MARINE CONSERVATION SOCIETY

MCS / Martin Stevens

Ocean-related risks and dependencies

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Executive summary

This report explores the value for financial institutions in understanding the dependencies that they have on the natural environment, and the financial risks posed by a degrading or changing environment. This is relevant to blue finance because financial institutions dictate where financial flows are directed. By becoming aware of their risks and dependencies, they can move money away from harmful activities and encourage regenerative activities within the marine environment.

The ocean contributes over half of the total economic value of the global economy. This economic contribution is underpinned by ecosystem services, i.e. the benefits we receive from nature, that the ocean delivers through biological processes, habitats, and species. Financially, many businesses and investors are dependent on these services to safeguard the value of investments or the financial security of their customer base. For example, there is a financial dependence on the provision of sustainable fish populations that extends from fisherman through to supermarkets. A multitude of pressures on the marine environment, combined with the effects of climate change, are changing the capacity of oceans to provide these valuable ecosystem services. At the same time, consequences of a changing environment such as rising sea-levels and increasing storm frequencies are also posing risks to society and the economy. These are called nature-related risks.

Nature-related risks can be physical risks such as loss of asset value due to natural events such as storms, flooding or drought. They can also be transitional risks from failure to react to change. This could include falling foul of new regulations introduced to reduce environmental impacts, or a loss of reputation associated with a company's environmental impacts. Nature-related risks become financial risks when they affect the financial performance or security of businesses, investors, or individuals. Investments may lose value, lenders may incur higher costs and struggle to meet debt repayments, or customers may take their spending elsewhere.

A financial institution is indirectly exposed to the same risks as those receiving their loans, investments, or insurance. A savvy investor will want to know the risks faced by the businesses and assets they invest in because those risks may impact their returns on investment. Nature-related financial risks are no different. To identify these risks, it is important to understand where investments are dependent on natural assets to safeguard economic value. By extension, they should also seek to understand their own impacts on nature, and then consider whether this

contributes to the risks faced by their investments. In short, they need to know where they are dependent on ecosystem services to safeguard the value of their investments and to identify activities that might threaten those dependencies.

Information around this topic tends to focus on terrestrial habitats. Concrete examples of ocean-related risks and dependencies are lacking, so an example has been constructed based on coastal flooding and erosion – a pertinent issue to the UK as an island nation surrounded by rising sea-levels.

The report was written during the finalisation of the TNFD – Taskforce for Nature Related Financial Disclosures – a voluntary initiative that guides financial institutions on identifying risks and dependencies across their value chain.

Ocean-related risks and dependences for the UK economy and financial sector

The UK economy, financial sector and the environment are inextricably linked. Although the importance of the ocean for human welfare and our economies has long been acknowledged (Costanza *et al.,* 1999), the full extent to which our economies and financial systems are dependent on marine health has been neglected. For example, most of the planet's biodiversity is found within the oceans and the entire GDP of the planet is linked in some level to biodiversity, with over half of GDP estimated to be moderately or highly dependent on it (Herweijer *et al.,* 2020).

A leading study by WWF revealed that globally, 66% of publicly listed companies have exposure and dependencies on ocean health, with $8.4 trillion USD of assets and revenues at risk over the subsequent 15 years in a business-as-usual scenario (Kennedy *et al.,* 2021). Recent analysis of the portfolios of six large asset-owners in our North Sea neighbours Denmark found that almost 40% of the total value of investments had exposure to activities which depend or impact upon the marine environment, either directly or indirectly (Gardin *et al.,* 2023).

As we know, the marine environment is subject to a number of modern stressors that threaten ecosystems in unpredictable ways. These threats are not bound to the oceans and can have unpredictable impacts on the financial ecosystem too.

To understand risks, an organisation first needs to understand the dependencies it has on the natural environment and how they affect its performance. The benefits that society receives from nature are known as ecosystem services and many organisations will exploit these services at various points in their value chain. Analysis by the Bank of England found that 52% of UK GDP and 72% of UK lending stock shows some dependence on these services. The health of the environment dictates the extent to which those services can be provided. Therefore, a loss of these services, upon which an enterprise may depend to run their business, presents risk. In this way, climate change and environmental pressures introduce a new form of uncertainty that requires a due diligence.

Targets, frameworks and guidelines

Various initiatives have been borne out of the growing recognition for the importance of organisations understanding and addressing their relationship with nature. There are a number of acronym-laden reporting targets, networks and

frameworks to guide companies on their sustainability goals and nature-related impacts.

- In the EU, the Corporate Sustainability Reporting Directive (CSRD) requires organisations that meet particular size criteria (referred to as 'large undertaking') to report on the social and environmental impact of their activities.
- The Science Based Targets Network (SBTN) is a network of organisations that develop methods and resources for science based targets that companies can adopt to ensure they are addressing impacts and dependencies on nature across their supply chains.
- The Taskforce on Climate-Related Financial Disclosures (TCFD) advises on the information that companies should disclose to help financial institutions assess and price in exposures and risks related to climate change.

Similarly, the Taskforce on Nature-related Financial Disclosures (TNFD) have created a framework that organisations can used to report on their impacts on nature, finalised in September 2023. This uses standardised metrics, that make it easier for companies to compare their performance and exposures. The framework is a step in the right direction but not perfect. The scope of financial impacts is focused more on the short term and there is not yet any independent third party to verify disclosures. Nevertheless, it should be within an institution's best interests to understand their risks and impacts related to the natural environment.[1]

Nature-related risks becoming financial risks

There is a logical need for institutions to understand nature-related financial risks that goes beyond altruism or compliance.

A financial institution, be it a bank, an investor or insurance company, is indirectly exposed to the same risks as the individuals or businesses receiving their loans, investments, or insurance. Just as a bank will want to know the creditworthiness of a borrower, investors want to know the risks faced by businesses and assets in their investment portfolios. They also need to understand how these risks may change in the future. By extension, it is also in the interests of institutions to understand their own impacts on nature and how they are contributing to these risks that may come back to affect them over time. The concept of looking at both the outside impacts

[1] There is a natural link between TCFD and TNFD. As well as the similarities between the frameworks and methodologies, climate change can exacerbate environmental stressors, including in marine ecosystems (Niiranen *et al.,* 2013).

that affect an organisation, and the impacts of the organisation itself, is known as double materiality (TNFD, 2022). Double materiality is being adopted by a growing number of financial institutions when it comes to nature-related risks.

Nature-related risks can be physical – such as the loss or damage to assets, raw materials or infrastructure resulting from natural events like flooding, drought, or loss of habitat (CISL, 2021). This can lead to disruptions across a company's operations causing increased costs or delays. Alternatively, there are also risks arising from policy, regulation, technological change, consumer preferences or litigation. These are bracketed under *transition and liability risks*. For example, policy and regulation change can be expected as governments and industries seek to respond to the planetary crisis. *Regulatory or reputational risks* may await organisations that do not react in line with these policy and regulatory changes (Bayangos *et al*., 2023).

Institutions need to manage these transitional sources of risk, because failure to adapt to changes in consumer preferences, regulations or technological advancements could lead to a loss of customers, or even result in lawsuits and fines for failure to comply (Svartzman *et al*., 2021). In other cases, environmental pressures, consumer sentiment or regulatory change can lead to assets becoming 'stranded' as they are no longer deemed viable or in demand.

These nature-related risks become financial risks directly, through their impacts on the operations of affected companies, but also indirectly, as institutions invested in those companies may lost value on their investments (CISL, 2021).

The resulting nature-related financial risks are broken down into four categories (CISL, 2021):

- Credit risk, where a borrower is not able to repay its financial obligations, a risk to both the borrow and lender.
- Market risk resulting from movement in prices on financial markets, such as falling share prices.
- Liquidity risk whereupon an institution may not be able to finance its operations as viably, perhaps due to disruptions in its supply chain or price of raw materials.
- Business risk where a change of circumstances (such as regulatory change) can impact an organisation's operations or business model.

Case study: Coastal flooding & defence

As an island nation, coastal flooding and defence is an area where institutions in the UK need to understand which of their assets, investments and insurance policies are vulnerable to physical risk from flooding and coastal erosion. As shown in Figure 1, there are substantial areas of the UK subject to flood risk in the future. This provides one example of where changes to the marine environment, such as sea-level rise, increased storm frequency and loss of protective habitats, can have costly impacts.

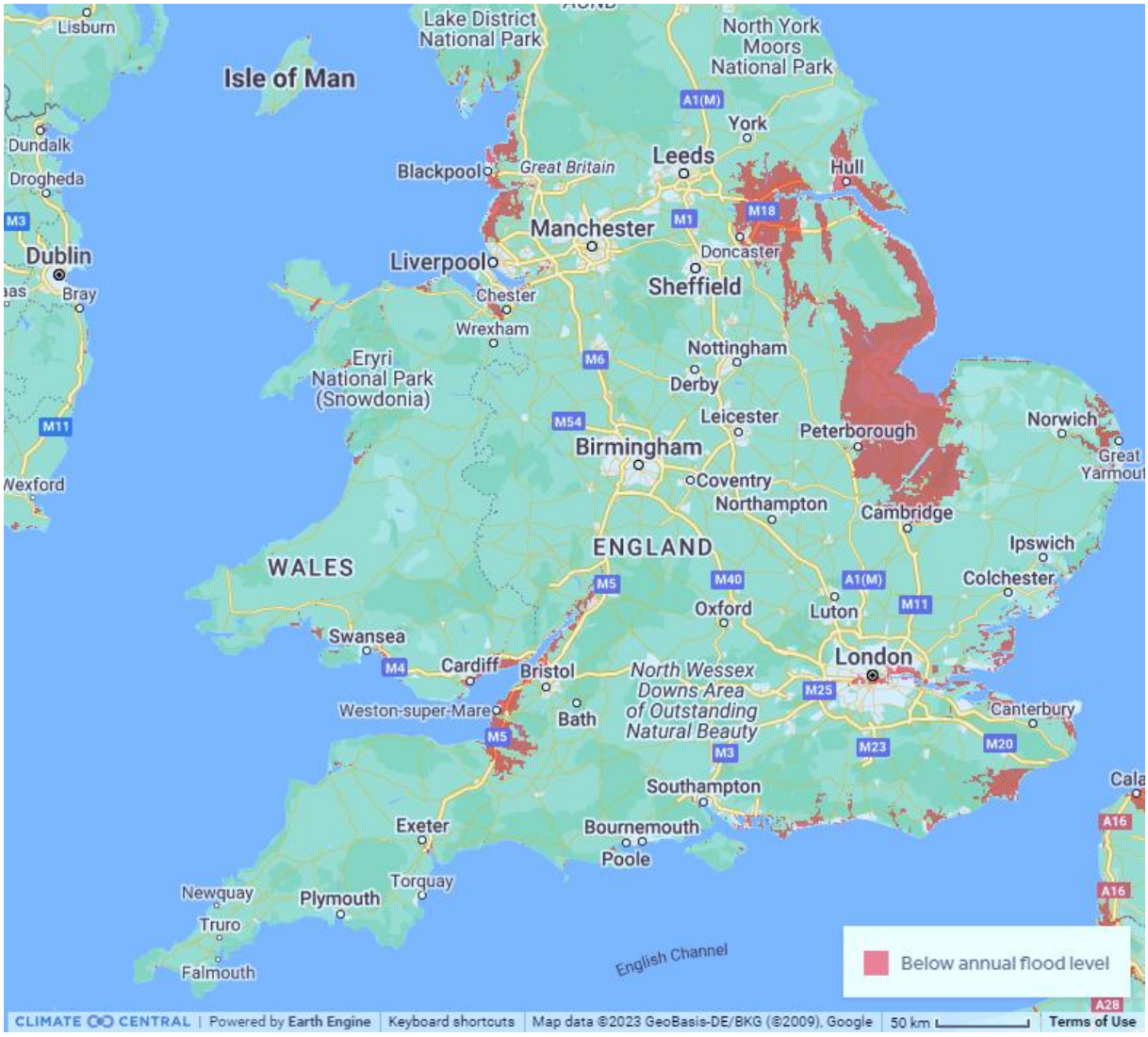

Figure 1: Land predicted to be below the annual flood level in England by 2030, red shading marks the affected areas. A significant number of properties and infrastructure is at risk of flooding. Source: Climate Central, available at: http://sealevel.climatecentral.org/.

As sea-levels rises and storm events become more frequent, the UK may expect to experience greater costs and losses linked to property and infrastructure damage. This is already costing the UK economy £2.2 billion per year and is predicted to

increase over time. According to the Climate Change Committee, there is between £120 and £150 billion worth of property, businesses and infrastructure at risk of coastal flooding, which includes 12 nuclear power stations that could be affected by coastal erosion.

The costs of coastal erosion and flooding could be much higher were our coastlines not protected by blue carbon habitats. For example, intertidal coastal habitats such as saltmarsh and providing natural coastal defence which is a service valued between £3.1 and £33.2 billion per year when compared to the cost of man-made alternative. Coastal habitats play an important role in mitigating these risks and dampening the effects of sea-level rise, flooding and coastal erosion, and this safeguards private sector investment in the infrastructure at risk. In the Severn Estuary alone, saltmarsh in the estuary supports the protection of 100,000 homes and business, valued at £5 billion.

It is unclear exactly how much private sector investment is tied up in coastal infrastructure and properties. Examples of direct exposure that a financial institution may have to coastal flooding include:

- Loans or investments provided for coastal development.
- Investment in property.
- Insurance issued on properties and infrastructure.

However, institutions may have companies or assets within their investment portfolio that are exposed to these same risks, or additional risks such as:

- Loss of agricultural land and raw materials due to flooding or coastal erosion, with knock-on effects for the supply chain of other companies.
- Loss of revenue incurred by coastal tourism operators and local businesses as customers are deterred by flooding events.
- Increased costs incurred by coastal businesses through repairs to property and infrastructure, impacting their financial security.
- Delays and disruptions to daily operations of coastal enterprises, impacting on business productivity and profits.
- Projects and businesses in coastal areas having to pay higher insurance premiums, increasing operating costs and reducing overall profits.

Loss of natural coastal protection contributes to an acute physical risk that can impact the portfolios of financial institutions. Therefore, as well as understanding their risks, affected institutions will also need to understand how their activities influence this risk. This could include identifying investments in infrastructure projects that could lead to destruction of coastal habitats. An institution could look

at which investments are contributing to poor water quality which is a leading cause of declines seagrass and saltmarsh coverage. They may wish to consider how companies they invest in are contributing to poor water quality around the UK which is indirectly undermining their investments in coastal projects. By the same logic, financial institutions may now become incentivised to invest in companies and activities that can demonstrate a positive and restorative impact on key coastal habitats in an effort to safeguard related investments.

Figure 2 provides an illustration of the simultaneous interactions between nature-related risks, financial risks, impacts and dependencies in a hypothetical example of a company exposed to coastal flooding and erosion risks:

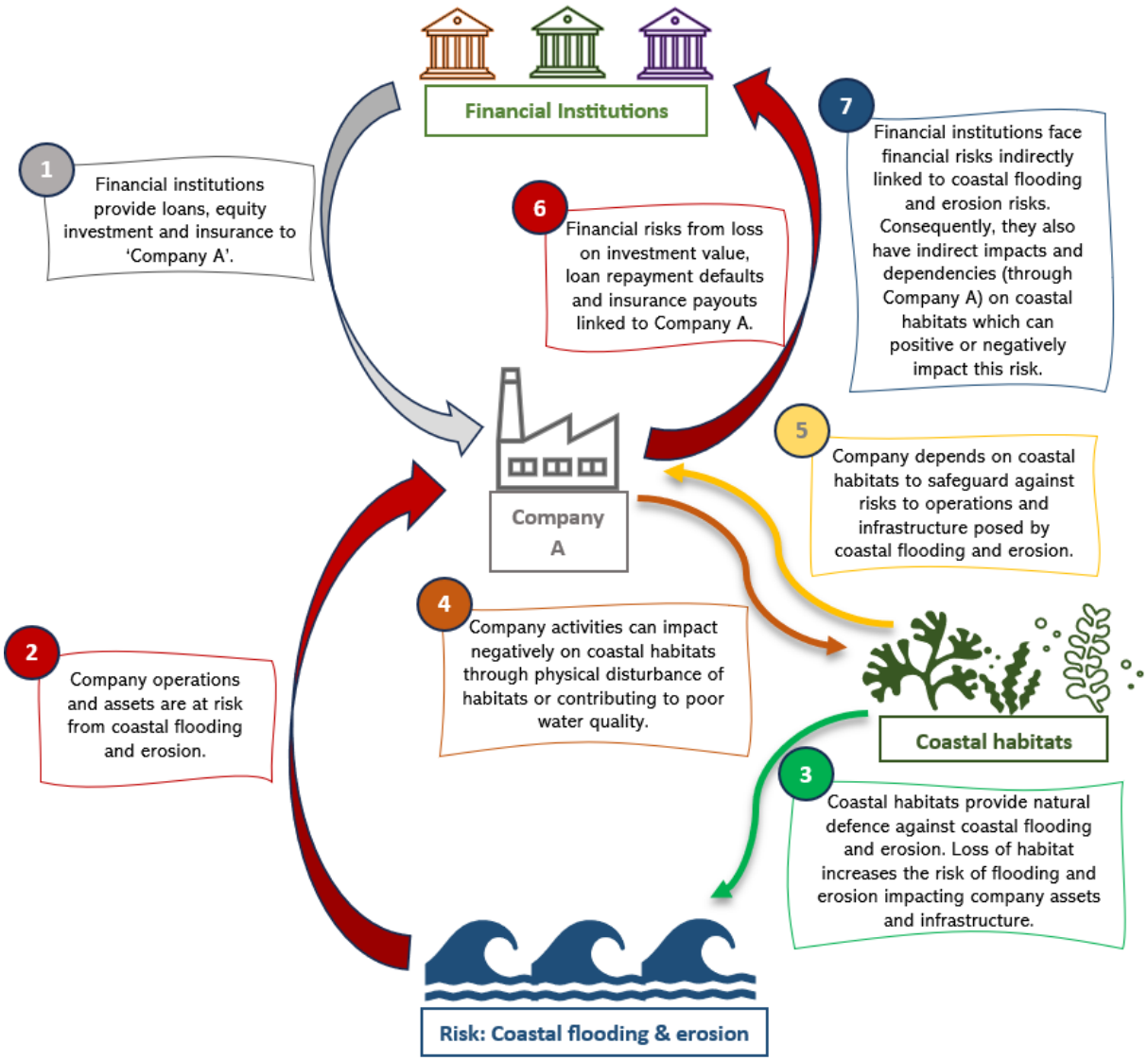

Figure 2: An illustration of how nature-related risks are linked to financial risks. Source: Author.

In this example, financial institutions have financial exposure to 'Company A' through loans, equity investments and insurance. Company A has assets and infrastructure at risk of coastal flooding and erosion which in turn would impact its operations, coasts and profits. Company A depends on coastal habitats to reduce this risk by providing natural defence, however coastal habitats are at risk of negative impacts through Company A's activities. The financial institutions have indirect dependencies and impacts on coastal habitats because of their investment in Company A, and it is in their interests to protect coastal habitats in order to reduce their own financial risk linked to the performance of Company A.

Measuring ocean impacts and dependencies

While financial institutions are used to working with long-standing metrics such as GDP, inflation, interest rates and returns on investment, there is a lack of agreed-upon metrics for quantifying the economic and financial impacts of the environment (Bayangos *et al.,* 2023). Clear, accurate, and up-to-date information that extends beyond the immediate-term is needed to ensure transparency around environmental impacts and risks (Ward *et al.,* 2022).

As tends to be the case, the availability of appropriate data for the marine environment is lagging behind terrestrial ecosystems. Easy access to metrics that are fit for purpose will be key to financial institutions understanding their ocean-related risks and dependencies. A major challenged to be addressed is the ability to translate complex nature-related data and apply it to investment decisions (Gardin *et al.,* 2023).

The *Making Oceans Count Initiative* highlighted some key opportunities to address this, including (Gardin *et al.,* 2023):

- Strengthening nature-related and corporate disclosure data platforms with geolocated asset-level data for ocean-linked activities.
- Increased levels of corporate disclosure, led by financial institutions requesting specific data from businesses in their portfolios and client base.
- Develop a wider set of assessments, data and metrics specifically for the marine environment, building on tools such as ENCORE – a platform developed by Global Canopy, UNEP FI and UNEP-WCMC to explore natural capital risks and opportunities.
- Nature metric providers and technological innovations to support in providing greater granularity to the data.

Awareness of these risks and dependencies can guide future investment decisions

The finance sector decides where capital flows are directed and can enable damaging or restorative activities depending on who it decides to loan to, invest in or insure (Hand and Wentworth, 2022). A better understanding of risks and dependencies can therefore benefit both the institutions and the environment.

This could lead to informed actions being taken to the benefit of both the finance sector and marine environment. Financial institutions could adjust the terms of an investment where there is evidence of nature-based solutions incorporated into a project to increase coastal resilience. Investor confidence may grow where prospective investment projects can demonstrate an understanding of risk in coastal zones and take measures to mitigate them. Institutions may look to start directing capital directly into marine restoration where they can see it benefits assets in their portfolio. Insurance companies may themselves stand to benefit from investing specifically in nature-based flood defences to reduce the likelihood of payouts.

Inaction presents the biggest risk

The biggest risk to financial institutions is a failure to understand their impacts and dependencies on the ocean, or to take too long in doing so. Ecological collapse precedes financial bankruptcy and ecosystems do not degrade gradually. They are a complex network of biological interactions and failure in one part of the network can lead to the collapse of the whole system, not unlike the financial system. A notable example of this occurred in 1992 when mismanagement and overexploitation of Northern Cod populations in the Grand Banks saw numbers drop to 1% of historic levels (Barber *et al.,* 2021). The effects on the fishing industry and local economy were profound and required emergency measures of income support worth $484 million USD and a further $1.9 billion in additional economic support (Hamilton and Butler, 2001).

It is not just the threat of sudden shocks that should inspire urgency. The business-as-usual future facing the economy and finance sector in the UK (as well as globally) is one of rising costs and losses due to declining ocean health. As time marches on, so the disparity between the gains of ocean investment versus costs of inaction widens, as illustrated in Figure 3.

In theory, a financial institution that takes steps to identify and manage its risks and impacts linked to marine and coastal ecosystems will be better prepared for nature-related risks that threaten financial value. Financial value may also be better protected against sudden environmental events like flooding or severe storms. This is depicted by the ocean-positive approach in Figure 3. Over time, actions to safeguard the marine environment may even lead to an increase in financial value, as the capacity of better protected ecosystems to provide ecosystem services increases. By contrast, a business-as-usual approach that doesn't consider these links to the ocean will see increasing losses over time and feel greater impacts linked to environmental shocks.

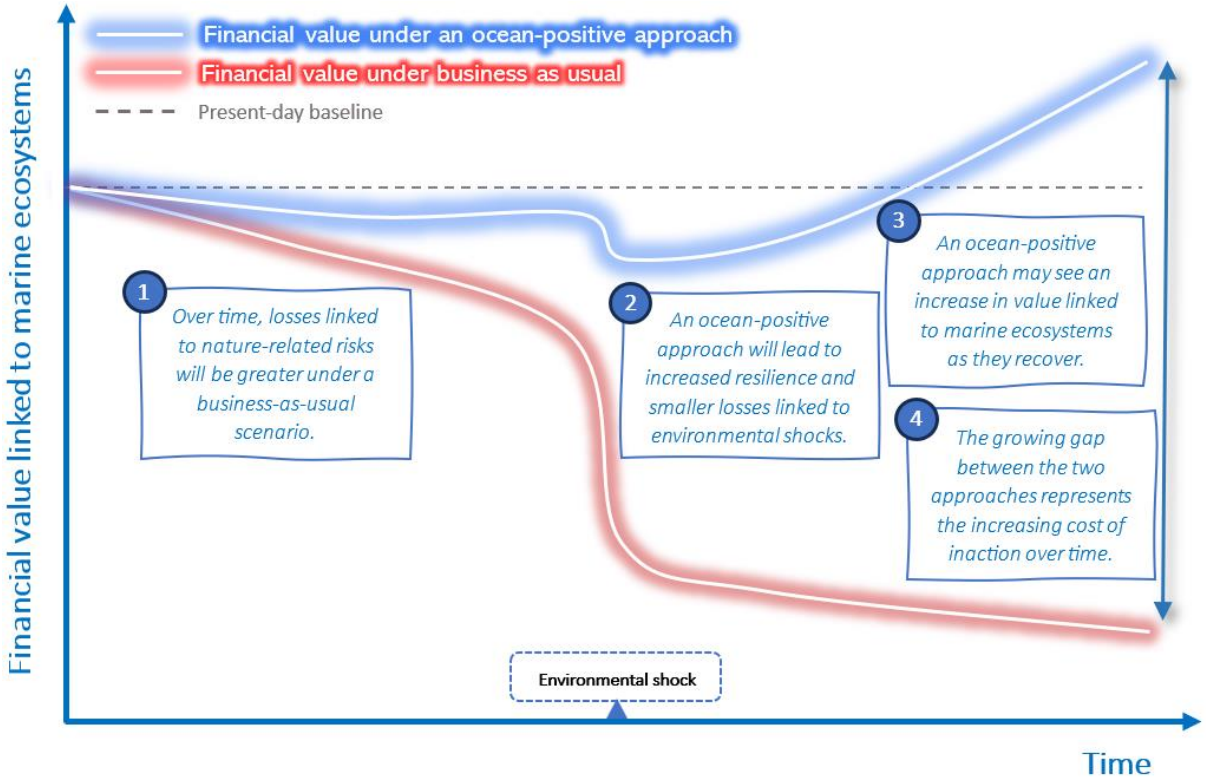

Figure 3: An illustration of how an institution's financial value linked to the marine environment may differ between a business-as-usual and an ocean-positive approach. An ocean-positive approach would consider how financial value is linked to the marine environment and take steps to manage those risks and dependencies. A business-as-usual scenario assumes no steps are taken to identify and manage risks and dependencies. It is likely that some value will be lost under either scenario as ecosystems degrade, but these losses would be minimised under an ocean-positive approach that would also be more resilient to shocks and may even achieve increases in financial value where ecosystems are allowed to recover. Source: Author.

Fortune favours the brave

In summary, many businesses, investors and financial institutions will depend to varying degrees on marine ecosystems to deliver value across their operations and portfolios. This dependency creates risk where changes to those ecosystems may impact financial value. A proactive approach to understanding risks, dependencies and impacts on ocean ecosystems – an ocean-positive approach - may reduce losses linked to environmental change and increase financial resilience. Going a step further, it could also encourage nature-based solutions that actively help to manage risk and protect value. Institutions that are on the front foot in understanding their links to ocean health can therefore play an important role in improving ocean health and avoid the financial downfall that awaits those that are too slow to act.

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