment

To begin their assessment of ocean-related risks and opportunities, investors should first decide on the key objectives of the assessment. This can help to determine the level of detail and granularity that investors should apply to the assessment. For instance, investors with significant holdings in ocean-related sectors may choose to undertake targeted engagement with key companies which would involve undertaking steps 1 to 7. Meanwhile, investors with large, diversified portfolios may opt to only do a sector level assessment (i.e. skipping from step 3 to step 7) to understand their sector-level risks and opportunities.

Core Question: What is the core objective of the risk assessment?

Guidance questions:

1. What is the purpose of conducting this assessment (e.g. understanding investment risk, client communication)?
2. Is this a pilot assessment or a comprehensive assessment?
3. Which asset classes do I want to focus on?
4. What internal capacities and resources do I have to conduct this risk assessment? How much time do I have?
5. What pre-existing knowledge and expertise do I have on ocean-related issues?
6. What data do I have or can I access?

Step 2: Identify relevant ocean sectors and commodities

Once the core objectives of the assessment have been determined, investors can identify which sectors are likely to have significant ocean-related impacts and dependencies and are relevant to the objectives set. This may depend on:

1. **Direct exposure:** these are sectors that with have a physical presence in the ocean.
2. **Indirect exposure:** those in the upstream or downstream supply chain that rely on ocean-related products or services (e.g. food retailers selling seafood, consumer goods companies using shipping services).

As a starting point, investors are likely to prioritise industries with direct exposure to the ocean (as seen in Table X.1). As their approach develops and data becomes more readily available, investors may choose to extend the assessment to sectors with indirect exposure.

Once relevant sectors and commodities have been identified, investors can determine their holdings across each of these sectors by identifying companies that solely operate in this sector as well as ones where key business lines are in one or more of these sectors. This allows investors to identify which sectors they have the greatest exposure to and set priorities for Step 3.

Industry	Description
Transport (shipping)	Global movement of goods and people via commercial maritime vessels (e.g. container shipping, bulk cargo transport).
Fisheries	Harvesting wild marine species for food, trade, and livelihoods worldwide.
Aquaculture	Farming aquatic organisms using controlled marine cultivation systems.
Marine & Coastal Tourism	Recreation and travel activities centred on oceans, coasts, and beaches (e.g. cruise tourism, coastal hotels).
Marine renewables	Ocean-based energy from waves, tides, offshore wind, and thermal gradients (e.g. offshore wind farms, wave energy projects).
Port infrastructure	Facilities enabling vessel berthing, cargo handling, logistics, and maritime trade.
Telecommunications	Subsea cable network transmitting global digital data and communications across ocean basins.
Blue biotechnology	Ocean organisms leveraged to develop industrial, environmental, biochemical products.
Marine pharmaceuticals	Discovery of ocean-derived compounds for developing medical treatments.

Table X.1: *Industries with direct exposures to the ocean*

Note: An alternative approach to identifying the scope for the assessment is to focus on specific high-risk commodities. SBTN[o] identifies eight commodities that have a potential high impact on either marine pollution or marine ecosystem use (Table X.2). Investors may choose to (See Part 2) use this list as a basis for selecting relevant industries by selecting sectors that have a high exposure to these commodities (either in their direct operations or in their value chain). Assessing this requires consistent turnover data from relevant sectors or companies and is therefore likely to be harder to assess.

Commodity	Relevant Material Pressures
Oil (crude)/petroleum	Marine ecosystem change; marine pollution
Platinum	Marine pollution
Sand (construction-grade)	Marine ecosystem use change
Wild capture seafood (freshwater)	Marine pollution
Wild capture seafood (saltwater)	Marine ecosystem change; marine pollution
Nitrogen fertilizer	Marine pollution
Gasoline	Marine pollution
Farmed seafood/ aquaculture	Marine ecosystem conversion; marine pollution

Table X.2: *SBTN high-risk commodity list*

o. SBTN (2024). High Impact Commodity List.

Core Question: Which sectors or commodities have the most significant exposure to ocean activities?

Guidance questions:

1. Which sectors in your portfolio have a direct exposure to the ocean (i.e. are included in the list in Table X.1? What % of my portfolio is in these sectors?

2. Are there any companies or sectors in your portfolio that have a high exposure to high-risk material commodities (see Table X.2)?

Step 3: Develop sector level heatmap of impacts and dependencies

Once relevant sectors have been identified, investors can begin to use Table X.3 below to determine the key ocean-related impacts and Table X.4 to assess relevant sectoral dependencies (see Part 2 for a detailed overview of ocean-related impacts and dependencies). Determining impacts and dependencies will involve examining the key ocean ecosystem services that the sector depends on (e.g. climate regulation, coastal protection, food provision) as well as the impacts the sector may have on the ocean (e.g. marine ecosystem use, marine pollution, etc.).

Based on these factors, investors can develop a heatmap which categorises sectors into 'low', 'medium' or 'high' impact which can then be overlayed with the information about the portfolio's exposure to key sectors gathered in step 2.

The heatmap in Table X.3 and X.4 is based on ENCORE materiality ratings. While ENCORE provides a good starting point for sector analysis, data categories are generally not granular enough to determine ocean-related sectors, impacts and dependencies specifically. For example, "Wired telecommunications" includes both land-based and ocean-based telecommunications. Therefore, investors should consider supplementing these ratings with other, ocean-specific datasets, particularly for sectors which they are highly exposed to. ENCORE also provides more information on the methodology used to determine materiality ratings. ENCORE materiality ratings are also likely to evolve as new datasets emerge.

Additionally, it is important to note that ENCORE uses the ISIC Group/Class level classification. Therefore, investors may wish to create a crosswalk to calibrate their sector classifications to line up with data sets and tools (e.g. NACE-GICS – ISIC). UNEP FI have published a sector mapping tool that can facilitate this process. Activity classifications will often not align perfectly to one another (e.g. marine renewables is captured by 'ocean energy production' which does not account for offshore wind).

Table X.3: *Heatmap exercise of impacts of direct ocean sectors (based on ENCORE)*

Sector	ISIC Group / Class Classification	Area of seabed use[p]	Other biotic resource extraction (e.g. fish)	Emissions of toxic pollutants to water and soil[q]	Emissions of nutrient pollutants to water and soil	Generation and release of solid waste	Disturbances (e.g. noise, light)	GHG emissions	Emissions of non-GHG air pollutants	Volume of water use[r]	Introduction of invasive species
1. Transport (shipping & cruise-liners)	Sea and coastal water transport	Medium	N/A	Low	Low	Medium	Very high	High	High	Low	Very high
2. Fisheries	Fishing	High[s]	High	Medium	N/A	High	High	Medium[t]	Medium	Medium	Medium
3. Aquaculture	Aquaculture	High	Very high	High	High	High	Medium	Medium	N/A	Medium	High
4a. Tourism (recreation)	Sports activities[u]	Low	Very low	Low	N/A	Low	Medium	Low	Very low	Low	N/A
4b. Tourism (accommodation)	Short term accommodation activities[v]	N/A	N/A	Low	Low	Medium	Low	Low	N/A	Low	Medium
5. Marine renewables	Ocean energy production[w]	Medium	N/A	Very low	N/A	Low	Medium	Very low	Very low	Very low	N/A
6. Port infrastructure	Service activities incidental to water transportation[x]	Medium	N/A	Low	Medium	Low	Very low	Medium	Low	Low	N/A[y]
7. Telecommunication	Wired telecommunications	Medium	N/A	Low	N/A	Very low	Low	Low	Very low	Very low	N/A
8. Blue biotechnology[z]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9. Marine pharmaceuticals	Manufacture of pharmaceuticals, medicinal chemical and botanical products	N/A	N/A	Medium	Medium	Medium	Medium	Medium	Medium	Medium	N/A

p. Area of seabed use considers disturbances to hydrodynamic features and seabed habitats. Given the lack of available quantitative indicators, this impact is assessed using a qualitative methodology.
q. While ENCORE data on 'emissions of pollutants to water and soil' accounts for emissions to seawater alongside freshwater, materiality ratings for ocean-related industry tend to be low given that the most material impacts to water and soil pollution occur through land-based activities and materiality ratings are determined relative to all economic sectors.
r. ENCORE data for volume of water use mainly considers freshwater use, rather than seawater use.
s. Some fishing activities occupy or interact with the seabed (e.g. beam trawling, dredging). This can significantly damage seabed habitats and morphologies such as reef formations.
t. Emissions mainly arise from combustion engines on fishing vessels and refrigeration.
u. 'Sports activities' is a broad sector which is not limited to water-related sports and therefore may fail to capture relevant ocean-related impacts.
v. Accommodation activities encompass a broad range of tourism types beyond coastal tourism. Therefore, the impacts assessed by ENCORE extend beyond ocean-related impacts and may not fully capture ocean-related impacts. For instance, coastal accommodation can use high amounts of water and have significant noise and light pollution impacts which affect marine biodiversity.
w. Ocean energy production primarily centres of tidal and wave energy technologies and therefore does not capture impacts from ocean-based hydropower and offshore wind energy.
x. It is important to note that this ISIC classification focuses on the operation of port infrastructure rather than the construction of ports or maintenance of port access. For materiality ratings related to the construction of ports, refer to ISIC sector 'Construction of other civil engineering projects'.
y. While ports are often a key site for the introduction of alien invasive species, these impacts are captured by the 'sea and coastal water transport' sector rather than 'service activities incidental to water transportation'.
z. Note that blue biotechnology is not captured as a sector classification in the ENCORE dataset. However, there is notable overlap between blue biotechnology and marine pharmaceutical sectors so investors may opt to look to the row below as a proxy for impacts and dependencies.

Table X.4: *Heatmap exercise of select[a.1] ocean-related dependencies of direct ocean sectors (based on ENCORE)*

Sector	ISIC Group Classification*	Cultural Services			Provisioning Services			Regulating and maintenance services			
		Recreation-related services	Visual amenity services	Education, scientific and research services	Water supply	Biomass provisioning	Genetic material	Global climate regulation	Flood mitigation	Water purification	Soil and sediment retention
1. Transport (shipping & cruise-liners)	Sea and coastal water transport	Very high	Very high	N/A	Low	N/A	N/A	Medium	High	Medium	Low
2. Fisheries	Fishing	N/A	N/A	Very high	High	Very high	High	Very high	Medium	Very high	Very high
3. Aquaculture	Aquaculture	N/A	N/A	N/A	High	Very high	Medium[a.2]	Medium	High	Very high	Very high
4a. Tourism (recreation)	Sports activities	Very high	Very high	N/A	Low	Low	N/A	Medium	Medium	Very low	Very low
4b. Tourism (accommodation)	Short term accommodation activities	Very high	Very high	Very high	Low	N/A	N/A	Very low[a.3]	Very low	Very high	Low
5. Marine renewables	Ocean energy production	N/A	N/A	N/A	Medium	N/A	N/A	Medium	High	N/A	Medium
6. Port infrastructure	Service activities incidental to water transportation	N/A	N/A	N/A	Low	N/A	N/A	Very low	High	N/A	Low
7. Telecommunication	Wired telecommunications	N/A	N/A	N/A	Very low	N/A	N/A	Very low	Medium	N/A	Low
8. Blue biotechnology	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9. Marine pharmaceuticals	Manufacture of pharmaceuticals, medicinal chemical and botanical products	N/A	N/A	Very high	High	N/A	High	Very low	Medium	Very high	Medium

a.1. Note that ENCORE covers a wider range of nature-related dependencies. For the purpose of this table, a set of ocean-relevant dependencies were selected across the three main dependency categories.
a.2. Aquaculture and fishing have different ratings with regard to genetic material dependencies because while fishing directly depends on the provision of (a wider variety of) genetic materials to maintain fish stocks, aquaculture depends on the effective management of (fewer) genetic resources for framed aquatic plants and fish.
a.3. It is important to note that ENCORE considers the aggregated dependencies for the entire sector of short-term accommodation activities (i.e. hotels). Certain types of activities (e.g. coastal hotels) are likely to be more dependent on global climate regulation and flood mitigation services than the 'very low' materiality rating suggests.

To further build on this exercise, several open-access tools can support the classification of impacts and dependencies:

- ENCORE provides materiality rating for over 80 sub-sectors based on ecosystem services and pressures.
- WWF's Biodiversity Risk Filter provides a high-level mapping of the impacts and dependencies of key sectors, several of which relate directly to ocean biodiversity.

Investors should then overlay the heatmaps with their assessment of their holdings across each of the sectors. The outcome of this exercise should allow for investors to determine:

A. The most material impacts and dependencies across their entire portfolio (i.e. by identifying common impacts and dependencies across multiple sectors); and

B. The sectors which have the highest overall impacts and dependencies.

At this stage, investors may choose to use this heatmap as a basis for having a high-level understanding of their portfolio's exposure to sector-level risks and opportunities.

Alternatively, investors may choose to use this exercise to form the basis for further in-depth analysis and engagement in priority sectors. Depending on resources and capacity, investors may choose to start with an analysis of a limited number of sectors with the view of broadening this scope in the future. Investors can choose priority sectors based on where their largest holdings are as well as on whether these sectors have significant impacts and dependencies. Investors may also consider targeting priority sectors in particular asset classes where they may hold greater influence over the asset (as is often the case for infrastructure or private equity assets).

Core Questions: Which sectors in my portfolio have the greatest potential exposure to ocean-related impact and dependencies?

Guidance questions:

1. How material are ocean-related impacts and dependencies on the sectors in my portfolio?
2. Which sectors have the most significant impacts and dependencies? How significant are my holdings in these sectors?

Step 4: Identify priority companies

To begin further analysis within key sectors, investors should identify priority companies to assess for their ocean-related risks and opportunities. A good starting point for this is likely to be the companies where investors have the largest holdings across the key sectors identified in step 3[a.4]. Prioritisation may also be informed by (a) some high-level measures of exposure to impacts and dependencies and (b) a high-level assessment of the quality of management. Specific indicators for company-level data on impacts and dependencies can be obtained from data service providers (see examples in Table X.5) or obtained from company disclosures and reporting. Where data is lacking, investors can choose to engage with companies to request more information and data. In relation to quality of management, the following are useful initial questions (where data is likely to be available through data providers):

- **Does the company publish a biodiversity policy / action plan?**[a.5] A lack of a biodiversity policy or plan may indicate a lack of acknowledgement of nature-related risks as a business issue.
- **Has the company been involved in controversies or incidents related to the ocean?** Controversy screenings can provide an indication of whether a company has failed to adequately manage ocean-related risks.
- **Does the company publish ocean-specific metrics or data?** An absence of such reporting may suggest that ocean-related risks and opportunities are not on the company's agenda. If data are available – for example, "the extent of seafood sustainable certification" or "the proportion of locations covered by sustainable fisheries and aquaculture programmes", these may provide an indication of how well ocean-related risks and opportunities are being managed.

a.4. Jouffray et al. (2025) identify the 10 largest firms across 8 key ocean sectors. Cross-checking holdings against this list of firms could provide a starting point for investors to prioritise companies.

a.5. Biodiversity policies are likely to focus on ocean-related risks and opportunities for companies which operate in key ocean sectors.

Investors who have the capacity to undertake more detailed fundamental analysis (e.g. private equity or infrastructure investors) may choose to prioritise companies based on a broader set of ocean-related indicators. Depending on the relevant companies, these may include specific location data as well as data on impact drivers, state of nature, ecosystem services and the company's response to ocean-related risks and opportunities (Table X.5). UNEP FI's Turning the Tide Guidance Annex includes indicators related to ocean sectors, setting out recommendations for investors to 'challenge' companies based on specific indicator thresholds.

To decide on which metrics would be most relevant, investors should consider the most material impacts and dependencies identified in the sector-level heatmapping exercise.

Investors are likely to source most of this data directly from company reporting, either directly or through ESG data providers. As many companies are in the early stages of reporting on ocean metrics, investors may need to engage with priority companies to improve disclosure (see Part 4 on Engagement). Additionally, some investors may choose to engage with ESG data providers to improve the availability of ocean-related metrics. For example, in 2024, a group of five asset managers issued a joint statement calling for ESG data providers to enhance their data offerings on ocean-related risks and opportunities at the project and issuer level[a.6].

Metrics category	Example indicators
Location prioritisation	• Operations inside or adjacent to protected area • Endangered species recorded near operating sites
Impact drivers	• Wastewater volume discharged • Containers lost at sea • Volume of wild-caught fish by species • Accidental marine mammal or bird mortality • Vessel spill incidents • Fish escape incidents • Percentage of habitat disturbed or degraded • Area converted for aquaculture • Volume and species of fish, shellfish, invertebrates and seaweed caught or harvested
State of nature	• Marine ecosystem extent and condition • Water quality
Ecosystem services	• Marine tourism value (e.g. yachting, swimming, number of people participating in ocean activities, expenditures) • Coastal protection (e.g. structure of habitats and how that interlinks with reducing wave energy and wind damage) • Volume and annual stock of carbon sequestered by marine habitats • Cultural services (e.g. research, educational values)
Response	• Number of biodiversity action plans • Number or percentage volume of products that are certified to leading sustainability standards

Table X.5: *Examples of different indicators for measuring ocean-related issues (TNFD, 2025)*

Beyond data from company reporting, investors can supplement and verify reported data using data from several sources. For example:

- HUB Ocean is an evolving database of ocean-related data which includes corporate reporting as well as country and sector-level reporting.
- World Benchmarking Alliance plans to publish an Ocean Benchmark in 2026 which will examine how 125 leading companies contribute to the sustainable management of oceans and coastal ecosystems.

This initial data gathering exercise can help to inform investors on the extent to which companies are reporting on and addressing their ocean-related risks and opportunities.

Core Question: What are the priority companies in my portfolio?

Guidance questions:

1. Which companies are the largest holdings in the priority sectors of my portfolio?
2. What widely available data points are available to allow me to prioritise companies?
3. What other data sources can I use to supplement or verify the reported data?

a.6. BNP Paribas Asset Management (2024). Statement from the private financial sector to ESG data providers: The urgent need for better ocean-related data to make informed investment decisions. https://www.bnpparibas-am.com/en/sustainable/statement-from-the-private-financial-sector-to-esg-data-providers/

Step 5: Determine the interface with biodiversity and sensitive locations

A further step that investors can take to understanding asset-level impacts and dependencies, risks and opportunities, is to examine the interface of specific operations with locations of high biodiversity or sensitivity. This step is particularly relevant to investors who invest in a limited number of ocean-related assets or companies (i.e. infrastructure or private equity investors). Investors with larger, diversified portfolios may opt to skip this step. To conduct this exercise, investors can begin by identifying the key operating locations of priority companies. These locations will vary depending on the sector of the company. For example: Shipping and cruise line companies may publish data on their key routes or the ports out of which they operate.

- Aquaculture companies may publish precise, farm-level location data though this is often not the case. In some countries, aquaculture companies must obtain licences to operate in specific locations; this information may be made publicly accessible on regulatory websites.
- Fishing companies may publish information on their licenses to fish in certain locations. Alternatively, Global Fishing Watch tracks the locations of specific fishing vessels.

This data can be overlayed with data on sensitive locations or areas of high biodiversity (Figure). Several public data tools can be used to facilitate this exercise:

- Ocean+ Data Viewer provides a mapping of ocean ecosystems and protected areas.
- Conservation International's Ocean Health Index provides a composite indicator of ocean health across over 220 exclusive economic zones (EEZs) globally.
- Marine Protected Atlas contains a dataset of officially designated parks, reserves and other conservation areas.
- Particularly Sensitive Sea Areas is a list of designated areas chosen by the International Maritime Organisation.
- FAO Database for Vulnerable Marine Ecosystems provides a global inventory of fisheries measures adopted in areas beyond national jurisdiction to prevent adverse impacts of bottom fisheries on vulnerable marine ecosystems.

Core Question: Do companies / assets in my portfolio operate in areas of high biodiversity and/or sensitivity?

Guidance questions:

1. Where are the key operating locations of the priority companies?
2. Where are marine protected areas and other sensitive locations located?
3. Are these operating locations in (or close to) sensitive areas and/or areas of high ecosystem integrity or a decline in ecosystem integrity?

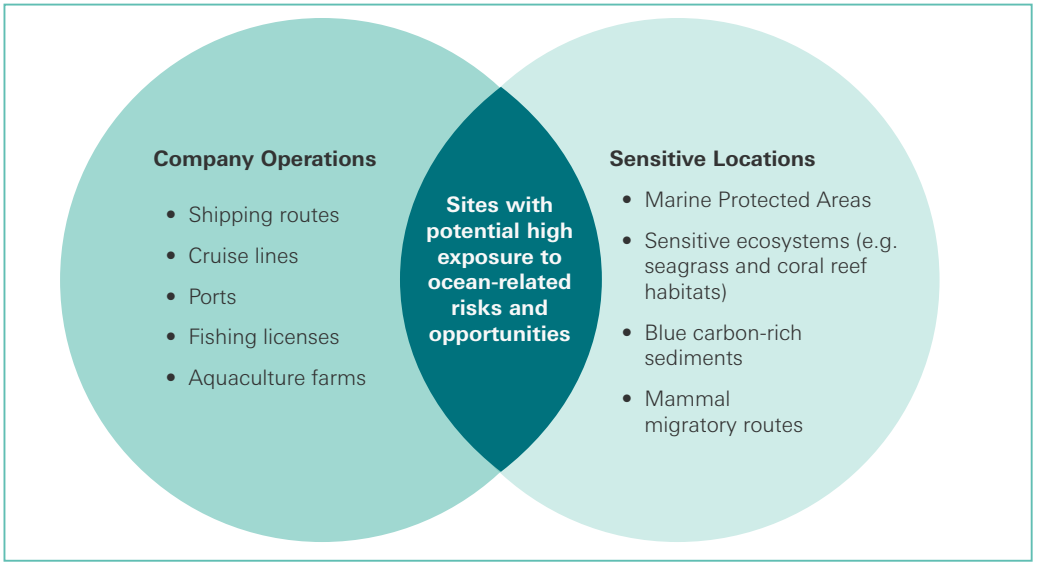


Figure X.2: *Examples of the overlap between operating locations and sensitive locations. Image Source: Chronos Sustainability.*

Step 6: Individual company impacts and dependencies

Building on the sector-level heat-map exercise undertaken in Step 3, as well as the company-level analysis undertaken in Steps 4 and 5, investors can begin to identify an individual company's impacts and dependencies on the ocean.

The sector-level heatmap exercise can provide an important basis for understanding a company's direct impacts and dependencies. Ideally, investors can supplement this heatmap with information on company location (Step 5) to identify the most relevant impacts and dependencies which require further attention. Investors may then choose to supplement this with an analysis of the company's potential upstream and downstream impacts and dependencies. For example, a shipping company is likely to have indirect impacts through shipbuilding, warehousing and cargo handling activities.

Once relevant impacts and dependencies have been identified, investors can examine the extent to which the company is equipped to manage these by examining the company's governance, risk assessment, targets and implementation. Useful resources to support this exercise include:

- UNEP FI's Turning the Tide Guidance on how to avoid and mitigate environmental and social risks and impacts when allocating capital to companies in the blue economy.
- Nature Action 100 _ can provide a useful tool for investors to assess a company's management of ocean impacts and dependencies (Table X.6).

In assessing companies, investors may look for companies to conduct an impacts and dependencies assessment (Indicator 2), establish targets aligned with the SBTN Ocean targets (Indicator 3) and develop a clear ocean-related policy (Indicator 4).

Indicator	Sub-indicators
1. Ambition	1.1 The company has a commitment to avoid and reduce key drivers of nature loss and/or to restore and regenerate marine and coastal ecosystems throughout its value chain.
2. Assessment	2.1. The company publicly discloses the location of all assets and activities in its direct operations and upstream and downstream value chain that are situated in or adjacent to ecologically sensitive marine locations. 2.2. The company assesses and publicly discloses its material dependencies and impacts on the ocean within its own operations and throughout its value chain. 2.3. The company assesses and publicly discloses the risks and opportunities stemming from material dependencies and impacts on the ocean.
3. Targets	3.1. The company has comprehensive and measurable targets to avoid and reduce key drivers of nature loss and to restore and regenerate marine ecosystems. 3.2. The company's targets pertain to its material ocean-related impacts and dependencies, are validated by an impartial and independent third party, and are designed in an integrated manner that takes account of the company's climate targets. 3.3. The company publicly discloses its progress toward its targets on an annual basis.
4. Implementation	4.1. The company publicly discloses a strategy for achieving its ocean targets. 4.2. The company respects and upholds the rights of Indigenous Peoples and local communities. 4.3. The company's fiscal policies are aligned with achievement of its ocean-related targets.
5. Governance	5.1. The company board has clear oversight over its ocean-related dependencies, impacts, risks and opportunities, including implications for and engagement with Indigenous Peoples and local communities. 5.2. The board has sufficient expertise to oversee issues pertaining to ocean-related dependencies, impacts, risks, and opportunities, including how the company's actions on nature impact Indigenous Peoples and local communities.
6. Engagement	6.1. The company engages with its value chain to help achieve its ocean targets. 6.2. The company publicly discloses direct lobbying activities and any expectations for associations that it is a member of which are not aligned with The Biodiversity Plan. 6.3. The company identifies and engages with key stakeholders on ocean-related issues and incorporates the outcomes of these activities in its strategy and operations. 6.4. The company has a grievance and redress mechanism through which individuals and communities may raise complaints or concerns that they have been adversely impacted by the company's actions pertaining to the ocean.

Table X.6: *Nature Action 100 Benchmark indicators adapted to ocean context.*

Core Question: What are the key ocean-related impacts and dependencies of my priority companies?

Guidance questions:

1. Which sector-level impacts and dependencies are most relevant to my priority companies (based on the company's key activities and locations)?
2. How is the company managing these impacts and dependencies through its risk assessments, targets, implementation, governance and engagement processes (see examples in Table X.6)?

Step 7: Identify risks and opportunities associated with the ocean

Once impacts and dependencies have been identified, investors can determine the specific risks and opportunities which may arise from these (See Table X.7). Depending on the objectives of the assessment, investors may do this on a sector level (after Step 3), on a company level (after Step 6) or on a specific asset level (combining Steps 5 and 6).

Ocean impacts and dependencies can translate into financial risk across various channels (Figure X.3), as detailed in Part 2.

To assess risks and opportunities, investors may need to conduct additional analysis, which may be done in-house or through third party providers. For example:

- Mapping relevant regulations that apply to the company's operating geographies can enable an assessment of policy risks.
- Climate and weather modelling of flood and storm risks in particular locations can help to identify acute physical risks.
- An understanding of relevant environmental laws in a company's operating jurisdictions can help to uncover potential liabilities and litigation risks.

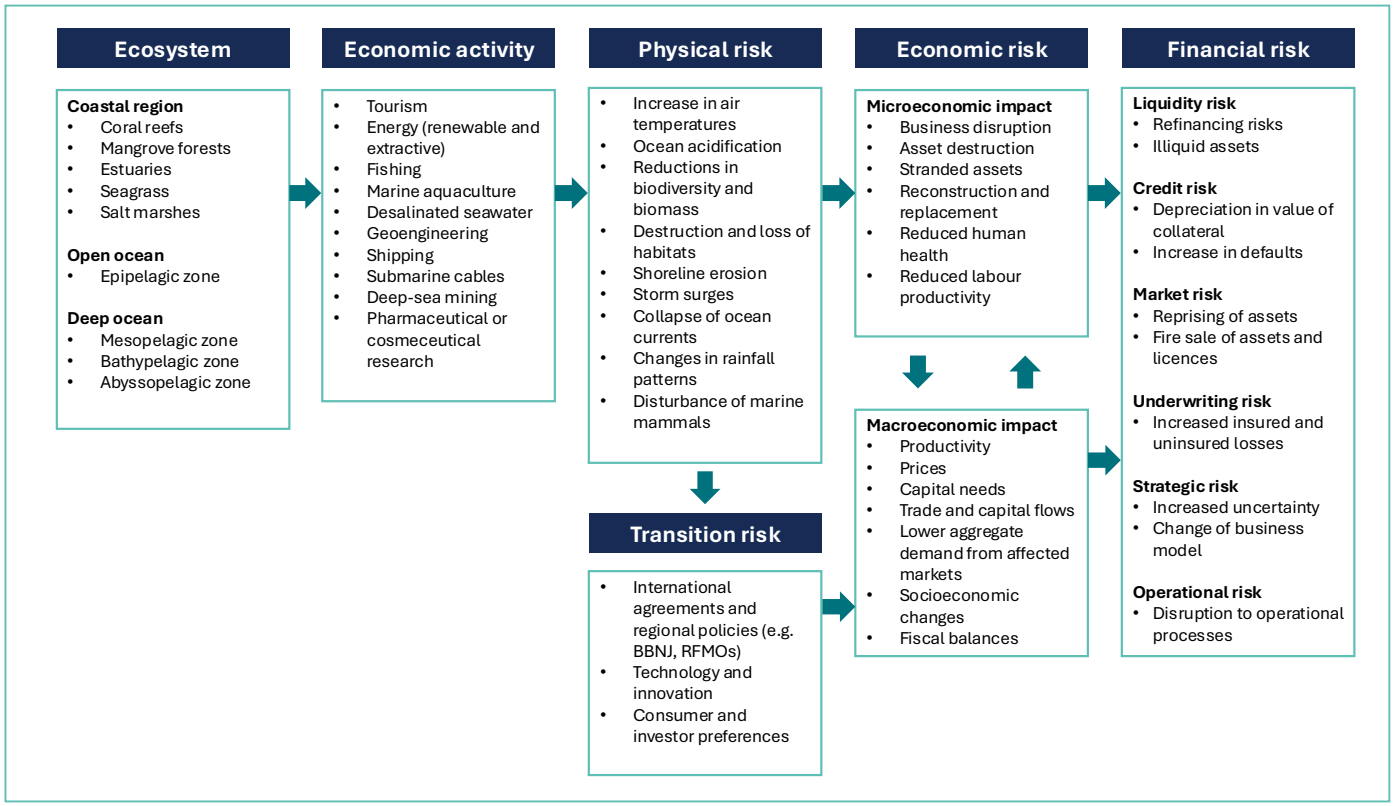


Figure X.3: *Transmission channels of ocean-related risks. Image Source: Almeida and Reitmeier (2024). The blue imperative: understanding interactions between the ocean, climate and economy. Centre for Economic and Transition Expertise.*

Type		Description	Example
Physical Risk	**Acute**	Sudden, severe events causing immediate disruption, such as storms or floods.	Diseases or pests lead to decline in aquaculture fish stocks.
	Chronic	Long-term, gradual environmental changes that erode conditions over time.	Degradation of marine habitats leads to loss of genetic material for marine pharmaceutical discoveries.
Transition Risk	**Policy**	Financial or operational impacts from new laws, regulations, or compliance requirements.	Implementation of GBF 30x30 framework leads to a rise in marine protected areas, increasing operating costs for fishing.
	Litigation	Exposure to legal action, claims, or liability arising from environmental or social harms.	A shipping company is sued for damages after an oil spill contaminates coastal ecosystems.
	Reputation	Damage to stakeholder trust due to perceived misconduct, poor performance, or inaction.	Media coverage on the bioaccumulation of chemicals in farmed fish damage brand value of aquaculture company.
Opportunities	**Resource efficiency**	Reducing costs and impacts through improved energy, water, or material efficiency.	Higher long-term catch yields from avoiding overfishing.
	Markets	Accessing growing markets for low-carbon, nature-positive, or resilient solutions (e.g., carbon markets, blue economy sectors).	Access to emerging eco-tourism markets from sustainable coastal tourism practices.
	Financing	Attracting investment or lowering cost of capital through sustainability performance, green financing, or transition funding.	Eligibility for preferential rates.

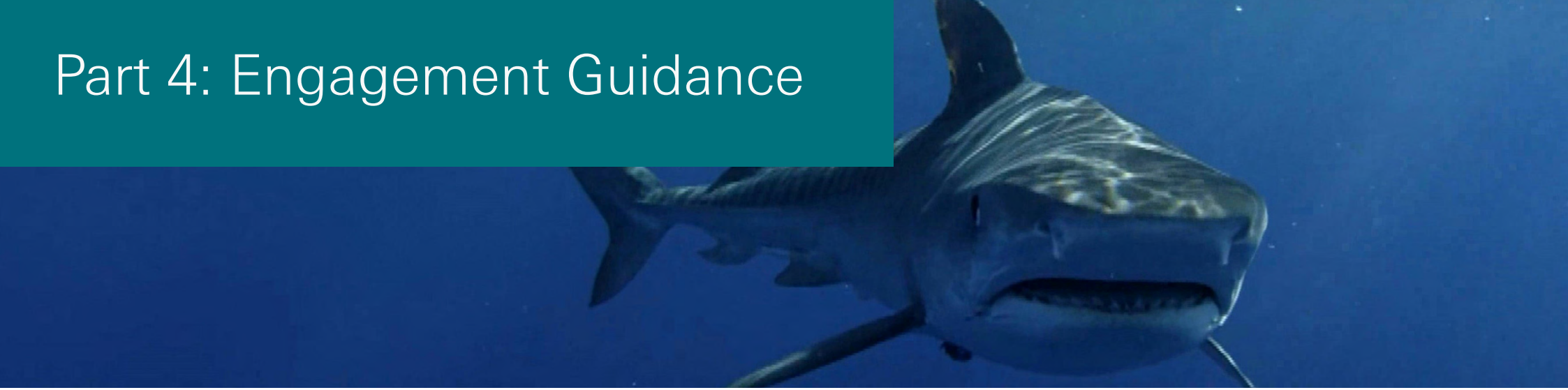
Table X.7: *Illustrative list of ocean-related risks and opportunities*

Core Question: What are the key ocean-related risks and opportunities in my portfolio?

Guidance questions:

1. How do key sector or company-level impacts and dependencies translate into potential financial risks and opportunities?
2. What additional information do I need to understand my exposure to ocean-related risks and opportunities?

Part 4: Engagement Guidance



4.1 Investor case for engagement

All ocean-dependent sectors face a common set of systemic, cross-cutting challenges that are increasingly material to long-term investment performance. Across industries, key sector-agnostic issues include accelerating marine biodiversity loss and habitat degradation; rising levels of marine pollution from plastics, chemicals, wastewater and underwater noise; and the escalating impacts of climate change on ocean temperature, acidity, and circulation (see Part 1). These pressures are often compounded by unsustainable resource use, weak or uneven governance across jurisdictions, and persistent social and labour risks linked to marine activities, particularly in complex and global supply chains. Together, these dynamics undermine ecosystem resilience and heighten operational, financial, and reputational risks for companies reliant on ocean health.

For investors, unmanaged ocean-related risks can translate into more comprehensive regulation, increased enforcement and litigation exposure, supply chain disruption, and the potential for stranded or impaired assets as business models become misaligned with ecological limits or policy direction (see Part 2). Effective engagement presents opportunities to protect and enhance long-term value by influencing corporate actions. Companies that invest in mitigation measures, strengthen adaptive capacity to climate and ecosystem change, and align strategies with the transition toward a sustainable blue economy are better positioned to manage risk and capture emerging opportunities. Frameworks such as the Sustainable Development Goals and UNEP FI's Sustainable Blue Economy Principles provide a reference point for aligning finance with environmental sustainability, social inclusion, and long-term economic resilience, reinforcing the role of investor engagement as a critical lever for improved ocean stewardship and sustainable returns.

4.2 Purpose of the Engagement Guidance

To understand and assess their level of exposure to ocean related dependencies, impacts, risks and opportunities and to improve long-term sustainability and value, investors may wish to engage with companies within their portfolios. Investors can assess and prioritise which companies to engage with using the Ocean Framework (see Part 3). This engagement guidance has been developed, to provide investors with a set of initial and follow up questions to ask companies in different sectors about how they are identifying, assessing and managing to ocean-related risks and opportunities. The questions are designed to be applicable to all asset classes although it is acknowledged that the availability of data, investor access to company management and the ability of investors to exert influence will depend on the specific company, on the form (e.g. equity, debt) and scale of the investment, and on the relationship between the investor and the company.

Recognising that investors engage with portfolio companies for a range of reasons, using different approaches and within varying contexts, the guidance sets out a series of:

- Sector-agnostic engagement questions: that focus on the main drivers of ocean degradation and ocean-related sustainability issues that are either directly caused by unsustainable ocean-based economic activities (e.g. overfishing, habitat destruction) or which have the potential to affect and impact ocean-based industries (e.g. climate change).

- Sector-specific engagement questions: tailored to more established, high-impact, sectors such as seafood, shipping and cruise tourism.

In addition to gaining insights into how companies are assessing and managing risks and opportunities where relevant, company engagement may also help to close some of the data gaps that may have been identified during the screening process (see Part 3, Step 4 discussion).

4.3 Scope of the Guidance

The engagement guidance provided includes high-level, sector-agnostic guidance that applies to all asset classes (e.g. equity, fixed income, private markets, real estate, infrastructure) and focuses on the main ocean sustainability issues that are relevant to institutional investors (see 1.1 Investor case for engagement).

4.4 How to use the guide

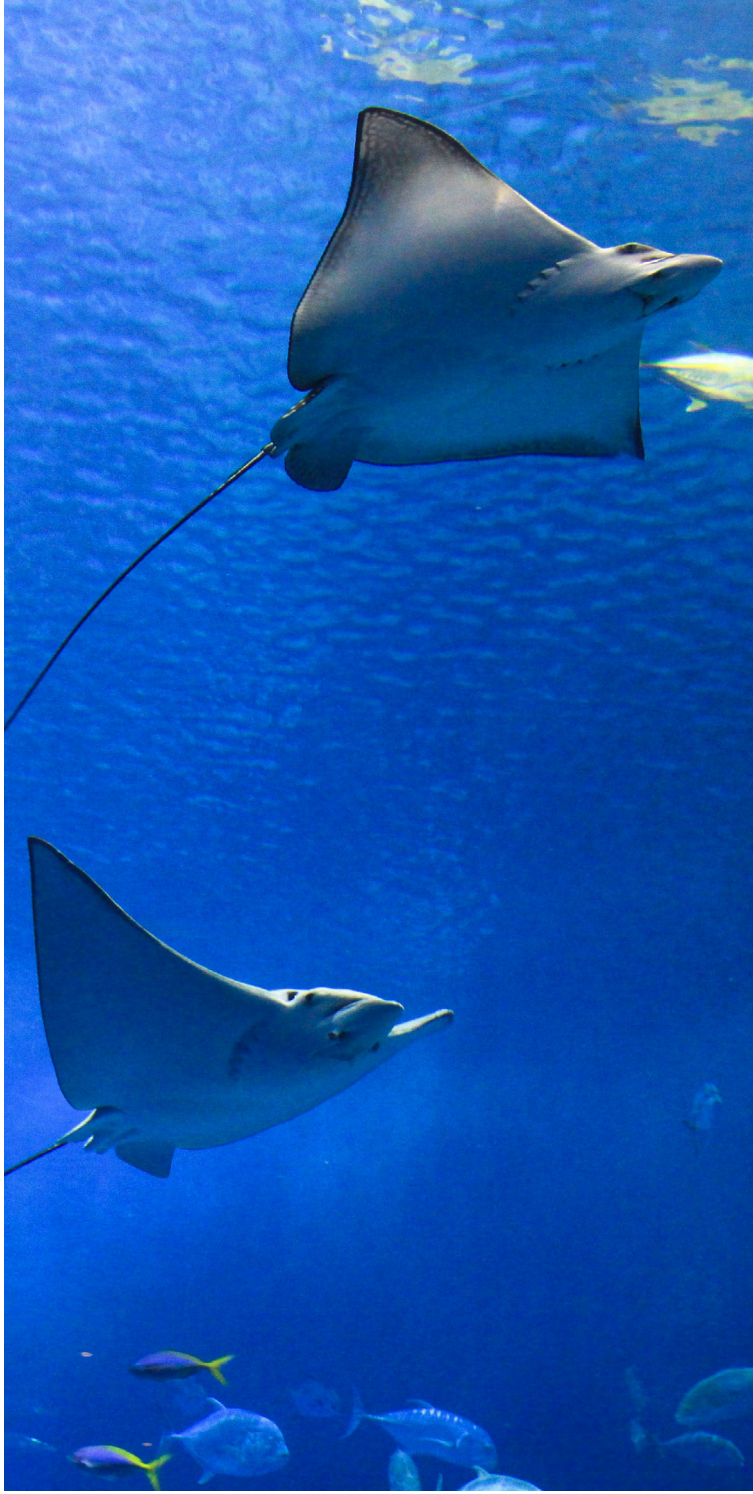
User instructions

This guide can be used in conjunction with The Ocean Framework (see Part 3) which enables investors to screen portfolios, identify and prioritise companies to engage with and inform the key objectives of their engagement, prioritising companies and specific issues where risks and opportunities are most material.

> This guide is intended to be used with companies where ocean-related issues have been identified as potentially materially risks.

Section 4.5 introduces a set of sector-agnostic questions relating to governance, strategy, risk and impact management, and targets and metrics, in line with TNFD reporting requirements. The guidance provides the user with a series of opening, entry-level questions to ask companies that operate in or on the ocean, followed by a series of more detailed, follow-up questions where relevant.

In addition, a series of sector-specific engagement questions are included in Section 4.6 for seafood (including fisheries and aquaculture) and marine transportation (including shipping and cruise tourism) companies. Note: the sector-specific questions should be used in addition to – rather than in place of – the sector-agnostic guidance questions to gain greater clarity on how companies operating in these high impact sectors are assessing and managing their ocean-related dependencies, impacts, risks and opportunities.



While investor expectations of companies in response to these engagement questions will vary depending on a company's exposure to ocean-related risks as well as the maturity of their existing practices, several resources can be used to help investors communicate their recommendations to companies:

- UNEP FI's Turning the Tide Guidance Annex sets out key indicators and suggested actions related to seafood, ports, marine transport, marine renewable energy and coastal and marine tourism sectors.
- FAIRR's Seafood Traceability Engagement includes investor letters to seafood companies, setting out specific expectations related to ocean risks and opportunities.
- TNFD's sector-specific guidance on aquaculture, fishing and marine transportation and cruise lines can be used to shape recommendations about how companies should assess and report on their ocean-related impacts and dependencies.
- SBTN's Ocean Targets methodology can be used by investors to guide seafood companies in setting actionable, time-bound targets to avoid and reduce overexploitation, protect structural habitats and reduce risks to endangered, threatened and protected species.

Practical considerations for assessing ocean-related impacts

When assessing ocean-related risks and opportunities, it is important for companies and investors to consider several challenges in collecting ocean-related data:

- **Place-based impacts in mobile and distributed activities:** Many ocean-dependent sectors, including shipping and fishing, operate across large and often transboundary marine areas. Impacts are therefore highly place-specific and can vary significantly depending on location, timing, and intensity of activity. To better understand investment risks, investors need to understand location-specific aspects by looking beyond company-wide averages and assessing whether companies identify and manage risks in ecologically sensitive areas such as marine protected areas (MPAs), particularly sensitive sea areas (PSSAs), and key migratory routes. Evidence of marine spatial planning, route optimisation, area-based restrictions, and engagement with regional management bodies can be more decision-useful than aggregate metrics alone.
- **Data paucity and uneven data quality:** Ocean-related impacts are frequently characterised by limited, fragmented, or inconsistent data, particularly in offshore, small-scale, or multi-jurisdictional contexts. Investors should recognise that data gaps are often structural rather than indicative of poor management. Engagement should therefore focus on whether companies are transparent about uncertainties, invest in monitoring and data collection, and participate in credible improvement initiatives, rather than relying solely on complete or standardised datasets.
- **Incorporating ocean impacts into climate and nature reporting:** Ocean health and ecosystem function is directly related to both climate and nature related goals (See Part 1) and investors should encourage companies to include ocean-related risks and dependencies in both climate disclosure frameworks (e.g. Taskforce on Climate-related Disclosures, TCFD) and emerging biodiversity disclosure frameworks (Taskforce on Nature-related Financial Disclosures, TNFD). This includes identifying priority ocean-related risks and dependencies, disclosing governance and management responses, and aligning targets and metrics with ecosystem-level outcomes rather than isolated operational indicators.

Figure X.4 maps a range of financing initiatives, engagement initiatives, frameworks and reporting frameworks, their intended audience and action pathways included to help Investors overcome some of these challenges. Additionally, Part 3: The Ocean Framework provides an overview of the ocean-related datasets and metrics that are available to support reporting and engagement.

Initiative	Organisation	Primary Target Audience							Action Pathway				
		Private Finance			Public finance		Policymakers	Companies	Collaboration	Capital allocation[a.7]	Stewardship[a.8]	Disclosure	Policy advocacy
		Investors	Banks	Insurers	MDBs[a.9]	Statutory finance							
Financing Initiatives													
Principles for Sustainable Blue Economy	UNEP FI	●	●	●						●	●		●
Ocean Risk and Resilience Action Alliance	ORRAA	●	●	●	●	●		●	●	●			
Blue Bond Accelerator	ORRAA	●	●	●	●	●	●	●	●	●			
ProBlue Initiative	World Bank				●	●	●			●			
Clean Oceans Initiative	European Bank for Investment				●					●			
Blue Natural Capital Financing Facility	International Union for Conservation of Nature (IUCN)	●	●			●		●		●			
1000 Ocean Startups	World Economic Forum	●						●		●			
Engagement Initiatives													
Nature Action 100	Ceres, IIGCC, Planet Tracker, Finance for Biodiversity Foundation	●						●	●		●		
Seafood Traceability Engagement	FAIRR	●						●	●		●		
Frameworks													
Ocean Investment Protocol	UN Global Compact, UNEP FI	●	●	●	●	●	●		●	●	●	●	●
High Level Panel for a Sustainable Ocean Economy	World Resources Institute	●		●	●	●	●	●	●	●			●
Blue Bond Guidelines	ICMA	●	●		●	●		●		●		●	
IFC Blue Finance Guidelines 2.0	International Finance Corporation	●	●		●	●		●		●		●	
Towards Shared Marine Metrics	Nature Positive Initiative	●	●	●				●				●	
Reporting Frameworks													
TNFD	TNFD	●	●	●				●				●	
SBTN Oceans Hub	SBTN	●	●					●				●	
Global Ocean Accounts Partnership	Global Ocean Accounts Partnership					●	●		●			●	
CDP	CDP	●	●	●				●				●	

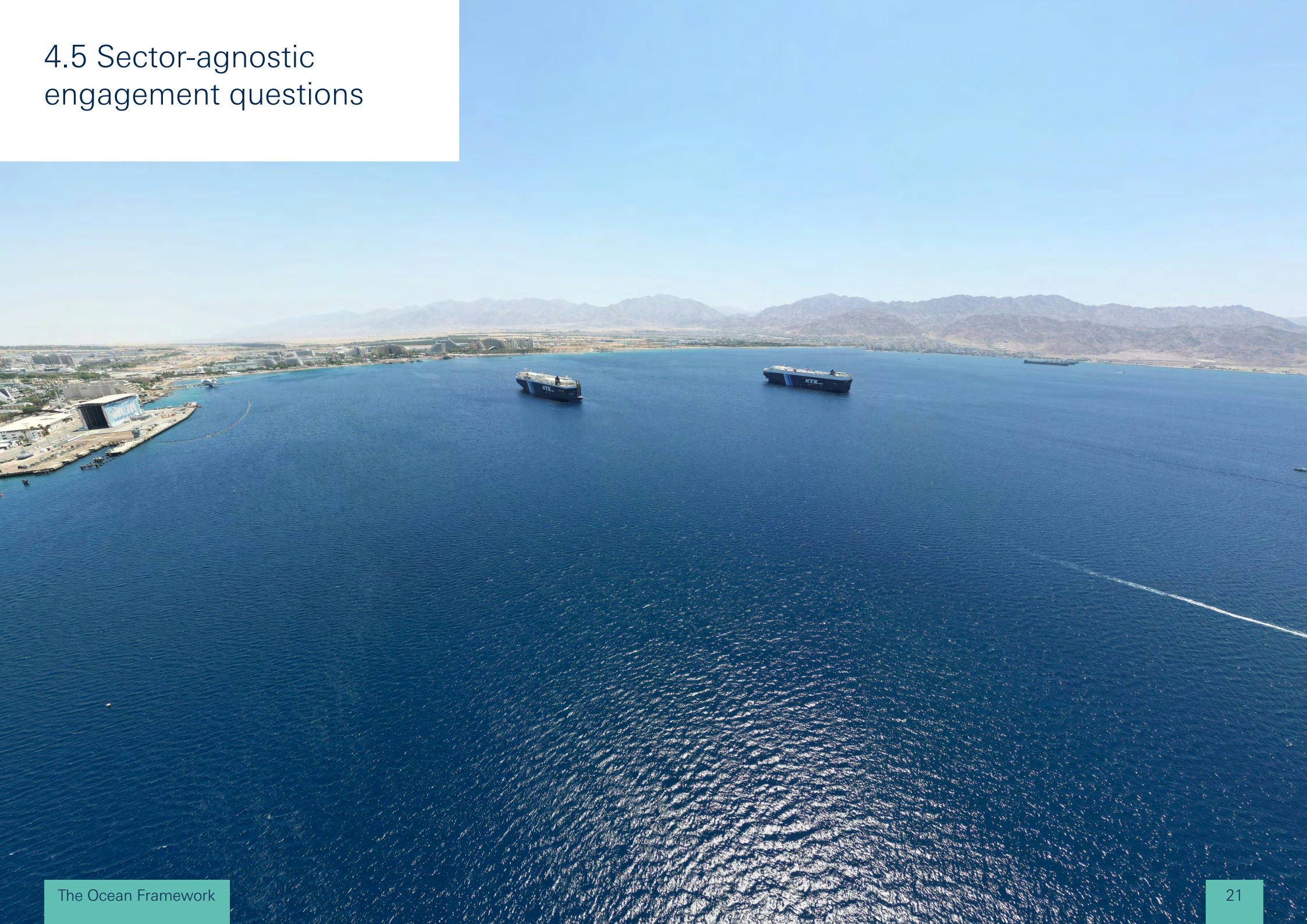
Figure X.4: *Examples of financing initiatives, engagement initiatives, frameworks and reporting frameworks that relate to the ocean, including the intended audience and action pathways. Compiled by Chronos Sustainability Ltd.*

a.7. Capital allocation refers to initiatives which make specific recommendations on the factors to be considered in financial decision-making and/or on the decisions that should be made (e.g. not to support certain activities, to preferentially allocate capital to specific actors).

a.8. Stewardship refers to engagement with entities that are receiving financial support.

a.9. Multinational Development Banks (MDBs) are international financial institutions that provides loans, grants and technical assistance to developing countries to support economic development and social progress. In the context of ocean finance, MDBs potentially play a catalytic role by mobilising public and private capital for sustainable ocean-based activities, de-risking investments through blended finance and guarantees, and supporting policy reform and capacity-building.

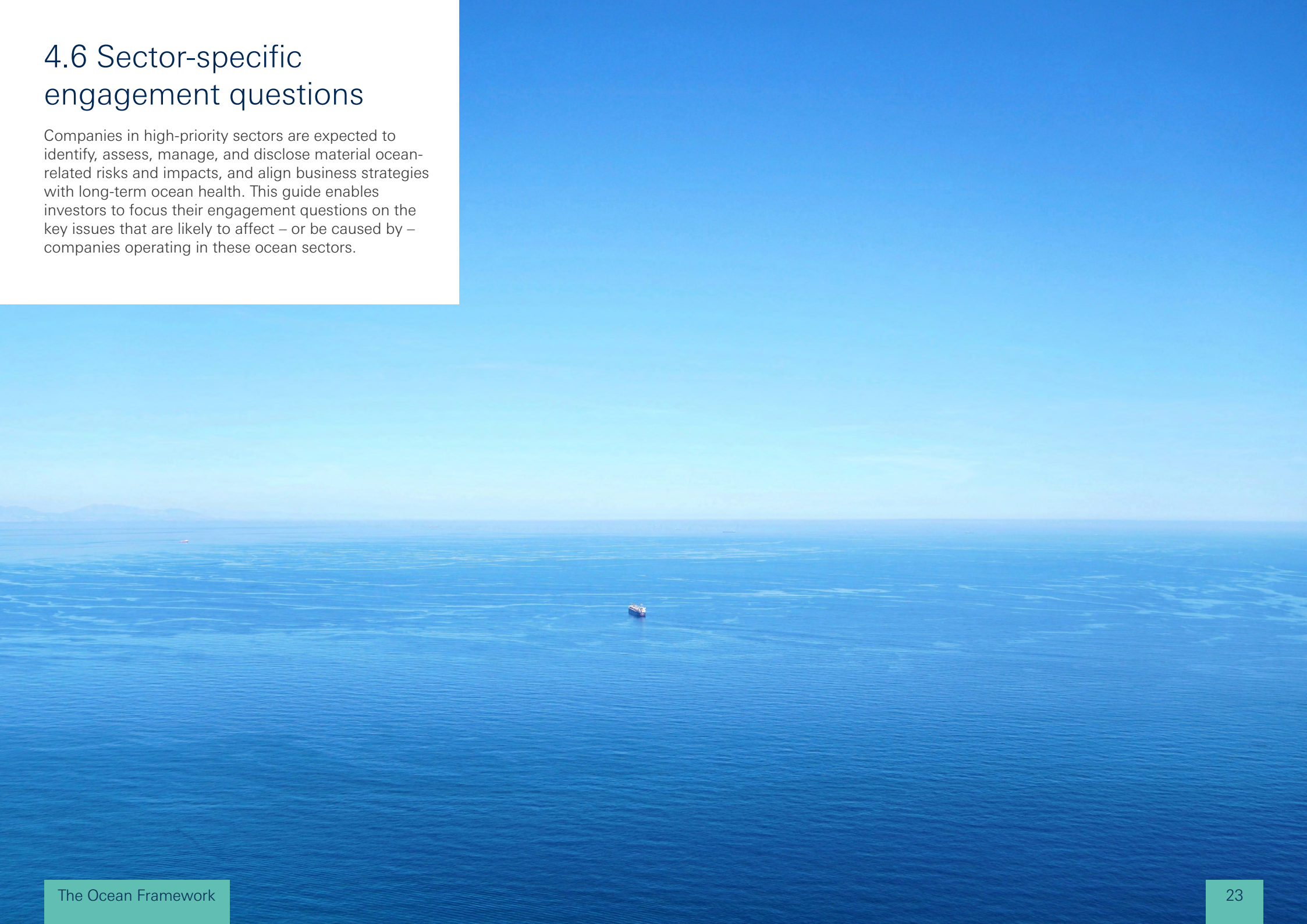
4.5 Sector-agnostic engagement questions



Topic	Opening questions	Follow-up questions
Governance		
Acknowledgement	• How do you identify ocean-related risks and opportunities in relation to your business?	• What ocean-related impacts and dependencies affect your business strategy?
Commitment to reducing ocean-related risks	• Do you have a commitment to addressing identified ocean-related risks?	• Who is responsible for overseeing the commitment is met?
Board-level accountability and oversight	• Does the board have oversight over ocean-related risks?	• How often and under what circumstances does the board discuss ocean-related risks? • How is the board overseeing ocean-related risks (e.g. does the board conduct regular structured trainings, get input from independent advisors / experts)?
Strategy		
Ocean integration	• How are ocean-related impacts and risks in your strategies approached (e.g. as part of your climate strategy or your nature and biodiversity strategy)?	• What is needed to integrate ocean-related issues into both climate and nature strategies? • How is the ocean related risk assessment with your climate and nature risk assessments used?
Identifying marine dependencies and impacts	• Have you identified your ocean-related impacts and dependencies, risks and opportunities?	• How do you evaluate the significance of the identified impacts, dependencies, risks and opportunities? • Do you assess and disclose the locations of all assets and activities in your direct operations that are situated in or adjacent to ecologically sensitive locations (e.g. marine protected areas)? • Do you assess and disclose the locations of all assets and activities in your supply chain that are situated in or adjacent to ecologically sensitive locations (e.g. marine protected areas)? • How are material business dependencies and impacts on the ocean evaluated?
Integration into risk assessment and management	• How do you integrate ocean-related risks in your risk management processes? • Have you identified any material ocean-related impacts and dependencies in your operations and value chain?	• How is the materiality of any identified risks assessed (e.g. what process did you follow, what stakeholders were consulted, what data and indicators were used)? How was the significance of these issues determined? • What opportunities have you identified as a result of the risk management process?
Risk and impact management		
Policy	• Do you have a policy which addresses ocean-related issues? • Are ocean-related issues incorporated into your climate and nature & biodiversity policies?	• How do ocean risks intersect with other issues (including nature and climate change)? • Does the policy describe the company's approach to reducing its most material impacts on: o water pollutants o waste generation o plastic use o end-of-life management of equipment and infrastructure o spills and hazardous material incidents o disturbances (including noise, light, electromagnetic radiation) o air pollutants o greenhouse gas emissions o invasive alien species management
Action plans	• Is there an action plan for managing, minimising and/or mitigating your ocean-related impacts and dependencies? • What actions are taken to reduce identified impacts on the ocean?	• What approach, tools and/or data are you using to assess whether the identified ocean-related risks and impacts are being managed and reduced? • Are you engaging with suppliers and other stakeholders to implement your action plan? • What challenges are you experiencing with integrating the action plan? • Has action plan to address any material ocean-related impacts and dependencies identified in your value chain been expanded?
Incident preparedness and remediation planning	• Do you have a strategy in place to manage and remediate potential ocean-related incidents (e.g. pollution events)?	• Is there a grievance and redress mechanism through which individuals and communities may raise complaints or concerns that they have been adversely impacted by your actions pertaining to the ocean?
Lobbying	• Are you a member of a trade association which lobbies policymakers on ocean-related issues? • Do you undertake direct lobbying with policymakers on ocean-related issues?	• What position has the trade association taken on [relevant ocean-related policy]? • What is your position on [relevant ocean-related policy]?
Metrics and Targets		
Objectives and targets	• Have you set any targets related to protecting the ocean, oceanic habitats or marine biodiversity?	• Are the targets time-bound and do they include the baseline value and base year from which progress is measured? • Are the targets clear, quantitative and measurable? • Are the targets short-term (until 2030)? • Are targets validated by an independent third-party organisation (e.g. SBTN)?
Reporting & Disclosure	• Do you report and disclose on key ocean related impacts and dependencies?	• Do you report on relevant ocean-related metrics, including: o The spatial footprint (km2) of your operations, including the total disturbed area and the total rehabilitated/restored area o The extent of ocean use change (km2) by type of ecosystem and type of business activity o Pollutants released (tonnes) o Total weight of plastics used or lost (tonnes) o Non-GHG air pollutants released (tonnes) o Quantity of high-risk natural commodities sourced from the ocean, including the quantity sourced under a sustainable management plan or certification programme

4.6 Sector-specific engagement questions

Companies in high-priority sectors are expected to identify, assess, manage, and disclose material ocean-related risks and impacts, and align business strategies with long-term ocean health. This guide enables investors to focus their engagement questions on the key issues that are likely to affect – or be caused by – companies operating in these ocean sectors.



Marine Transportation

Sector scope: Cargo shipping, container shipping, bulk carriers, tankers, ferries, and cruise lines.

Sector overview:
Marine transportation, including commercial shipping and cruise lines, is a cornerstone of the global economy and a critical enabler of international trade and tourism. The shipping sector comprises around 50,000 registered merchant vessels across more than 150 nations, employs approximately 1 million seafarers, and transports an estimated 11 billion tonnes of goods each year (around 90% of global trade by volume). Cruise lines operate within the wider coastal and maritime tourism economy, which is among the largest segments of the global tourism industry, directly supporting around 52 million jobs and enabling a further 100 million across the value chain. In 2023, coastal destinations accounted for roughly 50% of global tourism expenditure, equivalent to approximately USD 3 trillion.

The sector is highly dependent on healthy ocean systems for safe navigation, port operations, and sustained tourism demand, yet it also exerts significant pressures on marine environments. Key impacts include greenhouse gas and air pollutant emissions, underwater noise, physical disturbance of habitats, pollution from spills and wastewater discharge, and the spread of invasive species through ballast water and biofouling. These pressures expose companies to growing regulatory, operational and reputational risks as international standards tighten and expectations around ocean stewardship increase. For investors, engagement with marine transportation companies enables a more in-depth assessment of how ocean-related risks and dependencies are managed and whether business strategies and capital allocation are aligned with a credible transition toward lower-impact and more resilient maritime operations.

Key issues	Key Questions	Follow-up questions
Greenhouse Gas (GHG) emissions	• Have you set a time-bound target(s) for the reduction of GHG emissions? • Are you increasing your use of low-carbon fuels and efficiency technologies?	• How do your targets align with the International Maritime Organization (IMO) decarbonisation objectives[b.1]? • Do you have a credible transition plan explaining how targets will be met (e.g. fleet renewal, retrofits, fuel switching, operational measures)? • Do you participate in initiatives such as the Sea Cargo Charter[b.2]? If not, why not? • How is capital expenditure and R&D aligned with decarbonisation pathways?
Air pollutants	• How do you monitor and reduce non-GHG air pollutants from vessels? • How have your emissions of non-GHG air pollutants changed in recent years?	• What actions have you taken to address non-GHG air pollution from vessels (e.g. increased use of cleaner fuels, shore power, or exhaust abatement technologies)? • How do you manage operations in emission control areas (ECAs)? • Have you had any breaches of ECA requirements?
Water pollutants and spills	• Do you have pollution prevention & response policies in place? How often are they reviewed and updated? • Have you had any severe spill incidents in recent years? • How do you manage routine waste and wastewater from vessels?	• What systems do you have in place to prevent, detect and respond to spills and illegal discharges? • Have you paid any fines or have you faced any sanctions for illegal discharges? • Do you undertake testing and training as part of your spill prevention and response plans? • How do you monitor compliance with MARPOL[b.3] (i.e. onboard waste generation and port-side disposal & waste management)?
Marine disturbances	• How do you assess and mitigate impacts from vessel noise, routing, and speed? • Are sensitive marine areas explicitly considered in your voyage planning?	• How are sensitive marine areas or marine migratory routes in your voyage planning (e.g. through route optimisation, speed management, etc.) accounted for? • Are any quieting technologies to reduce the impacts from vessel noise adopted? • How are you engaging with regulators or conservation bodies to better understand and manage your impacts on marine sensitive areas?
Invasive species	• Do you have effective ballast water and biofouling management policies? • How is compliance with international standards monitored across the fleet?	• How do you comply with the Ballast Water Management Convention[b.4]? Have there been any breaches of these requirements in recent years? • Have you faced any regulatory action related to invasive species introductions? • Do you measure and/or report on any invasive species risk indicators?

b.1. The IMO's 2023 greenhouse gas strategy aims to reach net-zero emissions from international shipping by or around 2050, with key checkpoints to reduce total GHG emissions by at least 20% (striving for 30%) by 2030 and at least 70% (striving for 80%) by 2040, compared to 2008 levels.

b.2. The Sea Cargo Charter provides a framework to quantitatively assess and disclose whether chartering activities are in line with internationally adopted climate goals.

b.3. The IMO International Convention for the Prevention of Pollution from Ships (MARPOL) and specifically Annex V strictly prohibits disposal of waste including plastics at sea and requires evidence of waste logs and monitoring of disposal at port reception facilities.

b.4. The Ballast Water Management Convention sets out standards to ensure that ships manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released into a new location.

Fisheries

Sector scope: Wild-capture commercial fisheries across industrial, semi-industrial, and large-scale artisanal fleets, including vertically integrated seafood companies and those sourcing from third-party fisheries.

Summary:
Fisheries encompass the commercial, industrial, inland, small-scale, recreational, and customary capture of fish, invertebrates, and aquatic plants from ocean, coastal, and freshwater ecosystems. The sector is distinct in that it is the only major industry dependent on the industrial-scale extraction of wild biological resources. Global capture fisheries production exceeds 92 million tonnes (2023) and accounts for approximately 9% of global agricultural trade (2022). Fisheries support livelihoods for more than 600 million people worldwide, with an estimated 40% engaged in small-scale or subsistence fishing, underscoring the sector's economic and social significance as well as its exposure to local ecological conditions.

The fishing industry is fundamentally dependent on healthy, productive, and resilient aquatic ecosystems, including well-managed fish stocks, intact habitats, and functioning food webs. At the same time, fishing activities can exert significant pressures on marine and freshwater environments through overfishing, illegal, unreported and unregulated (IUU) fishing, bycatch of non-target and endangered species, habitat damage from certain gear types, labour and human rights abuses, and pollution from operational discharges and lost or abandoned fishing gear. These impacts create material risks for investors, including stock depletion, regulatory intervention, supply chain disruption, reputational damage, and heightened social risk. Effective investor engagement is therefore critical to assess whether companies have robust governance, traceability, and risk management systems in place to align harvesting practices with long-term stock sustainability, ecosystem integrity, and respect for human rights (including labour rights, access rights, benefit sharing and social licence to operate), thereby supporting the resilience of the sector over time.

Key issues	Key Questions	Follow-up questions
Overfishing and stock sustainability	• Are your fishing activities / sourcing policies aligned with scientifically determined sustainable catch limits? • How do you assess and manage exposure to overfished or data-poor stocks? • Have you set time-bound targets to transition key fisheries toward certification or fishery improvement projects (FIPs)?	• What actions are taken to manage high-risk fisheries? • What proportion of catch or sourcing is certified under Marine Stewardship Council (MSC) or other credible schemes recognised by the Global Sustainable Seafood Initiative (GSSI) Benchmark Tool? • What proportion of catch or sourcing are engaged in credible FIPs? • What proportion of catch is from stocks with up-to-date stock assessments?
Illegal, Unreported and Unregulated (IUU) fishing	• What systems are in place to prevent, detect, and respond to IUU fishing risks? • How is vessel activity monitored and verified across your owned and sourced fleets?	• Do you have a zero-tolerance policy in place for IUU fishing? • Have there been any IUU incidents in your owned or sourced fisheries? • How are your traceability systems aligned with recognised standards such as the Global Record of Stocks and Fisheries Standard (GRSF), Global Dialogue on Seafood Traceability (GDST) standard and the Marine Stewardship Council's Chain of Custody standard? • What proportion of vessels have unique vessel identifiers (e.g. IMO numbers)? If not all, why not? • Are vessel monitoring systems (VMS), automatic identification systems (AIS), or electronic monitoring used across your entire operations? • Have there been any breaches of compliance with seafood traceability regulations (e.g. EU IUU Regulation, U.S. Seafood Import Monitoring Program)?
Bycatch	• How do you identify, monitor, and reduce bycatch of non-target and endangered, threatened, or protected (ETP) species? • Are bycatch risks explicitly assessed by fishery, species, and gear type? • How are bycatch incidents reported and remediated?	• Do vessels use any bycatch mitigation measures (e.g. turtle excluder devices, bird scaring lines, circle hooks)? • Have you adopted any species-specific mitigation measures? • What is the weight (tonnes) or number of non-target and ETP species caught, injured, or killed? • What is the bycatch rate per unit of effort (by fishery and gear type)?
Gear impact	• What proportion of fishing activity relies on high-impact gear, and how are associated habitat risks managed? • Have you set time-bound targets for the phase-out of high-impact gear types?	• What proportion of vessels use bottom-contact gear? • What are your plans to increase the uptake of gear modifications or alternative fishing methods (e.g. planned capital expenditure)? • What proportion of catch is taken with modified or low-impact gear? • Do you have any area-based restrictions in place (e.g. voluntarily avoiding sensitive habitats)?
Marine pollution and lost gear	• What proportion of gear is marked with vessel or port ID? • Do you take actions to retrieve lost gear or report lost gear to authorities? • Do you rely on the use of Fish Aggregating Devices (FADs)? • Are gear recovery and reporting systems in place? • How do you dispose of end-of-life gear?	• Have you faced regulatory sanctions for marine pollution? • What actions are taken to limit pollution (including wastewater, bilge water and effluents) from your fishing operations? • How is lost or abandoned gear, including FADs managed, where relevant? • Do you actively participate in ghost gear recovery initiatives? • Have you committed to upgrading more circular, sustainable gear to minimise waste generation (e.g. planned capital expenditure)
Social and Human rights	• How do you minimise impact and conflicts with coastal communities adjacent to fishing areas? • What policies and controls are in place to prevent forced labour and other human rights abuses? • How are risks managed in distant-water and high-risk fisheries?	• Are coastal communities on use of local fishing grounds actively consulted? • How are the rights and access of small-scale and artisanal fishing communities to fishing grounds and resources protected? • What proportion of the fleet/suppliers are covered by labour standards aligned with International Labour Organisation (ILO) conventions? • Have you had any reported labour violations? What remediation measures were taken? • What corrective actions plans are in place to manage forced labour allegations? • Have you undertaken any independent social audits? • Are worker grievance mechanisms in place? What is the coverage of these mechanisms? • Have you collaborated with any worker organisations and NGOs?

Aquaculture

Sector scope: Marine aquaculture, including finfish, crustaceans, molluscs, and seaweed, across open-net pens, ponds, recirculating aquaculture systems (RAS).

Summary:
Aquaculture encompasses the farming of aquatic animals and plants across inland freshwater systems and coastal and marine environments. Global aquaculture production reached 130.9 million tonnes in 2022, surpassing wild-capture fisheries for the first time and marking a structural shift in global seafood supply. The sector employs approximately 22 million people worldwide and has expanded by around 6.6% since 2020, reflecting strong demand for aquatic protein and the role of aquaculture in food security. Many aquaculture operations, particularly those producing carnivorous species, remain partially dependent on wild-capture fisheries for seed and feed inputs, creating important linkages between aquaculture performance and the health of wild fish stocks.

The sector is highly dependent on access to clean water, stable ecosystems, and predictable environmental conditions, as well as on the availability of sustainable feed ingredients and healthy broodstock. At the same time, aquaculture can generate material environmental and social impacts, including habitat conversion, nutrient and chemical pollution, disease transmission to wild populations, and animal welfare concerns. Poorly managed feed sourcing can place additional pressure on wild fisheries and land-based ecosystems, while excessive use of antibiotics and pesticides presents regulatory, ecosystem, and public health risks. For investors, these impacts and dependencies translate into exposure to regulatory tightening, biosecurity events, supply chain disruption, and reputational risk. Effective engagement therefore focuses on whether companies are improving feed sustainability, reducing chemical intensity, safeguarding animal welfare, and adopting production systems and siting practices that support long-term resilience and growth.

Key issues	Key Questions	Follow-up questions
Habitat damage and siting	• How do you assess and avoid impacts on sensitive marine and freshwater habitats when siting farms? • Have you undertaken independent environmental impact assessments?	• Are coastal communities on use of inshore areas actively consulted? • How are the rights and access of small-scale and artisanal fishing communities to fishing grounds and resources protected? • Do you have any no-net-loss or avoidance commitments for sensitive habitats? • How do you consider cumulative and ecosystem-level impacts? • What proportion of production is in certified or spatially zoned areas? Do you have any plans to expand this?
Feed sourcing	• Do you have a sustainable feed sourcing policy? • Have you considered the upstream impacts related to the sourcing of key feed inputs (including soy and wild-capture fisheries)? If so, what are these impacts and how are they being assessed? • How is pressure on wild stocks and land-based ecosystems managed?	• What proportion of feed inputs are sourced from certified, alternative, or by-product-based feeds? • Do you have plans to scale the use of alternative or circular feed ingredients? • Have you set any time-bound targets to reduce reliance on wild-caught fishmeal and fish oil? • Have you set any time-bound targets to improve your feed conversion ratio?
Marine pollution	• How are nutrient releases and water quality impacts monitored and controlled? • What measures are in place to prevent marine litter and waste loss? • How do you monitor, manage and dispose of end-of-life gear, including pens?	• What is the nutrient discharge intensity (i.e. nitrogen and phosphorus releases per tonne of seafood produced)? • Have any waste and litter prevention programmes been implemented? If so, what were the outcomes of these programmes? • Have you committed to transitioning to more circular gear & pen design to minimise wase (e.g. planned capital expenditure)?
Chemical use (antibiotics, pesticides, therapeutants)	• What actions have been taken to minimise the use of antibiotics and other chemicals? • Do you prioritise alternatives such as vaccination and improved husbandry in your operations?	• How are practices aligned with the World Health Organization (WHO) and World Organisation for Animal Health (WOAH) frameworks on antimicrobial stewardship? • What proportion of operations are under “antibiotic-free” or equivalent standards? • Has there been any evidence of antimicrobial resistance associated with your operations? • How has antibiotic and pesticide intensity changed over time? • How do you minimise risk of chemical contamination in nearby waterways and water bodies?
Animal welfare, disease and parasites	• How do you monitor and manage disease outbreaks, and parasite loads? • Do you monitor and disclose animal welfare outcomes?	• Have any animal welfare standards in your operation (e.g. related to stocking density, stunning practices, transport practices) been adopted? • Have you undertaken third-party certification for your animal welfare practices (i.e. GSSI-recognised certification schemes)? • What are the mortality rates for each species in your operations? Have these changed over time? • Have there been any severe disease outbreaks? How were these managed? Did they affect wild populations? • How do you minimise risk of disease spreading to wild stocks in neighbouring waters? • Have there been any parasite infestation incidents?

First Sentier MUFG
Sustainable Investment Institute

Contact

institute@firstsentier.com
www.firstsentier-mufg-sustainability.com
www.mufg-firstsentier-sustainability.jp

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