Deep-sea mining and the transition economy

The extraction of raw materials, particularly over the last century, has resulted in extensive environmental degradation and the overexploitation of natural resources. There is an urgent need to reduce the global footprint in line with the United Nations (UN) Sustainable Development Goal (SDG) 12 to ensure responsible consumption and production.

With SDG 12, the world has committed to improve resource efficiency and sustainable consumption and production.¹ This requires a global transition from throw-away economies to restorative and regenerative economies. These circular economies aim to keep products, components and materials at their highest utility and value at all times:² re-use what you can, recycle what cannot be reused, repair what is broken and remanufacture what cannot be repaired.³ This is in contrast to traditional linear economies where large quantities of materials are used in production and then thrown away.⁴

**Anticipated benefits of a circular economy include:**

- Waste reduction;
- Lower environmental impact due to lower rates of extraction;
- Employment and economic efficiencies; and
- Long-term sustainable development.

Many studies are clear that more fundamental changes are needed to steer away from the pursuit of eternal growth in much of the world and an ever-increasing input of raw materials, including:

- Investment in sharing economies and shared infrastructure;
- Changes in lifestyles and consumption patterns; and
- New financial instruments.

A different model of development will similarly be needed in parts of the Global South in order to reduce global inequality and promote human development whilst progressing from linear to more circular economies.
Where does deep-sea mining fit into this future?

Supporters of deep-sea mining say it is necessary to ensure future supply of metals for use in renewable energy technologies. However, a report by the Institute for Sustainable Futures in 2016 concluded that “a transition towards a 100% renewable energy supply … can take place without deep-sea mining”. Metal demand associated with the dominant renewable technologies does not require deep-sea mining or other irresponsible forms of extraction. Indeed, within the next 10-15 years, it is likely that a different mix of metals and materials will be used in evolving technologies. The low-carbon energy transition also requires continued effort to make our economies much less energy intensive – which will in turn reduce the demand for all types of energy technology.

Impact of extraction

The Global Resources Outlook 2019 report by the UN Environment Programme’s International Resource Panel showed that current natural resource use and management is unsustainable and comes at an enormous cost to the environment and society. The report highlights how extraction and processing of natural resources now accounts for more than 90% of our biodiversity loss and approximately half of our climate change impacts.

A World Bank study called for a holistic approach to the supply chain of low-carbon technologies, from mineral extraction to end of life. It concluded that with the battery sector changing rapidly, it was nearly impossible to forecast which technologies will be the most

Deep-sea mining to extract raw materials would promote the continued exploitation of Earth’s resources, substantially expand humankind’s “footprint” on the planet, and potentially undermine efforts to transform economies by perpetuating unsustainable, single-use consumption.
used up to 2050. End of life recycling, would, according to this study, reduce the amount of primary copper, nickel and cobalt used by 2050.\(^9\)

If deep-sea mining began, it is highly unlikely to ever replace terrestrial mining. Rather it would greatly expand the biological and geographical scope of the degradation caused by mining into new areas and ecosystems on the planet that have been relatively untouched by direct human activity to date.\(^10\) A study commissioned by the International Seabed Authority found that the terrestrial supply of key deep-sea metals – copper, nickel and cobalt – is actually quite high: 60 years of resources for nickel, 100 years for cobalt and more than 100 years for copper.\(^11\) The study found that copper and cobalt seabed mining may actually increase a metal surplus.

**Proposed solutions**

We need to reassess our approach to production, consumption and resource management.

The UN Environment Programme’s International Resource Panel calls for resource efficiency and sustainable consumption and production policies. It says these policies would promote stronger economic growth, arguing that by 2060 they would keep growth of metal extraction limited to 14% compared to 2015 and would also support a more equal distribution of GDP per capita. In contrast, a business-as-usual scenario would cause metal extraction to at least double.

Rather than investing substantial public and private funding on technologies to extract metals from the deep ocean, we should be investing in developing sharing and circular economies and lifestyle change – innovating technology and systems that reduce the use of raw materials. For example, investing in increased public transit capacity, cycling and walking infrastructure will reduce the need for electric cars, the batteries that power them and the minerals required to produce them.

A move towards “urban mining” – reclaiming materials from products, buildings and waste\(^12\) – can contribute to a circular economy and reduce the need for virgin-mined materials. Urban mining can recover metals from electronic waste – one of the fastest global waste streams – helping meet future global metals demand. It is potentially more lucrative than deep-sea mining\(^13\) and could contribute towards achieving SDG12 targets on recycling and reuse.

Products must be increasingly designed in ways that make repair and recycling more cost-effective.
About the DSCC

The Deep Sea Conservation Coalition (DSCC) was founded in 2004 to address the need to prevent damage to deep-sea ecosystems and the depletion of deep-sea species on the high seas from bottom trawling and other forms of deep-sea fishing. The DSCC is made up of over 90 non-governmental organizations (NGOs), fishers organizations and law and policy institutes, all committed to protecting the deep sea.

For further information:
info@savethehighseas.org
www.savethehighseas.org
@DeepSeaConserve

Endnotes


Recommendations

- Investment in public shared infrastructure that reduces the need for individual transportation, consumption and purchase of products containing mined materials
- Legislative frameworks that require manufacturers to produce technologies that can be fully recycled at end of life
- Legislative frameworks and standards14 that require terrestrial extractive industries to improve and innovate processes to maximize capture of minerals, reduce waste and minimize social and environmental impacts
- Increase and upscale recycling rates by establishing effective infrastructure for waste management and recycling and developing innovative industries such as urban mining15
- Incentivizing extended product life cycles and intelligent product design
- Researching and developing substitutes for high-demand metals currently considered critical for renewable technologies16
- Combining circular economy policies with policies aimed at reducing overall demand for resource-intensive products and energy, for example through improving energy efficiency, investing in shared economy models, and redesigning towns and mobility cities.

Fact sheet 8 | Deep-sea mining and the transition economy | FEBRUARY 2022