

OCEAN ENGAGEMENT

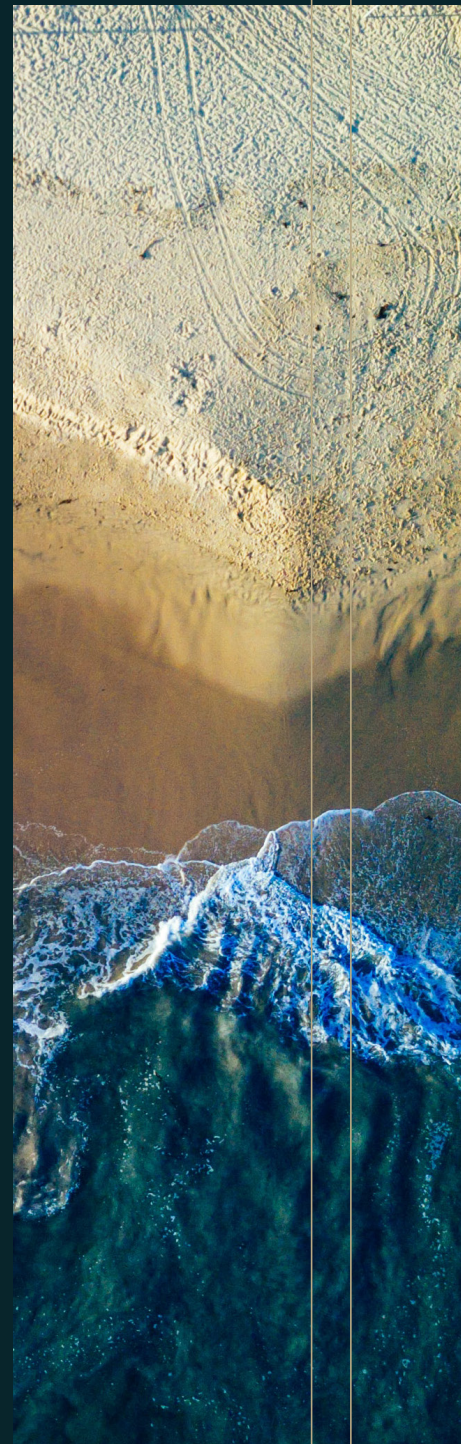


Shifting Tides

Rising Need for Investments and Engagement
in the Blue Economy

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Executive Summary

Rockefeller Asset Management has over a quarter of a century of experience in thematic investing. In recent years, we turned our focus to the ocean: the world's largest ecosystem and seventh largest economy. We believe that the "Blue Economy" is an emerging investment opportunity due to increased regulations, changes in consumer buying preferences, and technological advancements. Through our decade-long partnership with The Ocean Foundation, we have created a framework to identify and gain relevant exposure to blue economy investment opportunities, while also seeking to catalyze positive impact through engagement. This paper dives deeper into our investment framework, the ocean investment opportunity, and our main investment themes of pollution prevention, carbon transition, and ocean conservation.

We believe these sectors and sub-sectors enable us to invest in companies that have the capacity to improve materially and to catalyze positive change for our ocean.

THEMES & SUBTHEMES



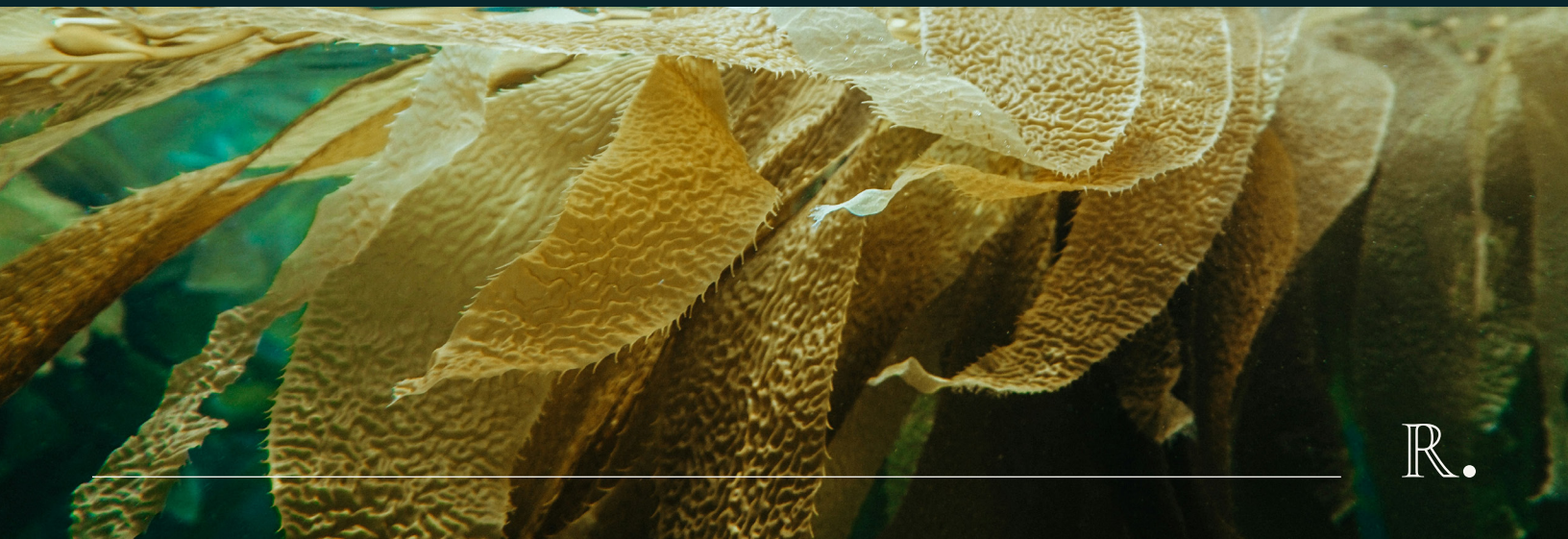
Pollution Prevention
Chemical, Seismic and Acoustic, Waste Disposal, and Plastic



Carbon Transition
Carbon Emissions, Air Pollution, Ocean Renewable Energy, and Alternative Energy



Ocean Conservation
Overfishing, Unregulated Fishing, Depletion of Ocean Resources, Nutrient Loading, and Coastal Development



The Big Picture: The Ocean Economy, Current State, and Future Outlook

We see the ocean being the single most unifying issue that resonates throughout the world. The ocean covers 70% of the earth's surface, making ocean health imperative for the stability of the earth and longevity of global biodiversity. Economic value derived from the ocean's goods and services is estimated to be \$282 billion in the U.S. alone, with three million people working in ocean sectors. These include tourism and recreation, shipping and transport, and related goods and services.¹ The ocean economy is the world's seventh largest economy, representing an estimated 5% of global GDP or US\$3 trillion per year.² The ocean is also a critical source of food and nutrition for three billion people.³

OCEAN FACTS⁴

- Known as the **lungs of the planet**
- Home to **80%** of the world's biodiversity
- Creates **50%** of the planet's oxygen
- Absorbs **25%** of the planet's carbon dioxide
- Absorbs **90%** of heat from the earth
- Provides **99% of living space** on the planet
- Feeds **three billion** people
- Over **40%** of the world's population lives in coastal areas
- More than **90,000 miles** (~145,000km) of shoreline protected by coral reefs



1 NOAA's National Ocean Service. "Why should we care about the ocean?" (n.d.). <https://oceanservice.noaa.gov/facts/why-care-about-ocean.html>

2 United Nations Department of Economic and Social Affairs. "Making waves for a blue economy." (n.d.). <https://www.un.org/en/desa/making-waves-blue-economy>

3 United Nations Environment Programme Finance Initiative. "Sustainable Blue Finance." (2023, September 6). <https://www.unepfi.org/blue-finance/>

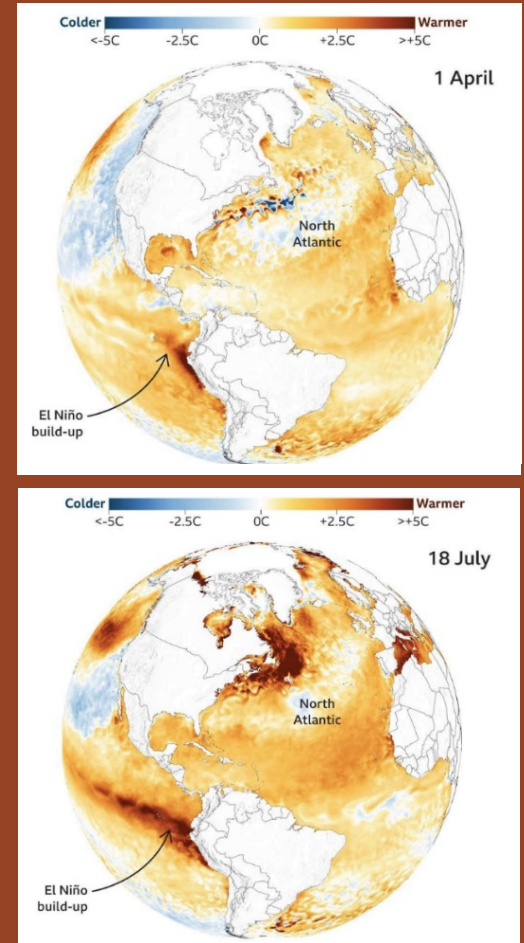
4 United Nations Environment Programme Finance Initiative. "Sustainable Blue Finance - Mobilising Capital for a Sustainable Ocean." (n.d.). <https://www.unepfi.org/blue-finance/>

THE CURRENT STATE

The Anthropocene, the period which human activity has been the dominant influence on climate and the environment, has brought significant challenges for the world's largest ecosystem. The ocean's deep seas have already absorbed 90% of the excess heat from global warming and is the repository for 25% of human-caused CO₂ emissions.⁵ As the ocean absorbs the heat and ocean temperatures rise, the water expands. This contributes to rising sea levels that are already impacting coastal communities.⁶ July 2023 proved to be record breaking: global average daily sea surface temperatures hit the highest mark in history at 69.7 degrees Fahrenheit (20.96 degrees Celsius)⁷ with the highest surface temperature recorded near the Florida Keys at 101 degrees Fahrenheit (38.33 degrees Celsius), equivalent to the average temperature of a hot tub.⁸ Global warming from burning fossil fuels, compounded by El Niño-related heat, have contributed to these extreme marine heatwaves, just one of the four global climate records broken in summer 2023.⁹

Unfortunately, the categorized "beyond extreme" marine heatwaves are not the only issues plaguing our ocean. Plastic, garbage, and other toxic waste is dumped into the ocean, which is then ingested by marine life, leading to increased rates of mortality and disease.¹⁰ This raises concern for the fishing industry and consumers of fish, as catches are being contaminated and are unfit for consumption. Despite this, people continue to eat seafood that contains microplastics, impacting human health along with ocean and marine life health, as these plastics can be absorbed by biota tissue, organs, and cells.¹¹

MARINE HEATWAVE IN THE NORTH ATLANTIC (DAILY SEA SURFACE TEMPERATURE APRIL - JULY 2023, COMPARED WITH 1985 - 1993 AVERAGE)



The ocean's deep seas have already absorbed 90% of the excess heat from global warming and is the repository for 25% of human-caused CO₂ emissions.

Source: NOAA (1985-1993 reference period recommended by NOAA as representative conditions)

5 Ocean Panel. "The Ocean's importance." (2022, October 30). <https://oceanpanel.org/the-oceans-importance/>

6 NASA Sea Level Change Portal. "Thermal Expansion - Understanding Sea Level." (2021, January 27). <https://sealevel.nasa.gov/understanding-sea-level/global-sea-level/thermal-expansion>

7 Horton, H. (2023, August 4). "Ocean surface hits highest ever recorded temperature and set to rise further." The Guardian. <https://www.theguardian.com/environment/2023/aug/04/oceans-hit-highest-ever-recorded-temperature>

8 Cardona, M. (2023, July 26). "Ocean temperatures around South Florida hit hot-tub levels." Reuters. https://www.reuters.com/business/environment/ocean-temperatures-around-south-florida-hit-hot-tub-levels-2023-07-25/?utm_source=Saillthru&utm_medium=Newsletter&utm_campaign=Sustainable-Switch&utm_term=072723

9 Rannard, G., Rivault, E., Tauschinski, J. (2023, July 22). "Climate records tumble, leaving Earth in uncharted territory - scientists." BBC News. https://www.bbc.com/news/science-environment-66229065?app=news.science_and_environment.story.66229065.page

10 Yuan, Z., Nag, R., Cummins, E. (2022, June 1). "Human health concerns regarding microplastics in the aquatic environment - From marine to food systems." Science of the Total Environment. <https://doi.org/10.1016/j.scitotenv.2022.153730>

11 Yyuan, Z., Nag, R., Cummins, E. (2022, June 1). "Human health concerns regarding microplastics in the aquatic environment - From marine to food systems." <https://doi.org/10.1016/j.scitotenv.2022.153730>

THE FUTURE OUTLOOK

While the challenges facing our ocean are vast, recent policy trends provide optimism. In March 2022, UN member states endorsed a pollution resolution to address the full lifecycle of plastic, with the ultimate aim to end plastic pollution.¹² In July 2022, the UN hosted its Ocean Conference for the first time since 2017, igniting a new chapter for global ocean action focused on science-based solutions.¹³ At COP15, world leaders resumed biodiversity talks and agreed upon a Global Diversity Framework which calls for the protection 30% of the world's ocean.¹⁴ In March 2023 – after more than a decade of discussions – UN member states agreed on a historic international treaty to protect the high seas.¹⁵ These events are important next steps in creating a global governance structure that delivers predictability and accountability—not just for entities with ocean-related operations—but also our broader global economy and climate. Global governance structures will also provide strong foundations for further investment in the blue economy.



12 United Nations Environment Assembly of the United Nations Environment Programme. "Resolution adopted by the United Nations Environment Assembly on 2 March 2022. End plastic pollution: towards an international legally binding instrument." (2022, March 2). <https://wedocs.unep.org/bitstream/handle/20.500.11822/39764/END%20PLASTIC%20POLLUTION%20-%20TOWARDS%20AN%20INTERNATIONAL%20LEGALLY%20BINDING%20INSTRUMENT%20-%20English.pdf?sequence=1&isAllowed=y>

13 United Nations. "About the 2022 UN Ocean Conference in Lisbon, Portugal." <https://www.un.org/en/conferences/ocean2022/about>

14 United Nations Environmental Programme Convention on Biological Diversity. "Kunming-Montreal Global biodiversity framework Draft decision submitted by the President." (2022, December 18). <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>

15 United Nations Convention on the Law of the Sea. "Agreement Under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction." (2023, June 19). https://treaties.un.org/doc/Treaties/2023/06/20230620%2004-28%20PM/Ch_XXI_10.pdf

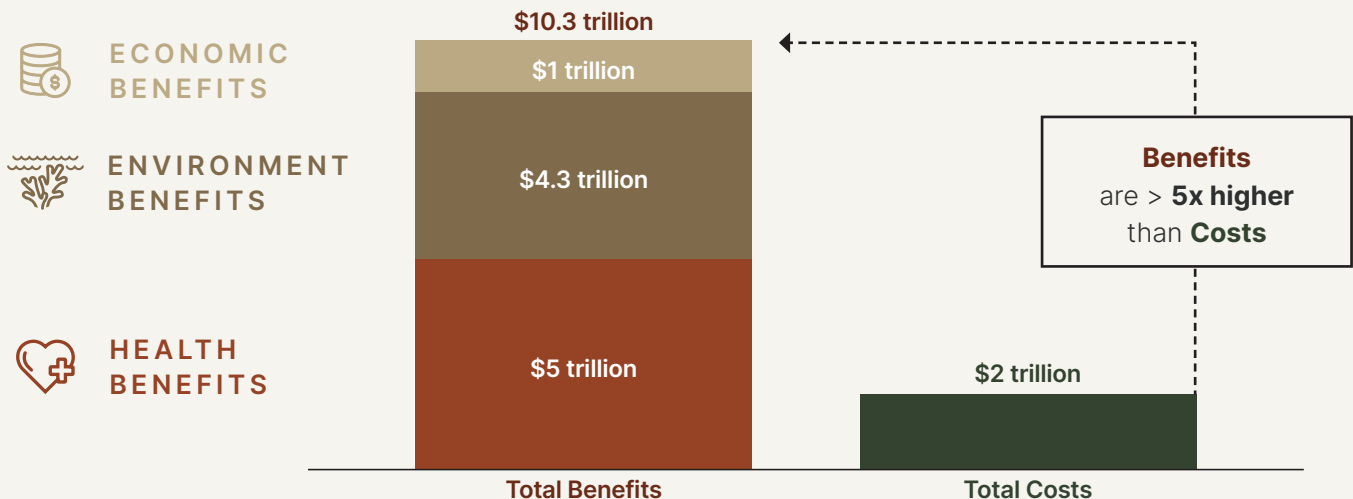
THE BLUE ECONOMY

According to our partners at The Ocean Foundation, the blue economy refers to economic activities that are based in and actively beneficial for the ocean.¹⁶ Investing in the blue economy is essential in combating economic, climate, and biodiversity risks that negatively impact us today, and the potential investment opportunity is immense. As we look towards 2030, various ocean-based industries have the potential to outperform the global economy.¹⁷ According to the Organization for Economic Co-operation and Development (OECD), strong growth from industries, such as marine aquaculture, renewable energy, green shipping, and port activities, have the potential for increased demand for products and services that can address food and energy security, as well as abide by increased environmental concerns and regulations.¹⁸ For example, the ocean could provide up to five times more food

than it does today if more sustainable precautions are taken. Additionally, it has the potential to provide two-thirds of the animal protein required to feed the global population by 2050.¹⁹ In line with increased investment and acknowledgement of the importance of the ocean, the global blue economy has the potential to more than double its contribution to the global economy by 2030.²⁰

According to the High Level Panel for a Sustainable Ocean Economy, benefits of investing in sustainable ocean sectors will result in meaningful returns. Investing \$1 in key ocean actions can yield at least \$5 in global benefits, often more, over the next 30 years. Specifically, investing \$2 trillion to \$3.7 trillion globally from 2020 to 2050 could generate \$8.2 trillion to \$22.8 trillion in net benefits, a rate of return on investment of 450–615 percent.²¹ In addition, investment will reduce exposure to losses if we do not improve ocean health and climate resilience.

OCEAN PANEL ECONOMIC ANALYSIS



Source: High Level Panel for a Sustainable Ocean Economy. "A Sustainable Ocean Economy for 2050: Approximating Its Benefits and Costs." https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel_Economic-Analysis_FINAL.pdf

16 The Ocean Foundation. "Blue Economy." (n.d.). <https://oceanfdn.org/blue-economy>

17 Organization for Economic Co-operation and Development (OECD). "OECD work in support of a sustainable ocean." (2020, June). <https://www.oecd.org/ocean/OECD-work-in-support-of-a-sustainable-ocean.pdf#:~:text=In%20particular%2C%20marine%20aquaculture%2C%20marine%20capture%20fisheries%2C%20marine,having%20the%20potential%20to%20outperform%20the%20global%20economy.>

18 Organization for Economic Co-operation and Development (OECD). "OECD work in support of a sustainable ocean." (2020, June). <https://www.oecd.org/ocean/OECD-work-in-support-of-a-sustainable-ocean.pdf#:~:text=In%20particular%2C%20marine%20aquaculture%2C%20marine%20capture%20fisheries%2C%20marine,having%20the%20potential%20to%20outperform%20the%20global%20economy.>

19 United Nations Environment Programme Finance Initiative. "Sustainable Blue Finance - Mobilising Capital for a Sustainable Ocean." (n.d.). <https://www.unepfi.org/blue-finance/>

20 Organisation for Economic Co-operation and Development (OECD). "The Ocean Economy in 2030. (2016). https://read.oecd-ilibrary.org/economics/the-ocean-economy-in-2030_9789264251724-en#page1

21 The High-Level Panel for a Sustainable Ocean Economy. "A Sustainable Ocean Economy for 2050: Approximating Its Benefits and Costs." (2020, July 14). https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel_Economic-Analysis_FINAL.pdf

Marrying Investment with Engagement: Ocean Engagement Strategy

Our ocean contains a wide diversity of renewable and non-renewable resources that provide critical inputs to support ocean-based industries, such as renewable energy and seafood products.²² We view the blue economy to encompass a wide array of industries that have direct and indirect links to the ocean. It is a diverse universe of industries and companies that range from marine transportation, port infrastructure, offshore renewable energy, the global seafood complex, and even to companies that have a role to play in developing the circular economy. This leads us to believe that the blue economy is an emerging investment opportunity due to:

POTENTIAL DRIVERS OF FUTURE BLUE ECONOMY OUTPERFORMANCE



Increased regulations



Changes in consumer buying preferences



Technological advancements

At Rockefeller Asset Management, we believe our decades long ESG investing history and over 10 years of experience in the blue economy investment opportunities, supported by our partnership with The Ocean Foundation, give us differentiated knowledge and access to address ocean-related challenges, support solutions, and catalyze positive impact through engagement.

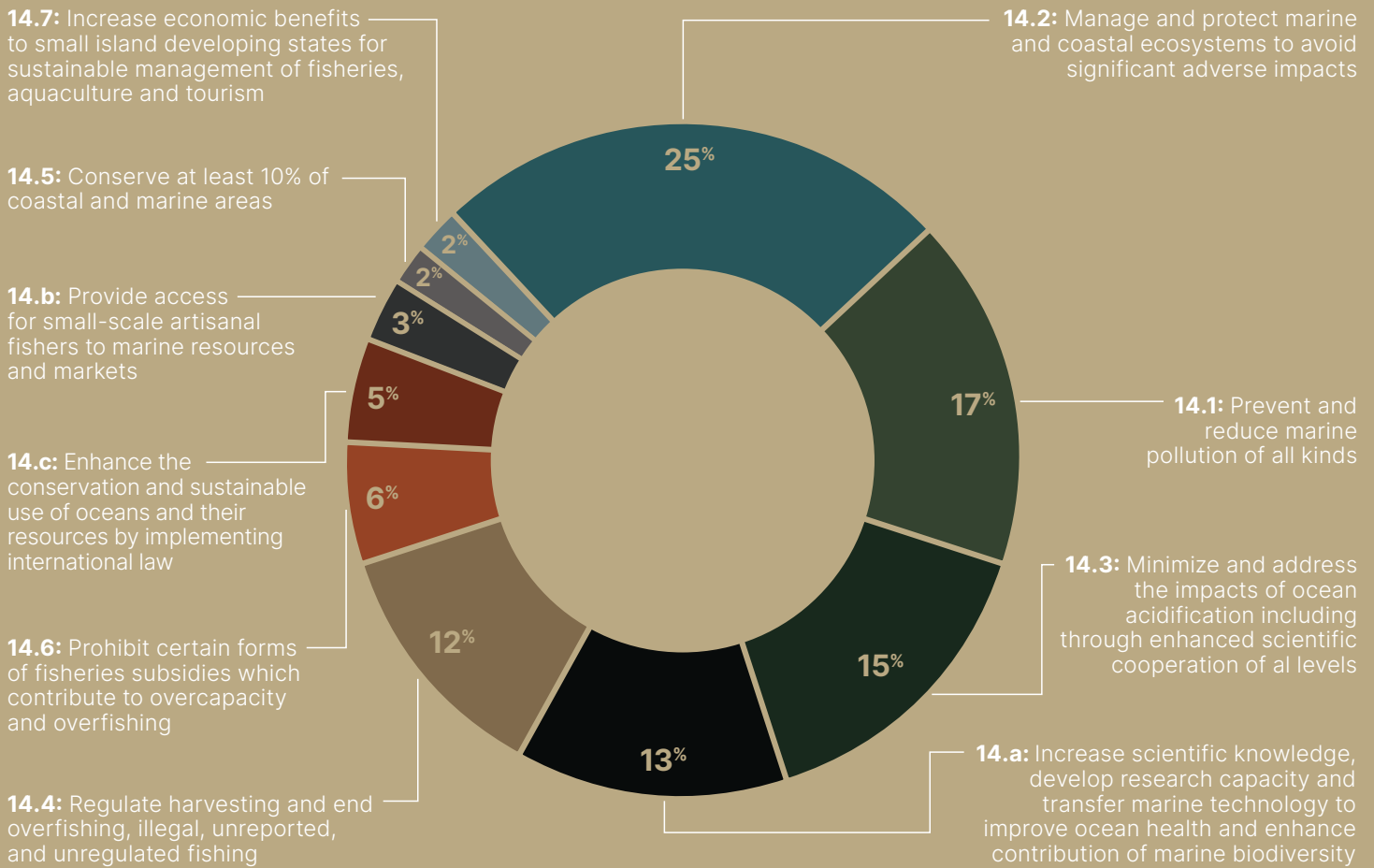
We look for opportunities to actively engage with companies to address material issues that can enhance their risk profile and seek to capitalize on opportunities linked to the sustainable development goals (SDG). In particular, on the structure of the Ocean Engagement strategy and its themes and subthemes are closely related to SDG 14: Life Below Water, which has historically been the most underfunded SDG despite having potential in addressing the triple planetary crisis.²³ For companies in the portfolio, we proactively engage to seek improvements that we believe will benefit progress against SDG 14. In 2023, we spent most of our time discussing SDG 14's sub indicators 14.1, 14.2, and 14.3.

²² Sumaila, U.R., Walsh, M., Hoareau, K. et al. (2021, June 8). "Financing a sustainable ocean economy." Nature Communications. <https://doi.org/10.1038/s41467-021-23168-y>

²³ United Nations Development Program. "The ocean and the blue economy are fundamental to addressing the triple planetary crisis – says UNDP." (2022, June 8).

<https://www.undp.org/press-releases/ocean-and-blue-economy-are-fundamental-addressing-triple-planetary-crisis%E2%80%94says-undptions> Development Programme

SDG14 ENGAGEMENT ALIGNMENT



For example, plastic pollution has been recognized as causing significant harm to ocean ecosystems. Despite this, plastic use has increased considerably over the last two decades.²⁴ Furthermore, emerging concerns, such as microplastics, are leading to potential new policies and regulations to address recycling infrastructure, alternative packaging, and potential health risks.²⁵ Rockefeller's Ocean Engagement strategy is designed to encourage companies to sustainably manage and protect marine coastal ecosystems from pollution of all kinds. We also look to address the impacts of ocean acidification and aim to end overfishing and destructive fishing practices through influencing business practices and promoting positive impacts on the ocean environment. We have seen recent policies passed, helping to accelerate renewable energy, the circular economy, and sustainable marine transportation. These opportunities can be identified among mature industries that are usually overlooked by public equity funds that are seeking ESG leaders. In addition to exciting opportunities among solution-oriented and ESG-leading business models, there are underappreciated opportunities among mature industries that have attractive valuations, middling third-party ESG scores, or may not be adequately recognized for their sustainability efforts. The incorporation of active engagement can reduce risk and promote sustainable efforts that may be recognized by the market over time. As long-term investors, this twin approach is aligned with our process to position us to unlock alpha and provide positive impact.

²⁴ Organisation for Economic Co-Operation and Development (OECD). "Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD." (2022, February 2). <https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm>

²⁵ Munhoz, Davi R., Paula Harkes, Nicolas Beriot, Joana Larreta, and Oihane C. Basurko. 2023. "Microplastics: A Review of Policies and Responses" *Microplastics 2*, no. 1: 1-26. <https://doi.org/10.3390/microplastics2010001>

THE FOUR STEP PROCESS

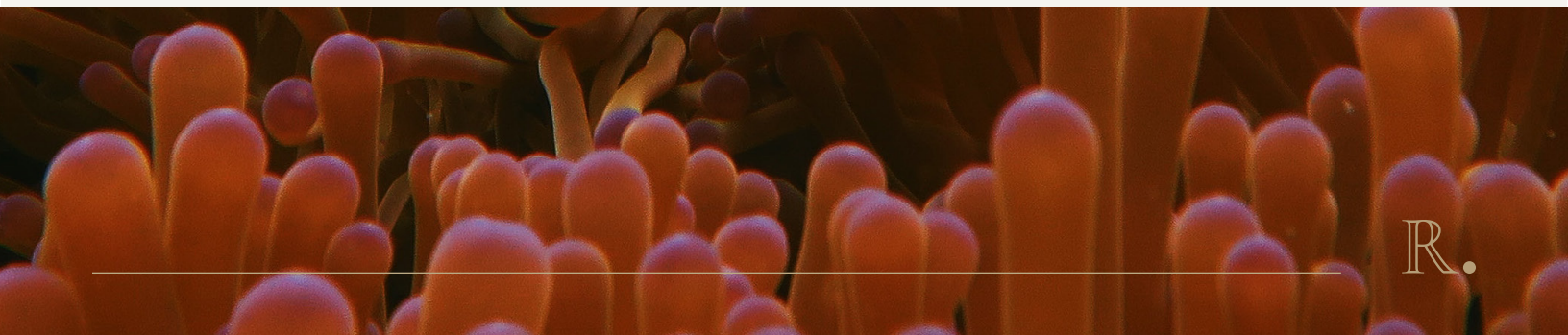


We believe that organizations that are improving their ESG practices will experience stronger financial returns over the long term and incorporating engagement into the investment process can lead to share price outperformance over time. That is because our engagement focuses on areas of improvement that have a strong business case and make sense from a financial perspective. Our approach goes beyond just selecting companies that are ocean leaders and solutions.

To influence this, our shareholder engagement team builds relationships with investee companies to identify and analyze material issues and opportunities. When it comes to ocean risk and opportunities, this practice is imperative.

The engagement team and the fundamental analysts speak to management about key ESG issues throughout the research and investment process. These discussions enable us to assess a company's engage-ability, develop an engagement plan, and work constructively to catalyze improvement. Engagement then continues throughout the holding period, as our team follows a four-stage shareholder engagement escalation process to increase the probability of an outcome: (1) Constructive Dialogue, (2) Official Letters, (3) Collaborative Action, and (4) Shareholder Resolutions. We seek to proactively engage with management, often speaking to individual companies several times a year. Our four-step engagement process seeks to enhance company returns and catalyze positive change:

Enhance company returns	Improve competitive positioning	<ul style="list-style-type: none"> • Stay ahead of consumer preferences • Shift to more sustainable business models • Reduce cost by cutting waste
	Reduce reputational risks	<ul style="list-style-type: none"> • Avoid labor strikes, protests or boycotts
	Get ahead of regulatory risks	<ul style="list-style-type: none"> • Avoid potential carbon pricing costs, pollution taxes, etc.
	Improve ESG ratings/rankings	<ul style="list-style-type: none"> • Improve disclosure of material ESG issues
Catalyze positive change	Reduce environmental impact	<ul style="list-style-type: none"> • Decrease emissions • Improve efficiency in use of water, energy etc. • Protect natural capital
	Improve social outcomes	<ul style="list-style-type: none"> • Improve worker health and safety



By discussing best practices with companies actively involved in the blue economy, we can influence their business practices to promote positive impacts on the ocean environment.

Specifically for the Ocean Engagement strategy, we categorize each holding into one of three buckets: Solution, Leader, or Improver. In this strategy, we focus on Improvers, as we believe there is an opportunity for us to directly address ocean health by working with companies on business practices that can lead to the reduction of the risk posed to ocean environments. By doing this, we establish our

engagement thesis to detail what change could be beneficial for the company and the ocean. We actively avoid business models that are ocean endangerers, such as offshore oil and gas or deep seabed mining companies, as their operational activities can lead to adverse impacts to marine environments. Pollution Prevention, Carbon Transition and Ocean Conservation are three major themes that we believe can capture solution-based opportunities. These themes are then broken down further into subthemes that we use as a framework to synergistically and intentionally engage across the portfolio.

1 Pollution Prevention

The theme focuses on:

- Chemical Pollution
- Seismic & Acoustic Pollution
- Plastics
- Pollution & Waste Disposal

Engagement topics:

- Embrace circular economy principles to prevent medical waste in waste streams (waste disposal companies)
- Transition away from plastic packaging towards other forms of packaging (packaging manufacturers)
- Request product formulation changes and adopt green chemistry to avoid ocean environment degradation (consumer product companies)

2 Carbon Transition

The theme focuses on:

- Carbon Emissions
- Ocean Renewable Energy
- Alternative Energy
- Air Pollution

Engagement topics:

- Reduce Greenhouse Gas (GHG) emissions to mitigate sea level rise and ocean acidification (shipping, energy & airline companies)
- Promote the transition to low carbon energy
- Promote use of carbon offsets to supplement emission reduction strategy

3 Ocean Conservation

The theme focuses on:

- Overfishing & Unregulated Fishing
- Nutrient Loading
- Depletion of Ocean Resources
- Coastal Development

Engagement topics:

- Implement sustainable aquaculture and fishing practices (fishing companies)
- Develop coastal protection programs that will preserve coastal areas and enhance guests' experience (hotel groups)
- Limit agricultural runoff that contributes to coral bleaching and algae blooms (fertilizer companies)

Pollution Prevention

Pollution in our ocean is an omnipresent issue. While waste such as oil spills, disaster debris, or inorganic materials like large plastic items are clearly visible pollutants, our ocean is also contaminated with toxic chemicals, nutrients, and microplastics that cannot be seen by the naked eye. We define components that pollute and disrupt the ocean as chemical, seismic, and acoustic, waste disposal, and plastic.

Pollution control can lead to increased societal and economic benefits by increasing productivity of resources. Compared with business-as-usual, the plastic circular economy could have the potential to generate savings of USD 200 billion per year, reduce greenhouse gases by 25%, and create 700,000 net additional jobs by 2040.²⁶ Recent estimates find that every dollar invested in air pollution control since passage of the Clean Air Act has produced an economic benefit of \$30. We can see similar simultaneous benefits while tackling other forms of pollution.²⁷

CHEMICAL

Chemical pollution is the harming of the marine environment by human-made fertilizers, pesticides, herbicides, detergents, pharmaceuticals and other household or cosmetic products, industrial chemicals, or sewage.²⁸ Chemical pollutants often enter waterways like rivers and streams as runoff and eventually make their way to the ocean.



Runoff occurs when impervious surfaces are unable to absorb excess water and can either occur from point sources²⁹ or nonpoint sources.³⁰ Currently, regulations for point source pollution sources vary by country and state. To combat chemical pollution, manufacturers should be more responsible for any point source waste that they are dumping into ocean, along with runoff that could be coming from their products or operations. City planners should incorporate more porous surfaces to allow water that may contain runoff from entering waterways.

26 The Ellen MacArthur Foundation. "Perspective on 'Breaking the Plastic Wave' study: The circular economy solution to plastic pollution." (2022, October 21). <https://www.ellenmacarthurfoundation.org/perspective-on-breaking-the-plastic-wave-study>

27 Boston College MassCleanAir. "A Pollution-Free Future Doesn't Only Save Lives." (2022). <https://www.bc.edu/bc-web/centers/schiller-institute/sites/masscleanair/articles/econ.html#:~:text=Recent%20estimates%20find%20that%20every%20dollar%20invested%20in,longer%20lived%20citizens%20and%20reduced%20health%20care%20costs>

28 Big Blue Ocean Cleanup. "Chemical Pollution." (2023). <https://www.bigblueoceancleanup.org/chemical-pollution>

29 Definition: any pipes or distribution system that empties into a waterway, such as sewage treatment plants, factories, or private homes

30 Definition: any source that does not directly enter a waterway through communities where people live.

Engagement Example: Shiseido

Please see page 29 for methodology for selecting case studies.

Shiseido is a beauty and personal care company based in Japan that manufactures and distributes cosmetics, toiletries, and beauty products for a variety of global brands alongside its own private labels. The firm operates a robust innovation and formulation department and is in a position of responsibility to set precedent for the elimination of marine- and human-harmful chemicals from product formulations.

Oxybenzone and octinoxate are two such marine-harmful chemicals that are often found in sunscreen and sun care products due to their UVA and UVB absorbing properties. These chemicals become nonpoint source runoff when they come off the skin, accumulating in waters where sunscreen-clad people sweat, swim, and play. In ocean waters, oxybenzone can cause deformities in both coral larvae and baby corals, can damage coral DNA, and can create abnormal skeletal growth,³¹ all of which heighten coral's susceptibility to bleaching.³²

When we initiated our position in Shiseido, we knew that some of their name brand sun care products contained oxybenzone and octinoxate. We also knew that Shiseido was in the process of reinvigorating its global image as it worked to grow the proportion of prestige products and gain market share against household names like L'Oréal and Estée Lauder. Combining investor pressure and research on consumer preferences, we advised that eliminating these chemicals would provide a marketing and brand value benefit, connect Shiseido with the premium consumer niche they are striving to reach, and

better position the company as a household name for prestigious, ocean-friendly sun care products.

In late 2021, Shiseido communicated that they decided to phase out oxybenzone from all product formulations. We met with the team to congratulate Shiseido on its commitment and to ask about the strategy for implementation. Throughout 2022, Shiseido did not publish a timeline or stock-keeping unit (SKU) list detailing that elimination process. However, during that time the firm was centralizing its sustainability oversight functions and establishing a more cohesive organizational structure between its corporate and brand functions. Shiseido voiced their appreciation for (and the utility of) the oxybenzone letter we sent to their leadership team and welcomed a second letter with more formalized and specific next steps to mobilize action on a phaseout plan. These letters served as a tool for Shiseido employees to prove investor interest, dedication, and support to leadership that this phase out is of utmost importance.

By early 2023, we were informed that a complete phaseout date has been set. We will continue to work with Shiseido on the elimination plan by providing resources and feedback on how to best design, disclose, and market the phaseout plan. Additionally, we will continue to engage Shiseido on chemicals like silicones, which bioaccumulate in aquatic organisms throughout the food chain,³³ and parabens, which can harm fertility and reproduction in marine mammals.³⁴

31 Smithsonian National Museum of Natural History. "The Truth About Corals and Sunscreen" (2022, September). The Truth About Corals and Sunscreen | Smithsonian Ocean (si.edu)

32 Definition: Coral bleaching is a process by which corals expel the symbiotic algae living in their tissues, causing them to lose all color, increasing stress to coral, and making the coral subject to mortality.

33 European Chemicals Agency. "ANNEX XV RESTRICTION REPORT: PROPOSAL FOR A RESTRICTION." (2015, June). [9a53a4d9-a641-4b7b-ad58-8fec6cf26229](https://european-chemicals-agency.eu/9a53a4d9-a641-4b7b-ad58-8fec6cf26229) (europea.eu)

34 Medkova, Denisa, Aneta Hollerova, Barbora Riesova, Jana Blahova, Nikola Hodkovicova, Petr Marsalek, Veronika Doubkova, Zuzana Weiserova, Jan Mares, Martin Faldyna, and et al. 2023. "Pesticides and Parabens Contaminating Aquatic Environment: Acute and Sub-Chronic Toxicity towards Early-Life Stages of Freshwater Fish and Amphibians" *Toxics* 11, no. 4: 333. <https://doi.org/10.3390/toxics11040333>

SEISMIC AND ACOUSTIC

Think about being underwater. Usually it's quiet, peaceful even. Now imagine the serene seascape reverberating and muddled by drilling, mining, ship motors, and active sonar. Over the past 200 years, the ocean has become exponentially noisier. From shipping to resource exploration to infrastructure development, human activities have increased anthropophony,³⁵ while biophony³⁶ has diminished.³⁷ This increased noise is having a major impact on behavior, physiology, and survival of marine life, as sound is the sensory cue that travels furthest in the ocean.³⁸

There is a silver lining with human-created ocean noise pollution: the noise can be stopped instantly and does not, as far as we know, have lingering effects like other contaminants. By managing human activities in the ocean such as ship traffic, moving from pile driving turbine installations to floating turbines, and/or minimizing underwater mining, the ocean soundscape can transition back to natural levels.

WASTE DISPOSAL

Proper management of waste is essential to ensuring that pollutants do not contaminate the ocean. Historically, product designers have used the strategy from “cradle to grave” when thinking through the impact their design may have on the environment. This approach implies a linear trajectory, assuming disposal or end-of-life of the product.

Recently, it has become more common to design products for circularity, or “cradle to cradle.” This model of production and consumption aims to reduce waste and extend the lifecycle of products by reusing, repairing, refurbishing, and recycling existing materials and products.³⁹ The circular economy is upheld by three design-centric principles:

eliminate waste and pollution, circulate products and materials at highest value, and regenerate nature.⁴⁰ When products are designed to eliminate the need for disposal it will lead to an increase in material health, clean air and climate protection, water and soil stewardship, and social fairness.⁴¹ In addition, designing products with circularity in mind now will minimize the impact pollution can have on our ocean, while ensuring emerging products will not need to be redesigned in the future to minimize their end-of-life impact. Learn more about a recent engagement we had with Waste Management, Inc. on its 2030 circularity target with a long-term focus on increasing overall recovery of material for beneficial use [here](#).

PLASTIC

Modern spaces are composed of and contain large amounts of plastics. From bottles and straws to car components and fibers in clothing, plastics are in many of the items we use daily. Plastic is a cheap, easy-to-produce material that has revolutionized the way humans live. From medical innovation in vaccine syringes to increasing the shelf life of fresh food, plastic has enabled safety, efficiency, and the minimization of food waste.

While its use case is revolutionary, we grapple with how to properly dispose of this material that cannot decompose and is often designed for one-time use. Currently, plastic waste accounts for 85% of all litter plaguing our ocean.⁴² This has a major impact on all marine life, as animals that cohabit the ocean face toxification, starvation, and suffocation due to the sheer amount of plastic waste.

Global plastic waste more than doubled from 2000 to 2019⁴³ and is expected to increase by 40% over the next decade.⁴⁴ The critical fact that only 9% of plastics

35 Definition: sounds generated by human activities

36 Definition: sounds of biological origin

37 Duarte, C., et al. (2021, February 5). “The soundscape of the Anthropocene ocean.” *Science*. <https://doi.org/10.1126/science.aba4658>

38 Duarte, C., et al. (2021, February 5). “The soundscape of the Anthropocene ocean.” *Science*. <https://doi.org/10.1126/science.aba4658>

39 Corporate Finance Institute. “Circular Economy - Overview, Principles, Types of Cycles.” (2022, December 27). <https://corporatefinanceinstitute.com/resources/economics/circular-economy/>

40 Ellen MacArthur Foundation. “What is a circular economy?” (n.d.) <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

41 Cradle to Cradle Products Innovation Institute. “Cradle to Cradle Certified®.” (2023). <https://c2ccertified.org/the-standard>

42 UN News. “Plastic Pollution on course to double by 2030.” (2021, October 21). <https://news.un.org/en/story/2021/10/1103692>

43 OECD. “Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD.” (2022, February 22).

<https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm>

44 Global Citizen. “Plastic Production Will Increase by 40% Over the Next Decade.” (2017, December 26). <https://www.globalcitizen.org>

are successfully recycled means that the bulk of the plastic waste ends up in landfills or is incinerated, which leaks harmful chemicals into the atmosphere or breaks down in the environment.⁴⁵ Unlike materials like aluminum that can be infinitely recycled, manufacturers mix polymers, additives, and adhesives into plastics to create custom materials that are too complex or too contaminated to be effectively or economically recycled in the current state of global recycling infrastructure, let alone to contribute to a circular economy.⁴⁶

Society has grappled with determining how to tackle the plastic problem and who should be responsible. Much of the responsibility has fallen on consumers, who have been educated – to varying degrees of success – through government-sponsored campaigns and in school on how to recycle the seven different types of plastics. Recently, however, more pressure is being put on the manufacturers who are producing the plastic products and selling them to consumers. Extended Producer Responsibility (EPR) is an environmental policy approach that originated in Sweden and extends the manufacturer's responsibility to the post-consumer stage of a product's life cycle. These policies are intended to provide incentives for producers to take environmental considerations into account when designing products.⁴⁷ Additionally, EPR aims to shift the financial burden away from municipalities and local governments to the manufacturers of products who are required to fund, via a variety of strategies, including Individual Producer Responsibility and Collective Producer Responsibility (variable- or fixed-fee), depending on geography, waste

management.⁴⁸ In essence, the policies force manufacturers to pay to collect and properly process waste.

To mitigate the plastic problem, EPR is necessary. While the bones behind EPR are strong, there is still a concern for toxicants that can leak into the environment by chemically or mechanically breaking down plastic. Recent studies indicate a high rate of transfer of thousands of chemicals, including carcinogens, obesogens, and endocrine disruptors, can leach into food and the environment when recycled content is used in plastics.⁴⁹ This occurs because polymer bonds weaken during the mechanical recycling process, making it easier for the bonds to break down again when being used as a recycled plastic product. In addition, it is still unclear whether chemical recycling is any safer. Solvents used in the chemical recycling process are still being questioned on their safety for food grade use. Therefore, recycling may not be the most effective way to manage plastic waste, especially as more and more producers are moving towards using recycled plastics in their products. In short, we must design away from plastic from the beginning of the manufacturing process to limit the harm done to our ocean and environment.

There are reasons for optimism. In June 2023, the UN convened talks with country representatives to create a legally binding document aimed to reduce harmful plastic waste.⁵⁰ We are confident that a plastic pollution treaty will be instrumental in minimizing plastic pollution globally and will complement existing single-use plastic bans and restrictions in many cities around the globe.

45 OECD. "Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD." (2022, February 22).

<https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm>

46 The Ocean Foundation. "Plastics Initiative." (n.d.) <https://oceanfdn.org/initiatives/plastics-initiative/>

47 OECD. "Extended Producer Responsibility." (n.d.) <https://www.oecd.org/environment/extended-producer-responsibility.htm>

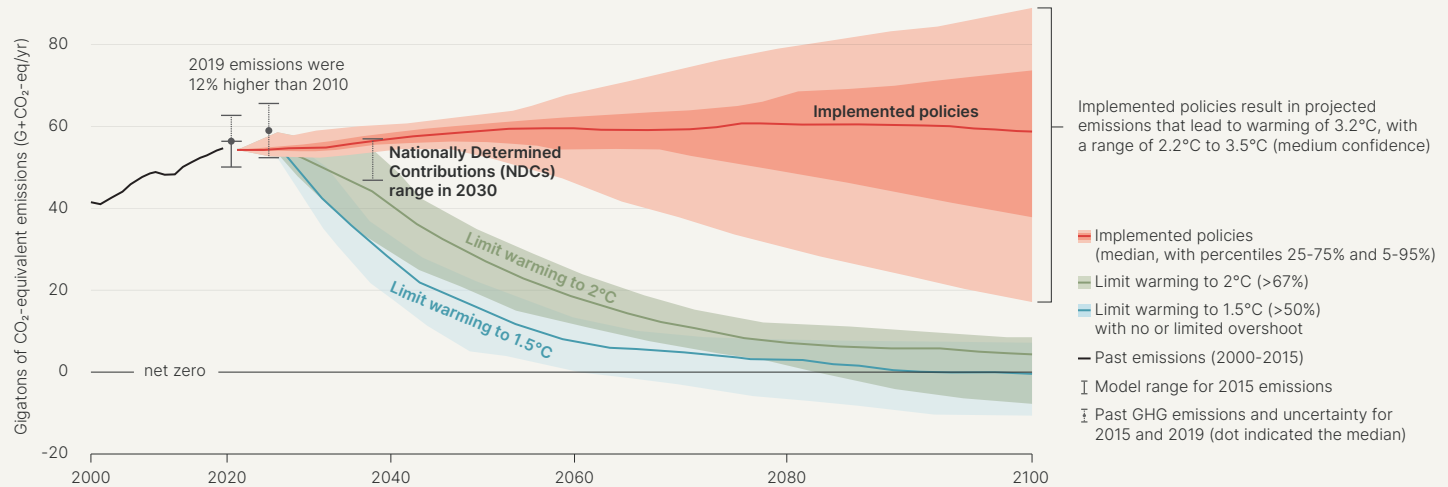
48 OECD. "Chapter 5: Incentives for eco-design in extended producer responsibility." (2016), *Extended Producer Responsibility: Updated Guidance for Efficient Waste Management*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264256385-en>

49 Geueke, B., Phelps, D., Parkinson, L., & Muncke, J. (2023, May 2). Hazardous chemicals in recycled and reusable plastic food packaging. *Cambridge Prisms: Plastics*, 1, E7. <https://doi.org/10.1017/plc.2023.7>

50 United Nations Environment Programme. "Intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment, on the work of its second session." (2023, July 6). <https://wedocs.unep.org/bitstream/handle/20.500.11822/42953/FinalINC2Report.pdf>

Carbon Transition

NET GLOBAL GREENHOUSE GAS (GHG) EMISSIONS



Source: IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001 https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel-Economic-Analysis_FINAL.pdf. Figure SPM.5.a : Limiting warming to 1.5 degrees C and 2 degrees C involves rapid, deep and in most cases immediate greenhouse gas emission reductions.

To address climate change, 196 parties at the UN Climate Change Conference (COP21) adopted the Paris Agreement in 2015. This legally binding international treaty requires economic and social transformation on a five-year cycle of increasingly ambitious climate action.⁵¹

Each year the Intergovernmental Panel on Climate Change (IPCC) reports human activities, principally through emissions of greenhouse gases, that have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 levels in 2011-2020.⁵² Urgent action is necessary to limit warming to 1.5°C or 2.0°C, as defined as by the Paris Agreement. Carbon transition, specifically of activities with ties to the ocean, is one step in the grand scheme of limiting the warming of the planet. The ocean plays an important role in the transition – as one of the main regulators of climate for the

planet – sustainable management and measurement of the ocean composition is essential.

The return potential for investing in the carbon transition related to the ocean is evident. For every \$1 invested in global offshore wind production may generate estimated returns between \$2 and \$17. Meanwhile, every \$1 invested in decarbonizing marine shipping and reducing emissions to net zero may generate estimated returns between \$2 and \$5.⁵³

CARBON EMISSIONS AND AIR POLLUTION

Since the Industrial Revolution, human-caused activities have increased the concentration of carbon dioxide (CO₂) in the atmosphere because of fossil fuel burning, deforestation, and other land-use changes.⁵⁴ The ocean

⁵¹ United Nations – Climate Change. (n.d.) "The Paris Agreement: What is the Paris Agreement?" <https://unfccc.int/process-and-meetings/the-paris-agreement/#What%20is%20The%20Paris%20Agreement?>

⁵² IPCC, 2023: Sections. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115, doi: 10.59327/IPCC/AR6-9789291691647

⁵³ The High-Level Panel for a Sustainable Ocean Economy. "A Sustainable Ocean Economy for 2050: Approximating Its Benefits and Costs." (2020, July 14). https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel-Economic-Analysis_FINAL.pdf

⁵⁴ National Oceanic and Atmospheric Administration (NOAA). (2023, January 20). "What is Ocean Acidification?" <https://oceanservice.noaa.gov/facts/acidification.html>

absorbs 25% of the planet's CO₂ emission air pollution, an essential carbon sink. However, the increasing carbon has changed its composition, regulatory cycles, and current. In addition, when CO₂ dissolves in the ocean, the pH levels decrease, contributing to ocean acidification.⁵⁵ Acidification can create a chain reaction, impacting all ecosystems in the ocean.

Many microorganisms, like plankton, store carbon in their bodies. Given that their survival depends on the pH levels of the ocean, and increasing carbon is decreasing pH, these organisms will increasingly need to put more effort into repairing and thickening their shells due to acidic erosion. This reallocation of biotic resources means these microorganisms' abilities to grow, reproduce, and ultimately survive, will lessen.⁵⁶ The demise of these microorganisms will set in motion a domino effect that will impact millions of other ocean species and environments. Plankton are the base for the food web in the ocean, they provide food for virtually every other marine creature.⁵⁷ As ecosystems fail and the ocean gets flooded by CO₂, plankton can no longer help to regulate due to acidification. It is clear a dangerous cycle has been established and our ocean as a regulator of climate cannot function properly due to the impacts on climate that humans are having. However, even if we can stop heating the ocean, acidification could continue.⁵⁸

Countries are turning their attention and resources towards policies to support the carbon transition. The European Green Deal was passed in 2020 with the ambition for Europe to be the first climate-neutral continent by having

no net emissions from greenhouse gas emissions by 2050, decouple economic growth from resource use, and leave no person or place behind.⁵⁹ The European Green Deal will provide cleaner energy and cutting-edge clean technological innovations, meaning they are actively investing to ensure a green transition away from emissions.

In 2022, the U.S. followed suit with the Inflation Reduction Act (IRA), which directs nearly \$400 billion in federal funding to clean energy, with a goal of lowering the country's carbon emissions through a mix of tax incentives, grants, and loan guarantees.⁶⁰ This bill is the largest investment in the climate change and energy transitions and will provide companies with proper incentives to fund the carbon transition to a greener planet. These policies are essential to ensure the ocean is protected during decarbonization efforts, as the ocean is imperative to a successful carbon transition.

OCEAN RENEWABLE ENERGY AND ALTERNATIVE ENERGY

The UN Convention on the Law of the Sea (UNCLOS) allows states to access the resources off their coasts, up to 200 nautical miles away.⁶¹ With this legal stature, offshore energy production has been on the rise. From traditional extractive offshore petroleum and gas drilling, to energy-transition enabling floating wind turbines, offshore energy production and management is important as safe and reliable energy sources are necessary for economic development and poverty reduction.⁶²

55 Definition: a reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of CO₂ from the atmosphere

56 The Natural History Museum. (n.d.) "How does ocean acidification affect marine life?" <https://www.nhm.ac.uk/discover/quick-questions/how-does-ocean-acidification-affect-marine-life.html>

57 Falkowski, P. Ocean Science: The power of plankton. *Nature* 483, S17–S20 (2012). <https://doi.org/10.1038/483S17a>

58 The Ocean Foundation. "Don't Shade the Ocean." (2023). <https://oceanfdn.org/wp-content/uploads/2023/11/Dont-Shade-the-Ocean-1.pdf>

59 United Nations Convention on the Law of the Sea. "United Nations Convention on the Law of the Sea Part V: Exclusive Economic Zone." (1994, November 14). https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

60 U.S. Department of Energy. (n.d.) "Inflation Reduction Act of 2022." <https://www.energy.gov/lpo/inflation-reduction-act-2022>

61 Wu, S., Zou, K. (2013). "Securing the Safety of Navigation in East Asia." Chandos Publishing. <https://doi.org/10.1016/B978-0-85709-489-6.50016-1>

62 Nyman, E. (2017). "Maritime energy and security: Synergistic maximization or necessary tradeoffs? Energy Policy. <https://doi.org/10.1016/j.enpol.2017.04.004>

Ocean renewable energy, including offshore wind, tidal, wave, floating solar, salinity gradient, and ocean thermal energy, is a growing sector that will support global decarbonization and energy security. Of these, offshore wind is by far the most common. Global offshore wind capacity is projected to increase fifteen-fold by 2040 to a \$1 trillion industry, with growth coming mostly from the Asia-Pacific region and Europe.⁶³ In fact, offshore wind is on track to become the number one source of power generation in Europe by 2042.⁶⁴

The focus on offshore wind is not accidental. Winds are stronger offshore, allowing turbines to operate more efficiently and effectively in a process that does not risk spilling toxic materials into the ocean.⁶⁵ According to the Wind Energy Technologies Office at the Office of Energy Efficiency and Renewable Energy, the offshore wind pipeline grew 13.5% over 2021 numbers, with 40,083 megawatts now in various stages of development.⁶⁶ The Biden-Harris administration set a goal to power 10 million homes, which will support 77,000 jobs up and down the supply chain. This is part of the administration's plan to expand the U.S. offshore wind energy production by deploying 30 gigawatts of offshore wind by 2030.⁶⁷

As a majority of the U.S. population lives along the coastline and will be able to harness energy from the ocean that is efficient and highly predictable due to daily and seasonal ocean cycles, making for stable and reliable sources of clean energy.⁶⁸ Offshore wind isn't the only option, there are also a series of kinetic energy sources, like current, tidal, and wave, as well as temperature and salinity sources, like ocean thermal and salinity gradient, that can generate clean and dependable energy.



63 International Energy Agency (IEA). "Offshore Wind Outlook 2019 – World Energy Outlook Special Report." (2019, November). https://iea.blob.core.windows.net/assets/495ab264-4ddf-4b68-b9c0-514295ff40a7/Offshore_Wind_Outlook_2019.pdf

64 Rokke, Nils. (2020, October 22). "5 Reasons To Back Offshore Wind Research & Development Not." Forbes. <https://www.forbes.com/sites/nilsrokke/2020/10/22/5-reasons-to-back-offshore-wind-research--development-now/?sh=10242d154f89>

65 Nyman, E. (2017). "Maritime energy and security: Synergistic maximization or necessary tradeoffs? Energy Policy. <https://doi.org/10.1016/j.enpol.2017.04.004>

66 Musial, W., et al. (2022, September). "Offshore Wind Market Report: 2022 Edition." U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy. <https://www.energy.gov/sites/default/files/2022-09/offshore-wind-market-report-2022-v2.pdf>

67 The White House. "FACT SHEET: Biden-Harris Administration Announces New Actions to Expand U.S. Offshore Wind Energy. (2022, September 15). <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/15/fact-sheet-biden-harris-administration-announces-new-actions-to-expand-u-s-offshore-wind-energy/>

68 U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy. (n.d.) "Marine Energy Basics." <https://www.energy.gov/eere/water/marine-energy-basics>

Engagement Example: Subsea 7

Please see page 29 for methodology for selecting case studies.

Subsea 7 is a leading provider of offshore oilfield services with an increasing focus on renewable energy, leaving it well placed to capture opportunities from the climate transition. Current company operations have carbon intensive vessels and potentially harmful installation processes that can negatively impact marine environments.

Throughout our engagement with Subsea 7, we have sought to gain a better understanding of their decarbonization strategy and to encourage a more strategic approach on the topic, ideally evidenced by a clear transition plan supported by capital expenditure commitments. We view this as essential to enabling execution of net zero commitments made by the company. Given Subsea 7's exposure both within its own operational emissions and due to its role in the oil and gas industry, we have recommended the company leverage the Taskforce on Climate-related Financial Disclosures' (TCFD)⁶⁹ recommendations as a framework for identifying risks and opportunities. On this, Subsea 7 has illustrated demonstrable progress after initiating disclosures aligned with TCFD recommendations and have cited their commitment to continue to improve their climate risk analysis leveraging this framework. Regarding emissions, the company continues to grapple with the challenge of decoupling growth from emissions and is investing in

efficiencies for their fleet including hybridization, digital transformation, and alternative fuels. We continue to see scope for improvement in terms of a clear transition plan and capital expenditure to support these efforts.

In addition to climate transition risks and related engagement, we have sought clarity on the company's impacts on the marine environment from installation of offshore energy facilities. Through constructive dialogue we encouraged the company to formalize policies and management of ecological impacts to the ocean floor and wildlife. To support these efforts, we recommended that the company establish new partnerships and deepen existing partnerships with non-profit and academic institutions to contribute to ocean health and enhance its social license to operate. The company partners with the UK's National Oceanographic Organization (NOC)⁷⁰ via the Blue Ocean Research Alliance (BORA).⁷¹ The alliance aims to enhance scientific understanding of the ocean through the collection of data of the deep seas. Subsea 7's partnership and target to install 15 BORA Box Sensors by 2025 is encouraging. Together with The Ocean Foundation's President Mark J. Spalding, we have confirmed the value of this data and maintain our interest in seeing successful execution of Subsea 7's targets related to the alliance.

69 Task Force on Climate-related Financial Disclosures. (n.d.) "Task Force on Climate-related Financial Disclosures." <https://www.fsb-tcdf.org/>

70 National Oceanography Centre. (n.d.) "Making sense of the changing seas." <https://noc.ac.uk/>

71 Blue Economy Research Alliance. (n.d.) "What is BORA Blue Ocean Research Alliance?" <https://www.blueoceanresearchalliance.com/>

Ocean Conservation

Ocean health is threatened by pollution, over fishing, climate change, and acidification from carbon emissions. These then exacerbate other issues related to ocean conservation, requiring further attention to sustain our ocean's health. Specifically, we highlight issues related to the depletion of ocean resources through unsustainable fishing practices, nutrient loading, and coastal protection and development. Mangrove forests, ecosystems that are critical for biodiversity and coastal protection, have experienced 60% loss attributable to human activities,⁷² and every 30 seconds an area of seagrass the size of a football field is lost.⁷³ There is scope for coastal development practices to better include natural solutions, such as mangrove rehabilitation. From 1974 to 2019, the fraction of fishery stocks within biologically sustainable levels decreased from 90% to 65%.⁷⁴ While climate is a major contributor, fisheries must also evolve their practices to prevent overfishing and further degradation of ecosystems services.

While ocean conservation efforts will produce ecological, environmental, social, and health benefits for people and planet, there is also return potential. Every \$1 invested in mangrove conservation will generate \$3 of benefits, while

\$1 invested in increasing production of sustainably sourced ocean-based protein (to ensure a healthy, balanced diet by 2050) is estimated to yield \$10 in benefits.⁷⁵

OVERFISHING, UNREGULATED FISHING, AND DEPLETION OF OCEAN RESOURCES

200 million tons of fish and seafood are produced annually, a major source of protein for approximately three billion people. Fish and seafood production has quadrupled over the past 50 years to accommodate the growing population and increased preferences for seafood. Even with this growth in production capacity, we are catching fish faster than stocks can be replenished, over-exploiting wild caught seafood stocks.⁷⁶ Modern fishing gear enables companies to harvest larger catch volumes faster and, due to advances in refrigeration, the vessels themselves can stay at sea substantially longer and travel further. Fishing gear can damage marine habitats and have high rates of bycatch, a major threat to non-target species, including sharks, rays,⁷⁷ and coral reefs.⁷⁸ Globally, 34% of stocks are overfished, which is creating harmful imbalance across interconnected marine ecosystems and causing fish populations to decline.

72 The Global Mangrove Alliance. "The State of the World's Mangroves." (2021). https://www.nature.org/content/dam/tnc/nature/en/documents/state_of_word_mangroves.pdf

73 The Natural History Museum. "Artificial reefs in seagrass meadows could help protect against climate change." (2023, July 26). <https://www.nhm.ac.uk/discover/news/2023/july/artificial-reefs-seagrass-meadows-could-help-protect-against-climate-change.html#:~:text=Artificial%20reefs%20might%20help%20to,carbon%20dioxide%20beneath%20the%20waves>

74 Food and Agriculture Organization of the United Nations (FAO). "The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation." (2022). <https://doi.org/10.4060/cc0461en>

75 The High-Level Panel for a Sustainable Ocean Economy. "A Sustainable Ocean Economy for 2050: Approximating Its Benefits and Costs." (2020, July 14). https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel_Economic-Analysis_FINAL.pdf

76 Ritchie, H., Roser, M. (2021, October). "Fish and Overfishing." Our World in Data. <https://ourworldindata.org/fish-and-overfishing#what-does-sustainable-fishing-mean>

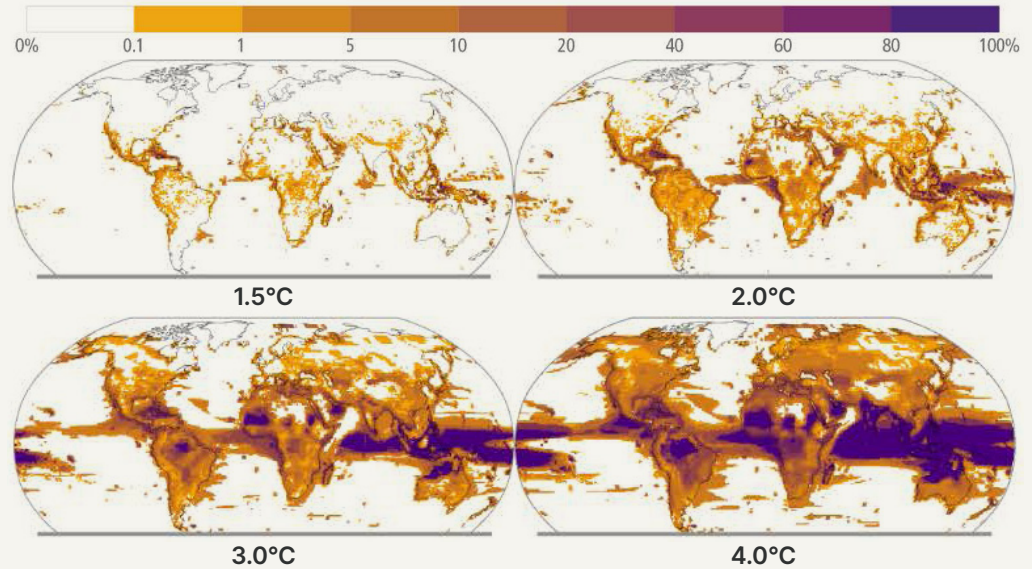
77 World Wildlife Fund (WWF). (2021, September 8). "Overfishing puts more than one-third of all sharks, rays, and chimaeras at risk of extinction." <https://www.worldwildlife.org/stories/overfishing-puts-more-than-one-third-of-all-sharks-rays-and-chimaeras-at-risk-of-extinction>

78 National Oceanic and Atmospheric Administration (NOAA). "How does overfishing threaten coral reefs?" (2023, January 20). <https://oceanservice.noaa.gov/facts/coral-overfishing.html>

FUTURE CLIMATE CHANGE IS PROJECTED TO INCREASE THE SEVERITY OF IMPACTS ACROSS NATURAL AND HUMAN SYSTEMS AND WILL INCREASE REGIONAL DIFFERENCES
 EXAMPLES OF IMPACTS WITHOUT ADDITIONAL ADAPTATION

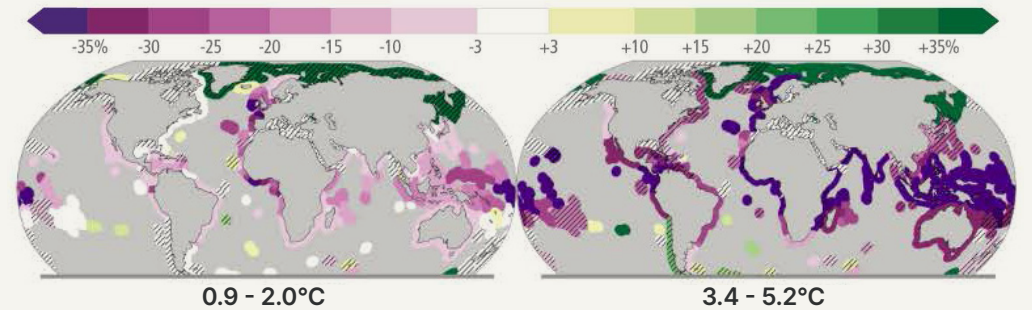


Risk of species losses
 Percentage of animal species and seagrasses exposed to potentially dangerous temperature conditions.^{1,2}



Fisheries yield³
 Changes (%) in maximum catch potential

- Areas with little or no production, or not assessed
- ▨ Areas with model disagreement



Source: Figure SPM.3: AR6 Synthesis Report (ipcc.ch)

- 1 Projected temperature conditions above the estimated historical (1850-2005) maximum mean annual temperature experienced by each species, assuming no species relocation.
- 2 Includes 30,652 species of birds, mammals, reptiles, amphibians, marine fish, benthic marine invertebrates, krill, cephalopods, corals, and seagrasses.
- 3 Projected regional impacts reflect fisheries and marine ecosystem responses to ocean physical and biogeochemical conditions such as temperature, oxygen level and net primary production. Models do not represent changes in fishing activities and some extreme climatic conditions. Projected changes in the Arctic regions have low confidence due to uncertainties associated with modelling multiple interacting drivers and ecosystem responses.

Adverse impacts of climate change on the ocean will shift the composition and distribution of fish stocks, leading to decreased food security for consumers that rely on ocean food products.⁷⁹ As seen in the graphic below, with increased warming we may experience a 35% decrease in production from the maximum catch potential of our fisheries.

As fishery management tools like protected areas and

quotas have been set for decades and did not account for the dramatic shift in habitat that climate change has created, competition for resources will likely increase as fish stocks decrease. Indeed, in the last four decades international fisheries conflict increased 20-fold⁸⁰ and in the next eight years, 23% of fish stock connected to territorial waters will migrate due to changing ocean conditions.⁸¹

79 European Commission. "A new outlook on the climate and security nexus: Addressing the impact of climate change and environmental degradation on peace, security and defense." (2023, June 28). https://www.eeas.europa.eu/sites/default/files/documents/2023/JOIN_2023_19_1_EN_ACT_part1_v7.pdf

80 Spijkers, J., et al. (2019, July). "Global patterns of fisheries conflict: Forty years of data." *Global Environmental Change*. <https://doi.org/10.1016/j.gloenvcha.2019.05.005>

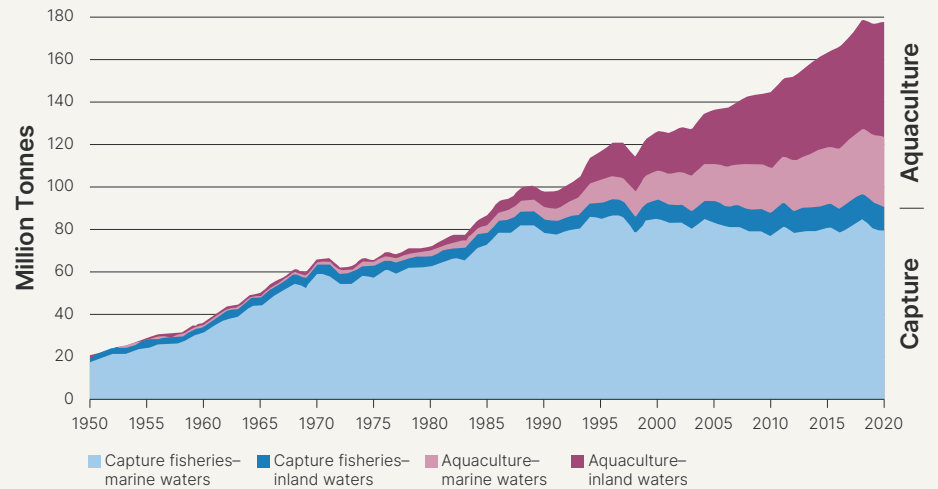
81 Palacios-Abrantes, J., et al. (2022, January 18). "Timing and magnitude of climate-driven range shifts in transboundary fish stocks challenge their management" *Global Change Biology*. <https://doi.org/10.1111/gcb.16058>

As climate change persists, we must invest in alternative methods of harvesting fish stocks. Aquaculture is the breeding, raising, and harvesting of fish, shellfish, and aquatic plants that is helping to provide a responsible source of food and rebuild stocks of threatened or endangered species.⁸² As of 2020, aquaculture production reached 122.6 million tons, employed nearly 60 million people, and generated approximately USD \$281.5 billion.⁸³ Globally, aquaculture

provides roughly 50% of seafood produced for human consumption⁸⁴ and is outpacing capture production.⁸⁵ We believe this presents a major opportunity. Aquaculture will create new jobs, support coastal communities, and provide a supplement to international trade opportunities in the seafood industry.

The transition to aquaculture must be completed responsibly. Near-shore and offshore open pens are typically seen as the most environmentally detrimental type of aquaculture, while recirculating aquaculture systems (RAS) on land are seen as the more sustainable method. Open pen aquaculture may lead to the spread of disease, promote unsustainable fish feed practices, cause the discharge of bio-hazardous materials, entangle wildlife, and lead to fish escapes.⁸⁶ In addition, aquaculture managers must be cognizant of environmental and social impacts, including social conflicts between users of land and aquatic resources,

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION



Source: Food and Agriculture Organization of the United Nations. Reproduced with permission.

the destruction of important ecosystem services, habitat destruction, the use of harmful chemicals and veterinary drugs, unsustainable production of fishmeal and fish oil, and social and cultural effects on aquaculture workers and communities.⁸⁷

Open ocean fishing will continue, however, even as aquaculture scales. Fishery management Company due diligence must improve to avoid catching threatened or endangered species, manage exploitation of limited boundaries, stay within the limits of natural ecosystems, and contribute to rebuilding fishery stocks.⁸⁸ Responsible practices include traceability of seafood product’s journey along the supply chain, which itself entails data on harvest and capture, port landings, processing, shipment, border inspection, wholesale and retail market, and the end consumer. See our [full brief on seafood traceability](#) which dives deeper into transparency in the supply chain and areas where companies can improve.

82 National Oceanic and Atmospheric Administration (NOAA). “What is aquaculture?” (2023, January 20). <https://oceanservice.noaa.gov/facts/aquaculture.html>

83 Food and Agriculture Organization of the United Nations (FAO). “The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation.” (2022). <https://www.fao.org/3/cc0461en/cc0461en.pdf>

84 National Oceanic and Atmospheric Administration (NOAA) Fisheries. (n.d.) “Aquaculture.” <https://www.fisheries.noaa.gov/topic/aquaculture>

85 Food and Agriculture Organization (FAO) of the United Nations. “The State of World Fisheries and Aquaculture 2022. Part 1 World Review.” (2022). <https://www.fao.org/3/cc0461en/online/sofia/2022/world-fisheries-aquaculture.htm>

86 The Ocean Foundation. (n.d.) “Sustainable Aquaculture.” <https://oceanfdn.org/sustainable-aquaculture/>

87 Food and Agriculture Organization (FAO) of the United Nations. “Fisheries and Aquaculture.” (2023). <https://www.fao.org/fishery/en/aquaculture>

88 Food and Agriculture Organization of the United Nations (FAO). “The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation.” (2022). <https://doi.org/10.4060/cc0461en>

Engagement Example: Nomad Foods

Please see page 29 for methodology for selecting case studies.

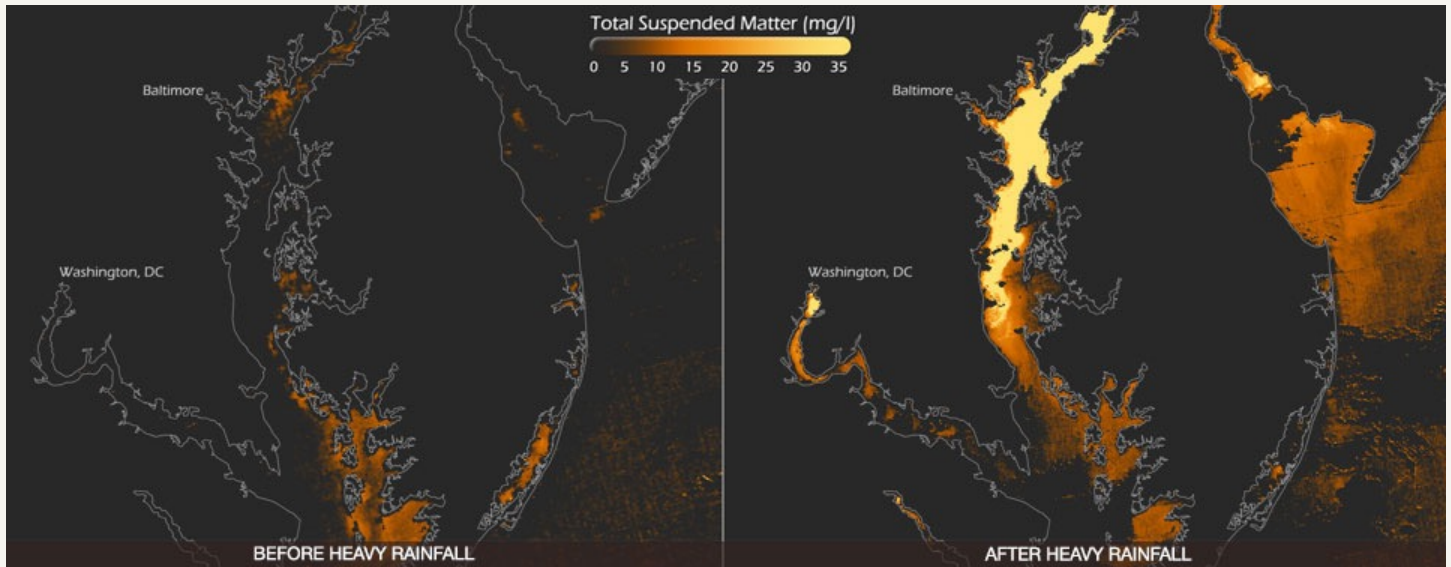
We initiated our relationship with the Nomad Foods leadership team by engaging on two related topics: sustainable seafood sourcing and the financial impact that potential sanctions on fish sourced from Russia may pose on the company. As the largest European frozen food manufacturer, 40% of Nomad's products contain white fish, and upon initiation of our position in the issuer, 40% of that white fish came from one geographic region. This positioning poses risks to supply both from overreliance on a regional stock, as well as from a geopolitical perspective. The opportunity we posed to Nomad was that of diversifying its whitefish procurement strategy away from sole reliance on Western Bering Sea pollock to different species and geographies. Building resiliency and redundancy in this manner can help insulate Nomad from the brunt of increased storm activity and price fluctuations, as well as relieving the pressure on individual pollock stocks. Additionally, whitefish diversification can open Nomad into new markets and consumer segments it didn't have access to before.

Throughout our relationship with Nomad's team of fisheries and procurement experts, we've been increasingly encouraged by the expedited timeline and subsequent progress made in diversifying away from Western Bering Sea stocks. This has included Nomad's foray into pangasius aquaculture, a species and harvesting process that are new to the issuer. Aquaculture can be a sustainable means to source fish whose wild stocks are too low or uneconomical to catch in the wild, but it is not a panacea. Nomad has forged laudable partnerships in the Mekong

River area with both suppliers and local Aquaculture Stewardship Council (ASC) affiliates, signaling the company's commitment to bring about long term, sustainable systems change. Because the value of Nomad's products is so heavily linked to sustainability credentials, and because certified stocks are relatively hard to find in Vietnam, we were interested to hear that Nomad chose not to pursue exclusivity provisions with its new suppliers. This decision was made because Nomad feels it already has the scale needed to remain competitive, and would rather have all boats rise as the tide of sustainability comes in. This is a positive read-through for our other aquaculture names operating in the region and a positive signal for the sector overall.



WHAT IS NUTRIENT POLLUTION?



Source: Science On a Sphere (noaa.gov)

NUTRIENT LOADING

Communities near waterways understand that after the rain, it is best to avoid the beach near a stream, sound, or ocean inlet. This is because as rain runoff make its way into the waterways, the nutrient load in the water increases, which in turn increases the health risk to swimmers if the water is swallowed.. These excess nutrients can come from human-caused chemical pollution, which is most often the source. However, it can also occur naturally as a result of rock weathering and soil being washed away.⁸⁹

While nutrients like nitrogen and phosphorus are necessary for plant growth, if they are too abundant in the water, they can stimulate overgrowth of algae. Harmful algae blooms quickly grow and produce toxic effects that suffocate other lifeforms in the

water, creating dead zones. When the algae begin decomposing, it consumes so much oxygen that there is not enough left for marine life to flourish, killing immobile organisms, and chasing away mobile marine life.⁹⁰ This process is called eutrophication.

COASTAL DEVELOPMENT

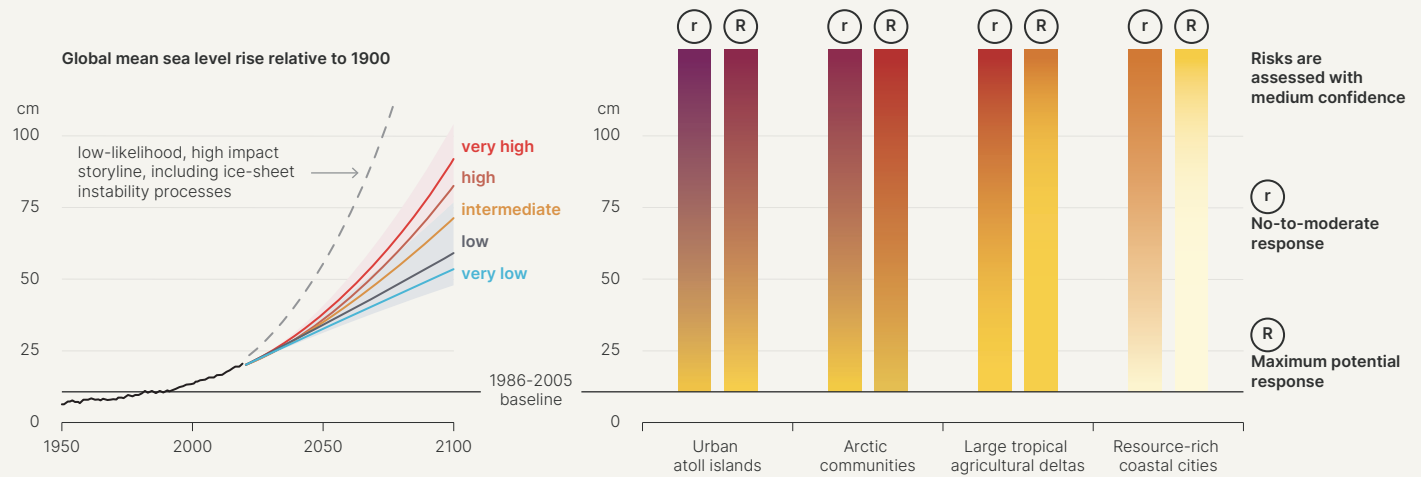
According to the UN, approximately 40% of the global population lives within 60 miles (100 km) of the coast at a density twice the global average. This population density puts tremendous pressure on our shorelines, as half of the world's coasts are at high- to medium-risk of degradation from coastal development, such as new communities, office buildings, ports, and entertainment.⁹¹ While humans continue to develop coasts, coastal geographies will experience heightened risk due to climate change and sea level rise.

89 National Oceanic and Atmospheric Administration (NOAA). (2023, January 20). "What is nutrient pollution?" <https://oceanservice.noaa.gov/facts/nutpollution.html>

90 National Oceanic and Atmospheric Administration (NOAA). (2020, April 1). "Ocean pollution and marine debris." <https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-pollution>

91 UN Environment Programme. (n.d.) "Coastal zone management." <https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/coastal-zone-management>

NET GLOBAL GREENHOUSE GAS (GHG) EMISSIONS



Source: Food and Agriculture Organization of the United Nations. Reproduced with permission.

This heightened risk calls for careful consideration of responsible and sustainable management of coastal development. In 2021, our team [visited a top shipping container port in the U.S.](#) to better understand the complexities of port operation, supply chain issues, and decarbonization initiatives. Without smart construction and efficient operations in shipping ports, coastal communities and the ocean may be adversely impacted. As discussed above, pollution and sediment runoff are significant factors to be considered when building up the coasts. As more of the population

moves to coastal cities, more structures must be built. This will lead to increased emissions, wastewater, and air pollution.

As coastal development increases, natural ecosystems diminish. Natural barriers that protect our coasts, like mangroves and coral reefs, may be destroyed during construction cycles. Additionally, as land use and land cover change, the coast may experience landslides and other adverse impacts that could endanger the communities living on the coasts.

Conclusion

The investment opportunity in companies needing to improve their practices and relationships with the ocean is immense. With large margins of improvement possible, we believe that by guiding investee companies through our engagement processes to be better stewards of the ocean, we will improve ocean and marine life health that will, in turn, have potential returns of 400 to 600 percent positive impacts on the global economy.⁹²

92 The High-Level Panel for a Sustainable Ocean Economy. "A Sustainable Ocean Economy for 2050: Approximating Its Benefits and Costs." (2020, July 14). https://oceanpanel.org/wp-content/uploads/2022/05/Ocean-Panel_Economic-Analysis_FINAL.pdf

Appendix

OCEAN ENGAGEMENT STRATEGY CONTRIBUTIONS TO THE SUSTAINABLE BLUE ECONOMY FINANCE PRINCIPLES

We are proud to be signatories of the Sustainable Blue Economy Finance (SBE) Principles,⁹³ as we believe it is well aligned with the objective of the Rockefeller Ocean Engagement Strategy. The strategy was created with twin objectives to enhance company returns and catalyze positive change among public equity holdings that we believe have business activities linked to the blue economy with an impact on ocean health.

At Rockefeller Asset Management, we believe our decades long ESG investing history and 10 years of experience in the blue economy investment opportunities, supported by our partnership with The Ocean Foundation, give us compelling knowledge and access to address ocean-related challenges, support solutions, and catalyze positive impact through engagement.

THE ROCKEFELLER OCEAN ENGAGEMENT STRATEGY OBJECTIVE

The objective of the Ocean Engagement Strategy is to outperform global equity markets over the long-term by investing in Ocean Health improvers, leaders, and solutions-oriented equity stocks. While the portfolio is benchmark unconstrained, we believe that companies positioned alongside Ocean Health themes will outperform over the long-term.

The Rockefeller Ocean Engagement Strategy incorporates an active shareholder engagement strategy that incorporates the sub-targets of SDG 14 (Life Below Water).

ACTIVE SHAREHOLDER ENGAGEMENT STRATEGY ALIGNED WITH SUSTAINABLE BLUE ECONOMY (SBE) TARGETS

Pollution Prevention, Carbon Transition, and Ocean Conservation are the three major themes that we believe can capture opportunities to actively engage with companies to address material issues that can enhance their risk profile and seek to exploit opportunities linked to the sustainable development goals (SDG), in particular, SDG 14. For example, plastic pollution has been recognized as causing significant harm to ocean ecosystems. Despite this, plastic use has increased considerably over the last five decades. Furthermore, emerging concerns, such as microplastics, are leading to potential new policies and regulations to address recycling infrastructure, alternative packaging, and potential health risks. Rockefeller's Ocean Engagement strategy is designed to encourage companies to sustainably manage and protect marine coastal ecosystems from pollution of all kinds. We also look to address the impacts of ocean acidification, and to end overfishing and destructive fishing practices through influencing business practices and promoting positive impacts on the ocean environment.

For the calendar year ending, December 31 2023, we had 54 portfolio holdings and 88 company shareholder engagements. We measure our engagement progress through four categories: 1) Target communicated, 2) Company has acknowledged the issues, 3) Company addressing issue internally, 4) Since the inception of the strategy, out of 200 targets set, we were able to achieve 60 targets.

93 UN Environment Programme | Finance Initiative. (n.d.) "The Principles: Sustainable Blue Economy Finance." <https://www.unepfi.org/blue-finance/the-principles/>

We believe recent policies to help accelerate renewable energy, the circular economy, and sustainable marine transportation can provide opportunities among mature industries that are usually overlooked by public equity funds that are seeking ESG leaders. In addition to exciting opportunities among solution-oriented and ESG-leading business models, there are underappreciated opportunities among mature

industries that have attractive valuations, middling third party ESG scores, or may not be adequately recognized for their sustainability efforts. The incorporation of active engagement can reduce risk and promote sustainable efforts that can be recognized by the market over time. Many of the SBE finance targets overlap with the objectives, philosophy, and approach of the Ocean Engagement strategy.

SBE Finance Principles	Rockefeller Asset Management Actions
Protective	The underlying objective of the Ocean Engagement Strategy is to promote sustainable efforts that can restore and protect the overall health of ocean eco-systems.
Compliant	Our engagements seek compliance of our investment holdings to various international, regional, and national frameworks which underpin sustainable development and ocean health. For example, we have worked with a Japanese shipping company to abide by the Hong Kong convention to align with international norms on ship breaking.
Risk-aware	Rockefeller Asset Management incorporates shareholder engagement in the fundamental research process for the Ocean Engagement strategy. We have a long-term investment horizon that enables active shareholder engagement.
Systemic	Through our partner, The Ocean Foundation, we seek to identify systemic and cumulative impacts of our investments through our shareholder engagements.
Inclusive	Through our shareholder engagements, we consider socio-economic impacts of the business models we invest in. For example, we engage on controversial labor issues related to the seafood company holdings.
Cooperative	We collaborate with multiple entities, such as ocean-centric NGOs and engagement platforms, to access and leverage expertise to catalyze change through our engagement.
Transparent	We strive to provide information on our philosophy and approach and provide a yearly impact report.
Purposeful	Our engagements seek to address issues and topics that are related to multiple Sustainable Development Goals, but in particular, Sustainable Development Goal 14 (Conserve and Sustainably use the ocean, seas, and marine resources for sustainable development).
Impactful	Our shareholder engagements seek to catalyze change for the environmental, social, and economic benefit our ocean.
Precautionary	Our investments are based on a framework to consider environmental and social risks that leverages the expertise of our partner, The Ocean Foundation.
Diversified	Our portfolio of investment holdings reflects a diversified portfolio of companies that operate in various industries within the blue economy, such as aquaculture, shipping, ports, seafood retailers and packaging companies.
Solution-driven	One aspect of the Ocean Engagement Strategy is to allocate investment to solution-oriented companies that have a positive impact on ocean health that is inherently derived from the business model. For example, we have companies involved in offshore wind, sustainable aquaculture, and environmental and coastal remediation.
Partnering	We have partnered with several public and private entities to accelerate progress and help advance our shareholder engagements.
Science-led	Our main partnership with The Ocean Foundation enables us to access expertise on various ocean-science related issues that helps us in our fundamental research and risk analysis.

ALIGNMENT WITH GLOBAL AGREEMENTS

Sustainable Development Goals⁹⁴

The Rockefeller Ocean Engagement Strategy is explicit in incorporating active shareholder engagement actions that seek to catalyze positive change and contributions primarily to SDG 14, while having positive impacts to other SDGs.

Kunming Montreal Global Biodiversity Framework⁹⁵

The UN Finance initiative is an important development to advocate for biodiversity resilience and to understand systems and systematic risks and identify value of common economic, social, and environmental systems. Although early, we believe it is important to raise awareness of biodiversity issues as they relates to risks of company regulations, operations, and reputation. We believe the Kunming Montreal Global Biodiversity Framework has the ability to align government policy and investments and goals by financial institutions, which can have implications for reporting the impact to ocean and marine environments.

Global Call for Treaty on Plastic Pollution

In June 2023, the UN convened talks with country representatives to create a legally binding document aimed to reduce harmful plastic waste. We are confident that a plastic pollution treaty will be instrumental in minimizing plastic pollution globally and will complement existing single-use plastic bans and restrictions in many cities around the globe. Rockefeller Asset Management has endorsed the Business

Coalition for a Global Plastics Treaty⁹⁶ which convenes an inclusive group of business, financial institutions, key NGOs, and business organizations with a share ambition towards a circular economy for plastic and a strong commitment to support an effective, legally binding treaty to end plastic pollution.

Short and long-term plans

In the near term, Rockefeller Asset Management has launched an exchange traded fund (ETF) for our Ocean Engagement Strategy through Kraneshares. This ETF provides access to the U.S. market audience to invest in the Ocean Engagement Strategy and will allow our annual impact report to be accessed by U.S investors.

Longer-term, we are seeking to provide more information on our engagement activities and seek to collaborate further with our network of NGO's, academic and research entities with the objective of enhancing our research to seek alpha generating opportunities and catalyze positive change.

94 UN Department of Economic and Social Affairs – Sustainable Development. (n.d.) "The 17 Goals." <https://sdgs.un.org/goals>

95 United Nations Environmental Programme Convention on Biological Diversity. "Kunming-Montreal Global biodiversity framework Draft decision submitted by the President." (2022, December 18). <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>

96 Business Coalition for a Global Plastics Treaty. (n.d.) "Business Coalition for a Global Plastics Treaty." <https://www.businessforplasticstreaty.org/>

ROCKEFELLER OCEAN ENGAGEMENT EQUITY STRATEGY

TOP 10 HOLDING BY WEIGHT As of 12/31/2023

	Port	MSCI ACWI	+/-
8040F/OEF	100.00	100.00	0.00
Waste Management Inc.	5.41	0.11	5.30
Berry Global Group Inc	3.79		3.79
USDUSD Spot Exchange Rate - Price of 1 USD in USD	3.71		3.71
Advanced Drainage Systems Inc	3.39		3.39
Cie de Saint-Gobain SA	3.35	0.05	3.30
Loblaw Cos Ltd	3.21	0.02	3.19
Albertsons Cos Inc	3.12	0.02	3.19
SSE PLC	3.07	0.03	3.03
Trimble Inc	3.03	0.02	3.01
Subsea 7 SA	2.93		2.93

Source Rockefeller Asset Management

CASE STUDIES

The Case Studies shown herein are for informational purposes only, as of the date indicated in the presentation and subject to change at any time. The Case Studies were selected by the Shareholder Engagement team from the universe of companies that were evaluated by the Rockefeller Asset Management (“RAM”) Equity Investment team and identified to be companies appropriate for investing in RAM’s investment strategies with an Environment, Social, Governance (“ESG”) component. The Shareholder Engagement team considered certain factors during the Case Study selection process: 1) the mobility of Milestones (there are four Milestones: target communicated, company acknowledged, company addressing, target achieved – which represent the stages and progress of an ESG initiative that is applicable to a specific company), and 2) the level of engagement each company has participated in with the Shareholder Engagement team, which is defined to include actively participated 1:1 calls or in-person meetings with the management team of the company, during the preceding 12 months as of the date of the analysis.

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Some of the risks involved with equities include the possibility that the value of the stocks may fluctuate in response to events specific to the companies or markets, as well as economic, political or social events in the U.S. or abroad. Diversification does not ensure a profit or guarantee against loss.

Environmental, Social and Governance (ESG) investing refers to an investment approach that incorporates ESG criteria into the investment process. This approach is subjective by nature, and there is no guarantee that an ESG investment approach will be successful or that it will reflect the beliefs or ideals of any one particular investor. ESG market data is limited and much of the data is unstructured and reported in varying increments and timetables. While we endeavor to obtain and analyze relevant ESG market data, there is no guarantee that we will be successful in these efforts. ESG investing can also limit the investment opportunities available to a portfolio, such as the exclusion of certain securities or issuers for nonfinancial reasons and, therefore, the portfolio may perform differently than or underperform other similar portfolios that do not apply an ESG criteria to their investment approach.

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