Let our Oceans Breathe

How investors can support ocean health

Nature-based Investing - Ocean Report November 2025

Mindful Money

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About this report

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Whakatupu Aotearoa Foundation is a philanthropic trust focused on driving system change for a restored and thriving Aotearoa. As a country, we are stewards of one of the world's largest ocean spaces, and it is this that brings increasing focus to our donations and investments. The Foundation supports initiatives that challenge harmful practices and promote ocean health through research, innovation, and advocacy. This includes Mindful Money's work to show how investment funds are impacting our oceans.

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About Mindful Money

Mindful Money is an independent charity that aims to switch investment flows from companies causing harm to companies generating positive outcomes. Mindful Money provides transparency for New Zealanders' holdings in Kiwisaver funds (superannuation schemes) and managed funds. Our research focus for 2024-2026 is on conducting a comprehensive nature-based research initiative that adopts an ecosystem approach to analyse the impacts of financial investment.

Mindful Money's approach is 'education for action'. The research extends beyond analysing the drivers of degradation to also identify the major companies that bear significant responsibility. Our aim is to enable investors to use this information in their investment decisions.

We seek to work with partners to facilitate action both in Aotearoa NZ and globally. In New Zealand, follow-up work will identify the funds that invest in these companies, using Mindful Money's unique database that traces investments into specific securities and companies. We aim for this work to play a role in strengthening the visibility of nature in investment decisions and influencing investment practices.

www.mindfulmoney.nz/ email: **info@mindfulmoney.nz**

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Foreword

Mindful Money is undertaking this research on oceans as the first in a research series that focuses on the impacts of commercial investment flows on major ecosystems. Reports on forests and land use, freshwater systems and the atmosphere will follow. The research highlights the impacts of investment on nature, focusing on nature harm and nature regeneration. Our aim is to reduce harm and support investment in regeneration.

This report focuses on commercial activity as a major influence on ocean health and a cause of degradation. It identifies global companies that cause harm and calls for action to significantly reduce harm and increase investment in regeneration.

Companies are owned by their investors and should be accountable to them. This report aims to highlight and ultimately influence the investment flows that finance corporate activity.

In the past, the connection between investment decisions and the health of the planet's ecosystems has been largely overlooked.

The investment providers and financial institutions that own shares or lend money to the large global companies also own a share of responsibility for the global crisis in biodiversity and nature. As owners, investors can and should play a powerful role in governing the corporations. They have power to influence company management, policies and practices, but rarely use it to prevent nature harm or promote positive outcomes.

Faced with the huge loss of biodiversity and damage to nature, many investment providers are now recognising they have a responsibility to people and the planet. They can no longer solely pursue short term profits and ignore the impacts on nature that their investments cause.

This research is intended to provide pathways that investors, acting through institutions that manage their money, can use to influence the companies impacting nature.

Mindful Money will use this research as a foundation to educate and engage public audiences and investment providers. The primary audiences are in Aotearoa New Zealand, but we hope that the analysis will also be valuable to organisations and individuals in other countries. We look forward to working with international allies.

We anticipate that the transparency in the identification of major companies impacting on the oceans will result in more informed and active investors. In Aotearoa New Zealand, Mindful Money will undertake public awareness and mobilisation calling on members of the public to raise concerns with their KiwiSaver and investment fund providers.

Mindful Money's Fund Checker tool enables New Zealand investors to identify the specific companies in their superannuation (KiwiSaver) and investment funds that impact on the oceans they love. They can use their influence, through their fund providers, to prevent further ocean harm and seek opportunities to invest in ocean regeneration. If sufficient progress is not made by their fund providers, they may choose to switch their investment to a more ocean-friendly fund.

A healthy, living ocean is not merely a foundation of both our wellbeing and long term economic value, it is also the habitat that other species need to survive and thrive. The intrinsic rights of nature to exist in a healthy state are starting to being recognised and given legal status.

We need to use all available avenues to transform our political and economic systems to respect, value and sustain nature. The financial system is a lever for change that has been under-utilised. This report provides a contribution towards greater understanding of the power and potential for investment to be shifted from financing the problems towards financing the solutions.

Executive Summary

The health of our oceans is crucial to the health of just about everything else – our climate, biodiversity, coastal communities and a large proportion of our economy. Oceans are arguably our most important ecosystem. But ocean health has been overlooked. The vastness of the oceans has made it seem like they are impervious to human activity. However, as this report shows, that is far from the truth. Oceans are degrading at an alarming rate.

Our economy is heavily dependent on healthy natural systems, including oceans. However, while commercial activity relies on nature, it is rapidly degrading it, often irreversibly. Climate change is the most obvious example, but the threats extend across all natural systems.

The drivers of harm

The crises of biodiversity loss and degradation of nature are not new. There have been numerous international conferences, agreements and programmes of action over the last 50 years, but growing awareness has rarely resulted in sufficient action to halt the damage. The Third Oceans Conference in 2025 has generated commitments to establish more marine protected areas, but there also needs to be progress in the five major drivers of degradation identified in this report.

We need to drastically reduce the build-up of plastics; halt the rising concentrations of pollutants, especially toxic chemicals; end overfishing and especially destructive practices such as bottom trawling; prevent the growing threat of seabed mining and other damage to the ocean floor; and rapidly reduce greenhouse gas emissions that are the main cause of acidification. New thinking and new approaches are required.

Investing in healthy oceans

This report has four key features. Firstly, the report goes beyond the analysis of risks and dependencies that detail how important the oceans are to company value and the risks nature poses. Instead this report focuses on the impacts of commercial activity. These may be negative or positive – the report provides more coverage of the negative impacts, recognising that the overwhelming weight of commercial activity is harming ocean health, rather than restoring it.

The framework for looking at Impact extends beyond ESG (Environmental, Social and Governance) analysis, and narrow measurements of company impact, to recognise the importance of tracing corporate impacts on important functions of oceans – as a provider of livelihoods for three billion people, regulators of the climate, providers of half the world's oxygen, habitat for biodiverse creatures and for literally immeasurable cultural, spiritual and amenity reasons.

Secondly, the report identifies 36 major global companies that bear a significant share of responsibility for the damage. Those companies are the largest in concentrated industries, and therefore constitute a significant proportion of the activity within each of the five drivers of damage. Many of them claim to be on a sustainable pathway, but their core business models are destructive to ocean health.

Thirdly, the report is focused on the role of capital as a pathway for powerful action. It starts with the understanding that flows of investment and finance are the lifeblood of global companies. If the financial system served the interests of ocean health and well as financial returns, there would be conditions on the use of capital to prevent damage to nature and to support regeneration.

Fund managers need to step up to this agenda. They are holders of shares and loans in these companies, and part of the corporate governance system. Their voices can and should be strong in ensuring that the companies they invest in do not damage the oceans. However, despite growing awareness about the ways that investments are dependent on nature, few funds are taking sufficient action to reduce harm. It is of concern that the largest of these global fund managers are amongst those that are most failing to take nature and biodiversity into account in their investment practices.

Finally, the report identifies the crucial role of investors – those that have savings or pools of money that are invested by the fund managers. They include institutions, such as trusts and foundations, charities, educational and health institutions, wealthy individuals and family offices, as well as insurance companies, banks, businesses and sovereign wealth funds (such as the NZ Super Fund) and investments.

Investors also include individuals with superannuation (KiwiSaver) or investment funds. It is their money that is being invested, via fund managers, into the global companies. This report aims to make those processes more transparent, so there can be accountability for the impacts back to the people and institutions who provide the capital. Mobilising these owners of capital provides an important pathway for action to support ocean health.

In New Zealand, these links between specific investment funds and the global companies in this report are accessible and free through the Mindful Money website. Members of the public can see whether they are investing in the companies that are damaging our oceans. This report, and the website, provide guidance for taking action and bringing accountability into the financial system.

The audience for this report, and the actions that flow from it, are broad. For all those who appreciate the importance of oceans and their critical state of health, we want to provide a way to take action, using the power of capital. Millions of people around the world have been educated about the tragic loss of oceans habitats and species through David Attenborough's film, Ocean. It provides both a wakeup call and a call to action. Importantly, its core message is not of hopelessness, but one of realistic hope. He cites the evidence to show that ocean can bounce back once the source of stress and damage is alleviated. Forests of kelp will regenerate rapidly; fish and a vast range of species will return; and ocean health can be restored in a matter of a few years. But first, we need to stop the damage and give our oceans a chance to breathe.

This report highlights the drivers of damage, and the exciting investments that could be made in ocean regeneration. It calls for investors to let our oceans breathe - to urgently reduce harm and scale up ocean regeneration.

Introduction

Background

Oceans play a pivotal role in our economy, contributing significantly to economic sectors such as fisheries, tourism, and trade, while also providing ecosystem services that regulate climate and support biodiversity. Despite extensive research by marine biologists, oceanographers, climatologists and other scientists, we still have much to learn about this vast realm, its essential role in the earth's biosphere[1] and how it interacts with other ecosystems.

We are still learning about how processes of economic activity affect oceans. Few companies report on the impact of their activities, and systematic monitoring of their activities is lacking.

As a result, it has been difficult for investment providers and investors to understand the impact of their investments on the health of the oceans. The scale, severity and consequences of commercial activity have not been well-documented.

This is a worrying gap in information given that the World Economic Forum highlights that in the next ten years, the top four global risks will be environmental, with the top two being extreme weather events and biodiversity loss & ecosystem collapse[2].

The lack of information is one reason why current investment approaches fail to identify important financial risks related to oceans, especially those that are indirect and pervasive, such as the accumulation of plastics in the marine environment. Even when information has been available, the traditional investment approach has been to ignore impacts on nature, except those regulated by governments. This has allowed capital to be allocated to businesses that pollute the oceans, pillage fisheries and other marine species, and destroy the seafloor and coastal areas.

These adverse impacts on the environment and communities and the planet are 'hidden costs' - they are not part of company costs and not part of their financial accounts (often called 'externalities'). Typically, most are non-financial impacts but there are ways to estimate an equivalent cost as if they were to be part of the financial system. An analysis reveals that Australia and New Zealand alone have contributed $36 billion in negative environmental impacts through externalities in 2021[3].

In the financial sphere, there is a lack of acknowledgement for the intrinsic value of nature and its importance. It is a value that lacks a financial sum, so it can be hard to quantify its significance. Beyond what nature offers to the financial industry and to humans, it has inherent value and species have rights[4]. Ecocentrism values the whole ecosystem and its processes and says "human needs, like the needs of other species, are secondary to those of the Earth as the sum of its ecosystems"[5]. This is particularly relevant to New Zealand, where as an island country we seek to protect our native species and we value them as treasures (taonga)[6].

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1 R. J. Huggett, "Ecosphere, Biosphere, or Gaia? What to Call the Global Ecosystem," Global Ecology and Biogeography 8, no. 6 (1999): 425–31.

2 World Economic Forum, "The Global Risks Report 2025."

3 S&P Global, "Unpriced Environmental Costs: The Top Externalities of the Global Market" (S&P Global Sustainable 1, July 2021), file:///C:/Users/sauck/Downloads/Unpriced-Environmental-Costs-The-Top-Externalities-of-the-Global-Market-Report%20.pdf.

4 Rea and Munns, "The Value of Nature."

5 Gray, Whyte, and Curry, "Ecocentrism: What It Means and What It Implies."

6 Waitangi Tribunal, "Taonga Species."

Research Objectives

This research report aims to highlight the relationship between the health of oceans, commercial activity and investment. The report traces the decline in ocean health over recent decades and identifies the types of commercial activities (the causal drivers) that are responsible for degradation, as well as the growing commercial opportunities in ocean regeneration. The major companies in each of the drivers are identified and profiled, as a starting point for integrating ocean impacts into investment decision-making. The report aims to provide a call to action for investors and investment providers.

Subsequent analysis in Aotearoa New Zealand aims to provide information for investors as a basis for action in support of ocean health. Portfolio analysis will identify the flow of investment into the companies harming or regenerating our oceans. Mindful Money will enable all investors in superannuation (KiwiSaver) funds and managed investment funds to check their holdings in the companies identified in this report, as a starting point for individual and institutional investors to contribute to ocean health.

Methodology

For the purpose of this report, our definition of (environmental) degradation is:

"Environmental degradation is a process through which the natural environment is compromised in some way, reducing biological diversity and the general health of the environment."[7]

The scope of this report is the impact from companies on the global health of our oceans, including deep oceans, inland seas and coastal waters. The analysis looks at the nature of the degradation and identifies five drivers of changing oceans, and specific global companies most responsible for causing the drivers. The companies selected are primarily those financed by publicly traded shares and debt, since these companies offer the best opportunity for accountability to investors.

Where the impacts are significant, we have also identified some private and state-owned enterprises which are major contributors to harm and issuers of public debt.

The research uses academic sources, research reports and environmental information to identify the specific and most significant drivers of ocean degradation most detrimental to the health of our oceans. We selected these drivers due to their widespread and significant impact on our oceans. Our analysis focused on five major impacts as follows:

1. Plastic pollution
2. Waste dumping and pollution
3. Physical destruction of marine habitats
4. Overfishing
5. Climate emissions

There are other causes of harm and we welcome further information and feedback for incorporation in future reports.

There are complex interactions between ecosystems. The oceans are impacted by degradation of other ecosystems, such as siltation and pollution from freshwater systems and land use, and by greenhouse gas emissions. These impacts on the oceans, and the companies significantly responsible for the harm, are outlined in this report. In addition, other ecosystems will be the subject of subsequent research reports in this series: forests and land use; freshwater systems including rivers and wetlands; and the atmosphere, including greenhouse gas emissions.

The framework for this report is to focus on the relationship between the health of our oceans and the flows of private sector investment. There are generally more straightforward pathways to influence investment in publicly-listed companies, rather than private companies. So the focus of the report is primarily on the impacts of public companies. In addition, the most significant impacts are those of transnational corporations, rather than national companies where the impacts may be serious but confined to a local area. The main focus is therefore on global companies that are publicly listed.

7 General Multilingual Environmental Thesaurus, "Environmental Degradation."

Companies that contribute to the drivers were assessed on two sets of criteria: the extent of their impact on the oceans (i.e. how much degradation they directly cause through their practice); and the gravity of their impact on oceans (i.e. the seriousness of the degradation on long term ocean health). Therefore, the companies profiled are amongst the largest companies responsible for each of the drivers and include those with significant and long-lasting impacts.

While this report identifies a limited number of companies for each of the drivers, these companies account for a large proportion of the sectors they operate in. Research shows that companies operating in the oceans economy are highly concentrated - the 100 largest companies account for 60% of the revenues in the ocean economy[8].

As an organisation based in Aotearoa New Zealand, we highlight some of the specific impacts in our territorial waters and in the South Pacific throughout the report.

Research for action

This research report is part of a process that will include briefings, seminars and discussions with the financial sector; collaboration with allies in the marine and environmental movements; and educational materials and outreach to public audiences. The issues of ocean health are of increasing importance, not only to people who love oceans and the species that live in them, but also for economic and environmental reasons.

Investment accountability is an important dimension. The research aims to create a resource that will enable investment providers and investors to trace the links between impacts and specific companies. Mindful Money's online Fund Checker provides New Zealand investors with information on portfolio holdings in their own investment funds, alongside support for influencing company practices and strengthening the accountability of investment fund providers.

A core role of investment providers is to manage financial risk. As shown in the following sections, the economy is heavily dependent on oceans as a provider of materials and ecosystem services. Disruptions due to impacts such as degradation, extreme weather and loss of resource productivity are costly. It is little surprise that the investment sector is paying more attention to nature related risks.

Healthy oceans and species are also important to individuals and institutions that aim to support sustainability. The report provides them with information on how their investments impact on oceans, with guidance on ways they can take action. In addition to work in Aotearoa New Zealand, Mindful Money will work with international allies to promote accountability for investment that impacts nature.

In future years, Mindful Money will update the portfolio data every six months to identify trends in investment following our research, such as shifts away from companies contributing to environmental harm, as well as regularly monitoring changes in the policies and practices of those companies.

NEW ZEALAND FOCUS

In Aotearoa New Zealand, Mindful Money will work with investment managers and institutional asset owners to better recognise nature impacts and integrate those into investment practices. In particular, Mindful Money will provide free and accessible information to individual investors, enabling them to see which companies responsible for ocean degradation are in their superannuation funds ('KiwiSaver) and managed retail investments (around 900 funds).

In future years, Mindful Money will update the portfolio data every six months to identify trends in investment following our research, such as shifts away from companies contributing to environmental harm, as well as regularly monitoring changes in the policies and practices of those companies.

8 Science Advances, "The Ocean 100: Transnational corporations in the Oceans Economy", January 2021. https://www.science.org/doi/10.1126/sciadv.abc8041

1. Background – Oceans, the lifeblood of the Earth

The biosphere forms the foundation of life on our planet, consisting of all areas of the earth where life exists. Among this, the hydrosphere (the water on the surface, in the air and the ground) stands out as particularly important[9]. From the smallest microorganisms to the largest of whales, life on Earth owes its existence and continued survival to our oceans. Covering more than 70% of the Earth's surface[10] oceans play an important role in maintaining the delicate balance of our global system. Oceans are not merely vast bodies of water but complex, interconnected systems that profoundly influence climate, weather patterns, and the very air we breathe. As illustrated in the diagram below, the impacts from climate change from our land and air have huge impacts on the health of our oceans.

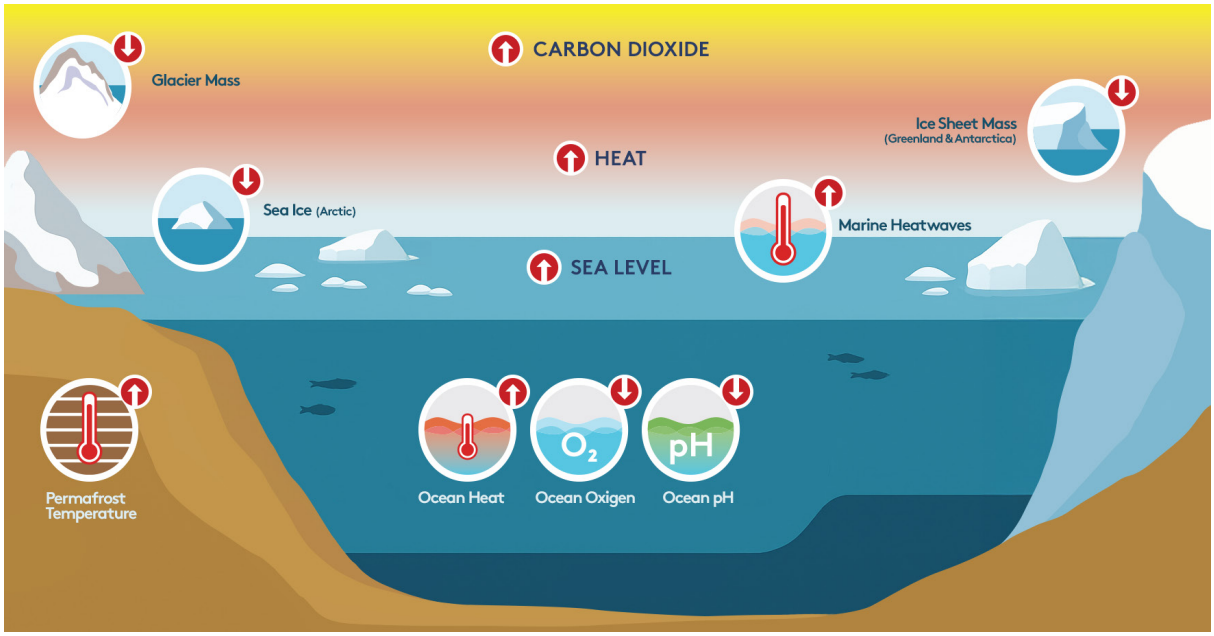


FIGURE 1: DIAGRAM OF THE HYDROSPHERE[11]

9 National Geographic, "Biosphere."

10 US Department of Commerce, "How Much Water Is in the Ocean?," National Oceanic and Atmospheric Administration (NOAA), accessed November 21, 2024, https://oceanservice.noaa.gov/facts/oceanwater.html.

11 "Summary for Policymakers."

For the health of the planet:

The connection between ocean and planetary health is both intricate and essential. Our ocean covers 70% of the world's surface and accounts for 80% of the planet's biodiversity[12]. Scientists estimate that roughly half of the oxygen production on Earth comes from the ocean[13].

The majority of this production is from oceanic plankton through photosynthesis. A single species of plankton bacteria, Prochlorococcus, generates up to 20% of the biosphere's oxygen, which is a higher percentage than all of the tropical rainforests on land combined[14].

Oceans also play a vital role in carbon sequestration and heat regulation, keeping our climate cooler and more hospitable. The ocean holds 60 times more carbon than the atmosphere[15] and has been absorbing almost 30% of carbon dioxide (CO_2) emissions from human activities since the start of the industrial revolution[16]. This CO2 is absorbed at the ocean's surface and then transported to the deep ocean, where it is stored for centuries. In this way, oceans function as a natural carbon sink, which is crucial in mitigating climate change. Oceans also regulate the global climate by transporting heat from the equator to the poles. The oceans also absorb heat from the atmosphere, with more than 90% of the excess heat generated as a result of climate change ending up in the ocean[17]. Despite their critical role in planetary stability there is still a lack of scientific knowledge about oceans, particularly the deepest parts. This is one of the reasons why the UN proclaimed this decade as 'The United Nations Decade of Ocean Science for Sustainable Development'[18].

NEW ZEALAND FOCUS

Here in Aotearoa New Zealand, our oceans span an area five times larger than our land mass, forming one of the largest maritime areas in the world. In fact, due to the large size of the continent of Zealandia, 94% of New Zealand is under water (see map below)[19]. Our oceans sustain some of our most threatened and most iconic native species, with experts estimating up to 85% of New Zealand wildlife could be in the ocean[20], and New Zealand being the seabird capital of the world. We have over 17,000 known species, with over half of these being endemic, meaning they are found nowhere else in the world, and more species are being discovered all the time. These include the well-known and beloved Māui dolphins, New Zealand Fur Seal, Hoiho (yellow-eyed penguin), and blue cod.

12 Sean Fleming, "Here Are 5 Reasons Why the Ocean Is so Important," World Economic Forum, August 29, 2019, https://www.weforum.org/stories/2019/08/here-are-5-reasons-why-the-ocean-is-so-important/.

13 US Department of Commerce, "How Much Oxygen Comes from the Ocean?," National Oceanic and Atmospheric Administration (NOAA), accessed November 21, 2024, https://oceanservice.noaa.gov/facts/ocean-oxygen.html.

14 Kalila Morsink, "With Every Breath You Take, Thank the Ocean," Smithsonian National Museum of Natural History, accessed November 21, 2024, https://ocean.si.edu/ocean-life/plankton/every-breath-you-take-thank-ocean.

15 Elizabeth Shadwick, Tyler Rohr, and Anthony Richardson, "Oceans Absorb 30% of Our Emissions, Driven by a Huge Carbon Pump. Tiny Marine Animals Are Key to Working out Its Climate Impacts," CSIRO (CSIRO, June 16, 2023), https://www.csiro.au/en/news/All/Articles/2023/June/oceans-absorb-emissions.

16 Jens Daniel Müller et al., "Decadal Trends in the Oceanic Storage of Anthropogenic Carbon From 1994 to 2014," AGU Advances 4, no. 4 (August 2023): e2023AV000875, https://doi.org/10.1029/2023AV000875.

17 NIWA, "Climate Change and the Oceans," NIWA, accessed November 21, 2024, https://niwa.co.nz/climate-change-information-climate-solvers/climate-change-and-oceans.

18 UNESCO, "United Nations Decade of Ocean Science for Sustainable Development (2021-2030)"; Krull, "What Knowledge Do We Lack About the Ocean?"

19 Nick Mortimer, "New Hidden Continent Mostly Underwater, Scientists Say," GNS Science | Te P Ao, February 17, 2017, https://www.gns.cri.nz/news/new-hidden-continent-mostly-underwater-scientists-say/.

20 DOC, "New Zealand's Marine Biodiversity," Department of Conservation, accessed November 21, 2024, https://www.doc.govt.nz/nature/habitats/marine/new-zealands-marine-biodiversity/.

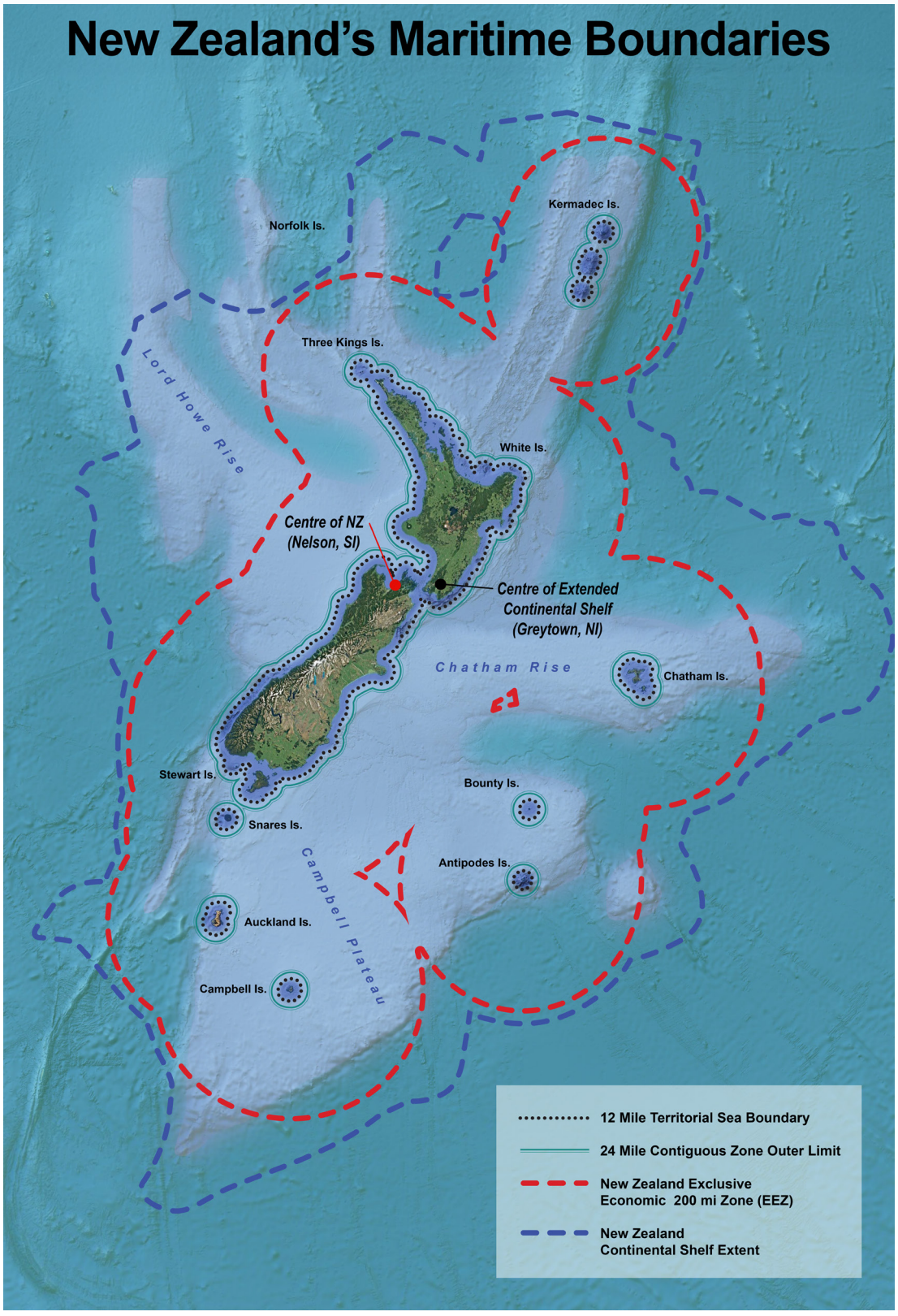


FIGURE 2: CONTINENT OF ZEALANDIA[21]

21 Douglas-Clifford, "Continent of Zealandia Te-Riu-a-Māui: New Zealand's Maritime Boundaries."

For the health of society:

For human societies, oceans are indispensable. We derive economic, social and health benefits from our oceans[22]. Oceans serve as the world's largest source of protein, with more than 3 billion people depending on the oceans as their primary source of protein.[23]

As well as playing a vital role in food security and providing nutrition, oceans also provide a source of income for people. Oceans support the livelihoods of 10-12% of the world's population (over 870 million people) through fishing and aquaculture[24]. Economically, industries like mining and cruise tourism rely on our oceans[25]. Socially, research has shown that living close to the ocean has benefits for mental and spiritual health[26].

Indigenous perspectives emphasise the fundamental role of nature in fulfilling basic human needs and rights, particularly for indigenous communities. Far beyond mere recreational spaces, oceans and other natural environments are crucial for the survival of many indigenous peoples. For Pacific Island nations, oceans are not just an economic resource but the foundation of their cultural identity and survival strategies.

PACIFIC FOCUS

Pacific communities have developed place-based traditional knowledge over millennia to cope with climate-driven changes[27], demonstrating the inextricable link between ocean health and Pacific livelihoods. As the poet Epeli Hau'ofa has written, the Pacific Islands are not isolated in a vast sea, but are interconnected by the vast and diverse ocean. "Oceania denotes a sea of islands with their inhabitants. The world of our ancestors was a large sea full of places to explore, to make their homes in, to breed generations of seafarers like themselves... theirs was a large world in which peoples and cultures moved and mingled, unhindered by boundaries of the kind erected much later by imperial powers."[28] This shows the connectivity and power of Oceania.

As Philip Malsale, senior climatologist at the South Pacific Regional Environment Programme (SPREP) says, "our people derive their own methodology to combine their rich traditions with modern science to live sustainably in a changing climate. That is the future we want."[29] To effectively safeguard the health of our oceans, it is essential to respect, empower, and collaborate with traditional knowledge holders, alongside scientific and economic understanding. This partnership is vital in both identifying and combating ocean degradation, as well as in designing projects that receive nature-based investment.

22 De Salas et al., "The Super Wicked Problem of Ocean Health."

23 UN, "Sustainable Development Goal 14 Conserve and Sustainably Use the Oceans, Seas and Marine Resources," United Nations (United Nations, 2017), https://www.un.org/en/conf/ocean/background.shtml.

24 Department of State Bureau of Oceans and International Environmental and Scientific Affairs, "Sustainable Fisheries," Our Ocean 2016, accessed November 21, 2024, http://ourocean2016.org/sustainable-fisheries.

25 De Salas et al., "The Super Wicked Problem of Ocean Health."

26 Nash et al., "Oceans and Society."

27 Patrick D. Nunn et al., "Traditional Knowledge for Climate Resilience in the Pacific Islands," WIREs Climate Change 15, no. 4 (July 2024): e882, https://doi.org/10.1002/wcc.882.

28 Epeli Hau'ofa, pp.153-154

29 Philip Malsale, "The Role of Traditional Knowledge in a Changing Climate," RNZ, April 15, 2024, https://www.rnz.co.nz/international/pacific-news/514276/the-role-of-traditional-knowledge-in-a-changing-climate.

Current state: the ocean is at risk

Oceans face unprecedented threats. Overfishing, pollution, climate change, and habitat destruction are pushing marine ecosystems to the brink. It is estimated that 90% of big fish populations have been depleted since the 1950s, 11 million metric tons of plastics enter our ocean annually, and over 50% of the world's coral reefs have died in the last 30 years[30].

NEW ZEALAND FOCUS

In Aotearoa New Zealand, less than 1% of our ocean's territory is highly protected[31], which is far from the 30% by 2030 international pledge we have signed up for[32]. Approximately 90% of our seabirds, 85% of our invertebrates, 80% of our shorebirds and 22% of our marine mammals are either threatened with or at risk of extinction, and important areas like the Hauraki Gulf/Tīkapa Moana are in a state of sustained and dramatic decline[33].

The health of our oceans is inextricably linked to the health of our planet and our societal well-being. As we navigate the challenges of today, understanding and addressing the impact of our financial decisions on marine ecosystems is not just an environmental imperative but a social and economic necessity. This research aims to highlight these connections, drilling down to the root causes and industry drivers of ocean degradation to provide a foundation for more informed and sustainable investment practices that recognise the true value of our oceans.

30 Ritchie and Roser, "Fish and Overfishing"; Ocean Conservancy, "Plastics in the Ocean"; SECORE International, "Why Coral Reefs Need Our Help."

31 WWF, "10 'Asks' for the Ocean," WWF, September 5, 2023, https://wwf.org.nz/news/oceans/10-asks-ocean.

32 UNEP, "COP15 Ends with Landmark Biodiversity Agreement," UNEP, December 20, 2022, https://www.unep.org/news-and-stories/story/cop15-ends-landmark-biodiversity-agreement.

33 WWF, "10 'Asks' for the Ocean."

2. The Role of Financial Investment in Ocean Health

The health of the oceans is increasingly being affected by human activity. This includes our use of the oceans for transport, as a source of fish and other products, as a dumping ground for pollution and for recreation. Much of the use is small scale and local, but the adverse impacts usually result from large scale activity. This report focuses on the impacts that commercial activity globally has on ocean health.

When a company pollutes the ocean, often far from the reach of government regulators, it has a detrimental effect. Some companies behave responsibly, but many do not, prioritising profits and their executive bonuses over environmental damage. However they can often be influenced to avoid or minimise pollution by the threat of public embarrassment or by consumer campaigns.

They can also be influenced by their investors. Companies are owned by their shareholders, usually large institutional investors, such as investment funds. Those funds typically invest on behalf of institutions, including charities, trusts and foundations, sovereign wealth funds and universities, and by individuals whose money is being invested. A majority of individual investors want to avoid their money being invested in companies that damage the environment or harm people[34].

Investment can be a powerful lever for change, primarily in two main ways: by influencing companies to improve their practices through using shareholder power; or by reducing their investments ('divesting') which can increase company financing costs.

Growing awareness of nature-based investing

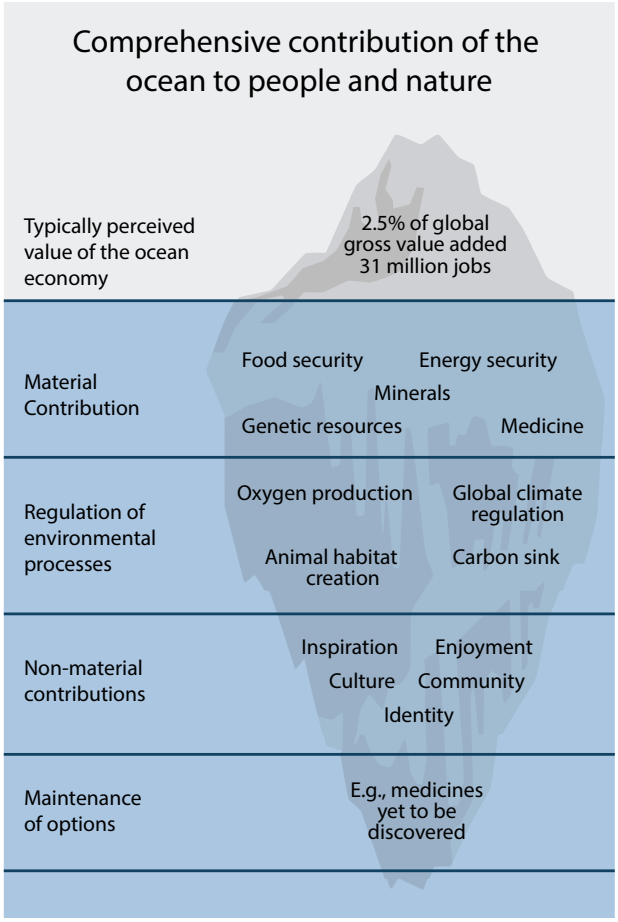
In a 2025 United Nations Trade & Development report, the export value in ocean-based industries is estimated to contribute US$2.2 trillion annually to the global economy through tourism, fishing, and trade[35]. This is on top of the less tangible, but equally important, estimated benefits that oceans provide for carbon sequestration. Considering carbon prices needed to limit warming to 1.5°C, the natural services of the ocean, absorbing 30% of the 10 billion tonnes of carbon released annually, is worth over US$2 trillion annually[36]. Oceans provide the foundation for much of the global economy, and for the finance and investment sectors.

34 Mindful Money, "Voices of Aotearoa: Demand for Ethical Investment in New Zealand 2024."

35 UNCTAD, "Fast-Growing Trillion-Dollar Ocean Economy Goes beyond Fishing and Shipping."

36 Shadwick, Rohr, and Richardson, "Oceans Absorb 30% of Our Emissions, Driven by a Huge Carbon Pump. Tiny Marine Animals Are Key to Working out Its Climate Impacts."

The extent of ocean contribution to people and our planet is not widely appreciated. The perceived value of the ocean typically includes the monetised products and services from the ocean but not other benefits as shown in Figure 3 - the full extent of material resources it provides, its regulation of environmental processes, its value for people and its importance for the future.



The concept of nature-based investing has gained traction in recent years, as it aims to channel financial resources towards projects and initiatives that protect, restore, and sustainably manage natural ecosystems, including oceans. The approach recognises that natural capital, which includes nature's assets and ecosystem services, is crucial for economic production and company operations. Depletion of natural resources poses significant risks to businesses, including physical, transition, liability, and reputational risks[37].

There are a number of alliances and initiatives supporting investors to take action on nature and biodiversity. These include supporting the targets established under the Convention on Biological Diversity. This global treaty has become a key coordinating mechanism for action on nature, particularly through the Kunming-Montreal Targets and its Global Biodiversity Framework which has set targets for action to halt biodiversity loss. The framework includes a specific role for investors to step up to play their role[38]. It calls on the financial sector to align their portfolios with the Global Biodiversity Framework goals and targets, shifting financial flows urgently towards a sustainable and just transition.

The Sustainable Blue Economy Finance Principles[39], launched in 2018, promotes the Sustainable Development Goal 14 - Life Below Water. Subsequently, the Finance for Biodiversity Pledge, signed by more than 200 international investors, undertakes "to contribute to the protection and restoration of biodiversity and ecosystems, through our financing activities and investment"[40]. It supports actions by investors, including providing a guide on engagement with companies on biodiversity[41]. Collaborative action by investors includes the Nature Action 100 initiative[42], targeting 100 companies across eight sectors.

37 I. S. S. Insights, "Natural Capital 101: Natural Capital and Why It Matters to Investors," ISS Insights, May 16, 2024, https://insights.issgovernance.com/posts/natural-capital-101-natural-capital-and-why-it-matters-to-investors/.

38 UN Environment Programme and Principles for Responsible Investment, "Stepping up on Biodiversity" April 2023. https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Stepping-up-on-Biodiversity.pdf

39 UNEP, WWF, European Commission, European Investment Bank and World Resources Institute, Sustainable Blue Economy Finance Principles, 2018. https://www.unepfi.org/blue-finance/the-principles/

40 Finance for Biodiversity Foundation, "Finance for Biodiversity Pledge". https://www.financeforbiodiversity.org/signatories/

41 Finance for Biodiversity, "Guide on Engaging with Companies", April 2022 https://www.financeforbiodiversity.org/wp-content/uploads/Finance-for-Biodiversity_Guide-on-engagement-with-companies_Dec2022.pdf

42 Institutional Investors Group in Climate Change and Ceres, "Nature Action 100" https://www.natureaction100.org/

As shown by these initiatives, nature services are increasingly recognised by leading investors as crucial to financial risks and opportunities. There are other examples of institutional investors introducing policies to support a circular economy and restore nature[43] - the Sustainable Markets Initiative talks about nature-based solutions for protecting critical ecosystems[44], NatureFinance considers the creation of 'nature positive investment opportunities'[45] and the Taskforce for Nature-Related Financial Disclosures (TNFD) has published a framework for reporting.

However, the growing enthusiasm for nature-based investing has not yet changed the practices of mainstream investors. Despite a plethora of reports and frameworks, it is difficult to ascertain what has actually changed in investment patterns or company practices. The world's largest asset managers are key actors. A survey of 76 of the largest asset managers found that only 9% have made a time-bound commitment to reduce negative biodiversity impacts or threats, or increase positive impacts[46].

Positive influence by investors is dependent on those asset managers to engage companies and influence their practices. The above survey found that 61% of asset managers reported they had engaged on biodiversity issues, but less than half of them failed to build pressure for change by having escalated their engagements through steps such as divestment, litigation, filing a shareholder resolution, or asking a question at a company AGM. The top four global asset managers - Black Rock, State Street Global Advisors, Vanguard and Fidelity Investments - managing US23 trillion, one third of global assets under management, achieved none of the five key biodiversity standards[47].

One reason is that so-called passive investment follows an index of companies within a category, such as the largest US companies (S&P500). This is a low cost form of investing that does not pick specific companies for investment, but invests automatically across the index. This means there is no screen to filter out the companies that harm the oceans. However, there are now a wide range of funds that allow investors to achieve the low costs of passive investing while screening out companies that raise concerns over the risks to company value posed by Environmental, Social and Governance (ESG) factors, including some forms of ocean harm.

Investment risks from nature

ESG frameworks have become the dominant tool for taking non-financial risks into account, such as those related to nature[48]. Typically, a wide range of factors are included in an ESG analysis - specific environmental risks include pollution, excessive waste, use of water and greenhouse gas emissions. These diverse risks are often aggregated into an ESG score, encompassing 30-50 indicators.

There has been criticism from US Republicans and the MAGA movement that ESG management is 'woke', supporting environmental and social justice viewpoints. However, the roots of ESG management derive from the core mainstream investment practices around managing risk. ESG is primarily a tool to reduce risk and increase financial returns and it has become an important tool for investors to manage the risks that could adversely affect their investments. The inclusion of social and environmental risks, alongside the more traditional governance risks, is a reflection of the growing importance of those issues for company profitability. In financial terms, they have become 'material' risks with significant implications for company returns.

43 Blackrock Investment Institute, "Capital at Risk: Nature through an Investment Lens," BlackRock, August 13, 2024, https://www.blackrock.com/institutions/en-zz/nature-through-an-investment-lens.

44 Sustainable Markets Initiative and Green Finance Institute, "Investing in Nature: Opportunities for Institutional Investors," May 2024, https://www.greenfinanceinstitute.com/wp-content/uploads/2024/07/investing-in-nature_20240521.pdf.

45 Nature Finance, "Nature Investment," NatureFinance, accessed November 25, 2024, https://www.naturefinance.net/making-change/nature-investment/.

46 ShareAction, "Point of No Returns 2025", May 2025. https://cdn2.assets-servd.host/shareaction-api/production/resources/reports/ShareAction_PONR2025_Final.pdf?dm=1749045243

47 ShareAction, as above.

48 Mindful Money "Does investing ethically earn good financial returns?" https://www.mindfulmoney.nz/learn/ethical-returns/

There have been extensive comparisons between investments with and without ESG factors over decades. The weight of evidence shows that financial returns from ESG management skew on the high side - they are as high or higher than traditional investing, and risks are lower.

Reporting on Investment and Nature

As covered in earlier sections, current responsible investment practices are failing natural systems and particularly the oceans. However, there are encouraging developments to provide more disclosure that will help global investors understand the harms from current investments and opportunities from nature-oriented investing.

So far, the disclosures are voluntary and are limited in scope, but, as with reporting on climate emissions, the process of reporting brings management attention to the risks of investment decisions that affect nature (as well as the risks from nature to the investments). The Taskforce on Nature-related Financial Disclosures (TNFD) has developed a framework for organisations to report on evolving nature-related risks and opportunities. It provides a standardised approach for companies and financial institutions to assess, manage, and disclose their dependencies on nature and the potential risks, as well as opportunities for nature positive investments.

While the TNFD represents a significant step towards integrating nature-related risks and opportunities into financial decision-making, the primary emphasis is on identifying dependencies and managing risks. Although reporting on impact is nominally part of the framework for TNFD, the core metrics for reporting are more process-oriented, rather than giving priority to reporting on nature impacts.

Voluntary initiatives such as TNFD are welcome and important, but they are no substitute for legal requirements on companies and investment funds to report on impacts. Climate Related Disclosure, adopted in a growing number of countries, requires the mandatory reporting of emissions. The next step after mandatory climate reporting should be to require reporting on nature impact. As with climate change, the crises in biodiversity loss, plastics pollution and freshwater systems are also urgent and critical for the economy, societies and planetary health.

Initiatives for mandatory reporting are underway. The EU requires large companies to disclose information on what they see as the risks and opportunities arising from social and environmental issues, and the impact of their activities on people and the environment[49].

A new standards-setting body, the International Financial Reporting Standards organisation (IFRS) has issued Sustainability Standards to guide the reporting by companies on sustainability matters. While these are focused primarily on sustainability-related risks and opportunities, rather than the impacts of companies on nature, they could provide a starting point for mandatory disclosures[50].

49 European Commission, "Corporate Sustainability Reporting."

50 IFRS Foundation, "IFRS S1 General Requirements for Disclosure of Sustainability-Related Financial Information."

NEW ZEALAND FOCUS

It is also important to recognise that framing nature in terms of assets and services is just one worldview. Other perspectives, such as Mātauranga Māori, offer different interpretations and learnings about our relationship with nature. In Māori cosmology, the natural world is genealogically related to people. Rivers, mountains, and forests are tūpuna (ancestors); they have mauri (life force) and wairua (spirit). So, Māori identity is entwined with the natural world through whakapapa (genealogy). Legal personhood, in these cases, acknowledges this worldview by granting rivers and lands a legal status that affirms their inherent dignity and relational rights, rather than treating them solely as resources[51]. New Zealand has recognised a river, mountain and forest as legal persons which means their rights will be protected in the long term[52]. These alternative viewpoints can provide valuable and valid insights to ensure that our approach to natural capital does not lead to exploitation, but rather to a more holistic and sustainable relationship with the environment.

Beyond ESG

ESG is often characterised as a 'single materiality' approach - the approach includes only the risks that affect profits and share prices. Typically, the research agencies that provide much of the financial information to investment managers focus more on the direct risks and the short term. However, as shown in Figure 4, the intangible assets of most companies far outweigh its tangible assets.

In most sectors, company value is dominated by its intangible assets, especially its social licence. Intangibles include brand, reputation, relationships, intellectual property, licences and other forms of what is often termed 'goodwill'. These factors have grown far faster than physical assets, financial assets and investments as a proportion of the value of the company. Intangibles now comprise over 80% of enterprise value.

The Hidden Value of Companies

Components of Shareholder Value

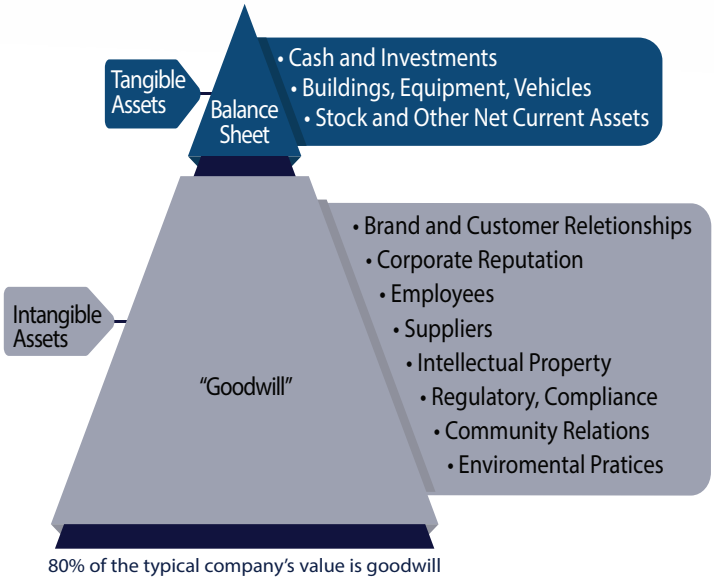


FIGURE 4 - THE HIDDEN VALUE OF COMPANIES

The analysis shows the crucial importance of intangibles in company value. These are typically under-valued in ESG analysis. The ESG approach of looking at the risk from nature to the company ('single materiality') is too narrow a framework. Companies need to also understand the impact of the company on nature (double materiality). This is crucial in being able to manage a far wider range of risks and opportunities than ESG risk alone. Therefore, this report focuses on company impact as more relevant for investors, as well as more attuned to the values and aspirations of most investors.

51 Tara McAllister et al., "Kua Takoto Te Mānuka: Mātauranga Māori in New Zealand Ecology," New Zealand Journal of Ecology 43, no. 3 (February 4, 2020), https://doi.org/10.20417/nzjecol.43.41.

52 New Zealand Parliament, "Innovative Bill Protects Whanganui River with Legal Personhood," New Zealand Parliament, March 28, 2017, https://www.parliament.nz/en/get-involved/features/innovative-bill-protects-whanganui-river-with-legal-personhood/.

The BP Horizon case

High profile examples of ESG-related risks include BP's failure to manage risk in their offshore oil drilling, resulting in the Deep Water Horizon disaster. The company was required to pay for much of the clean up costs, as well as fines and lawsuits for compensation. However, in BP's case, the damage to their brand and reputation was far higher. Their share price dropped by over 50% and the costs recorded in their balance sheet for the disaster have been estimated at US$63 billion.

ESG analysis typically captures a set of direct risks that might affect company value. These are rarely available to quantify future risks, but often used once risks have come to light. For example, after the BP Horizon catastrophe, ESG analysis was relied on by many investment providers to calculate likely future costs, such as fines and environmental liability, compensation claims and some of the clean up costs. The cost categories are outlined as 'Typical costs in ESG analysis' in Figure 5.

However, the broader and longer term costs are often not shown on the balance sheet and not reflected in most ESG risk analysis. The longer term costs of settling lawsuits, paying compensation, legal bills and remediation are estimated to have raised BP's costs to US$145 billion[53].

Even this higher estimate for BP's costs from their harmful impact on the ocean understates other long term costs such as the longer term costs of damage to BP's reputation, reduced brand value and customer loyalty, loss of employee motivation and damage to supplier relationships. Examples of 'Long term costs to the company' are shown in Figure 5.

Beyond the costs to the company are the costs to the environment and users of the oceans (called 'externalities' in economics). BP did not fully mitigate the adverse impacts on coastal communities. The damage was complex and long lasting, affecting local communities, fisheries, tourism, and health impacts for local people[54]. Those costs were offloaded onto others.

Counting the True Cost

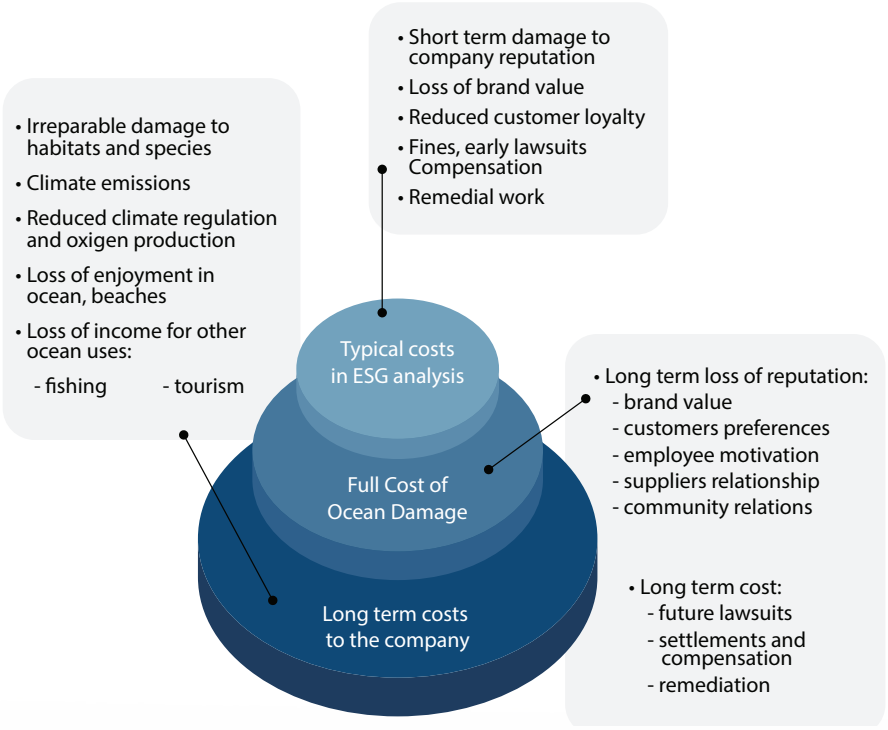


FIGURE 5 - COUNTING THE TRUE COSTS

In addition, the long term damage to ocean health and function are borne by us all, and by future generations. The limited coastal clean up was grossly inadequate to restore the damage to coasts, seabirds and marine life, ocean functions and long term ocean health[55].

The combined costs of these impacts, 'Full Cost of Ocean Damage' in Figure 5, are not counted when investors talk about financial risks, but they are real to the oceans and to people affected. They are particularly important to consumers who want to avoid products that cause harm to people and our planet, and prefer brands associated with positive outcomes. Impact is also important to most investors, as shown in surveys[56].

53 Gyo Lee, Garza□Gomez, and Lee, "Ultimate Costs of the Disaster."
54 Sandifer et al., "Human Health and Socioeconomic Effects of the Deepwater Horizon Oil Spill in the Gulf of Mexico."
55 Meiners, "Ten Years Later, BP Oil Spill Continues to Harm Wildlife—Especially Dolphins."
56 Mindful Money and RIAA, "Voices of Aotearoa: Demand for Ethical Investment in New Zealand 2025."

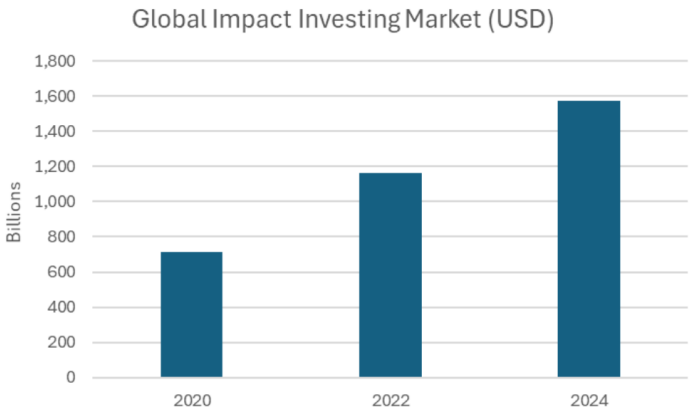
ESG risks cover only a small proportion of the true costs, and so do most definitions of company impact. Frameworks such as planetary accounting[57] are needed to factor in externalities that provide decision-makers with forward-looking perspectives on the consequences of their decisions.

Nature Positive Investing

Investment management is evolving. With the recent recognition of the importance of nature, the challenge for investors is now twofold - to reduce or stop the activities that are causing ocean degradation, and to invest in nature-positive activity i.e. the companies or initiatives that can make a positive difference to oceans, such as through enhancing protection, restoring ocean habitats and health, sequestering carbon and regenerating degraded ecosystems.

There has been significant growth in overall investment in positive social and environmental outcomes, in sectors such as renewable energy and the circular economy. Often termed 'impact investing', there are now dedicated positive impact funds as well as positive impact allocations within mainstream investment portfolios. A key definitional issue is the standard required for an investment to be termed 'impact'. The generally accepted definition is: "investments made with the intention to generate positive, measurable social and/or environmental impact alongside a financial return"[58] and there are a wide range of measurement tools to assess the contribution to positive impact.

However, there have, until recently, been fewer opportunities for positive investments that relate more directly to nature. Of the current initiatives, so far most are publicly funded. The European Investment Bank found that, "only 3% of nature-based solutions projects in the European market have a significant private sector investor behind it; the rest is funded by governments"[59]. However, there are a growing range of opportunities for the private sector to contribute and to generate financial returns. Blended finance, i.e. the collaboration between the public and private sector, offers exciting opportunities. Some examples are shown in Section 4.



SOURCE: GLOBAL IMPACT INVESTING NETWORK

57 Planetary Accounting Network, "Planetary accounting framework". https://www.planetaryaccounting.org/planetaryaccounting

58 RIAA, "Impact Investing."

59 Lucian Peppelenbos and Aaron Vermeulen, "SI Dilemma: Is It (Im)Possible to Invest in Biodiversity?," Robeco Global, October 26, 2023, https://www.robeco.com/en-int/insights/2023/10/si-dilemma-is-it-impossible-to-invest-in-biodiversity.

3. Drivers of Ocean Degradation

Ocean health is affected by a range of economic activities, both those directly causing harmful impacts, such as bottom trawling or deep sea mining, and others indirectly impacting the oceans, such as the production and disposal of plastics, and the emissions from fossil fuels. The focus of this report is on the drivers of ocean degradation - the commercial activities that directly or indirectly are causing adverse impacts.

The selection of these drivers has been based on a thorough literature search and analysis of the crucial determinants of ocean health - its functions as an ecosystem, a habitat for living organisms, contributions to the biosphere and contributions to human society. This has enabled the categorisation of five major drivers of degradation:

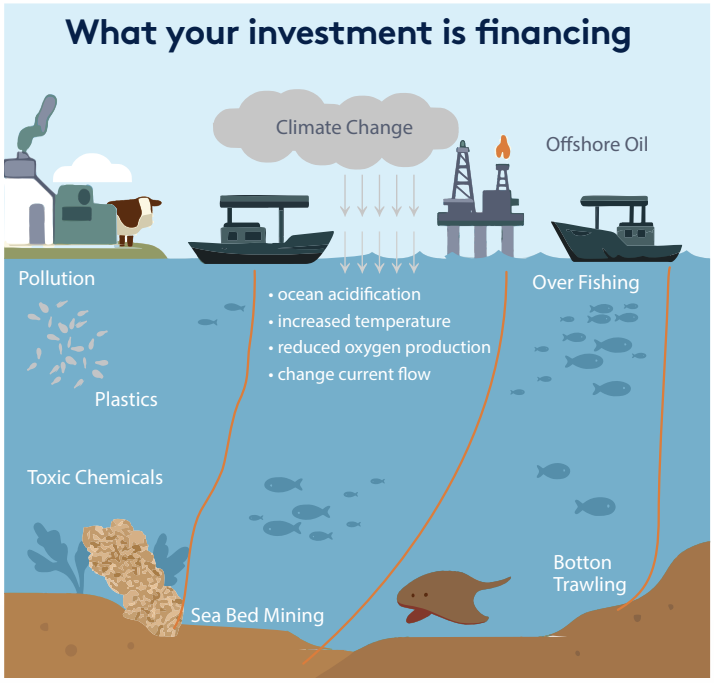
- Plastics pollution
- Waste dumping and pollution
- Overfishing
- Physical destruction of marine habitats
- Climate emissions

As noted in the Methodology above, the companies that contribute to the drivers were assessed according to the extent of their impact on the oceans (i.e. how much degradation they directly cause through their practice); and the gravity of their impact on oceans (i.e. the seriousness of the degradation on the long term ocean health).

In order to identify companies and gather company data, we reviewed a wide range of sources, particularly focusing on the companies that are funded through private sector investment (excluding state-owned companies and private companies that do not issue bonds).

Given the limited coverage by investment research of company impacts on oceans, we undertook a comprehensive search of credible academic, research and online sources. We cross-referenced the characteristics of companies with information provided by global investment research provider, Sustainalytics, as well as research undertaken by leading asset owners and investment providers internationally, including Norges Bank and Storebrand.

We have also focused more on larger, publicly listed companies. However, in emergent sectors (e.g. deep sea mining) or sectors with dominance of private/state investment (e.g. fishing) we have highlighted some of the larger private companies. The selection is not exhaustive and we welcome information about other companies which contribute significantly to ocean harm.



3.1 Plastic Pollution

Plastic Pollution

Plastic pollution represents a significant and increasing threat to marine ecosystems globally. Current data indicates that approximately 11 million metric tons of plastic waste enter the oceans annually, contributing to an estimated 200 million metric tons already present in marine environments[60].

The distribution of plastic pollution in oceans is widespread but non-uniform. Convergence zones in subtropical gyres, commonly referred to as "garbage patches," exhibit higher concentrations of floating plastic debris. However, recent studies suggest that these surface accumulations represent only a small fraction of total marine plastic, with the majority residing in coastal areas, on the seafloor, and throughout the water column[61].

Plastic pollution can have devastating impacts on marine life, including entanglement, ingestion, and the transfer of toxic chemicals through the food chain. The ecological consequences of plastic pollution in marine environments are multifaceted. Large plastic debris harms and marine entangles across trophic levels, from the base of the food chain to high level predators. A systematic review has reported plastic ingestion in 701 species, with particularly high frequencies in seabirds[62].

The lack of proper waste management leads to the accumulation of up to 80% of plastic waste each year in the ocean, which, scattered by waves, currents, winds and UV light, transforms it into microplastics and nanoplastics.[63]

Plastics are not only an environmental problem - they are a growing financial problem as well. One of the world's largest insurers, Swiss Re, recognises that the financial sector faces growing exposure to plastics-related risks: "Long-term asset values are at risk as fossil-fuel-based plastic production faces declining demand, regulatory penalties and policy driven phase-outs"[64]. The report suggests current ESG indices and ratings often inadequately capture plastic-related sustainability risks, long-term demand risk and stranded assets.

Microplastic & Fast Fashion

Microplastics, which are small plastic particles less than 5 millimetres in size, are particularly problematic as they can be readily consumed by a wide range of marine organisms and have the potential to bioaccumulate. Microplastics have been detected in diverse marine habitats, from surface waters to deep-sea sediments. Their small size means they are accessible to a wide range of organisms, and ingestion has been documented in species spanning from zooplankton to cetaceans[65]. The long-term ecosystem effects of plastic pollution remain incompletely understood - this is a new and emerging issue due to the relatively short amount of time plastics have been such a big part of society.

The fast fashion industry has emerged as another significant contributor to ocean degradation, particularly through microfibre pollution. Fast fashion, characterised by the rapid production of inexpensive, trendy clothing, often relies on synthetic fabrics such as polyester, nylon, and acrylic. These materials shed microfibres during washing, which eventually make their way into waterways and oceans. A study by the International Union for Conservation of Nature (IUCN) estimated that 35% of all microplastics in the ocean come from the washing of synthetic textiles[66].

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60 Feedback Global, "Still Butchering the Planet: The Big-Name Financiers Bankrolling Livestock Corporations and Climate Change – 2024 Update." https://feedbackglobal.org/research/still-butchering-the-planet/

61 Zhao et al., "The Distribution of Subsurface Microplastics in the Ocean."

62 Ocean Conservancy, "Plastics in the Ocean."

63 Susanne Kühn and Jan Andries Van Franeker, "Quantitative Overview of Marine Debris Ingested by Marine Megafauna," Marine Pollution Bulletin 151 (February 2020): 110858, https://doi.org/10.1016/j.marpolbul.2019.110858.

64 Swiss Re, "Swiss Re SONAR: new emerging risk insights", June 2025 https://www.swissre.com/dam/jcr:055e0c4c-32fe-48d7-a8cc-dc33944767ef/ZRH-24-14947-P1_SRI_Sonar%20Publication%202025_A4%20EN_WEB.pdf

65 Lukić Bilela et al., "Impact of Per- and Polyfluorinated Alkyl Substances (PFAS) on the Marine Environment"; Turns, "The Photo That Made the Plastics Crisis Personal."

66 Zara L.R. Botterell et al., "Bioavailability and Effects of Microplastics on Marine Zooplankton: A Review," Environmental Pollution 245 (February 2019): 98–110, https://doi.org/10.1016/j.envpol.2018.10.065.

INTERNATIONAL ACTION

The Global Plastics Treaty

Over 90% of the plastic that pollutes our planet is made up of single-use plastics, such as plastic cutlery, and microplastics, such as those added to cosmetic products[67]. The Global Plastics Treaty represents a landmark international effort to address the escalating crisis of plastic pollution in our oceans and environment. Initiated in March 2022, when 175 nations voted to adopt a global treaty for plastic pollution at the UN Environmental Assembly[68], this legally binding agreement aims to create a comprehensive framework for reducing plastic waste across its entire lifecycle[69]. The treaty's goal is to implement solutions as soon as possible, targeting the reduction of unnecessary plastic products, establishing binding design requirements, and creating mechanisms for effective implementation and a just transition.

While this demonstrates strong international commitment, there is a potential dissonance between governmental action and corporate interests. Some businesses may resist stringent regulations that could impact their production processes or profits. However, forward-thinking companies could recognise the treaty as an opportunity for innovation and long-term sustainability. WWF has set out recommended baseline actions for business to reduce their risk and to plan for the future in the Global Plastics Treaty for Business proposal[70].

Major Corporate Contributors to Plastic Pollution

How we selected the following companies:

The primary criterion for identifying plastics companies is the extent and gravity of impact. Coca Cola and PepsiCo are two of the largest beverage producers in the world and are also the two largest sources of plastic garbage in the world's oceans. Nestle, Unilever, Danone and Mondelez International are some of the largest sources of plastic marine trash due to the volume of their packaging and their lack of action on reducing or eliminating plastics from their product.

While these companies may claim to be reducing plastic pollution, many practices are false solutions to the plastic problem. Recycling, waste to energy projects and plastic credits are false solutions as they do not tackle the heart of the plastic issue, which is the growing production of plastic and the use of plastic packaging.

Coca-Cola Company

The Atlanta-based beverage company is the top producer of plastic rubbish making its way into the world oceans, wreaking havoc on wildlife and sending plastic particles into the food chain, according to a global sampling of trash Greenpeace and Break Free From Plastic collected in 42 countries around the world[71]. Coca Cola, which markets hundreds of brands of carbonated beverages, water, and juices, said last year it uses 3 million tons of plastic packaging annually[72].

67 Natalia Quinete et al., "Specific Profiles of Perfluorinated Compounds in Surface and Drinking Waters and Accumulation in Mussels, Fish, and Dolphins from Southeastern Brazil," Chemosphere 77, no. 6 (October 2009): 863–69, https://doi.org/10.1016/j.chemosphere.2009.07.079.

68 Qi Wang et al., "Legacy and Emerging Per- and Polyfluoroalkyl Substances in a Subtropical Marine Food Web: Suspect Screening, Isomer Profile, and Identification of Analytical Interference," Environmental Science & Technology 57, no. 22 (June 6, 2023): 8355–64, https://doi.org/10.1021/acs.est.3c00374.

69 Marine Conservation Society, "PFAS Aka 'Forever Chemicals.'"

70 WWF, "Global Plastics Treaty For Business."

71 Break Free From Plastic, "2023 Global Brand Audit: The Coca-Cola Company Is Once Again the Top Global Plastic Polluter," Break Free From Plastic, accessed November 26, 2024, https://www.breakfreefromplastic.org/2024/02/07/bffp-movement-unveils-2023-global-brand-audit-results/.

72 Sandra Laville, "Coca-Cola Admits It Produces 3m Tonnes of Plastic Packaging a Year," The Guardian, March 14, 2019, https://www.theguardian.com/business/2019/mar/14/coca-cola-admits-it-produces-3m-tonnes-of-plastic-packaging-a-year.

They have scaled back their net zero and ESG targets as of December, 2024[73]. Coca-Cola has been called out for lobbying policymakers to influence a weaker Global Plastics Treaty, which had its second round of negotiations in August 2025[74]. Coca-Cola's bottling companies also have a significant impact[75], through manufacturing and distributing Coca-Cola to major markets globally.

Nestlé

The Swiss multinational food and beverage company, whose brands include Gerber baby food, Perrier water, and KitKat chocolate among others, is the second largest source of plastic trash found in the oceans, according to a global sample collected on ocean shores last year by Greenpeace and Break Free From Plastic organisations[76]. The company disclosed in 2018 that it uses 1.7 million tons of plastic annually to produce its plastic packaging[77]. Nestle has been called out for false claims that its products are '100% recyclable' and by burning plastic waste in order to meet its plastics targets[78], changing its plastics targets from 'recyclable' to 'designed for recycling'[79].

Unilever

The Break Free From Plastics Audit found Unilever to be the third largest plastic polluter in the world. Despite promises, Unilever's plastic footprint has not decreased, selling 1,700 plastic sachets per second as of 2023. Unilever has also lobbied against laws to ban plastic sachets in India and The Philippines while being publicly against them[80]. Although it could be argued that they are mitigating their impact by being engaged in the Global Plastics Treaty and disclosing data in 2023 about plastics usage on the CDP environmental database[81], they have scaled back their social and environmental targets due to pressure from the oil lobby[82].

PepsiCo

The multinational beverage, snack and food company operates across 200 countries. A global sample of garbage collected on ocean shores and waters in 2023 by Greenpeace and Break Free From Plastic organisations found that the North Carolina-based company was the fourth largest source of plastic garbage in the world's oceans[83]. Alongside Coca-Cola and other large US companies with plastics agendas, PepsiCo has been called out for lobbying for a weakened Global Plastics Treaty[84]. Investors have raised issues with PepsiCo's pullback in plastics commitments, suggesting they address flexible plastic packaging[85].

Mondelēz International

A global sample of ocean garbage collected last year found that the Illinois-based confectionary, food, and beverage company is the fifth most common source of plastic marine trash.[86] In December 2024 Pew Charitable Trusts filed a shareholder motion to raise concerns about Mondelēz's likely failure to meet its 2025 reusables and recyclability packaging goals and low levels (18.9%) of recyclable packaging[87]. The shareholder resolution attracted only 13% of shareholder support but sent a strong signal to the company. If corporations like Mondelez fully accounted for the life cycle waste costs of the products they produce, it could cost them up to $100 billion in financial risk[88].

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73 Mooney and Savage, "US Multinationals Purge Website References to Climate Change."

74 Center for Biological Diversity, "Companies Lobbying for Weak U.N. Plastics Treaty Spend Big on U.S. Politics."

75 The Coca-Cola Bottlers are: Coca-Cola Consolidated, Coca-Cola Europacific Partners, Coca-Cola FEMSA, Coca-Cola HBC AG & Co-ca-Cola Icecek

76 Break Free From Plastic.

77 Nestlé, "What Is Nestlé Doing to Tackle Packaging Waste?," Nestlé, accessed December 4, 2024, https://www.nestle-caribbean.com/atackling-packaging-waste-plastic-bottles.

78 Leggett and Edser, "Coca-Cola and Nestle Accused of Misleading Eco Claims"; Greenpeace Southeast Asia, "Activists Send Plastic Waste Back to Nestle, Call out Company for Greenwashing."

79 Afanasieva, "Nestle Shifted Critical Recycling Goal and Revealed Scale of Plastics Problem."

80 Greenpeace, "Uncovered: Unilever's Complicity in the Plastics Crisis and Its Power to Solve It."

81 CDP, "Plastics Disclosure Data."

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83 Break Free From Plastic, "2023 Global Brand Audit: The Coca-Cola Company Is Once Again the Top Global Plastic Polluter."

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85 MRA Publications, "Investors Raise Concern over PepsiCo's Shift on Plastics," Market Report Analytics, accessed October 14, 2025, https://www.marketreportanalytics.com/news/article/36091.

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87 As You Sow, "Mondelez International Inc: Sustainable Packaging Policies for Flexible Plastics."

88 ibid

Danone

The French multinational food and beverage company, whose brands include Activia and Evian, is one of the largest sources of plastic garbage in the world's oceans. Danone disclosed last year that it uses about 750,000 tons of plastic annually to package its products[89]. The company is currently involved in a lawsuit against its marketing of Evian products as 'natural' and with 'sustainability' aspects when in reality its products involve harmful BPA and microplastics[90]. The settlement of the lawsuit required Danone to step up its plastics prevention policies and be more transparent about use of plastics[91].

89 Constant Méheut and Catherine Porter, "French Food Giant Danone Sued Over Plastic Use Under Landmark Law," The New York Times, January 9, 2023, sec. World, https://www.nytimes.com/2023/01/09/world/europe/danone-sued-plastic-use-france.html.

90 Plastic Pollution Coalition, "PepsiCo, Inc., FIJI Water, and Danone Face 'False and Deceptive Marketing' Lawsuits in D.C."; Order Denying Danone Waters of America, LLC's Motion to Dismiss the Complaint.

91 Garot, "France."

3.2 Waste Dumping and Pollution

Point source pollution (e.g. industrial toxins & dredging)

Ocean pollution stems from a variety of sources, broadly categorised into two main types: point source pollution, which includes deliberate waste dumping, and nonpoint source pollution, which encompasses diffuse land-based activities. The deliberate dumping of waste materials, including industrial effluents, sewage, and agricultural runoff, poses a significant threat to marine ecosystems.

Point source pollution involves the direct discharge of pollutants into marine environments from identifiable sources. This includes industrial effluents. Many industries discharge their waste directly into water bodies, often containing toxic chemicals, heavy metals, and other harmful substances. For instance, the global textile industry alone is responsible for 20% of industrial water pollution worldwide[92].

Inadequately treated sewage from urban areas is a major source of marine pollution, with approximately 80% of urban sewage in developing countries being discharged untreated into water bodies[93].

Along with more typical types of waste, the dumping of sediment is also a concern for marine ecosystems. Over 99% of sediment dumped at sea is locally-generated and results from the dredging of harbours and their approaches to ensure they are navigable[94].

Industries such as tourism development and mining are becoming more significant drivers of dredging. Dumping and dredging activities in marine environments can release contaminants into the water column, increase turbidity, smother benthic communities, and alter marine habitats within a 5 km radius of dumpsites, potentially disrupting local ecosystems and introducing pollutants into the food chain.[95]

Dredging operations present a twofold challenge to marine ecosystems. The process of dredging itself causes direct physical destruction to seafloor habitats, disrupting or destroying benthic communities and altering the physical structure of marine environments. The subsequent dumping of dredged sediments can also smother marine life at disposal sites, increase water turbidity, and potentially release stored contaminants into the water column[96]. This combination of physical disturbance and sediment relocation can have far-reaching consequences for marine biodiversity, water quality, and ecosystem functioning, extending well beyond the immediate dredging and dumping sites.

The shipping industry contributes a significant amount of water and air pollution to our environment. In 2018, the shipping industry accounted for 2.89% of global greenhouse gas emissions according to the IMO's Greenhouse Gas Study[97]. Other pollution from ships includes sewage pollution, waste dumping, oil spills, chemicals, plastic waste and damage from anchoring on reefs[98].

Cruise ships have been found to have a significant impact as one quarter of all ocean waste comes from their discharge[99]. This pollution can compound and have significant impacts on marine and human health, such as during the Covid-19 pandemic in Los Angeles. Ships backed up outside the Port of Los Angeles contributed pollution of 100,000 big rigs per day which impacted severely on the local population through increased air pollution[100].

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92 Business Coalition for a Global Plastics Treaty, "Business Coalition for a Global Plastics Treaty," accessed November 26, 2024, https://www.businessforplasticstreaty.org/.

93 Ministry for the Environment, "Towards an International Treaty on Plastic Pollution," Ministry for the Environment, June 21, 2024, https://environment.govt.nz/what-government-is-doing/international-action/towards-an-international-treaty-on-plastic-pollution/.

94 Ellen McArthur Foundation, "A New Textiles Economy: Redesigning Fashion's Future," November 28, 2017, https://www.ellenmacarthurfoundation.org/a-new-textiles-economy.

95 UN, "Advocating for More Wastewater Management," Sustainable Development Knowledge Platform, accessed November 26, 2024, https://sustainabledevelopment.un.org/topics/water/unsgab/wastewater.

96 Finn Blackwell and Rayssa Almeida, "Hauraki Gulf Takes a Hit as Human Waste Flows into Harbour," RNZ, September 28, 2023, https://www.rnz.co.nz/national/programmes/checkpoint/audio/2018908913/hauraki-gulf-takes-a-hit-as-human-waste-flows-into-harbour.

97 IMO, "Fourth IMO GHG Study 2020 Executive Summary."

98 Fox, "Cruise Ship Water Pollution"; Maritime NZ, "Protecting Our Marine Environment."

99 Wizenberg, "'A Good Cruise Is One That Doesn't Come.'"

100 Swanson, "Shipping Contributes Heavily to Climate Change. Are Green Ships the Solution?"

NEW ZEALAND FOCUS

Oil spills are another compounded form of pollution from the shipping industry. Two significant oil spills relevant to New Zealand are the Rena and Manawanui. The Rena ran aground on the Ōtāiti, Astrolabe Reef, off the coast of Tauranga in Aotearoa in 2011. The following damage of 350 tonnes of heavy oil spilt over 6 weeks caused over 2000 dead seabirds as well as huge algal blooms from the dairy product runoff[101]. More recently in October 2024, the Manawanui ship from New Zealand sank 150m off the coast of Upolu Samoa. Although the New Zealand Defence Force has been sent in to recover pollutants from the wreck[102], 200,000 litres of diesel leaked[103] and 535,000 litres still remain onboard the sunken ship[104]. The Samoan authorities also reported 5,000 square metres of damage to the reef from the shipwreck and anchor.

Nonpoint source pollution (e.g. runoff)

Nonpoint source pollution refers to pollution from diffuse sources, often resulting from land-based activities.

Key contributors include agricultural runoff such as fertilisers, pesticides, and animal waste from agricultural activities that can be carried into water bodies through rainfall and irrigation. It is estimated that agriculture is responsible for 70% of water pollution in rural areas[105].

Stormwater from urban areas can carry a variety of pollutants, including oil, grease, and toxic chemicals. Studies have shown that urban runoff can contain up to 100 times more bacteria than raw sewage, which is unsurprising considering that, because of impervious surfaces like pavement and rooftops, a typical city block in the US can generate more than 5 times more runoff than a woodland area of the same size[106].

NEW ZEALAND FOCUS

An effective approach to managing coastal environments is through integrated coastal zone management. This means sustainably governing coastal areas by balancing environmental, social, economic and cultural concerns and consulting with all stakeholders about management of the coastal zone[107]. In New Zealand, a crucial factor in coastal zone management is the traditional rights of iwi (Māori tribes). Although rights were established under Te Tiriti o Waitangi, the treaty between Maori and The Crown, signed in 1840[108], some iwi have lost access and stewardship responsibilities over the foreshore and seabed, even in areas where they have long-standing interests. The criteria used for judicial processes to affirm these rights is under threat and Māori are having to continue their struggle to retain their customary rights[109].

The introduction of toxins, heavy metals, and persistent organic pollutants into the marine environment can have long-lasting effects on the health and reproductive success of marine organisms. These pollutants can lead to eutrophication, where excessive algal growth and subsequent oxygen depletion results in the creation of "dead zones" and the loss of marine life. The number of oceanic dead zones has quadrupled since 1950, now affecting more than 245,000 square kilometres globally[110].

101 Battershill, "Manawanui Sinking"; Miskelly et al., "Impacts of the Rena Oil Spill on New Zealand Seabirds."

102 RNZ, "Operation to Remove Fuel from Sunken Naval Vessel Set to Start in December."

103 Duff and Tupufia, "A Sunken Timebomb?"

104 Pennington, "Diesel Fuel Aboard Sunken Manawanui Still Unaccounted For."

105 Jordan Dunn, "'Deluge of Sewage' into Waitematā Harbour Nothing New, Iwi Says," RNZ, September 29, 2023, https://www.rnz.co.nz/news/national/498988/deluge-of-sewage-into-waitemata-harbour-nothing-new-iwi-says.

106 OSPAR Commission, "Dredging & Dumping," OSPAR Commission, accessed November 26, 2024, https://www.ospar.org/work-areas/eiha/dredging-dumping.

107 Damian Carrington, "Oceans Suffocating as Huge Dead Zones Quadruple since 1950, Scientists Warn," The Guardian, January 4, 2018, https://www.theguardian.com/environment/2018/jan/04/oceans-suffocating-dead-zones-oxygen-starved.

108 Arctic Council, "Mercury in the Arctic," Arctic Council, August 28, 2015, https://arctic-council.org/news/mercury-in-the-arctic/.

109 Felipe A. Alencar Goyanna et al., "Mercury in Oceanic Upper Trophic Level Sharks and Bony Fishes - A Systematic Review," Environmental Pollution 318 (February 2023): 120821, https://doi.org/10.1016/j.envpol.2022.120821.

110 OSPAR Commission; Victoria L. G. Todd et al., "A Review of Impacts of Marine Dredging Activities on Marine Mammals," ICES Journal of Marine Science 72, no. 2 (January 1, 2015): 328–40, https://doi.org/10.1093/icesjms/fsu187.

Persistent organic pollutants (POPs) and heavy metals accumulate in marine organisms, with their concentrations magnifying up the food chain. For example, mercury pollution in oceans, leads to bioaccumulation in predatory fish[111]. This not only poses significant health risks to marine life but also to human consumers.

Leading international investors are collaborating to advocate for global action as the pollution crisis escalates. A coalition of more than 44 investors with over US$4 trillion in assets under management are calling on chemical companies to phase out highly hazardous chemicals and transition to safer alternatives to protect biodiversity and human health[112].

Companies responsible for the largest amount of oceanic non-point pollution include major producers of single-use plastic containers, fossil fuel companies, meat and dairy producers, and agricultural chemical manufacturers.

Forever chemicals (PFAS)

Per- and poly-fluoroalkyl substances (PFAS), commonly known as 'forever chemicals', represent a significant threat to marine ecosystems. This group of several thousand synthetic chemicals are found in a wide range of consumer products from non-stick cookware to waterproof clothing and can enter the environment in a variety of ways, from firefighting foam being released to household cleaning chemicals washing down the drain. They are currently impossible to remove from the ocean and are of particular concern because they can be transported over long distances.[113]

Their extreme persistence in the environment, coupled with their high mobility in water, has led to their ubiquitous presence in oceans worldwide, even reaching remote polar regions[114]. One study has even found that ocean waves crashing on the world's shores emit more PFAS into the air than the world's industrial polluters[115], reflective of their ability to stay in the environment for long periods, or "forever". PFAS have already been linked to various adverse effects on marine life, including effects on the immune system and liver function of fish and marine mammals, neurological impacts in polar bears, and negative effects on seabirds[116].

The only option to prevent PFAS pollution in the environment is to stop them at source[117]. Their persistence mirrors that of legacy pollutants like polychlorinated biphenyls (PCBs), which continue to harm marine life decades after being banned. The widespread presence and harm from PFAS underscores the urgent need for comprehensive regulation and phase-out of these chemicals.

111 EPA, "Protecting Water Quality from Urban Runoff" (Washington DC: EPA, 2003).

112 ShareAction, Investors press for global action on toxic chemicals" 2025 https://shareaction.org/news/investors-press-for-global-action-on-toxic-chemicals-as-pollution-crisis-escalates

113 Julien Boucher and Damien Friot, "Primary Microplastics in the Oceans: A Global Evaluation of Sources" (Gland, Switzerland: International Union for Conservation of Nature and Natural Resources, 2017), dx.doi.org/10.2305/IUCN.CH.2017.01.en.

114 Joshua Garcia-Barrios et al., "Biomarkers of Poly- and Perfluoroalkyl Substances (PFAS) in Sub-Arctic and Arctic Communities in Canada," International Journal of Hygiene and Environmental Health 235 (June 2021): 113754, https://doi.org/10.1016/j.ijheh.2021.113754.

115 Zhiyong Xie and Roland Kallenborn, "Legacy and Emerging Per- and Poly-Fluoroalkyl Substances in Polar Regions," Current Opinion in Green and Sustainable Chemistry 42 (August 2023): 100840, https://doi.org/10.1016/j.cogsc.2023.100840.

116 Sha et al., "Constraining Global Transport of Perfluoroalkyl Acids on Sea Spray Aerosol Using Field Measurements"; Guillette et al., "Elevated Levels of Per- and Polyfluoroalkyl Substances in Cape Fear River Striped Bass (Morone Saxatilis) Are Associated with Biomarkers of Altered Immune and Liver Function"; Desforges et al., "Immunotoxic Effects of Environmental Pollutants in Marine Mammals."

117 Marine Conservation Society, "PFAS Aka 'Forever Chemicals,'" Marine Conservation Society, May 2022, https://www.mcsuk.org/ocean-emergency/ocean-pollution/chemicals/pfas-forever-chemicals/.

Major Corporate Contributors to Waste Dumping and Nonpoint Source Pollution

How we selected the companies:

The criteria for extent of impact point towards two key sectors: agricultural chemicals, which account for most of the highly hazardous pesticides, and PFAS, which has particularly serious impacts on ocean health. Companies dominating the agricultural chemical sector globally are Bayer, Syngenta, BASF and Corteva. The major PFAS manufacturers are 3M, DuPont, Honeywell International and AGC Inc. BASF and Bayer also make PFAS chemicals.

Syngenta & ADAMA

Syngenta is Switzerland-based, being the world's largest agrochemical and seeds producer by sales in 2023[118]. It is one of the largest suppliers of herbicides and pesticides used in agricultural activity, which wash into the oceans. ADAMA is Israel-based and is a leading producer of agricultural chemicals and the world's largest producer of generic pesticides, acquired by ChemChina. ChemChina later bought Syngenta, putting two major agrochemical producers under one parent company[119].

BASF

The largest chemical company in the world by revenue is also a leading producer of agricultural pesticides, herbicides, and fertilisers. The German multinational company had some of the highest agrochemical sales in 2023[120]. There have been multiple lawsuits filed across the US due to water and soil contamination from their products. Recently, they have been found to discharge PFAS, mercury and cyanide into the Detroit River from one of its facilities.

Bayer

Following its acquisition of seed maker Monsanto, the German multinational pharmaceutical and chemical company is the world's second largest supplier of seeds and agricultural chemicals[121]. Bayer has been involved in multiple pollution cases for agricultural runoff, chemicals and wastewater. Their production of PCBs has impacted whole ecosystems through its toxicity.

Corteva

In 2017, DowDuPont separated its agricultural business unit into a standalone company, Corteva Agrisciences. The move comes after the completion of a merger between Michigan-based The Dow Chemical Company and Delaware's E.I. du Pont de Nemours in 2017. Dow Chemical is one of the largest chemical manufacturers globally and Du Pont is one of the largest manufacturers of per-and poly-fluoroalkyl substances (PFAS). The merger made Corteva the fourth largest seller of agrochemicals, involved in various lawsuits due to its harmful practices[122].

3M

3M is a major manufacturer of per-and poly-fluoroalkyl substances (PFAS). Evidence shows 3M (and Du Pont) utilised tactics akin to the tobacco industry to conceal evidence of the toxicity of PFAS and delayed regulations governing their use[123]. 3M has been fined over $13 billion in PFAS violations for contaminating public water systems since 2018[124]. As of May 2025, 3M has agreed to pay up to $450 million in a New Jersey lawsuit for knowing the risks of PFAS and continuing to use and sell them[125].

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118 Tiseo, "Crop Protection Companies Global Revenue Ranking."

119 Shields, "ChemChina Clinches Landmark $43 Billion Takeover of Syngenta."

120 Tiseo, "Crop Protection Companies Global Revenue Ranking."

121 Ian Tiseo, "Crop Protection Companies Global Revenue Ranking," Statista, October 18, 2024, https://www.statista.com/statistics/257489/ranking-of-leading-agrochemical-companies-worldwide-by-revenue/.

122 Tiseo, "Crop Protection Companies Global Revenue Ranking"; International Chemical Secretariat, "Controversies: Corteva."

123 Nadia Gaber, Lisa Bero, and Tracey J. Woodruff, "The Devil They Knew: Chemical Documents Analysis of Industry Influence on PFAS Science," Annals of Global Health 89, no. 1 (June 1, 2023): 37, https://doi.org/10.5334/aogh.4013.

124 Good Jobs First, "3M Company Violation Tracker Current Parent Company Summary."

125 The Associated Press, "3M Will Pay up to $450 Million for Drinking-Water Contamination from 'Forever Chemicals.'"

Honeywell International

Honeywell International has placed 17 persistent chemicals on the US and EU markets, with the majority being PFAS substances. The company has paid over $440 million in regulatory penalties since 2000 for offenses such as environmental violations, air pollution and competition related offenses[126]. Recent controversial cases have included the city of Brunswick, Georgia suing Honeywell in 2022 over PCB and mercury pollution since 1996, and an explosion and subsequent release of hydrogen fluoride and chlorine at a facility in Geismar, Louisiana in 2023[127].

AGC Inc

AGC Inc is also responsible for placing chemicals on the US and EU markets, with 15 significant PFAS substances[128]. The Guardian conducted a survey alongside Watershed Investigations of the River Wyre which has effluent from the AGC Chemicals plant running into it. They found over 700 PFAS substances in the river, which flows into a marine protection zone[129]. Some significant lawsuits that the company has been involved in include the Orange County Water District filing against the company for negligence in PFAS water contamination[130].

126 Good Jobs First, "Honeywell International: Violation Tracker Current Parent Company Summary."

127 Landers, "Brunswick Takes Honeywell to Court over Decades of Pollution"; Mitchell, "Release of Toxic Chemicals at Honeywell in Geismar Prompts Highway Closures, Shelter Order."

128 International Chemical Secretariat, "AGC: ChemScore Report Card 2024."

129 Salvidge and Hosea, "Toxic Substances from Chemicals Firm Site Found Polluting Protected River."

130 Mindock, "New PFAS Lawsuit Cites EPA's 'Forever Chemicals' Drinking Water Rules."

3.3 Overfishing

Overfishing occurs when fish are caught faster than they can reproduce, leading to the depletion of fish stocks and disruption of marine ecosystems. Overfishing can result from various factors, including excessive fishing capacity, indiscriminate and destructive technologies (such as fishing aggregating devices), lack of data on fish populations, illegal fishing, and short-term profit-seeking. Overfishing has significant ecological, economic, and social consequences, with the ability to alter whole ecosystems through the disruption of food chains, as well as having an impact on communities that rely on marine environments for their livelihoods[131].

A substantial portion of global fish stocks are now fished at biologically unsustainable levels, with illegal, unreported, and unregulated (IUU) fishing exacerbating the problem. Unsustainable fishing practices, such as the use of destructive fishing gear, the targeting of keystone species, and IUU fishing can have cascading effects on marine food webs and ecosystem functioning, at times disrupting entire ecosystems[132]. Government subsidies to those fleets engaged in industrial fishing have some of the worst impacts, as they travel to developing nations' waters and overfish their stock. $35 billion is given out in fishing subsidies each year, and 80% of that is to industrial fishing vessels[133].

According to the United Nations Food and Agriculture Organization (FAO), over 37% of global fish stocks were overfished in 2024[134]. This practice threatens ocean biodiversity and the livelihoods of millions who depend on seafood for protein and income. Out of the species caught by trawlers, up to 90% of species can be caught by bycatch, which is where species are caught unintentionally when aiming for other species[135]. A study on shrimp pot fisheries in New Zealand found that 68% of the pots included bycatch[136].

Seabirds are a particularly affected species, with a study finding 44,000 killed from trawling bycatch, with this number being an underestimation[137].

NEW ZEALAND FOCUS

Aotearoa New Zealand has a reputation for strong fisheries management. However, unsustainable fishing remains a concern, and consumers are encouraged to look for credible sustainability certifications when purchasing seafood[138]. The case of the orange roughy is a key example of the need for strong and effective fisheries management. Orange roughy are a unique deep-sea fish - slow growing, with a long lifespan, and relatively low female reproductive capacity. The species was not properly managed which led to over 50,000 orange roughy being harvested between 1983 and 1990, culminating in the collapse of eight orange roughy fisheries in New Zealand waters by the end of the 1990s[139]. The New Zealand orange roughy fishery was the first in the world to be certified as sustainable by the Marine Stewardship Council (MSC) in 2016, and again in 2022. However, there are now indications that stocks have not recovered and certification was suspended in 2023[140].

The economic impact of overfishing is substantial, resulting in significant annual losses in foregone economic benefits. In extreme cases, overfishing causes a massive collapse of fish stocks. Overfishing resulted in the collapse of cod biomass off Newfoundland by 93% from 1962 to 1992. The government was forced to place a moratorium on the cod fishery putting 30,000 people out of work[141].

Overfishing threatens food security for billions of people who rely on fish as a primary source of

131 Marine Stewardship Council, "What Is Overfishing."

132 WWF, "Illegal, Unreported, and Unregulated Fishing Causes and Effects."

133 Symmonds et al., "Ending Harmful Subsidies Will Benefit Small-Scale Fishers."

134 FAO, ed., Towards Blue Transformation, The State of World Fisheries and Aquaculture 2022 (Rome: FAO, 2022).

135 Shark Allies, "Bycatch, Accidental and Unintended Catch."

136 Lively and McKenzie, "Discards and Bycatch."

137 Phillips et al., "Incidental Mortality of Seabirds in Trawl Fisheries."

138 "What Is Overfishing," Marine Stewardship Council, accessed November 27, 2024, https://www.msc.org/en-au/what-we-are-doing/oceans-at-risk/overfishing.

139 Ellen, "Case Study."

140 Milne, "Fishing Firms Lose Sustainability Certification, Impacting Exports."

141 Seal, "A Tragedy with No End."

protein, particularly in coastal communities of developing countries. It is challenging to identify specific corporate actors due to the structure of the fishing industry, particularly as 84% of publicly traded seafood companies hide their fishing locations, even to their shareholders[142].

However, some of the world's largest fishing companies, such as Nueva Pescanova , the Dongwon Group and Thai Union Group, have faced criticism for their roles in unsustainable fishing practices. Globalisation has consolidated these companies, with transnational corporations now having more control over the supply chain, leading to wide reaching impacts[143].

NEW ZEALAND FOCUS

New Zealand is the sole country in the South Pacific still allowing bottom trawling to occur on seamounts, despite international consensus that this should be banned[144]. Bottom trawling is extremely destructive to dense corals which have built up over millions of years, ecosystems which are essential to the health of our oceans like ancient seagrass meadows and sponge gardens[145]. Between 2021 and 2022, 70% of commercial catches used bottom trawling or were within 1 metre of the seabed[146]. The Department of Conservation documented over 13,400 recorded incidents of protected coral being dragged up by trawlers between 1990 and 2024[147]. New Zealand companies Sealord and Sanford Limited have been forced to forfeit vessels and fined for bottom trawling in New Zealand waters when they fished in protected areas in 2020 and 2021[148]. There are claims that bottom trawling is one of the most effective methods of fishing for the amount of catch, but the severe damage to our seabeds and ocean habitats is undeniable[149].

Aquaculture

While aquaculture plays a role in maintaining demand and keeping overfishing under control, many current aquaculture operations contribute significantly to ocean pollution. Intensive fish farming operations often release excess nutrients, primarily from uneaten feed and fish waste, leading to eutrophication in surrounding waters[150]. This can result in harmful algal blooms and oxygen-depleted "dead zones."

The importance of protecting coastlines is reflected in many indigenous systems of management. In Aotearoa New Zealand, Mātauranga Māori is a comprehensive system of knowledge encompassing Māori culture, values, traditions, and worldviews. It has applicability in effective coastal zone management. Research has shown that Māori with stewardship over coastal areas have traditionally used local ecological knowledge to guide the protection and harvesting of fish, shellfish and other marine resources in ways that sustain the ecosystem, including the use of temporary bans on use of marine resources[151]. Māori knowledge of sustainable marine use and management also has a crucial role to play in the development of new ventures, such as seaweed cultivation, mussel farming and carbon sequestration[152].However, within national boundaries there are more options for managing fisheries.

NEW ZEALAND FOCUS

142 Fish Tracker Initiative, "Empty Nets: How Overfishing Risks Leaving Investors Stranded."

143 Österblom et al., "Transnational Corporations as 'Keystone Actors' in Marine Ecosystems."

144 Milne, "Fishing Firms Lose Sustainability Certification, Impacting Exports."

145 WWF, "Help Stop Destructive Bottom Trawling!"

146 MPI, "Bottom Trawling."

147 NZ Department of Conservation and NIWA, "Understanding Coral Bycatch: Assessing large catches", May 2025 https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/non-csp-reports/understanding-coral-bycatch-assessing-large-catches-niwa.pdf

148 MPI, "Company and Fishers Fined for Bottom Trawling in a Benthic Protected Area – West of Stewart Island"; Ausmarine, "NZ."

149 Evans, "A Clean Sweep?"

150 Brianna Healey, Will Dell'Erba, and Kurt Leavitt, "Aquaculture and Its Impact on the Environment," University of Massachusetts Blog, April 20, 2016, https://websites.umass.edu/natsci397a-eross/aquaculture-and-its-impact-on-the-environment/.

151 Clapcott et al., "Mātauranga Māori."

152 Sustainable Seas Challenge, "Tikanga, Te Tiriti o Waitangi and Marine Governance."

There are also plastic pollution pathways from marine aquaculture. Plastics are used extensively in fish and shellfish farming and they are released into the ocean during extreme weather events, mismanagement of waste or deliberate discharge[153]. Plastic pollution from aquaculture at sea is often significantly under-quantified[154]. Additionally, the use of antibiotics and pesticides in aquaculture can contaminate marine ecosystems, potentially affecting wild species and contributing to antimicrobial resistance[155].

The industry's demand for fishmeal and fish oil to feed carnivorous farmed species puts pressure on wild fish stocks, potentially disrupting marine food webs. Using wild-caught fish to feed farmed fish contributes to the overfishing pressure on wild fish populations.[156] The Southern Ocean's ecosystem and krill production is already being affected by climate change, and it is only worsening due to industrial fishing, taking krill for fishmeal and other cosmetics and pet food products[157]. As aquaculture continues to expand globally, addressing these pollution issues and wider issues of marine food webs becomes increasingly critical alongside overfishing for maintaining ocean health and biodiversity.

INTERNATIONAL AGREEMENTS

UNCLOS and IUU Fishing

There are methods in place to try and counter overfishing and illegal fishing practices. UNCLOS (The United Nations Convention on the Law of the Sea) was created as a legal framework for states to regulate marine resources and sovereign rights to areas of the sea, which has helped to monitor activity in the ocean[158]. It also requires that countries cooperate to manage the high seas and their fish populations. In 2023, an addition to the convention added regulations to conserve marine biodiversity in areas outside national jurisdiction. However, enforcement on the high seas and even within sovereign seas remains a major challenge. There are new commercial opportunities in satellite technology and tracking systems[159] that can supplement the activities of ocean defenders like Sea Shepherd[160] in monitoring IUU (illegal, unregulated, unreported) fishing in oceans outside national boundaries.

153 Ingrid Giskes, "Addressing Plastic Pollution From the Aquaculture Industry," Ocean Conservancy, August 25, 2021, https://oceanconservancy.org/blog/2021/08/25/plastic-pollution-aquaculture-industry/.

154 Maggie Skirtun et al., "Plastic Pollution Pathways from Marine Aquaculture Practices and Potential Solutions for the North-East Atlantic Region," Marine Pollution Bulletin 174 (January 2022): 113178, https://doi.org/10.1016/j.marpolbul.2021.113178.

155 Adenike Adenaya et al., "Usage of Antibiotics in Aquaculture and the Impact on Coastal Waters," Marine Pollution Bulletin 188 (March 2023): 114645, https://doi.org/10.1016/j.marpolbul.2023.114645.

156 Monterey Bay Aquarium, "Limit Wild Fish Use in Aquaculture," Seafood Watch: Monterey Bay Aquarium, accessed November 29, 2024, https://www.seafoodwatch.org/seafood-basics/sustainable-solutions/limit-wild-fish-use-as-feed.

157 Changing Markets Foundation, "Krill, Baby, Krill The Corporations Profiting from Plundering Antarctica."

158 IMO, "United Nations Convention on the Law of the Sea."

159 Global Fishing Watch, "Recent Study Shows How Satellite Technology Can Help Track Illegal Fishing Throughout the Pacific Region" 31 March 2022 https://globalfishingwatch.org/article/tracking-illegal-fishing-in-the-pacific/

160 Sea Shepherd Global, "Illegal Fishing Campaigns."

Major Corporate Contributors to Overfishing

How we selected the companies:

Some of the most serious fishing problems are caused by private companies, including Chinese, Japanese, South Korean, Taiwanese, Indonesian, US and EU companies operating in the vast Pacific Ocean. Information on the specific companies and their activities, particularly in remote international waters is sparse.

Globally, there are a number of large multinationals that are responsible for overfishing. Thai Union Group and Dongwon Industries are two of the largest tuna producers worldwide and are heavily involved in IUU fishing as well as overfishing of critically endangered species. The Mitsubishi Corporation is the largest seafood corporation and has been charged for overfishing as well as being called out for controversial and destructive projects. Pescanova and Mowi are two of the largest aquaculture companies, causing ocean damage as well as significant carbon emissions.

Thai Union Group

Thai Union Group is one of the largest tuna producers in the world, with high-risk tuna in its supply chain. Shark Guardian found that the whole supply chain of the Thai Union group is plagued with IUU (illegal, unreported and unregulated) fishing practices. Their tuna fishing operations were found to affect endangered and threatened species like sharks and sea turtles[161]. Thai Union Group has signed onto the Tuna Transparency Pledge with the Nature Conservancy, but more measures need to be put in place to improve its whole supply chain[162].

Dongwon Industries

The Dongwon Group is one of the largest tuna producers and has high market share in its home South Korea[163]. It was one of the companies recorded by the Fish Tracker Initiative involved in overfishing world fishing stocks[164]. In the Indian Ocean, Dongwon Industries caught 602,000 tonnes of yellowfin and 344,000 tonnes of Southern Bluefin alone[165]. The yellowfin are being overfished as catch levels have increased alongside increased levels of bycatch, and the Southern bluefin has been classed as critically endangered due to levels of overfishing, risking extinction.[166]

Mitsubishi Corporation

Mitsubishi Corporation is the largest seafood corporation in the world, with control over large companies Princes Group, Cermaq and Toyo Reizo[167]. They are primarily involved in salmon farming, but also with tuna and seafood processing and distribution[168]. Mitsubishi provides the majority of Japan's tuna through Pacific, Atlantic and Southern bluefin which are vulnerable or endangered species. The company has been charged by the Chilean Superintendence for the Environment for overproduction of salmon and for excessive krill harvesting in the Antarctic[169].

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161 Shark Guardian, "The Art of Greenwashing: Thai Union's Sustainability Smokescreen," May 2024.

162 Nature Conservancy, "The Tuna Transparency Pledge," The Nature Conservancy, April 10, 2024, https://www.nature.org/en-us/what-we-do/our-priorities/provide-food-and-water-sustainably/food-and-water-stories/eyes-on-tuna/.

163 Österblom et al., "Transnational Corporations as 'Keystone Actors' in Marine Ecosystems."

164 "Shareholders in Fishing Companies at Risk from Fisheries Over-Exploitation: Research," Sea Around Us (blog), October 30, 2017, https://www.seaaroundus.org/shareholders-in-fishing-companies-at-risk-from-fisheries-over-exploitation-research/.

165 Luke Barratt, "Western Banks Provide Billions for Firms Fishing Tuna Species to Collapse," Unearthed, September 28, 2020, https://unearthed.greenpeace.org/2020/09/28/western-banks-finance-companies-responsible-for-overfishing-tuna/.

166 WWF, "Tuna | Species | WWF," World Wildlife Fund, accessed November 29, 2024, https://www.worldwildlife.org/species/tuna; Smithsonian Ocean, "Southern Bluefin Tuna (Thunnus Maccoyii)," Smithsonian National Museum of Natural History, accessed November 29, 2024, https://ocean.si.edu/human-connections/seafood/southern-bluefin-tuna-thunnus-maccoyii.

167 Insider Monkey, "Top 5 Largest Seafood Companies in the World," Insider Monkey, 2024, https://www.insidermonkey.com/blog/top-5-largest-seafood-companies-in-the-world-1250428/.

168 World Benchmarking Alliance, "Mitsubishi Corporation," World Benchmarking Alliance, accessed November 29, 2024, https://www.worldbenchmarkingalliance.org/publication/seafood-stewardship-index/.

169 Changing Markets Foundation, "Krill, Baby, Krill The Corporations Profiting from Plundering Antarctica."

Pescanova

This Spanish based company is the second largest shrimp producer in the world and heavily involved in the aquaculture industry[170]. Shrimp farming has been called into question for its unsustainability as it produces high carbon emissions (twice that of salmon production) and has severely damaged mangrove habitats worldwide[171]. Nueva Pescanova has also been drawn into recent controversy due to a proposed octopus aquaculture farm in the Canary Islands. Octopuses require a significant amount of feed in the form of small fish and shellfish, which creates further pressure on the food chain, and they are kept in a concentrated aquaculture space there is a high potential for disease[172]. According to NGOs, the organisation has not provided a comprehensive pollution analysis, with the plan being for wastewater to be discharged into the nearby port[173].

Mowi

The Norwegian-based seafood company is heavily involved in the aquaculture industry, accounting for 23% of the global salmon market[174]. They have been criticised for malpractice by NGO, Wildfish, for using chemical pesticides and causing animal harm in their Scottish salmon farms[175]. They were also called out for their Canadian salmon farms by First Nation groups for environmental damage and biodiversity loss, with the groups taking Mowi to federal government court[176]. Their use of fish feed for salmon farming is unsustainable due to the amounts needed for aquaculture.

170 Henrik Österblom et al., "Transnational Corporations as 'Keystone Actors' in Marine Ecosystems," ed. Athanassios C. Tsikliras, PLOS ONE 10, no. 5 (May 27, 2015): e0127533, https://doi.org/10.1371/journal.pone.0127533.

171 Robert Jones, "Better Shrimp Farming Could Take a Bite Out of Carbon Emissions," Nature Conservancy, accessed November 29, 2024, https://www.nature.org/en-us/what-we-do/our-priorities/provide-food-and-water-sustainably/food-and-water-stories/future-of-shrimp-farming/; Jack Cheney, "An Overview of Shrimp and Its Sustainability in 2024," Sustainable Fisheries (blog), February 14, 2024, https://sustainablefisheries-uw.org/shrimp-sustainability-2024/.

172 Bill Chappell, "A Seafood Firm Wants to Farm Octopus. Activists Say They're Too Smart for That," NPR, February 7, 2024, sec. Animals, https://www.npr.org/2024/02/07/1229233837/octopus-farm-spain-controversy.

173 Keri Tietge and Elena Lara, "Exposing the Environmental Risks of Octopus Farming" (Eurogroup for Animals, July 2024), https://www.eurogroupforanimals.org/files/eurogroupforanimals/2024-07/2024_07_efa_exposing_environmental_risks_octopus_farming_case_study_en_0.pdf.

174 GRAIN, "Of Lobsters and Mobsters: Who Are the Companies Poaching the Oceans?," Grain, June 24, 2021, https://grain.org/en/article/6692-of-lobsters-and-mobsters-who-are-the-companies-poaching-the-oceans.

175 Wildfish, "Responsibly Farmed? Investigating the Certification of Scottish Farmed Salmon" (Wildfish, 2023), https://wildfish.org/wp-content/uploads/2023/09/Responsibly-Sourced_-FINAL-REPORT_130923.pdf.

176 The Canadian Press, "First Nations Take Feds, Companies to Court over B.C. Fish Farms," CBC News, 2024, https://www.cbc.ca/news/canada/british-columbia/first-nations-bc-namgis-kwikwasut-inuxw-haxwa-mis-fish-farm-licences-federal-court-1.7279921.

3.4 Physical Destruction of Marine Habitats

Physical destruction

The physical destruction of marine habitats represents a significant threat to ocean ecosystems. Deep-sea mining, an emerging industry dominated by companies like Deep Sea Mining Finance and The Metals Company, poses substantial risks to seafloor ecosystems. These operations can disturb habitats, release harmful sediment plumes, and introduce noise pollution, with impacts potentially lasting for decades to centuries[177]. Supporters of deep sea mining argue that the minerals extracted are necessary for the clean energy transition to meet 2050 targets. However, that claim is not supported by analysis of the evidence[178].

Bottom trawling, a fishing method involving dragging heavy nets across the seafloor, is another major contributor to habitat destruction. This practice affects vast areas of the seafloor, damaging benthic habitats and the organisms that depend on them. It also releases significant amounts of carbon from the seafloor, which has wide reaching impacts[179].

Coastal development also plays a role in habitat destruction, leading to the loss of critical ecosystems such as mangroves, seagrass beds, and coral reefs. The United Nations reports that up to 67% of mangroves have been lost or degraded worldwide, while 29% of seagrass meadows have disappeared since the late 19th century[180]. The consequences of these activities are far-reaching, including biodiversity loss, altered ecosystem functioning, and the disruption of critical services such as coastal protection and carbon sequestration.

Biodiversity loss is a primary concern, with coral reefs, which support 25% of all marine species, seeing a 50% decline globally since the 1870s[181]. Many affected habitats, particularly in the deep sea, have very slow recovery rates. Some deep-sea coral species grow only a few millimetres per year, meaning that recovery from damage could take decades or even centuries.

Another industry which significantly affects marine habitats is tourism, particularly the growing prevalence of overtourism in ecologically sensitive areas. While tourism is an essential part of many countries' economies, the economic benefits can often come at the expense of environmental impacts. Damage to coastlines and marine ecosystems is a common impact of tourism, in a process of development that leads to the environment being sacrificed for resorts, hotels and experiences for tourists. Important ecosystems like mangroves, seagrasses and coral reefs are often destroyed to make way for tourism development[182].

In Costa Rica, coral reefs have been heavily impacted by sedimentation from tourist operations which led to coral die off and increase of invasive species[183]. These impacts are evident globally, as 50% of the world's coral reefs have died off due to human disturbance[184]. Changing the ecosystems around coastlines also has huge impacts on marine life. Mammals such as whales will move away from their habitats, which disrupts their migration patterns as well as their behaviour, leading to a lower survival rate[185].

MITIGATION ACTION

Despite the widespread degradation of our marine ecosystems that is occurring, there are initiatives that are aiming to counter the impacts and restore our vital reefs and sea floors. The International Coral Reef Initiative is a global partnership between organisations and countries to preserve coral reefs, engaging in awareness raising and sustainable management practices[186]. There are also technological innovations that are helping to restore the Great Barrier Reef through coral IVF, cryopreservation and 3d mapping[187].

177 Niner et al., "Deep-Sea Mining With No Net Loss of Biodiversity—An Impossible Aim."

178 Deep Sea Conservation Coalition, "Deep-Sea Mining Moratorium."

179 Sala et al., "Protecting the Global Ocean for Biodiversity, Food and Climate."

180 UNEP, "Celebrating International Mangrove Day."

181 Souter et al., "Status of Coral Reefs of the World: 2020 Summary for Policymakers."

182 Planet Wild, "Why Is Mass Tourism so Bad for Our Oceans?"; Nguyen and Cheer, "Why the Travel and Tourism Industry Should Care about the State of the Ocean #GFC23."

183 Cortés, "Anatomy of a Dying Coral Reef."

184 Planet Wild, "Why Is Mass Tourism so Bad for Our Oceans?"

185 Pacific Whale Foundation, "Unsustainable Marine Tourism Solutions |."

186 ICRI, "Homepage."

187 Great Barrier Reef Foundation, "Reef Restoration."

Deep sea mining is an industry which has very direct and serious impacts in specific areas. Although there are only a few companies which currently have permits to mine the seafloor in international waters, there are many more permit applications being considered. Deep sea mining initiatives in the Pacific include approaches by China to the Kiribati government and a five year permit in the Cook Islands for exploration for seafloor minerals such as nickel and cobalt[188].

The US has also been pushing fast track permits for deep sea mining exploration in international waters in order to stockpile essential minerals and challenge China's dominance of rare earth supply chains[189].

NEW ZEALAND FOCUS

In Aotearoa New Zealand, deep-sea mining poses significant threats to marine ecosystems, including rare species like Māui dolphins and New Zealand pygmy blue whales. Companies such as Trans Tasman Resources, Chatham Rock Phosphate and the McCallum Brothers have been seeking approval to mine iron sands and phosphate, which contain valuable minerals used in various industries, including renewable energy technology and the agricultural sector. The main concerns revolve around sediment discharge from mining activities smothering marine life, impacting fishing, and endangering marine mammals[190].

A study of the proposal to mine iron sands in Taranaki by the National Institute of Water & Atmospheric Research Ltd (NIWA) revealed thriving biodiversity near the proposed site, including thriving fish populations, extensive kelp forests, algal meadows, sponge gardens and blue cod nurseries[191]. Marine science experts worry about long-term impacts on these typically stable deep-sea environments, which may take extensive time to recover. They have particular concern about sediment plumes travelling far from mining sites, potentially clogging and killing organisms like sponges, which could lead to broader ecosystem disruptions.

Local communities and Māori are also campaigning against seabed mining and against the new government 'Fast Track' provisions that will by-pass consultation and proper assessment of the social, cultural and environmental impacts[192].

188 AFP and RNZ, "Cook Islands Strikes Deal with China on Seabed Minerals."

189 Scheyder and Renshaw, "Exclusive: White House Weighs Executive Order to Fast-Track Deep-Sea Mining, Sources Say"; Bryan and Sevastopulo, "Donald Trump Plans to Stockpile Deep Sea Critical Metals to Counter China."

190 Eva Corlett, "The Fight for Iron Sands: The Bitter Battle to Protect New Zealand's Sea-Floor Riches," The Guardian, August 19, 2024, sec. World news, https://www.theguardian.com/world/article/2024/aug/19/deep-sea-mining-new-zealand-south-taranaki-bight-ocean-sea-bed-patea-beach-ntwnfb.

191 NIWA, "Offshore Subtidal Rocky Reef Habitats on Pātea Bank, South Taranaki" (NIWA, September 2022).

192 Ellis, "Whanganui Council Takes Stand against Deep Seabed Mining"; Hancock, "Locals Fear a Fast-Tracked Sand Mining Plan Will Turn Bream Bay's Pristine Beaches to Mud."

In response to the push for deep sea mining, there has been strong advocacy from organisations such as Deep Sea Mining Campaign, Pacific Blue Line Collective and Greenpeace against further exploration. There is now significant support for a moratorium in deep sea mining, signed by a growing number of governments, with the aim of allowing more time to research the impacts of deep-sea ecosystems and put governance procedures in place, including gaining free, prior and informed consent from the Indigenous peoples who often suffer from the damage caused. At the Oceans Conference in June 2025, French President Emmanuel Macron has denounced the industry as "madness," and UN Secretary-General António Guterres has warned that the deep sea "cannot become the Wild West". Governments have now been joined by a growing list of major financial institutions[193]. David Attenborough warned: "the rush to mine this pristine and unexplored environment risks creating terrible impacts that cannot be reversed"[194].

Major Corporate Contributors to Destruction of Ocean Habitats

How we selected the companies:

While deep sea mining has not yet had a major impact on ocean seabed and habitats, it is likely to pose a significant threat in the future potentially causing irreversible harm to ecosystems. It is therefore the focus for companies identified in this section.

Deep Sea Mining Finance

This private company registered in the British Virgin Islands has ambitious plans for exploratory mining off the coast of Papua New Guinea. Although it claims to be conducting 'exploratory' mining, environmental groups found that the company was mining the seabed[195]. The PNG government had committed to a moratorium on deep sea mining, yet allowed Deep Sea Mining Finance to conduct this operation[196]. There are claims that 180 tonnes of seabed had been mined by the company, according to the Deep Sea Mining Campaign[197].

TMC The Metals Co

TMC The Metals Co Inc is a deep-sea minerals exploration company focused on the collection, processing and refining of polymetallic nodules found on the seafloor in international waters of the Clarion Clipperton Zone (CCZ). Geographically, the company has its presence in Nauru, Singapore, Tonga and North America. The potential for mining between Hawaii and Nauru is large and could have far reaching consequences for the health of the Pacific ocean. The Metals Co has been pushing ahead with harvesting polymetallic nodules off the sea floor despite a lack of environmental assessment and regulation around deep sea mining[198].

193 RNZ "PNG reaffirms ban as opposition to deep sea mining gains traction", 18 June 2025 https://www.rnz.co.nz/international/pacific-news/564506/png-reaffirms-ban-as-opposition-to-deep-sea-mining-gains-traction

194 Deep Sea Conservation Coalition, "Deep-Sea Mining Moratorium"; McVeigh, "David Attenborough Calls for Ban on 'devastating' Deep Sea Mining."

195 Elizabeth Claire Alberts, "Not Merely 'Exploration': PNG Deep-Sea Mining Riles Critics & Surprises Officials," Mongabay Environmental News, 2024, https://news.mongabay.com/2024/09/not-merely-exploration-png-deep-sea-mining-riles-critics-surprises-officials/.

196 "Deep-Sea Mining Continues in PNG despite Moratorium," ABC Pacific, August 18, 2024, https://www.abc.net.au/pacific/programs/pacificbeat/png-sea-bed/104241276.

197 Deep Sea Mining Campaign, "Outrage In PNG As Deep Sea Mining Finance Illegally Mines 180 Tonnes Of Seabed | Scoop News," August 14, 2024, https://www.scoop.co.nz/stories/WO2408/S00128/outrage-in-png-as-deep-sea-mining-finance-illegally-mines-180-tonnes-of-seabed.htm.

198 Catherine Clifford, "The Metals Company Announces a Controversial Timeline for Deep Sea Mining That Worsens the Divide in an Already Bitter Battle," CNBC, August 4, 2023, https://www.cnbc.com/2023/08/04/the-metals-company-puts-out-controversial-timeline-for-deep-sea-mining.html.

Trans Tasman Resources

Fully owned by Manuka Resources, this Australian company has recently been included on the New Zealand government's fast track list for new projects. They aim to "mine 50 million tonnes of sea bed a year for 30 years in the South Taranaki Bight"[199]. Local NGOs, dairy farmers and Māori oppose this project as it will dredge iron sand from the seabed which could have severe impacts for the sea bed, fisheries, marine life and endangered species, including Maui's and Hector's dolphins and migratory species such as blue whales. These ecosystems have been largely undisturbed so far and the impacts are potentially highly damaging.[200]

TechnipFMC

A collaborator of multiple deep sea mining companies, this offshore oilfield company provides equipment and engineering services for deep-water offshore oil and gas project development.[201] TechnipFMC also provides deep-sea mining companies with new technologies to allow more extraction of seabed minerals. As deep sea mining is still relatively new, the full extent of the repercussions are still unknown.[202]

199 Robin Martin, "Trans-Tasman Resources: Taranaki Seabed Mining Included in Fast-Track Projects List," RNZ, October 7, 2024, https://www.rnz.co.nz/news/national/530067/trans-tasman-resources-taranaki-seabed-mining-included-in-fast-track-projects-list.

200 Corlett, "The Fight for Iron Sands."

201 Business Wire, "TechnipFMC Announces Strategic Investment in Loke Marine Minerals to Enable the Energy Transition - TechnipFMC Plc"; Deep Sea Mining Campaign, "TechnipFMC"; Reuters, "At Least Two Companies Seek Norway Seabed Mining Permits."

202 Harry Dempsey and Kenza Bryan, "Deep-Sea Mining Is Key to Making Transition to Clean Energy, Says Loke," Financial Times, April 1, 2023, sec. Mining, https://www.ft.com/content/1d58455b-60f6-499d-aabe-2a7a3a108fef.

3.5 Climate emissions

Ocean acidification

Ocean acidification, often referred to as "the other CO2 problem,"[203] is a subtle but destructive process transforming the chemical balance of our oceans. As atmospheric carbon dioxide levels rise, primarily due to human activities, the oceans absorb approximately 25% of this excess CO2 and capture 90 percent of the excess heat generated by these emissions[204]. This absorption, while mitigating some atmospheric warming, comes at a steep cost to marine ecosystems.

Ocean acidification results from atmospheric carbon dioxide being absorbed by the ocean, resulting in a reduction of the pH levels of seawater. Since the beginning of the industrial revolution, the average pH of surface ocean waters has fallen by 0.1 units (becoming more acidic), from 8.2 to 8.1[205]. This 30% increase in acidity might seem small, but this shift in ocean chemistry can be catastrophic for the delicate balance of marine life[206]. Calcifying organisms such as corals, molluscs, and some plankton species, are highly vulnerable; they encounter difficulties in building and maintaining their skeletal structures in more acidic conditions[207].

Addressing ocean acidification requires a multifaceted approach, including drastic reductions in carbon dioxide emissions, protection and restoration of coastal ecosystems that act as carbon sinks, and development of adaptive strategies for marine industries. The health of our oceans, and by extension, the health of our planet, depends on our ability to curb this silent but potent threat.

Ocean warming

Ocean warming, primarily driven by anthropogenic greenhouse gas emissions[208], has significant implications for global climate patterns and marine ecosystems. The ocean has absorbed approximately 90% of the excess heat in the climate system over the past 50 years, leading to an average increase in sea surface temperature of 0.11 °C every decade over the last 50 years[209]. This warming trend contributes to various climatic phenomena, including increased frequency and intensity of extreme weather events. For instance, warmer ocean temperatures provide more energy for tropical cyclone formation and intensification, potentially leading to an increase in the proportion of Category 4 and 5 hurricanes[210]. For the Pacific, instances of El Nino and La Nina will increase in frequency and intensity due to global warming, meaning more intense periods of ocean warming[211].

NEW ZEALAND FOCUS

The impacts of ocean warming are widespread and significant. A recent study in New Zealand's Fiordland provides a stark example of the broader consequences of marine heat waves. In 2022, researchers from Victoria University of Wellington discovered widespread bleaching of marine sponges (Cymbastela lamellata) in Pātea, Doubtful Sound, linked to an extreme marine heatwave.[212] Follow-up surveys indicated a potential loss of 5-10% of these sponges in Doubtful Sound, with potentially greater losses in southern fjords.[213] This case highlights the vulnerability of diverse marine ecosystems to warming waters and the potential for rapid, significant changes in local marine biodiversity.

203 McAllister et al., "Kua Takoto Te Mānuka."

204 United Nations, "The Ocean – the World's Greatest Ally against Climate Change," accessed November 25, 2024, https://www.un.org/en/climatechange/science/climate-issues/ocean.

205 Jennifer Bennett, "Ocean Acidification," April 30, 2018, https://ocean.si.edu/ocean-life/invertebrates/ocean-acidification.

206 Kristina Kiest, "How Will Climate Change Change El Niño and La Niña?," NOAA Research (blog), November 10, 2020, https://research.noaa.gov/new-research-volume-explores-future-of-enso-under-influence-of-climate-change/.

207 Forest & Bird, "Ocean Acidification: Implications for New Zealand."

208 World Meteorological Organization, State of the Global Climate 2023 (Erscheinungsort nicht ermittelbar: United Nations, 2024).

209 Roberto M. Venegas, Jorge Acevedo, and Eric A. Treml, "Three Decades of Ocean Warming Impacts on Marine Ecosystems: A Review and Perspective," Deep Sea Research Part II: Topical Studies in Oceanography 212 (December 2023): 105318, https://doi.org/10.1016/j.dsr2.2023.105318.

210 Thomas Knutson et al., "Tropical Cyclones and Climate Change Assessment: Part II: Projected Response to Anthropogenic Warming," Bulletin of the American Meteorological Society 101, no. 3 (March 2020): E303–22, https://doi.org/10.1175/BAMS-D-18-0194.1.

211 Kiest, "How Will Climate Change Change El Niño and La Niña?"; Wenju Cai et al., "Butterfly Effect and a Self-Modulating El Niño Response to Global Warming," Nature 585, no. 7823 (September 3, 2020): 68–73, https://doi.org/10.1038/s41586-020-2641-x; Chirag Dhara and Roxy Mathew Koll, "How a Warming Pacific Ocean and Climate Change Will Impact Agriculture," Nature India, July 25, 2023, https://doi.org/10.1038/d44151-023-00093-1.

212 Victoria University of Wellington, "Marine Heat Wave Linked to Death of Fiordland Sponges," Victoria University of Wellington, August 21, 2023, https://www.wgtn.ac.nz/news/2023/01/marine-heat-wave-linked-to-death-of-fiordland-sponges.

213 James J. Bell et al., "Marine Heat Waves Drive Bleaching and Necrosis of Temperate Sponges," Current Biology 33, no. 1 (January 2023): 158-163.e2, https://doi.org/10.1016/j.cub.2022.11.013.

Moreover, ocean warming exacerbates sea level rise through thermal expansion and accelerated ice sheet melting, threatening coastal ecosystems and human settlements. In the Pacific, low-lying atolls such as Kiribati and Tuvalu will be significantly affected, with at least 15 cm of sea level rise in the next 30 years meaning the islands will be essentially uninhabitable[214].

The impacts of these warming-induced climatic events extend to marine biodiversity, with documented shifts in species distributions and increased coral bleaching events[215]. In Antarctica, methane trapped in the seabed is starting to release and contribute to our warming oceans as the ice melts[216]. These cascading effects signal just how important the role of ocean temperature regulation is in maintaining global climate stability and marine ecosystem health.

Greenhouse gas emitters

The primary driver of ocean acidification and warming is the increasing concentration of atmospheric greenhouse gases (GHGs), predominantly CO2, resulting from human activities. Analysis of global emissions data reveals that a significant proportion of these emissions can be attributed to a relatively small number of industrial sectors and companies.

The energy sector, encompassing electricity and heat production (extending to energy use in industry/transport/buildings), is the largest contributor to global GHG emissions, followed by transportation, manufacturing, construction, and agriculture, forestry & land use[217].

Within these sectors, fossil fuel combustion remains the dominant source of emissions, with coal being particularly carbon-intensive. A study by the Carbon Disclosure Project (CDP) found that just 100 fossil fuel producers have been responsible for 71% of global industrial GHG emissions since 1988[218]. The most significant emitters include state-owned entities such as China Coal, Saudi Aramco, and Gazprom, as well as investor-owned companies like ExxonMobil and Royal Dutch Shell[219].

We have selected some of the most harmful fossil fuel companies, however, this is a small proportion of the fossil fuel companies that contribute to ocean acidification. Further analysis of the companies driving greenhouse gas pollution will be included in a planned research report on nature investing and the atmosphere.

214 NASA, "NASA Analysis Shows Irreversible Sea Level Rise for Pacific Islands," Jet Propulsion Laboratory: NASA, September 25, 2024, https://www.nasa.gov/earth/climate-change/nasa-analysis-shows-irreversible-sea-level-rise-for-pacific-islands/.

215 Adriana Humanes et al., "Within-Population Variability in Coral Heat Tolerance Indicates Climate Adaptation Potential," Proceedings of the Royal Society B: Biological Sciences 289, no. 1981 (August 31, 2022): 20220872, https://doi.org/10.1098/rspb.2022.0872.

216 Concannon, "Our Changing World."

217 Hannah Ritchie, Pablo Rosado, and Max Roser, "Breakdown of Carbon Dioxide, Methane and Nitrous Oxide Emissions by Sector," Our World in Data, January 5, 2024, https://ourworldindata.org/emissions-by-sector.

218 Sustainability for All, "100 Companies Are Responsible for 71% of GHG Emissions," accessed November 26, 2024, https://www.active-sustainability.com/climate-change/100-companies-responsible-71-ghg-emissions/.

219 Ian Tiseo, "Cumulative Operational and Product Emissions from the Largest Carbon Producers Worldwide from 1854 to 2022," Statista, October 17, 2024, https://www.statista.com/statistics/1058434/leading-ghg-emissions-fossil-fuel-companies-globally/.

INTERNATIONAL AGREEMENTS

There are international treaties that aim to reduce our climate emissions and ensure a liveable planet for future generations. The Paris Agreement, signed in 2016, seeks to limit temperature increase from greenhouse gas emissions to well below 2°C and aims to stay below 1.5°C[220]. Countries set their own targets, in the form of Nationally Determined Contributions (NDCs), and submit progress to the UN Framework Convention on Climate Change every five years[221]. The Conference of the Parties also meets every year to review the NDCs and implementation of supporting agreements[222]. There has been some positive progress, such as the UK's emissions falling to the lowest level since 1879[223]. However, global progress has been well below the target, and overall emissions are still increasing. As a result, climate-related extreme weather events are causing massive damage and suffering, and ocean damage has been increasing.

Major Corporate Contributors to Acidification and Ocean Warming

Saudi Aramco

The state-owned Saudi oil and gas giant is the world's most profitable company. It is also the biggest emitter of greenhouse gases in the fossil fuel sector, according to the Carbon Disclosure Project (CDP). In addition to being the industry leader in GHG emissions from its own operations, Saudi Aramco is the overall leading supplier of fossil fuels in the global energy sector[224].

Gazprom

The state-owned gas giant, Russia's most valuable publicly traded company, ranks second among the top energy companies in terms of greenhouse gas emissions[225]. Gazprom is a major contributor to Russia's government revenues and their military budget.

ExxonMobil

ExxonMobil contributed to 2.8% of global emissions from 1854-2022 according to the Carbon Majors Database, being the third largest company contributing to CO2 emissions[226]. They are aggressively expanding new fossil fuel projects, while investing a small fraction of their capital expenditure in renewable energy. They continue to support research and advocacy to block progressive climate regulation and policy[227].

Coal India

India's state-owned coal company is the world's single largest generator of coal-based pollution by a government. It is also the fourth largest producer of greenhouse gases among fossil fuel companies[228]. As well as having the highest emissions intensity, coal burning also makes a disproportionate contribution to ocean acidification.

National Iranian Oil

National Iranian Oil ranks fifth in greenhouse gas emissions from its operations. Recent U.S. sanctions may have impacted the company's ranking, but Iran's state-owned oil and gas company remains one of the top producers and suppliers of greenhouse gases.

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220 UNFCCC, "The Paris Agreement."

221 UNFCCC, "Nationally Determined Contributions (NDCs)."

222 UNFCCC, "Conference of the Parties (COP)."

223 Carbon Brief, "UK 2023 emissions fell to the lowest level since 1879", March 11, 2024. https://www.carbonbrief.org/analysis-uk-emissions-in-2023-fell-to-lowest-level-since-1879/

224 Angelo Young, "20 Corporations Behind the Most Ocean Pollution," 24/7 Wall St, January 6, 2020, https://247wallst.com/special-report/2019/06/06/corporations-behind-the-most-ocean-pollution/.

225 Tiseo, "Cumulative Operational and Product Emissions from the Largest Carbon Producers Worldwide from 1854 to 2022."

226 Carbon Majors, "The Carbon Majors Database Launch Report," April 2024, https://carbonmajors.org/site/data/000/027/Carbon_Majors_Launch_Report.pdf; Dharna Noor and Oliver Milman, "Fury after Exxon Chief Says Public to Blame for Climate Failures," The Guardian, March 4, 2024, sec. US news, https://www.theguardian.com/us-news/2024/mar/04/exxon-chief-public-climate-failures.

227 Michael Copley, "Exxon Minimized Climate Change Internally after Conceding That Fossil Fuels Cause It," NPR, September 15, 2023, sec. Climate, https://www.npr.org/2023/09/14/1199570023/exxon-climate-change-fossil-fuels-global-warming-oil-gas; Noor and Milman, "Fury after Exxon Chief Says Public to Blame for Climate Failures."

228 Tiseo.

Chevron

According to data from the 1854 to 2022 period, Chevron was the second highest polluter of carbon emissions from carbon producers[229]. The company says it has been committed to carbon offsets, however, research found that 93% of the offsets it counted towards CO2 targets were 'worthless', as they still harmed the environment[230].

The Food and Agriculture Industry

The food industry, particularly animal agriculture, is a significant contributor to global greenhouse gas (GHG) emissions, with methane playing a crucial role. Livestock agriculture is the single largest source of methane, responsible for around 32% of anthropogenic methane emissions, and around 14.5% of global greenhouse gas emissions[231].

Ruminant animals like cattle and sheep produce methane through enteric fermentation, a digestive process that accounts for about one third of global methane emissions from human activities.[232] While methane has a shorter atmospheric lifespan than CO2, it is approximately 28 times more potent CO2 at trapping heat in the atmosphere.[233]

Over the last two centuries, methane concentrations in the atmosphere have more than doubled, largely due to human-related activities, raising temperatures in oceans [234]. Thus, reducing methane emissions is critical to mitigate climate change and the next decade will be crucial in avoiding dangerous tipping points. In this timeframe, methane, including agricultural emissions, will make a significant contribution to increasing levels of greenhouse gas concentrations, continuing to threaten ocean life [235].

NEW ZEALAND FOCUS

Methane emissions from the agriculture and waste sector have become a politically controversial issue. They have been excluded from New Zealand's Emissions Trading Scheme which provides a carbon price mechanism for other greenhouse gas emissions[236]. The farming lobby in New Zealand has been influential in providing a more permissive regime for methane, focusing primarily on the development of technologies for reducing emissions from ruminant animals. When compared to other countries, New Zealand is lagging the introduction of methane-reducing practices, such as Brazil's introduction of feeding practices that are projected to reduce methane from cattle up to 55%[237]. The omission of methane from a carbon price and emission reduction targets is likely to contribute to New Zealand missing its international targets and relying heavily on the purchase of emission credits from other countries to meet its Nationally Defined Contribution (NDC).

Agricultural producers have also been linked to other forms of ocean harm, including pollution and siltation of rivers. A major source of pollution is the dairy industry, through nitrogen runoff causing eutrophication, resulting in high nitrogen concentration, algal blooms and oxygen depletion ("dead zones"), with harm to marine life as rivers flow into the oceans [238].

229 Tiseo, "Cumulative Operational and Product Emissions from the Largest Carbon Producers Worldwide from 1854 to 2022."

230 Lakhani, "'Worthless.'"

231 Food and Agricultural Organisation, Livestock Solutions for Climate Change', 2017 https://openknowledge.fao.org/handle/20.500.14283/i8098en

232 Henning Steinfeld and Harry Clark, "Reducing Enteric Methane for Improving Food Security and Livelihoods" (Food and Agriculture Organization of the United Nations, n.d.), https://www.ccacoalition.org/resources/reducing-enteric-methane-improving-food-security-and-livelihoods.

233 EPA, "Importance of Methane," Overviews and Factsheets EPA, January 11, 2016, https://www.epa.gov/gmi/importance-methane.

234 EPA, "Importance of Methane"; Bange, "Non-CO2 Greenhouse Gases (N2O, CH4, CO) and the Ocean."

235 Science "Exceeding 1.5□ could trigger multiple climate tipping points", https://www.science.org/doi/10.1126/science.abn7950

236 Timperley, "What Can the World Learn from New Zealand on Climate?"

237 Oram, "Rod Oram."

238 Finnegan and Goggins, "Environmental Impact of the Dairy Industry."

Food and agriculture production can be undertaken sustainably, but large scale industrial agriculture comes at the expense of communities and the environment.

INTERNATIONAL AGREEMENTS

In response to the devastating impacts that food and agriculture companies are having on our forests, there are efforts to counter these impacts and reforest degraded land. The Reducing Emissions from Deforestation and forest Degradation (REDD+) initiative was created by the UNFCCC at COP19 in 2013 to implement conservation and sustainable practices for developing countries through the UN framework. Deforestation contributes to 11% of global emissions, and REDD+ efforts have contributed to emissions reduction[239]. Some research has found that REDD+ projects have been successful in protecting forests and enhancing their carbon sink capacity[240], while other evidence has documented policy failures and unintended consequences, particularly impacting on local communities and indigenous peoples[241].

Major Corporate Contributors to Ocean Harm from the Food and Agriculture Industry

Agrifood companies are a focus for ocean harm, resulting from their high level of greenhouse gas emissions, as well as other impacts on oceans including siltation, runoff and pollution of rivers and deforestation. The methane emissions of five of the biggest meat and dairy companies worldwide are estimated to rival those[242].

The methane companies were identified in research reports on the largest food and dairy companies that produce methane from 2022-2024 to identify the extent of their impact[243], as well as using other sources to research the significance of their impact[244]. This is not a comprehensive list of all the largest dairy and meat companies, but the ones we believed to be most impactful.

JBS SA

The Brazilian multinational company is both the world's largest meat processor and the biggest single emitter of greenhouse gases in the global food industry[245]. The seller of meat, chicken, and pork products is responsible for more GHG emissions than the other top three leading meat and dairy companies combined. The methane footprint of JBS is greater than that of Italy, Spain and the U.K. combined[246].

They have also been sued by the office of the New York attorney general for false claims with their net zero 2040 targets, as the company is not measuring all its emissions and has been taken off the SBTi list.

Marfrig

Marfrig is the second-largest beef producer in the world after JBS, and Brazil's second largest food processor[247]. Marfrig's methane emissions equal all of Australia's livestock emissions and they are involved in a scheme around 'carbon neutral beef' which they say neutralises methane emissions by the trees planted on farmland[248]. However, most methane cannot be captured by trees so these 'carbon neutral' claims are greenwashing[249].

239 UNEP, "REDD+."

240 International Union of Forest Research Organizations, "New Report Assesses Global Anti-Deforestation Measures."

241 World Rainforest Movement, "15 years of REDD: A mechanism rotten at the core" 28 April 2022. https://www.wrm.org.uy/publications/15-years-of-redd

242 Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

243 IATP. "Emissions Impossible: Methane Edition." Institute for Agriculture & Trade Policy. Accessed December 4, 2024; and Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

244 The methane emissions calculations are based on the UN FAO GLEAM measurement, which is one of the best ways to estimate methane emissions. However, they are estimates hence why there are differences between reports and based on which companies publicly report their GHG emissions fully.

245 Changing Markets Foundation and IATP, "Emissions Impossible: How Emissions from Big Meat and Dairy Are Heating up the Planet"; Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

246 IATP, "Fifteen Meat and Dairy Companies Emit More Methane than Russia," Institute for Agriculture & Trade Policy, November 22, 2022, https://www.iatp.org/fifteen-meat-and-dairy-companies-emit-more-methane-russia.

247 Changing Markets Foundation and IATP, "Emissions Impossible: How Emissions from Big Meat and Dairy Are Heating up the Planet"; Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

248 Cipriano, "Marfrig Launches Carbon Neutral Beef Line with Embrapa."

249 Changing Markets Foundation, "Viva El Greenwashing."

Tyson Foods

Arkansas-based Tyson was ranked as the third largest dairy and meat methane producer in 2022 and the fifth largest in 2024[250]. It is one of the largest single sources of greenhouse gas emissions on the planet, when the energy used to produce animal feed and the agricultural chemicals used to grow it are considered[251]. The company has been fined for polluting waterways and the air through its operations.

Dairy Farmers of America

The Kansas-based milk marketing cooperative is the fourth biggest source of greenhouse gas emissions in the meat and dairy industry if its livestock feed and agrochemicals operations are included[252]. They are a cooperative but do issue debt and are a large economic actor in the dairy and meat space.

Fonterra

Within the agri-food sector, New Zealand-based Fonterra Co-operative Group Limited is a major global source of methane emissions. Fonterra dominates New Zealand's dairy industry and commands a substantial share of the global whole milk powder market.

When accounting for the energy used in feedstock production, Fonterra is ranked as one of the highest sources of greenhouse gas emissions among agri-food companies globally[253].

According to their 2024 report, Fonterra produces 20% more GHG emissions per kilo of milk compared to Australian competitors[254].

Cargill

The Minnesota-based, privately held conglomerate is heavily involved in the production of livestock and grains for livestock nutrition. Cargill's operations are not limited to meat and poultry as the company's diverse businesses include agriculture products, food and beverages, beauty products and more[255]. The company is ranked as the sixth largest methane producer from dairy and meat companies as of 2024[256]. There have been multiple cases of environmental pollution from the company's livestock production.

Summary of Companies Contributing to Ocean Damage

Plastic Pollution	Waste Dumping & Pollution	Overfishing	Physical Destruction of Marine Habitats	Ocean Acidification & Warming
The Coca-Cola Company	Bayer	Mowi	The Metals Company (TMC)	Chevron
Nestlé	Syngenta	Pescanova	Deep Sea Mining Finance	Saudi Aramco
PepsiCo	ADAMA	Mitsubishi Corporation	Trans Tasman Resources	Gazprom
Mondelēz International	BASF	Thai Union Group	TechnipFMC	National Iranian Oil Co
Danone	Corteva	Dongwon Industries		ExxonMobil
Unilever	Honeywell International			Coal India
	AGC Inc			JBS
	3M			Tyson Foods
				Cargill
				Dairy Farmers of America
				Fonterra
				Marfrig

250 Changing Markets Foundation and IATP, "Emissions Impossible: How Emissions from Big Meat and Dairy Are Heating up the Planet"; Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

251 IATP, ibid.

252 Changing Markets Foundation and IATP, "Emissions Impossible: How Emissions from Big Meat and Dairy Are Heating up the Planet"; Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

253 Changing Markets Foundation and IATP, "Emissions Impossible: How Emissions from Big Meat and Dairy Are Heating up the Planet"; Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

254 Hancock, "The Dirty Truth about the Waikato River."

255 Cargill, "Products and Services from Food to Forecasting," accessed December 4, 2024, https://www.cargill.com/products.

256 Greenpeace Nordic, "Turning Down the Heat: Pulling the Climate Emergency Brake on Big Meat and Dairy."

4.Investing in regeneration of oceans

Although there is extensive investment in companies harming the oceans, there are also growing opportunities to invest in the health of our oceans. The investment challenge is to stop harming the oceans and invest in companies actively doing good. Annual surveys reveal that two thirds (66%) of New Zealanders say it is important that their superannuation (KiwiSaver) or investment fund delivers positive impacts in the world[259].

Historically, there have been barriers that have put investors off investing in the blue economy, such as a lack of information and few opportunities to invest at scale[260]. Investment in oceans has lagged behind other opportunities to support the Sustainable Development Goals.

Policy Framework

Positive investments to regenerate the oceans, whether small or large, require patience and long term financial backing to become reality. Specific philanthropic and government initiatives will continue to be crucial, but a supportive policy framework for investment is also required.

Governments have a role and responsibility to set a supportive policy framework in order to meet international commitments, support sustainable use of marine resources for the economy, to support users of the oceans for fishing, diving, boating and other recreational activity, and to fulfil our stewardship role for future generations.

The concept of biodiversity credits is gaining traction to create incentives for nature positive investment. A biodiversity credit is defined as "a unit that can be bought and sold, which represents a positive biodiversity outcome achieved by a nature-based solutions project registered under a biodiversity credit scheme that is based on scientifically derived and measurable metrics for biodiversity, and which is not used to offset an equivalent negative impact on biodiversity elsewhere."[261] The NZ Government is backing the expansion of voluntary nature credits, including wetland restoration in Southland[262]. Meanwhile, The Nature Conservancy has been developing blue carbon credits for Aotearoa through coastal wetlands[263].

A financial value on biodiversity allows ecosystems to be properly valued for their role as habitats and homes for diverse species. This supports private companies to help finance nature-positive outcomes, following the example of credits for forests supporting carbon sequestration[264]. Proposals for biodiversity credits have attracted widespread support and many organisations are promoting its potential. However, financially valuing nature has its critics. The use of financial value as a measuring tool does not align with Indigenous views that nature is inherently valuable beyond its economic value for humans[265]. As shown in Figure 5, the true value of nature is far greater.

259 Mindful Money and RIAA, "Voices of Aotearoa: Demand for Ethical Investment in New Zealand 2025."

260 Klerk and Tan, "Towards a Sustainable Ocean: Where There's a Will, There's a Wave."

261 Waterford, FitzSimons, and Olivia Back, "State of Voluntary Biodiversity Credit Markets: Current Supply and Demand Dynamics."

262 Hoggard, "Government Backs Voluntary Nature Credits."

263 The Nature Conservancy, "Advancing Blue Carbon in New Zealand's Coastal Wetlands."

264 Rao, Choi, and Czebiniak, "Can 'Biodiversity Credits' Boost Conservation?"

265 Moreno-Mateos et al., "The True Loss Caused by Biodiversity Offsets"; Dasgupta, "Are Biodiversity Credits Just Another Business-as-Usual Finance Scheme?"

NEW ZEALAND FOCUS

The New Zealand government has a responsibility to protect our oceans. With international frameworks such as the COP15 Kunming-Montreal Global Biodiversity Framework and the Sustainable Development Goals, we have a lot of guidance as a country on what is the best way forward for protecting our moana. New Zealand has made pledges to have "effective conservation and management of at least 30 percent of the world's...coastal areas and oceans" by 2030, as well as to "conserve and sustainably use the oceans, seas and marine resources for sustainable development" through SDG14[266]. Nationally, Te Mana o te Taiao (Aotearoa New Zealand Biodiversity Strategy 2020), the government set 2050 pledges to restore and protect our ecosystems and species "from the mountain tops to ocean depths" as well as that "biodiversity protection is at the heart of economic activity"[267]. The pledges have been made, now it is time for the government and the finance industry to follow through. In addition to establishing a policy and regulatory framework to prevent harm, the government could catalyse investment. WWF and EY have estimated that in order to meet the Global Biodiversity Framework Targets, NZ$26.5 billion is needed[268].

Blended Finance

The level of private sector investment in the oceans is still relatively low and most investment comes from governments. Blended finance can play a catalytic role, bringing together non-commercial funding, typically government, aid programmes or philanthropists, with positive impact investment. Cooperation between governments, philanthropists and investors is growing and creating new opportunities for private sector investors.

MITIGATION ACTION

Debt-for-ocean conservation swaps provide an example of innovative financing. These debt swaps allow heavily indebted developing countries with biologically diverse marine resources to restructure their existing debt. In exchange, the government commits itself to a defined marine conservation programme. They are often structured with private sector involvement, such as through intermediated debt swaps in which private investors lend money to sovereign debtors via a non-profit intermediary. This is the case with the Nature Bonds programme, led by The Nature Conservancy (TNC). These swaps were pioneered by the Seychelles in 2018, followed by Belize, Barbados and the Bahamas[269].

Builders Vision and the Minderoo Foundation are two philanthropic organisations which are initiating broader programmes for regenerating ecosystems. Builders Vision is a US-based organisation which focuses on "shifting markets and minds for good", including by systemic investing in ocean health and building the conditions for a more successful blue economy. They also engage in asset management and philanthropy to build a healthier planet[270]. The Minderoo Foundation is based in Australia and supports the Biodiversity Convention goal of 30% of Marine Protected Areas by 2030. They offer grants as well as impact investing in order to create systems change[271].

266 UN, "Goal 14 | Department of Economic and Social Affairs."
267 New Zealand Government.
268 EY and WWF, "A NATURE POSITIVE AOTEAROA Economic Analysis of Aotearoa New Zealand's Nature Opportunity."
269 The Nature Conservancy, "Nature Bonds: Unlocking Funds for Conservation and Climate Action."
270 Builders Vision, "Builders Vision | Impact Platform."
271 Minderoo Foundation, "Minderoo Foundation."

Opportunities for positive impact investing in oceans

Investors have often looked at oceans positive investments as not viable or with insufficient scale to be investible. But the sector is starting to take off. The World Resources Institute found that investing $2 trillion into sustainable projects (specifically offshore wind, decarbonising shipping, increasing sustainably sourced ocean proteins and restoring mangroves), had a return of $10.3 trillion in health, economic and environmental benefits at least[272]. The Standard Chartered Bank says that "blue economy equity deal flow has risen threefold between 2017 and 2023 while blue bond issuance levels almost doubled between 2022 and 2023"[273].

MITIGATION ACTION

1000 Ocean Startups is a coalition powered by the World Economic Forum to fund ocean regeneration projects[274]. These initiatives highlight the opportunities for finance to make significant differences in ocean health and achieve essential biodiversity and conservation targets. Other promising initiatives include:

Katapult Ocean invests in 77 companies in ocean innovation and is a founding member of the 1000 Oceans Startup Coalition. Their focus is in companies restoring the ocean, biodiversity and providing sustainable food options. They are also planning to launch two ocean focused funds in 2026

Outrigger Impact, a blended finance fund providing investment capital to businesses and projects in small island developing states (SIDS) related to the blue economy. Outrigger Impact focuses on six blue economy sectors: ocean conservation & ecotourism, sustainable seafood, circular economy & blue technology, sustainable blue infrastructure, ocean-based renewable energy and ridge to reef.

The SWEN Blue Ocean Fund is a direct impact strategy investing in innovations that help regenerate ocean biodiversity, hence contributing to achieve SDG #14. They support regeneration of ocean biodiversity, focusing on solutions to overfishing, marine pollution and marine-based solutions to climate change.

Oceans 14 Capital Fund is dedicated to the sustainable and regenerative blue economy. It focuses on sustainable seafood, marine biodiversity, circular economy and ocean health technologies, using science based metrics to align investments with SDG14 targets and ESG.

Aqua Spark focuses on making the aquaculture sector more sustainable and healthy. They have a range of companies focused on various aspects of the aquaculture sector, including feed, waste and production.

Nautilus (Blue Guarantee Company) aims to de-risk sustainable blue investments, through 'ocean-positive projects' protecting marine ecosystems and driving socioeconomic growth. It supports small-medium enterprises and infrastructure projects.

Blue Finance Facility is an impact loan facility aimed at bankable reef-positive enterprises within large MPAs. Currently it is focused in Indonesia, the Philippines and Tanzania around community-based aquaculture, sustainable fisheries and ecotourism.

272 Konar, Ding, and Teleki, "4 Sustainable Ocean Strategies That Yield Economic Benefits."

273 Klerk and Tan, "Towards a Sustainable Ocean: Where There's a Will, There's a Wave."

274 World Economic Forum, "Ocean Innovation."

MITIGATION ACTION

Within New Zealand, direct impact investing can include mussel and seaweed farming companies, blue carbon projects such as restoring coastal wetlands, or renewable energy projects[275]. There are also projects aimed at decarbonising the fishing industry, gathering more environmental data on our oceans and tackling illegal fishing[276] . A promising sustainable aquaculture project in New Zealand is the ORA Reefs project. This is situated in the Hauraki Gulf and aims to restore ecosystems which have been degraded over time by pollution and species introduction. The project initiator, Envirostrat, has been focusing on two projects: one on a rocky reef which is heavily impacted by sea urchins (kina) and the other on a soft-bottom floor which will be enhanced by artificial reefs. These projects will remove invasive kina species, reintroduce kelp and crayfish species, build new reef ecosystems and aim to restore the Gulf to its diverse and healthy state[277]. While this project and others in the Hauraki Gulf are at a relatively early stage, they provide examples of how investment can have restorative impacts on our oceans.

275 Purpose Capital, "Investing New Capital for Systemic Social and Environmental Change"; The Nature Conservancy, "Advancing Blue Carbon in New Zealand's Coastal Wetlands"; Invest New Zealand, "Renewable Energy Investment Opportunities in New Zealand."

276 Starboard Maritime Intelligence, "Starboard Maritime Intelligence"; Citizens of the Sea, "About Us"; NIWA, "NZ Ocean Data Network."

277 Smith, "Seaweed Farming: Hauraki Gulf Pilot Programme Paves Way for Potential Aquaculture Industry."

5. Investor Action for the Health of our Oceans

The challenges are clear - the international community needs to take action to stop polluting and degrading our oceans, and instead, direct more investments into restoration and regeneration. There is a sound base to work from, in the form of growing movements for ethical/responsible/ESG investment, positive impact investing and nature investment.

However, these movements have not been able to prevent the continued flow of massive investment funds into the companies identified in the report or into other companies causing harmful impacts on oceans. Ideally, investment decisions undertaken by managers of funds would recognise the risks and impacts of decisions that affect the oceans and avoid harm. But that has not been the case. This report includes examples of the largest and most impactful companies - the market capitalisation of the 35 companies named in this report is US$4.7 trillion. Since the report names only a few of the largest and most damaging companies, the full value of companies damaging our oceans is many times greater.

Action by Investment Providers

Investment managers can use a range of strategies to manage pooled funds of individual and institutional investors ethically and sustainably:

- Divest from harmful companies - sell the shares and bonds of the most harmful companies, or not invest in the first place
- Engage with companies having a harmful impact to influence companies to do less harm or avoid harm altogether. It is important that fund managers have a clear path of escalation, triggered by tangible progress so they do not continue to fund harmful investments while achieving only minor improvements.
- Invest in the companies that are contributing to restoration and regeneration of our oceans

Source: Mindful Money

NEW ZEALAND FOCUS

Mindful Money analyses the portfolios of all New Zealand superannuation (KiwiSaver funds and retail investment funds, and categorises companies on a range of issues that the public is concerned about (identified from annual surveys). A full analysis of investment in global fossil fuel companies to end March 2025 shows KiwiSaver and investment funds invested over $7 billion in companies harming the oceans.

Part 1: Overview of Responsible Investment Approaches; Industry Responses

Divestment

Asset owners have used divestment as a powerful force for change on issues, ranging from combating slavery in the 18th century to helping end apartheid in South Africa and putting pressure on companies making weapons used in the Vietnam War[278]. While the action of an individual investor is unable to influence markets, the collective actions of investors have the power to move capital markets and raise the cost of capital for companies causing harm.

In recent decades, investors have acted on a number of issues, notably encouraging the investment managers who invest on their behalf to massively divest from companies producing fossil fuels. Funds with US$41 trillion of assets under management have divested from fossil fuel companies. This broad campaign has been accompanied by specific campaigns on coal mines, such as the long running campaign in Australia against the Carmichael Coal Mine and Port in Queensland, owned by the Adani Group[279].

The pathway for most individual investors and other asset owners is to find out whether their current investment manager will divest, and if not, switch their funds to a fund that excludes harmful companies. The decision to divest has been made more compelling by the mounting evidence from extensive research showing that comparative returns to ethical investing have been at least as high, if not higher, than conventional investing.

Divestment is the starting point for most investors in reducing harm. Investors can use the list of companies in this report as a starting point for identifying harmful companies in their investments. While Mindful Money provides a unique source of portfolio information in New Zealand, available for free, this information is typically not available in other countries. Ideally, investment providers should provide a listing of company investments on request, but typically most disclose only a partial list that cover only their direct investments.

Investors should demand transparency - they have the right to know what companies their funds are invested in. If they are not provided with full transparency, or if they consider that the company investments do not align with their values, they can switch to a more ethical fund.

Active investors could also seek to create wider change through calling on companies and funds to improve disclosure about the impact of their activities on nature, and to lobby the government to introduce legislation requiring mandatory reporting. Transparency around investments is important to hold companies to account and allow for informed ethical investing.

Engagement

As explained in Section 2, the investment funds that hold shares in companies have governance responsibilities. They should be influencing all the companies they invest in. In some cases, they can play a role in significant influence that can change large companies.

However, companies often make promises to change but continue with the same core business model and harmful impacts. An example are the fossil fuel producers who have promised for decades to make the transition to renewable energy. BP re-branded as 'Beyond Petroleum', Shell promised to become a leader in renewable energy, and many companies made 'net zero' pledges. Most of these have been shown to be empty promises[280]. The world's largest oil and gas companies are still investing far more in developing new production fields than they are in transitioning to renewable energy.

Many fund providers claim they are influencing harmful companies, justifying their investments on the basis they are improving company practices. This is easy to say and hard to do. Investors should look for evidence from their fund manager that there is substantial progress towards reducing harm, rather than merely cosmetic change. If harm is continuing, investors should seek a different fund for their investment. In New Zealand, Mindful Money will monitor fund investments and let investors know if companies are living up to their claims.

278 350 Action, "Divestment Arguments."

279 Market Forces, "Stop Adani."

280 Client Earth Communications, "Revealed."

Positive impact investing

Individual support for nature is usually channelled through governments, international agencies, charities and other non-governmental organisations. Some initiatives may be structured with blended finance, particularly those funded through international aid and development programmes. These can provide opportunities for private sector companies to undertake research and development, experiment and scale up.

As shown in Section 4, there are also a growing number of exciting opportunities opening up in nature-positive developments. These may be supported by venture capital, private equity schemes or wealthy individuals. While there are still few large, listed companies investing in nature positive opportunities, mainstream investment can and should be seeking private capital opportunities to support nature positive initiatives as part of their portfolio.

Individual investors may have few opportunities to invest in venture capital or unlisted companies. However, they can seek out the mainstream pension or investment funds that are committed to reflecting nature positive investing in their core portfolio or creating a specific funding allocation.

Advocacy

The voices of investment managers and asset owners are crucial for achieving the changes needed to restore ocean health. As noted throughout this report, there are several alliances and initiatives supporting investors to take action on nature and biodiversity. These include:

- Reporting on nature dependencies, risks and impacts under the TNFD framework[281]
- Supporting the targets established under the Convention on Biological Diversity, and specifically the key actions for investors in aligning their portfolios[282]
- Joining the Nature Action 100 initiative[283] and contributing to collaborative engagement
- Signing up to the Finance for Biodiversity Pledge[284]
- Joining with others at the national level, such as the Responsible Investment Association for Australasia Working Group on Nature[285]
- Join with other investors to call for action on specific issues, such as to transition toxic chemicals to safe and sustainable solutions[286] and to advocate for a robust, legally binding international treaty to end plastic pollution[287]

Many investment managers are on a pathway towards investing responsibly. Change will require their leadership, and many more investment managers to recognise that their negative and positive impacts on our planet and its people need to be taken as seriously as financial risk and return.

281 Taskforce on Nature-related Financial Disclosures. https://tnfd.global/

282 UN Environment Programme and Principles for Responsible Investment, "Stepping up on Biodiversity" April 2023. https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Stepping-up-on-Biodiversity.pdf

283 Institutional Investors Group in Climate Change and Ceres, "Nature Action 100" https://www.natureaction100.org/

284 Finance for Biodiversity Foundation, "Finance for Biodiversity Pledge". https://www.financeforbiodiversity.org/signatories/

285 RIAA "Working Group on Nature". https://www.responsibleinvestment.org/membership/working-groups/nature

286 Chemicals and Biodiversity Investor Statement 2025. https://shareaction.org/chemicals-and-biodiversity-investor-statements-2025

287 Investor Statement in UN Plastics Treaty. https://planet-tracker.org/major-investors-sign-up-to-address-plastic-pollution-2/

Action by Investors

If investment providers continue to invest in harm, and/or fail to seek opportunities to invest in nature positive opportunities, members of the public and institutional investors can take action. It is important that investors recognise their power. They are the owners of the capital that is invested on their behalf. Investors may be individuals with pension or superannuation funds (KiwiSaver funds in New Zealand) or managed investment funds. Or they may be institutions with pools of money to invest and an ethical mandate, such as charities, trusts, foundations, schools, universities, or local government funds.

Most of these individuals and institutions treasure our oceans and marine species and do not want to see them harmed. Individuals and asset owners have the power to act, and the responsibility to do so. Figure 8 provides an outline of how investors can take action.

This report informs investors of the companies they invest in, and whether the companies are damaging to regenerating our oceans. As shown in the diagram, investors who are concerned over ocean damage in the funds should raise concerns with their fund manager. This is the most effective action, so that fund providers realise that their clients are concerned about ocean harm - simply switching to another fund without communicating why does not provide that feedback.

As detailed above, fund providers should engage and aim to influence the companies that contribute to ocean harm. Typically, these global companies are adept at appearing to be responsive to investor concerns but not changing the core business practices that cause harm. Investment managers acting in a coordinated way, such as through the Nature100 initiative, can provide a far more powerful voice for change than acting individually.

As shown in the diagram, investment providers should respond to the concerns of their investors. When they do so, investors have the choice to continue investing, and continuing to call for change, or to switch to a more ocean friendly fund.

Most investors doubt that their actions can make change. But when they are part of a movement for change, involving international allies, rivulets become streams, streams become rivers and rivers become a mighty force for change.

Mindful Money calls on investors globally and in Aotearoa New Zealand to prioritise nature as an explicit investment consideration, and specifically our precious oceans and marine ecosystems:

- Invest mindfully - engage to stop harm, divest if engagement does not succeed, and invest in positive outcomes.
- Advocate for stronger treaties and regulation to conserve our oceans, including protection for at least 30% of representative ocean habitats by 2030, in line with the Kunming-Montreal Global Biodiversity Framework.
- Promote nature positive investment by lobbying for policy settings to encourage development (e.g. development of blue carbon offsets).

Appendix

Glossary

Te Reo Maori Place Names and Words (Adapted from Te Aka Maori Dictionary)

Aotearoa - the Māori name for New Zealand

Hauraki Gulf - full name Tikapa Moana o Hauraki, deep inlet surrounding Auckland and bordering the Coromandel Peninsula in New Zealand

Hoiho - yellow-eyed penguin, endemic to New Zealand and nationally endangered species

Iwi - extended kinship group, tribe, nation, people, nationality, race - often refers to a large group of people descended from a common ancestor and associated with a distinct territory. Maori people in New Zealand relate to specific iwi.

Kina - common sea urchin, endemic to New Zealand. Due to overfishing and climate change, they dominate ecosystems in New Zealand such as in the Hauraki Gulf.

ki uta ki tai - from the mountains to the sea. Recognises how ecosystems are connected across the land.

Manawanui - the HMNZS Manawanui which is a Royal New Zealand Navy ship that sank off the coast of Samoa in October 2024.

Māori - the Indigenous people of New Zealand.

Mātauranga Māori - Māori knowledge - the body of knowledge originating from Māori ancestors, including the Māori world view and perspectives, Māori creativity and cultural practices.

Māui dolphins - subspecies of the Hector's dolphin, rare species only off the West coast of New Zealand, nationally critically endangered.

Moana - sea, ocean.

Ngāi Tahu - iwi group located in the South Island of New Zealand.

Ōtāiti, Astrolabe Reef - reef north of Tauranga in the Bay of Plenty of New Zealand, significantly affected by the grounding of the Rena ship.

Pātea, Doubtful Sound - fiord located in the Fiordland area of New Zealand, home to diverse sea life and species.

Rāhui - temporary ban on an area for conservation/social/political reasons. Māori use rāhui to separate people from tapu (forbidden) things.

Takutai Moana - Marine and Coastal Area Act of 2011, act which aimed to return legal rights for Māori to the marine and coastal areas of New Zealand.

Taonga - treasure, anything prized - applied to anything considered to be of value including socially or culturally valuable objects, resources, phenomenon, ideas and techniques.

Taranaki - region in the west of the North Island of New Zealand.

Tauranga - city in the Bay of Plenty region of New Zealand.

Te Mana o te Taiao - Aotearoa New Zealand Biodiversity Strategy 2020, to protect and restore New Zealand's biodiversity.

Te Tiriti o Waitangi - The Treaty of Waitangi, document with important significance to New Zealand as is an agreement between the Crown and Māori to govern on equal partnership. The implementation of this document has been controversial due to the English and Māori texts differing.

Tikapa Moana - otherwise known as the Hauraki Gulf.

Whanganui - city in the Manawatu-Whanganui region of the North Island of New Zealand.

Whanganui River - river in the Manawatu-Whanganui region of the North Island of New Zealand, which is recognised as a legal person under law, thus being protected and having the rights afforded to a person.'

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