# Deep-Sea Mining – FAQ

## What is deep-sea mining?

The deep sea is the part of the oceans from 200 metres below sea level downwards. It accounts for 95% of the total ocean volume. Deep-sea mining (also called deep-seabed mining or just seabed mining) means the exploration and exploitation of metallic raw materials in the deep sea. It is primarily aimed at cobalt, nickel, copper, and zinc, but also so-called rare earth metals and other metals. Many of these elements are essential components of batteries, high-tech products and renewable energy harvesting technologies.

Those metals that are found in concentrated form in manganese nodules, massive sulphides or cobalt-rich ferromanganese crusts (in short: cobalt crusts) are the most promising for commercial exploitation. Other than these terms would suggest, all of them contain different metals. For example, manganese nodules not only contain manganese, but also nickel, copper, cobalt and other metals. Manganese nodules can be found in plains at depths of about 4,000 to 6,500 m, massive sulphides at depths of about 800 to 5,000 m and cobalt crusts at depths of about 400 to 2,500 m. Manganese nodules loosely lie on and in the seabed and can therefore be collected, while exploiting massive sulphides and cobalt crusts involves separating them from their solid substrate. Therefore, mining needs specific machinery for each of these metal types, which also has to cope with the extreme conditions in the deep sea.

## How is deep-sea mining impacting on the marine environment?

For commercially viable deep-sea mining enormous areas have to be worked (thousands of square kilometres in the case of massive sulphides to tens of thousands of square kilometres in the case of manganese nodules and cobalt crusts). This process kills a large number of living creatures and irreversibly destroys huge habitats. In addition, deep-sea mining has secondary impacts on the marine environment. Among other things, swirled-up sediments, toxic chemicals, noise and light can cause severe environmental damage extending far beyond the exploitation sites. Noise, for example, travels very fast and over large distances in water. It disperses in all direction and can directly injure marine animals or interfere with their communication, foraging, orientation, reproduction and habitat choice. As deep-sea mining not only employs machinery on the seabed, but also hydraulic pumps along the pipes, as well as ships and platforms at the ocean surface, its noise emissions not only affect deep-sea wildlife, but the whole marine ecosystem up to the surface.

We can only estimate which creatures and habitats would be destroyed in the deep sea, because our knowledge is very limited. The deep sea is a largely unexplored space and less known than the surface of the moon. Many species and habitats might be lost before we even learned to know them. Apart from the large biological wealth, which might hold ready important scientific insights or even new drugs, the deep sea is also storing enormous amounts of $CO_2$. This important function for the planet's climate might be disturbed by deep-sea mining. The already heavily depleted fish populations and the fisheries that rely on them might be further jeopardized, too.



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## Is there deep-sea mining already going on?

Up to now, exploration took place both in international and in national waters. Commercial exploitation is expected to begin in the coming years. The most advanced technologies are those for exploiting massive sulphides and manganese nodules. The latter will probably be the first to be mined in international waters. The exploitation of cobalt crusts needs further technological developments and is therefore expected to enter the commercial stage at a later date.

While the International Seabed Authority (ISA) is currently in the process of developing the rules for commercial mining in international waters, deep-sea mining in national waters is already possible and expected to start soon (e.g. in waters of Pacific island countries).

## Who is the International Seabed Authority (ISA)?

The United Nations Convention on the Law of the Sea (UNCLOS) defines the international seabed as a "common heritage of mankind" and established the International Seabed Authority (ISA) to manage it. ISA is an autonomous international organisation under UNCLOS based in Kingston, Jamaica. It manages all activities related to mineral resources on and in the seabed beyond national jurisdiction. At the same time, it has the duty to protect the marine environment from detrimental impacts by deep-sea mining. For doing so, ISA passes rules and guidelines. It also grants licences for exploration of the international seabed. Currently, there are negotiations about the rules for the exploitation of resources in the seabed.

All parties of UNCLOS are automatically members of ISA, too. At present, these are 167 states and the European Union. ISA conferences are usually attended only by a limited number of parties, particularly those that are interested in boosting deep-sea mining. The mining industry is also exerting powerful influence on ISA decisions. On the other side, access to information at ISA is limited and civil society participation not adequately ensured. ISA is therefore facing criticism for discriminating environmental protection against deep-sea mining.

## Why deep-sea mining at all?

There is a rapidly increasing demand for metallic resources, partly fuelled by e-mobility, renewable energy sourcing and consumer electronics (see also the question "What has deep-sea mining got to do with electric cars, e-scooters, smartphones and laptops?"). Availability of metal resources on land is limited, and extraction often takes place in politically unstable regions and at the price of significant environmental degradation and human rights violations. In addition, states attach strategic value to various metallic raw materials (so-called "critical raw materials"), as they are central to their economies and their availability and control represent political power and independence. Deep-sea mining is therefore advertised by its proponents as an alternative to terrestrial mining, developing new deposits and securing critical raw materials while having less negative impact on people and the environment (because no forests have to be cleared or people resettled, among other things). However, it's more likely that deep-sea mining will simply add to terrestrial mining, rather than replace it. Besides that, deep-sea mining would result in large-scale and partly irreversible destruction of marine habitats. Mining impacts are much more difficult to monitor under extreme deep-sea conditions (remoteness, darkness, high pressure, cold) than on land.

The necessity of deep-sea mining for satisfying the demand for metallic resources is discussed controversially. This demand might also be covered by terrestrial mining (where improvements in terms of environment and human rights are urgently needed) in combination with more efficient



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resource use, new technologies, circular economy, and improved recycling. Moreover, the economic viability of deep-sea mining is doubtful, as it requires both huge investments and favourable market conditions (e.g. high prices of the raw materials).

## What has deep-sea mining got to do with electric cars, e-scooters, smartphones and laptops?

Converting large parts of transport into e-mobility as well as the constantly increasing demand for electronic devices such as mobile phones and computers entails an increased demand for metallic raw materials. For example, cobalt, nickel and manganese are needed for lithium-ion batteries, while power lines require large amounts of copper. These metals are abundant in the deep sea. Technologies for renewable energy generation, such as wind turbines and photovoltaic cells, also contribute to the increased demand for metallic raw materials.

Ending the exploration and exploitation of new oil and gas deposits, and phasing out fossil fuels has been a priority issue for OceanCare for many years. However, the raw materials that are necessary for the energy transition have to be exploited and produced sustainably. It is questionable at least, if deep-sea mining can make extraction of raw materials more environmentally acceptable.

## Why is OceanCare working on the deep-sea mining issue?

Driven by new business areas, increasing demand for raw materials as well as geopolitical considerations, the development of both exploration and exploitation of mineral resources is accelerating, in spite of the obvious risks to the marine environment and many uncertainties. OceanCare's programme on the deep-sea mining issue wants to bring about thorough research into environmental risks of this new industry as well as binding and comprehensive global rules to protect the marine environment from negative impacts by deep-sea mining. Deep-sea mining should only be conducted, if it is really necessary and if it can be carried out in a way not detrimental to the environment. Until these aspects are resolved, there should be no development of additional areas or exploitation of minerals in the deep sea. OceanCare is therefore joining the call of numerous scientists, non-governmental organisations and increasingly also political decision-makers for a moratorium on deep-sea mining activities.

Because of its expertise and experience in the field of underwater noise, OceanCare focuses on making decision-makers aware of the substantiated impacts of noise on marine wildlife, calling for further research on the issue, and aiming for the rules on deep-sea mining to include binding and detailed provisions on how to avoid and minimise underwater noise.

## Whom is OceanCare working with on the deep-sea mining issue?

OceanCare is networking with NGOs globally, closely cooperates with leading scientists, engages in dialogue with decision-makers in politics, industry and civil society, and works in international fora. In the field of deep-sea mining, OceanCare is particularly working with the Deep Sea Conservation Coalition (DSCC) and within the International Seabed Authority (ISA), which regulates deep-sea mining in international waters.



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