DEEP SEABED MINING

WWF'S GUIDE FOR FINANCIAL INSTITUTIONS

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ABOUT WWF
WWF - World Wide Fund for Nature is a global, independent conservation organization active in nearly 100 countries. Our mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable and promoting the reduction of pollution and wasteful consumption.

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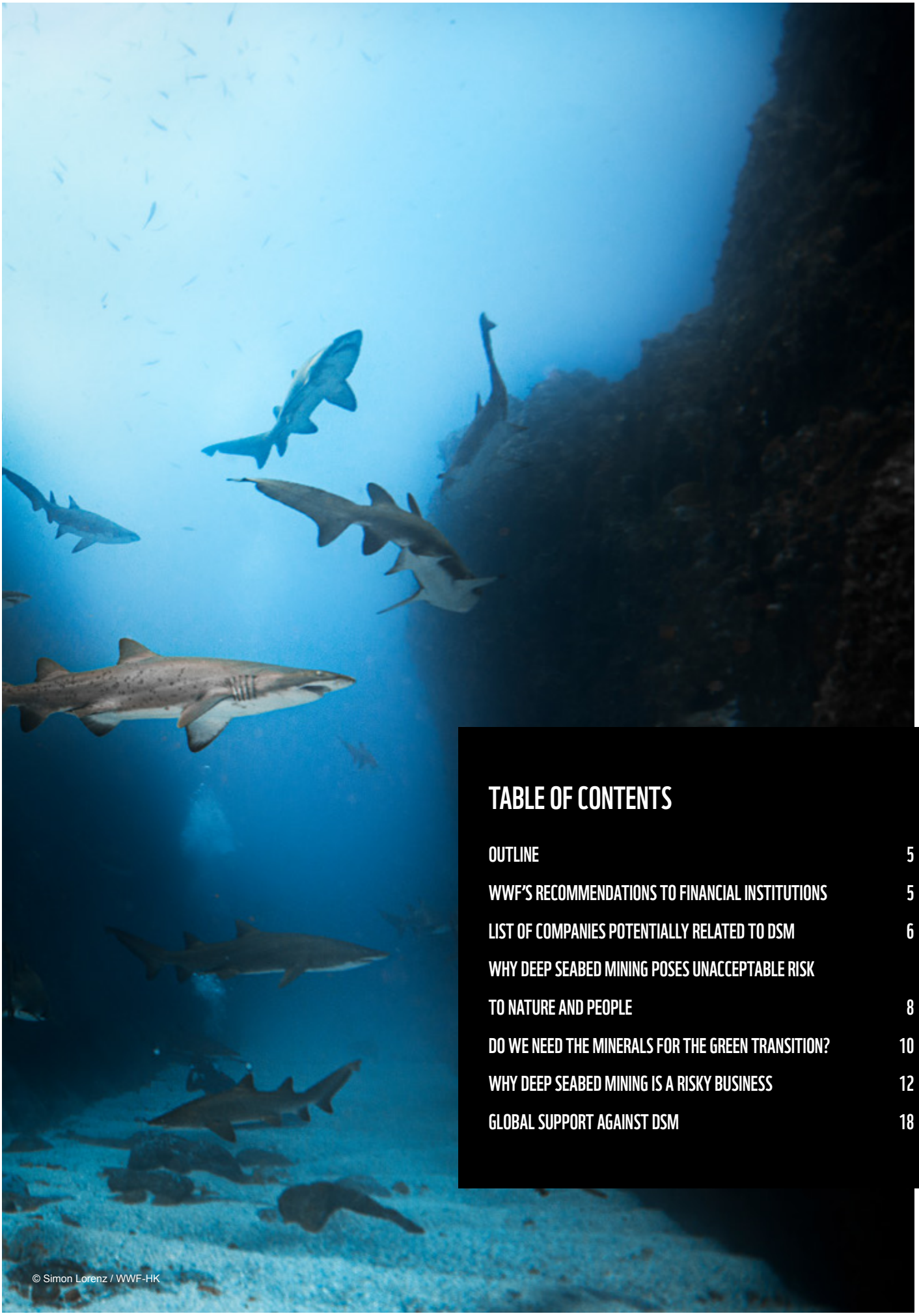

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TABLE OF CONTENTS

OUTLINE 5

WWF'S RECOMMENDATIONS TO FINANCIAL INSTITUTIONS 5

LIST OF COMPANIES POTENTIALLY RELATED TO DSM 6

WHY DEEP SEABED MINING POSES UNACCEPTABLE RISK TO NATURE AND PEOPLE 8

DO WE NEED THE MINERALS FOR THE GREEN TRANSITION? 10

WHY DEEP SEABED MINING IS A RISKY BUSINESS 12

GLOBAL SUPPORT AGAINST DSM 18

EXECUTIVE SUMMARY

Deep seabed mining (DSM) is a potential new industry based on mining different types of mineral deposits from the sea floor. At present, there are no commercial-scale DSM operations, only exploration and testing. The few pure-play companies are not generating revenue and are mainly attempting to raise early-stage financing. The deep ocean remains one of the least understood ecosystems on Earth, and there is no credible way to fully assess the damages DSM could cause. WWF, together with a wide range of international institutions, companies, experts and organizations, considers DSM unacceptable in all marine areas.

Based on the latest evidence, this report concludes that investing, financing and insuring DSM activities exposes financial institutions to a wide range of environmental, economic, political, regulatory and reputational risks. DSM will affect delicate ecosystems and lead to irreversible biodiversity loss, as well as introduce additional climate risk by potentially disrupting the ocean carbon cycle. The impacts will spread far beyond the mining site. Major fisheries organizations have already expressed strong concerns due to the impacts that pollution, noise and habitat destruction will have on fisheries.

There is no evidence that DSM is needed for the green transition. Rapid technological shifts – such as the growth of new battery technologies – and price volatility are reshaping the outlook for mineral demand, strongly weakening the business case for the key metals that DSM is supposed to commercialize. Alternative solutions such as circular economy measures and recovery of key minerals from current waste stocks can deliver better and more sustainable solutions to reduce mineral demand. Similarly, claims that DSM would allow countries to reduce their dependence on imported critical minerals fail to consider that the main bottleneck lies in refining capacity rather than mineral extraction.

DSM faces significant political and regulatory uncertainty, including delayed or abandoned licensing processes, unresolved international regulations and growing public awareness. The industry is considered inconsistent with the Sustainable Blue Economy Finance principles and DSM would directly clash with established international agreements such as the UN Global Biodiversity Framework.

For financial institutions and companies, DSM presents a high-risk business case. The environmental risks are immense, profitability remains unproven, regulatory frameworks are uncertain, and global opposition is growing. More than 40 governments, over 1000 scientists, high-level international institutions, businesses and financial institutions are increasingly joining the global movement calling for a pause on DSM. WWF is calling for financial institutions to join the Business Coalition for a Pause on DSM and adopt a dedicated policy to exclude all form of financing for pure-play DSM companies and engage with potential buyers and users, to make sure no such minerals end up in the supply chain in the future.

OUTLINE

This briefing for financial institutions includes:

- A background on why deep seabed mining (DSM) is risky and unacceptable for environmental and economic reasons.
- Recommendations on how financial institutions should develop a policy on DSM.
- A regularly updated list of the most relevant companies globally, serving as a basis for financial institutions to conduct further due diligence and start implementing the provided recommendations.


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WWF'S RECOMMENDATIONS TO FINANCIAL INSTITUTIONS

WWF calls on financial institutions to develop a dedicated policy to stop and prevent financing that can lead to deep seabed mining. These are the top four recommendations:

1) Publicly commit not to invest in pure-play DSM companies, or companies with a significant share of their revenue or activities within DSM[1]. This should include all types of financial activities (lending, equities, bonds, insurance,etc.).

2) Engage with non-pure-play mining companies and use all available engagement tools with the clear ask of stopping activities linked to DSM.

3) Engage with non-mining companies that are potential users of metals and minerals, in sectors such as consumer electronics, industrials and energy technology, asking them to sign the business call for a pause, develop robust monitoring systems, track sourced minerals and exclude DSM.

4) Engage with financial institutions and other sources of DSM funding, including companies with ownership in DSM-related companies, to encourage them to adopt similar policies.

A key ask to all non-pure-play companies is to officially join the Business Coalition for a Pause on DSM, in line with the position of, among others, UNEP-FI.

The **Business Coalition for a Pause on Deep Sea Mining**[A], founded by WWF and supported by a network of organizations, gathers companies across sectors including mobility and energy, technology, financial institutions, food, consultancies, retail, and research. By joining, companies publicly support a pause on deep seabed mining as a matter of precaution and commit (i) not to source minerals from the deep seabed in the future, including from their supply chains, and (ii) not to finance deep seabed mining activities. The membership includes companies such as Apple, Google, Philips, Samsung, Volvo, BMW, and many others. It was established on the recognition that the private sector is a key stakeholder in influencing the future demand for minerals and has a responsibility to find sustainable alternative solutions to DSM.

[A] https://www.stopdeepseabedmining.org/

[1] As of today, there are no companies commercially extracting minerals from the deep sea, and thus no revenue being generated. But this criterium might apply in the future.

LIST OF COMPANIES POTENTIALLY RELATED TO DSM

To support financial institutions in implementing a robust policy in line with the recommendations above and assess their own exposure to DSM activities, the Deep Sea Mining Campaign (DSMC) and WWF maintain an open-access market analysis, annually updated, conducted by Profundo.

The list can be downloaded as an Excel file:
https://dsm-campaign.org/deep-sea-mining-company-map/

Based on the research, and in line with the recommendations above, companies have been classified into the following four categories:

- **Pure-play:** Companies engaged solely in DSM.
- **Non-pure-play – Mining:** Companies with subsidiaries (or divisions of the same company) engaged in DSM while the parent company is engaged in other business.
- **Non-pure-play – Auxiliary:** Companies that support DSM with products or services, such as technology, equipment or logistics. These companies are engaging in DSM projects or joint ventures (with pure-play companies) though they are not DSM companies themselves.
- **Non-pure-play – Investor:** Financial institutions or investment companies that invest in, and hold controlling power over, deep seabed mining companies.

The list is based on the best available knowledge and financial information retrieved from Bloomberg and Refinitiv. Nonetheless there are some limitations to take into consideration:

- Although all efforts have been made to ensure accuracy, some data may be incorrect or out of date. Please contact the author of this report with any queries over the data.
- The DSM industry is still in its infancy and is a fast-moving space. There are currently no companies commercially extracting minerals from the deep sea, and thus no revenue being generated.
- Given the point above, it is not yet possible to define a clear threshold to identify companies with significant DSM involvement, e.g. with more than 5% of revenue from DSM, or that source more than 5% of their minerals from DSM.

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(Luidia sarsi) bipinnaria larva, deep sea Atlantic ocean.
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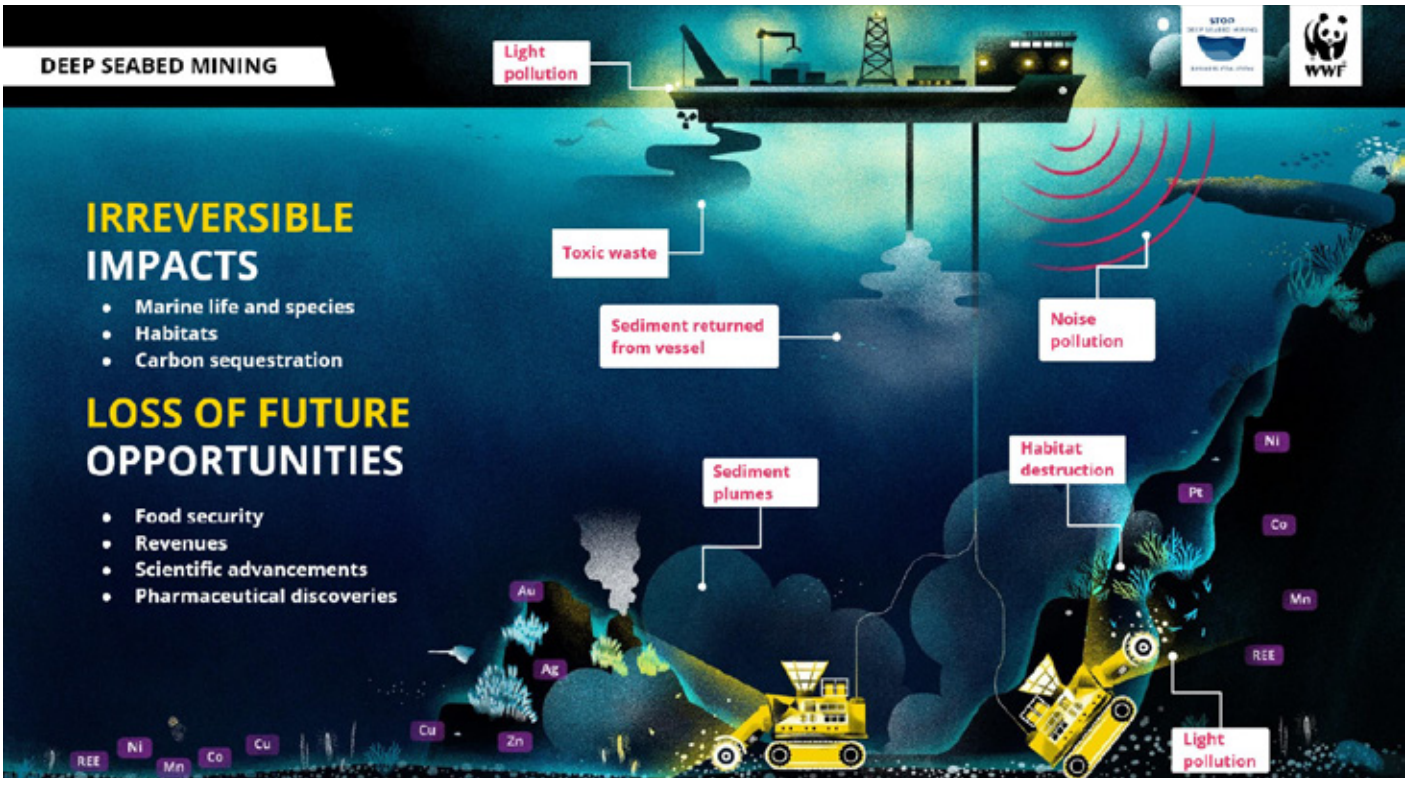
WHY DEEP SEABED MINING POSES UNACCEPTABLE RISK TO NATURE AND PEOPLE

DSM is a potential new industry based on extracting minerals from the seabed by scraping, drilling, cutting, or dredging deposits, transporting them to a surface vessel for de-watering and mineral extraction, discharging sediment-rich waters back into the sea, and transporting the materials onshore for further refining.

At present, there are no commercial-scale DSM operations anywhere in the world, only exploration and limited testing. However, there is already widespread concern that DSM will cause irreversible damage beyond the mining site, and that environmental restoration is highly uncertain.

The deep ocean remains largely unexplored[2], leaving major knowledge gaps about deep-sea ecosystems, biodiversity and ecological sensitivity. This has already led to underestimating potential impacts; for example, sediment disturbance experiments have shown impacts over much wider areas, and a slower recovery, than previously thought[3]. For these reasons, there is no credible way to fully assess the environmental risks of DSM. About 1,000 marine science and policy experts have signed a statement supporting a global moratorium, citing the *"paucity of rigorous scientific information available concerning the biology, ecology and connectivity of deep-sea species and ecosystems, as well as the ecosystem services they provide"*[4].

WWF considers DSM unacceptable in all areas, not only in the most vulnerable or biodiversity-rich ones such as marine protected areas.



[2] NOAA reports that less than 0.001% of the deep seafloor has been visually observed, and around 28% of the seafloor is mapped in high resolution https://oceanexplorer.noaa.gov/ocean-fact/explored/

[3] Smith, Craig R. et al. (2020). Deep-Sea Misconceptions Cause Underestimation of Seabed-Mining Impacts. Trends in Ecology & Evolution, Volume 35, Issue 10, 853 – 857 https://www.sciencedirect.com/science/article/pii/S0169534720301828

[4] Marine Expert Statement Calling for a Pause to Deep Sea Mining". www.seabedminingsciencestatement.org

BIODIVERSITY AND ECOSYSTEM IMPACTS

The extraction methods currently practiced during exploration activities are highly physically destructive, removing or severely disturbing vast areas of the deep seafloor that are home to numerous endemic species found nowhere else on Earth. Biodiversity loss in these habitats may be effectively irreversible on human timescales. Mining activities are expected to generate sediment plumes that can spread over large areas and alter ecosystem functions far beyond the mining site, with potential cascading effects.

FISHERIES IMPACTS

Pollution, underwater noise and habitat destruction could significantly affect fisheries well beyond the mining site, affecting livelihoods that depend on fisheries for income, economic stability and food security. For instance, the dumping of sediment-rich waters could release heavy metals into the food chain and affect fisheries. This has the EU, Norwegian and African fisheries organisations to warn that unresolved scientific uncertainty surrounding DSM may threaten marine ecosystems and commercially important fish stocks[5].

CLIMATE IMPACTS

Our ocean is the planet's largest carbon sink and climate buffer, and it has already absorbed over 90% of the excess heat generated by human-induced greenhouse gas emissions. Recent assessments[6] show that ocean heat content has reached record highs. In this context, DSM could introduce additional climate risk by disturbing the ocean carbon cycle, potentially weakening the ocean's capacity to regulate climate at a time when this function is already under unprecedented stress.

[5] WWF's upcoming report "WWF (2026). Deep Seabed Mining and Security: Why Deep Seabed Mining is unlikely to deliver long-term security and resilience."
[6] EU's Copernicus Climate Change Service (C3S). https://climate.copernicus.eu/climate-indicators/ocean-heat-content

DO WE NEED THE MINERALS FOR THE GREEN TRANSITION?

Proponents of DSM argue that minerals from the deep sea are necessary to support the transition away from fossil fuels. However, this claim is not based on evidence. EASAC, which represents Europe's National Academies of Science, concluded that *"the narrative that deep-sea mining is essential to meeting our climate targets is misleading"*[7] and that *"rather, sustainable development should prioritise reducing demands on planetary resources [...] and accelerate moves towards circularity"*[8].

SINTEF[9], one of Europe's largest independent research institutions, found that a combination of circular economy solutions, existing technologies and increased recycling can reduce global demand for minerals by up to 58% between 2020 and 2050, while still achieving climate objectives. Likewise, the most comprehensive assessment of materials in Europe's current waste stocks shows they could supply over half of Europe's demand for critical materials by 2050 through improved recovery, urban mining and circular economy, reducing Europe's dependence on imports and strengthening supply security for key technologies[10].

One of the main technologies in the DSM debate is batteries, especially used in electric vehicles and energy storage. However, rapid technological shifts are reshaping the outlook for mineral demand. Compared with long-dominant lithium-ion batteries, new lithium iron phosphate (LFP) batteries are no longer dependent on nickel, cobalt or manganese – some of the main economically relevant minerals that DSM is supposed to extract and commercialise. The global market share of LFP batteries increased rapidly from 17% to nearly 50% between 2021 and 2025. Future breakthroughs in sodium-ion or solid-state batteries could further reduce the need for minerals[11].

A 2025 OECD report concluded that *"despite high demand for minerals, the economic case for DSM is not evident in view of the strong volatility of prices"* and that minerals *"from the deep ocean may not be making economic sense in the foreseeable future, considering technological limitations, operational costs and high uncertainty on the impacts on the marine environment"*.[12]

[7] EASAC (2023). Press Release. https://easac.eu/fileadmin/user_upload/230608_PR_Deep_Sea_Mining_EN.pdf
[8] EASAC (2023). Deep-Sea Mining: assessing evidence on future needs and environmental impacts. https://easac.eu/fileadmin/user_upload/EASAC_Deep_Sea_Mining_Web_publication_.pdf
[9] SINTEF (2022). The future is circular. https://www.sintef.no/en/publications/publication/2073636/
[10] FutuRaM (2026). https://futuram.eu/half-of-critical-material-demand-from-europe-waste/
[11] IEA (2025). Electric vehicle batteries – Global EV Outlook 2025. https://www.iea.org/reports/global-ev-outlook-2025
[12] OECD (2025). The Ocean Economy to 2050. https://doi.org/10.1787/a9096fb1-en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WHY DEEP SEABED MINING IS A RISKY BUSINESS

DSM is likely to come under heightened scrutiny in the coming years, as growing public awareness could increase reputational risk for companies and investors. It remain uncertain whether DSM can ever become profitable, and prospects for long-term benefits for the countries issuing permits are minimal, while risks are abundant[13].

There is no company currently conducting commercial DSM. The few pure-play companies are not generating revenue and are mainly attempting to raise early-stage financing. The business model for DSM depends heavily on a range of highly uncertain assumptions about mineral demand, commodity prices and battery technologies. For investors, funding DSM activities combines high economic, regulatory, environmental and reputational risks.

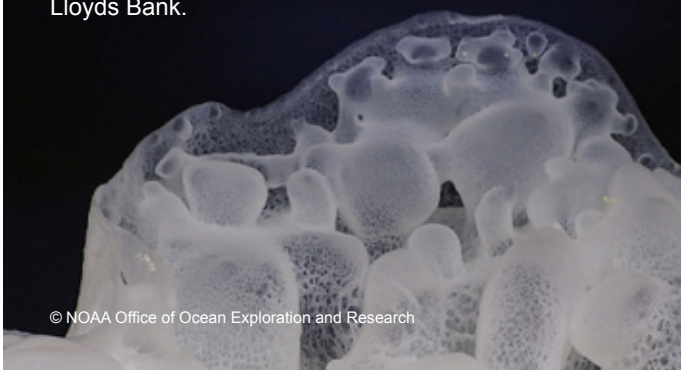
POLITICAL AND REGULATORY RISKS

DSM is not part of a sustainable blue economy. UNEP-FI has clearly stated that *"there is no foreseeable way in which the financing of deep seabed mining activities can be viewed as consistent with the Sustainable Blue Economy Finance Principles"*[14], citing significant regulatory, reputational, and operational risks. Similarly, the High-Level Panel for a Sustainable Ocean Economy concluded that *"The potential to mine the deep seabed raises various environmental, legal and governance challenges, as well as possible conflicts with the United Nations Sustainable Development Goals"*[15].

DSM companies gone bankrupt

In 2025, Loke Marine Minerals, a Norwegian company that wanted to mine the ocean floor, filed for bankruptcy, pointing at a difficulty in raising capital. The CEO told the Wall Street Journal that "The appetite for investing in deep-sea minerals has been much less than we thought, because, well, it is about uncertainty about the regulations."

In 2019, Nautilus Minerals, a Canadian first mover in the deep seabed mining business, went bankrupt, causing losses for several banks and Papua New Guinea's government, reported to have lost around US$120–125 million. The Dutch bank ABN Amro has since joined the Business Coalition supporting a precautionary pause on deep seabed mining, along with other large banks, such as NatWest and Lloyds Bank.



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Norway has been a first mover on DSM. In 2025, however, the government halted the first licensing round, postponed all licences until at least 2029, and stopped most public funding for seabed mineral mapping. The decision, commended by UN experts[B], occurred after formal political approval had been granted to open areas for the possibility of licencing. This highlights sovereign, regulatory, and policy risk for DSM investments, even in jurisdictions with strong institutions and legal frameworks.

India's first-ever offshore and DSM auction failed to attract a single bid[C], despite multiple deadline extensions. The government annulled the auction and has now confirmed it does not plan to revive it due to weak industry interest, with officials reporting that companies perceived DSM blocks as not economically feasible[D].

[B] https://www.ohchr.org/en/press-releases/2025/12/un-experts-commend-norway-decision-postpone-deep-sea-mining-licensing
[C] https://www.reuters.com/world/india/india-does-not-plan-revive-offshore-mining-auction-near-term-sources-say-2026-04-01/
[D] https://www.business-standard.com/industry/news/govt-does-not-plan-to-revive-offshore-mining-auction-in-near-term-126040100564_1.html

[13] Sumaila, U.R., Alam, L., Pradhoshini, K. et al. To engage in deep-sea mining or not to engage: what do full net cost analyses tell us?. npj Ocean Sustain 2, 19 (2023). https://doi.org/10.1038/s44183-023-00030-w
[14] https://www.unepfi.org/publications/harmful-marine-extractives-deep-sea-mining/
[15] https://oceanpanel.org/publication/what-role-for-ocean-based-renewable-energy-and-deep-seabed-minerals-in-a-sustainable-future/

DSM depends on governments or the ISA granting licences to companies to operate. Much of the deep sea lies in areas beyond national jurisdiction, where mineral activities are regulated by the International Seabed Authority (ISA). The political landscape is complex, and recent developments show that DSM faces substantial political and regulatory risk. Projects and licensing rounds have been delayed, annulled, or abandoned in countries such as India[16], Norway[17], and Papua New Guinea, due to political opposition, economic uncertainty and lack of private sector interest.

The International Seabed Authority (ISA), established under UNCLOS (the United Nations Convention on the Law of the Sea), is mandated both to regulate all mineral activities on the seabed beyond national jurisdiction and ensure the effective protection of the marine environment[18]. However, the ISA has been criticised for conflicting mandates and in-built conflicts of interest[19]. The ISA has adopted exploration regulations and is currently negotiating the mining regulations. However, a long list of outstanding matters means that these are far from being adopted[20]. Even if exploitation regulations were eventually adopted, there is little evidence this would improve the long-term economic outlook for DSM, since this relies on several critical assumptions, as discussed in the next sections.

Another risk factor is that any potential DSM activity would directly clash with strong, established international frameworks and conventions. A WWF analysis[21] found that DSM would undermine all four goals of the UN Global Biodiversity Framework (GBF), 18 of its 23 targets, and 16 of the 17 Sustainable Development Goals. Moreover, the legally binding "Agreement on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction" (BBNJ Agreement)[22] requires States Parties to protect biodiversity in international waters and to base all activities on a precautionary approach and ecosystem-based management.

The European Parliament has also adopted, by a strong majority, a resolution on international ocean governance reiterating support for a moratorium on DSM and reminding EU institutions and Member States to uphold multilateralism through collaboration[23].

[16] https://www.reuters.com/world/india/india-does-not-plan-revive-offshore-mining-auction-near-term-sources-say-2026-04-01/
[17] https://www.ohchr.org/en/press-releases/2025/12/un-experts-commend-norway-decision-postpone-deep-sea-mining-licensing
[18] https://wwfint.awsassets.panda.org/downloads/isa_and_principles_of_international_environmental_law_final_wwf_2020.pdf
[19] https://dialogue.earth/en/ocean/19905-sandor-mulsow-isa-not-suited-to-regulate-oceans/
[20] https://news.mongabay.com/short-article/2026/03/deep-sea-mining-rules-face-delays-despite-urgent-push/
[21] WWF (2025). Analysis of the implications of Deep Seabed Mining for the Global Biodiversity Framework and the Sustainable Development Agenda. https://wwfint.awsassets.panda.org/downloads/wwf-report---analysis-of-the-implications-of-deep-seabed-mining-for-the-global-biodiv.pdf
[22] https://www.un.org/bbnjagreement/en
[23] https://www.europarl.europa.eu/doceo/document/A-10-2026-0043_EN.html

THE ECONOMICS OF DSM

Proponents of DSM often base their claims on the assumption that minerals from the deep sea will find a profitable long-term market. However, these claims are not supported by current market evidence and technology trends and are subject to a high degree of uncertainty.

Mining the deep sea would mainly mean mining three different types of deposits, each with different relevant minerals and its own technological and market uncertainty:

1) **Polymetallic nodules** are small rocks lying on the ocean floor that formed over millions of years through mineral build-up. These contain four metals of primary commercial interest — nickel, copper, manganese, and cobalt — with nickel and copper typically having higher commercial value, cobalt facing uncertainty because of technology shifts, and manganese being the most abundant in terms of mass[24]. Nickel and cobalt are primarily used in batteries and energy storage, copper in electrical wiring and renewable infrastructure, and manganese in steel production and some battery chemistries[25].

2) **Polymetallic sulphides** are metal-rich deposits formed around hydrothermal vents, containing mainly copper, zinc, gold, silver and iron, and are of particular relevance to countries such as India and Norway.

3) **Cobalt-rich crusts** are deposits coating underwater mountains, containing mainly cobalt, manganese, nickel, Rare Earth Elements (REEs) and tellurium. They are found in the Western Pacific and are of particular relevance to countries such as Japan, China and India.

Most current exploration focuses on polymetallic nodules for battery-related metals, while sulphides are mainly attractive for copper and precious metals, and cobalt-rich crusts for strategic minerals and rare earth elements.

Demand for many of these metals is highly uncertain due to factors such as terrestrial supply, recycling and technological substitution. For these reasons, it is challenging to draw clear conclusions on future profitability. Nickel and cobalt are currently burdened by oversupply, contributing to price volatility and prompting measures such as Indonesia's planned cuts to nickel production[26], and the Democratic Republic of Congo's suspension/quotas on cobalt export[27], alongside the need to store excess cobalt. Copper and manganese, meanwhile, are abundant in terrestrial reserves and far cheaper to extract, offering little economic rationale for DSM[28],[29]. There are indications that nickel demand might still rise in absolute terms, while structural challenges remain high for other elements[30].


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[24] Several sources, in particular: (i) International Seabed Authority ISA (2022), Polymetallic nodules: Chemical composition and processing technologies. ISA Technical Study Series. (ii) Hein et al. (2020), Nature Reviews Earth & Environment https://www.nature.com/articles/s43017-020-0027-0 (iii) Hein & Mizell (2022), USGS https://pubs.usgs.gov/publication/70231662

[25] International Energy Agency (IEA). (2021). The role of critical minerals in clean energy transitions. Paris: IEA. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

[26] Barich, A., & Dholakia, G. (2025, December 29). Indonesia navigates nickel market with output cuts, policy shifts. S&P Global Commodity Insights (Metals & Mining). https://www.spglobal.com/energy/en/news-research/latest-news/metals/122925-indonesia-navigates-nickel-market-with-output-cuts-policy-shifts

[27] Yu, A., & Camposano, J. (2025, October 16). DRC cobalt export quotas to support cobalt prices, though challenges loom. S&P Global Market Intelligence. https://www.spglobal.com/market-intelligence/en/news-insights/research/2025/10/drc-cobalt-export-quotas-to-support-cobalt-prices-though-challenges-loom

[28] International Energy Agency. (2024). Global Critical Minerals Outlook 2024. https://www.iea.org/reports/global-critical-minerals-outlook-2024

[29] U.S. Geological Survey. (2026). Mineral Commodity Summaries (available for all the four specific minerals: Copper. Manganese. Nickel. Cobalt.) https://www.usgs.gov/centers/national-minerals-information-center/mineral-commodity-summaries

[30] Benchmark (2026). Special Issue: The emergence of deep-sea mining: a viable critical mineral source? https://source.benchmarkminerals.com/publications/special-issues/the-emergence-of-deep-sea-mining-a-viable-critical-mineral-source

Rare earth elements (REEs) are increasingly cited in pro-DSM narratives. In polymetallic nodules, REEs occur only in small quantities as trace constituents alongside the primary metals (nickel, cobalt, copper, manganese) and are therefore considered as by-products[31]. In polymetallic sulphides REEs are largely absent or again only present in negligible concentrations, while in cobalt-rich crusts some REEs may be present but are not the primary economic driver. The International Energy Agency (IEA) notes that "economically viable concentrations" of rare earths are uncommon and that their chemical similarities make them hard to separate and process, and far less competitive than terrestrial sources. Outside of a specific project in Japan that is exploring particular deep-sea muds with relatively high concentrations of REEs[32], no DSM company has incorporated the extraction of REEs into their feasibility studies.

The business case for DSM has so far relied heavily on the assumption that demand for nickel- and cobalt-based batteries will remain high. However, IEA analysis shows that this technology is rapidly being replaced by lithium iron phosphate batteries and alternative technologies such as sodium-ion, all of which have little or no reliance on nickel, cobalt and manganese[33], significantly weakening the long term demand case for DSM metals. Planet Tracker[34] estimated that preserving the deep sea would be worth at the very least ten times more than exploiting it, and that DSM would result in at least USD 465 billion in ecological loss. Taken together, these factors help explain why DSM is not currently commercially viable at scale.

[31] Hein, J. R., Koschinsky, A., & Kuhn, T. (2020). Deep-ocean polymetallic nodules as a resource for critical materials. Nature Reviews Earth & Environment, 1, 158–169. https://doi.org/10.1038/s43017-020-0027-0

[32] https://www.reuters.com/science/japan-retrieves-rare-earth-mud-deep-seabed-test-mission-2026-02-02/

[33] International Energy Agency. (2025). Global EV outlook 2025: Electric vehicle batteries. https://www.iea.org/reports/global-ev-outlook-2025/electric-vehicle-batteries

[34] Planet Tracker (2024). How to lose half a trillion. https://planet-tracker.org/how-to-lose-half-a-trillion/

GEOPOLITICS AND MINERAL SECURITY

A recurring argument is that DSM would allow countries to reduce their dependence on imported critical minerals needed for energy, infrastructure and defence. However, this claim fails to consider that the main issue is not mining, but processing and refining capability, which requires highly specialised value chains[35]. Developing this capability would take a long time and require extremely high upfront capital investments that would likely depend more on state-backed financing than on commercial competitiveness, further increasing political risks.

As the IEA notes[36], geographic concentration has increased across minerals in refining and processing. While minerals can be mined in different countries, China remains the dominant refiner for 19 of the 20 minerals classified as critical, holding an average market share of around 70%. For rare earth elements (REEs), often cited as key to reduce dependence, the real bottleneck is not mining and availability, but a lack of processing capacity, with China currently representing 91% of global refined output of magnet rare earth elements[37]. For example, the United States accounts for around 10–12% of global rare earth production but lacks domestic refining capacity and has exported much of this material to China for processing[38].

[35] For a thorough analysis of the security argument, refer to the upcoming WWF report "WWF (2026). Deep Seabed Mining and Security: Why Deep Seabed Mining is unlikely to deliver long-term security and resilience."
[36] IEA (2025). Global Critical Minerals Outlook 2025.
[37] The IEA looked specifically at the magnet rare earths, because they are the most consumed ones and for their strategic importance. International Energy Agency. (2026). *Rare Earth Elements*. IEA. https://www.iea.org/reports/rare-earth-elements
[38] USA Rare Earth Stock Statistics 2025 | Key Facts. https://theworlddata.com/usa-rare-earth-stock/

WWF's position on land-based mining

WWF recognizes the critical role that minerals and metals play in the energy transition and in sustainable development for countries with mineral reserves. However, the priority must be to implement strategies and investments that avoid and reduce social and environmental harms, minimise virgin material extraction and reduce overall demand through circular economy approaches, including recycling, and sufficiency and efficiency measures. Mining can never be considered sustainable due to the finite nature of the resources involved. The sector can only aspire to become as responsible as possible to people and nature. Robust environmental and social safeguards must be at the core of all mining-related decisions. Upholding the rights of all rightsholders and meaningfully including them in decision-making is essential. WWF advocates for mining operations to rigorously follow the mitigation hierarchy, where avoidance is always prioritised, and to aim for net positive impact objectives on biodiversity and ecosystems services.

GLOBAL SUPPORT AGAINST DSM

COUNTRIES

To date, more than 40 countries are calling for a moratorium or precautionary pause on DSM. The full list is published by the Deep Sea Conservation Coalition (DSCC)[39] and includes Germany, the United Kingdom, France, the Kingdom of Denmark, Portugal, Switzerland, Mexico, Chile, Brazil, Vanuatu, Malawi and Fiji.

INTERNATIONAL INSTITUTIONS

- The **European Investment Bank**[40] excludes DSM as *"Projects unacceptable in climate and environmental terms"*.
- The **IUCN World Conservation Congress**[41]: *"Deep seabed mining should be halted until the criteria specified by IUCN are met"*.
- The **European Parliament** called several times for a moratorium on DSM[42] and publicly criticized[43] Norway's decision to open vast areas in Arctic waters for deep seabed mining activities.
- **UNEP**: *"The sustainable blue economy is a goal for the wider blue economy, and therefore excludes non-renewable extractive industries (e.g. offshore oil and gas, and deep seabed mining) as well as unsustainable practices in other sectors."*[44]
- The **UNEP** guide to "Harmful marine extractives: Deep seabed mining": *"In their current form, there is no foreseeable way in which the financing of deep seabed mining activities can be viewed as consistent with the Sustainable Blue Economy Finance Principles."*[45]
- **UNCTAD** (United Nations Conference on Trade and Development): *"industries that are known to pose a high risk to the environment are excluded … [including] offshore oil and gas, deep- and ultra-deep-water oil and gas, marine and seabed mining."*.[46]
- **The High-Level Panel for a Sustainable Ocean Economy** stated that DSM "is conceptually difficult to align with the definition of a sustainable ocean economy"[47].

BUSINESSES AND FINANCIAL INSTITUTIONS

Companies and financial institutions are increasingly supporting a pause on DSM, either through a dedicated policy and/or by joining the Business Coalition for a Pause on Deep Seabed Mining (see page 5 for more information). Companies commit to publicly signal that they will not be buyers or users of minerals from the deep sea in the future, since currently there are no such minerals on the market.

In 2025, a group of 41 financial institutions representing over EUR 3.8 trillion of assets, signed a statement led by the Finance for Biodiversity Foundation asking governments to stop DSM, citing policy, regulatory and reputational risks[48].

WWF strongly encourages all companies with a position opposing DSM to join the Business Coalition, which is a step showing enhanced credibility and accountability. To date, more than 70 businesses and financial institutions are members of the coalition.


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[39] https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/
[40] https://www.eib.org/attachments/publications/eib_eligibility_excluded_activities_en.pdf
[41] https://www.iucn.org/resources/issues-brief/deep-sea-mining
[42] https://www.europarl.europa.eu/doceo/document/A-10-2026-0043_EN.html/
[43] https://deep-sea-conservation.org/european-parliament-vote-norway/
[44] https://www.unepfi.org/publications/turning-the-tide/
[45] https://www.unepfi.org/publications/harmful-marine-extractives-deep-sea-mining/
[46] https://unctad.org/system/files/official-document/ditcted2020d4_en.pdf
[47] https://oceanpanel.org/publication/ocean-solutions-that-benefit-people-nature-and-the-economy/
[48] https://www.financeforbiodiversity.org/news/financial-institutions-reaffirm-statement-to-governments-on-deep-seabed-mining/

A recent mapping of financial institutions only[49] found that 82 institutions, with a combined EUR 24 trillion in assets under management, have some kind of public policy that excludes or sets conditions on DSM, or have made a public statement expressing concern on DSM. Thirty-nine of these have a public policy on DSM that explicitly excludes the provision of finance, insurance or investment in DSM. The momentum is clear, with almost half (45%) of DSM exclusion policies published in 2025.

For financial institutions, taking a clear stance on DSM is not only about sending a public signal; it also requires some steps to ensure that no financing of pure-play companies is present in the portfolio, while taking into account the challenges posed by complex portfolios, funds such as ETFs, and complex company structures.

These are some examples of policies from financial institutions that have joined the Business Coalition for a Pause on DSM or financial institutions with a dedicated policy[50]. WWF encourages all institutions to join the Business Coalition to signal public commitment and be subject to improved scrutiny.

Some of the members of the Business Coalition:

- **Storebrand Asset Management**[51] (Norway) has one of the strongest policies, which has been thoroughly implemented across the entire portfolio, passed external scrutiny and set a gold standard for other financial institutions: *"Following the precautionary principle, Storebrand will not invest in companies involved in deep seabed mining"*.
- **ASN Bank** (The Netherlands)[52] in the Sustainability Criteria Guide, that applies to all investments, states: *"We do not invest in deep sea mining."*
- **Metzler Asset Management** (Germany)[53] has integrated an exclusion criterion in its ESG Policy: *"Securities are excluded from investment if they originate from issuers that are…active in deep-sea mining. The assessment is based primarily on data published by the Deep Sea Mining Campaign"*.

Some of the financial institutions with a dedicated DSM policy:

- **Commerzbank**[54] (Germany): *"Commerzbank does not participate in financing for deep-sea mining projects and does not enter into business relationships with companies that are solely engaged in deep-sea mining (so-called pure-play companies). We utilise publicly available lists by non-governmental organisations to operationalise these requirements."*
- **Lloyds Bank Group** (UK)[55], as part of its company-wide criteria, states that it will not *"support new or existing customers undertaking deep seabed mining"*.
- **BBVA bank** (Spain)[56]: *"BBVA will not support the provision of financial services to clients or projects who are involved in … seabed mining"*.

[49] Seas At Risk & Deep Sea Mining Campaign (2026). Red Lines in the Abyss: Growing Financier Concern Over Deep-Sea Mining. https://seas-at-risk.org/publications/report-red-lines-in-the-abyss-growing-financier-concern-over-deep-sea-mining/

[50] A more exhaustive list of institutions with some form of policy or position on DSM is available on the website of the report "Red Lines in the Abyss" https://seas-at-risk.org/publications/report-red-lines-in-the-abyss-growing-financier-concern-over-deep-sea-mining/

[51] https://www.storebrand.no/filbibliotek/_/attachment/inline/42b9db43-4da4-4333-a1cc-21680cf63260/86158%20-Storebrand-Policy-on-Nature.pdf

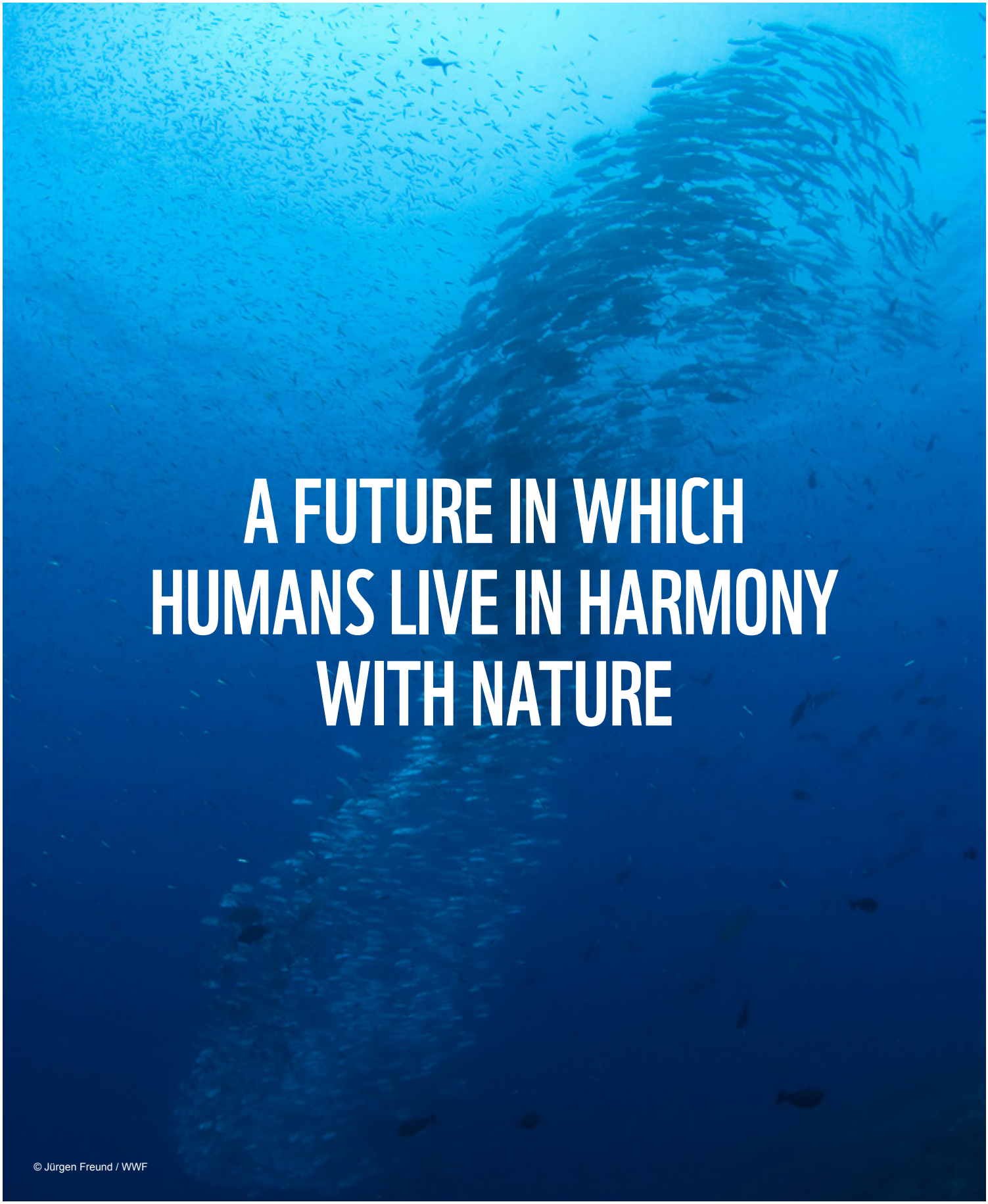
[52] https://www.asnbank.nl/downloads/sustainability-criteria-guide-asn-bank-2025.html

[53] https://www.metzler.com/downloads/Metzler/Download-Dokumente-MAM/Nachhaltigkeit/mam-esg-policy-en.pdf

[54] https://www.commerzbank.de/ms/documents/en/esg-framework-pdf.pdf

[55] https://www.lloydsbankinggroup.com/assets/pdfs/sustainability/codes-and-policies/2026/2026-lbg-energy-and-extractives-sector-statement.pdf

[56] https://shareholdersandinvestors.bbva.com/wp-content/uploads/2021/01/Environmental-and-Social-Framework-_-Dec.2020-140121.pdf



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