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# DEEP-SEA MINING

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An increasing demand for metals has led to a resurgence of interest in deep-sea mining. The exploration for, and exploitation of minerals from deep-sea deposits in water depths greater than 300 m will increase the human footprint on previously largely untouched, unknown and vulnerable ecosystems.

WWF believes that deep-sea mining activities should not commence before measures are in place to protect deep-sea ecosystems from adverse impacts, and then only overseen by an equitable governance system that have completed a series of steps outlined in this document.

## Context

The main deep-sea mineral resources are:

1. Polymetallic nodules (nickel, copper, cobalt, and manganese): on the abyssal plains at depths of 4,000 - 6,000 m;
2. Manganese crusts (cobalt, some vanadium, molybdenum and platinum): particularly on the upper flanks of guyot-type seamounts at depths of 800 - 2,400 m;
3. Polymetallic sulphide deposits (copper, lead and zinc, gold and silver): hydrothermal vents of mid-ocean ridges and back-arc spreading centers at depths of 1,400 - 3,700m.

Distinct ecosystems are or can be associated with these minerals and will be affected in different ways by different types of mining. Dredging for nodules is likely to damage large areas of the seabed and disperse large clouds of sediment. Polymetallic sulphide mining may destroy active and inactive hydrothermal vents (black smokers) and their associated communities and disperse toxic materials. The extraction of cobalt rich crusts may destroy the benthic seamount communities and dependent fauna.

For more  
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Deep-sea mining may result in the destruction of seabed communities at or near the mining site, offsite impacts due to the dispersion of toxic and particulate material in ocean currents and from sea surface discharges, and due to accidents involving mining gear and support vessels.

Potential negative impacts of deep-sea mining include<sup>i,ii</sup>:

- Loss of habitat;
- Degradation of habitat quality;
- Decreased seafloor and/or water column primary production;
- Modification of trophic interactions;
- Decreased diversity;
- Local, regional, or global extinction of endemic or rare taxa.

The degree of impact will depend on:

- The degree and frequency with which disturbance occurs and whether active vent areas are mined;
- The respective ecosystem's characteristics;
- The biota present in the area;
- The spatial extent of the mining;
- The degree of toxicity of released material;
- The degree of sedimentation;
- The spatial extent to which sediment and toxic material disperses.

Until a strict governance mechanism is set up and adhered to that allows for all countries to benefit at an equal footing from deep seabed resources in areas beyond national jurisdiction is set up and adhered to, there are also potential socio-economic consequences such as:

- Poorly controlled resource depletion;
- Unfair partitioning of globally-owned resources;
- Increasing gap between the rich and the poor countries;
- Disenfranchisement of poor countries.

## Recommendations

WWF believes that deep-sea mining activities should not commence until measures are in place to protect deep-sea ecosystems from adverse impacts.

Deep-sea mineral mining should not be permitted in national and international jurisdictions until responsible states and the International Seabed Authority, in bioregions being considered for seabed exploration or mining, have established an equitable governance system that has accomplished the following steps:

1. Openly and transparently considered alternatives to mining deep-sea minerals, taking into account ecological, social and economic perspectives, including:
  - a. Conserving natural and mineral resources;
  - b. Increasing the recycling of minerals; and
  - c. Exploiting land based mineral resources with much greater efficiency and more stringent environmental regulation.
  
2. Carried out strategic environmental assessments of the likely impacts of deep-sea mining on the marine environment, including the potential cumulative effects in conjunction with other human activities.
  
3. Consulted with other international bodies whose jurisdictional interests may be impacted by deep-sea mining activities.
  
4. Prepared and implemented ecosystem-based oceans management strategies, laws and regulations that:
  - a. Collect adequate baseline information on the marine environment where mining could potentially occur including the location of sensitive deep sea habitats/ecosystems;
  - b. Establish a comprehensive network of well-managed protected areas to protect vulnerable marine ecosystems<sup>iii</sup>, ecologically or biologically significant areas<sup>iv</sup>, depleted, threatened or endangered species<sup>v</sup>, and representative examples of deep-sea ecosystems<sup>vi</sup>; —
  - c. Adopt a precautionary approach that assumes that deep-sea mining will have adverse ecological impacts in the absence of compelling evidence to the contrary;
  - d. Define standards for the environment around any deep-sea operation, building on local, national and regional knowledge of the sensitivities of deep-sea ecosystems, to minimise environmental impacts and avoided significant and irreversible adverse environmental impacts;
  - e. Permit exploration or exploitation of minerals on or below the seabed only following Environmental Impact Assessments for each potential project, that include full identification, assessment and treatment of risks (including those with low probability, but high consequence)<sup>vii</sup>;
  - f. Assign liability to the owners or operators of exploration or exploitation facilities for the costs associated with the containment or cleanup of any unauthorised discharges of materials and/or waste and any damages resulting from such discharges (“polluter pays”); and,

