



THE FUTURE IS CIRCULAR:

The Circular Economy and Critical Minerals for the Green Transition

WWF SUMMARY AND RECOMMENDATIONS FOR POLICY MAKERS

The Circular Economy and Critical Minerals for the Green Transition report commissioned by WWF provides key insights into how some of the minerals that have been identified as key to the transition to a low carbon economy can be obtained without opening new natural frontiers for extraction, including in the deep ocean.



[CLICK HERE TO READ THE WHOLE REPORT](#)



WWF RECOMMENDS THAT GOVERNMENTS:

01 Invest in and ensure regulations that enable and favour alternative sources for the responsible production and use of the minerals needed for the sustainable transition to a net zero economy, such as:

A TRANSFORMATION TO A RESOURCE EFFICIENT, CLOSED-LOOP MATERIALS CIRCULAR ECONOMY, INCLUDING :

- Reduction of demand for primary minerals
- Extension of lifetime for products and materials
- Recycling of all basic materials
- Increase collection rates
- Upscale best available techniques for mineral recovery from low-carbon technologies
- Capitalize on urban mining

A SHIFT TO NEW TECHNOLOGIES WITH LESS CRITICAL MINERALS, INCLUDING:

- Electric vehicle batteries with different chemistries
- Stationary applications without lithium-ion batteries
- Electric traction motors and wind turbine generators with low or no rare earth elements

LEVERAGE CONFIRMED MINERAL RESERVES, THROUGH RESPONSIBLE MINING PRACTICES

INVEST IN RESPONSIBLE MINERAL SUPPLY FROM OLD MINING SITES AND MINING WASTE LIKE TAILINGS

02 Adhere to UNEP's guidance on Harmful Marine Extractives and establish policies not to invest in deep seabed mining and other harmful extractive activities.

03 Join the Alliance of States calling for a Global Moratorium on Deep Seabed Mining, and attend International Seabed Authority meetings and other relevant fora to call for the adoption of a moratorium on deep seabed mining as a matter of urgency.

WE STAND AT A CRUCIAL JUNCTURE.

The 2022 edition of WWF's "Living Planet Report"¹ confirms the planet is in the midst of a biodiversity and climate crisis, and that we have a last chance to act.

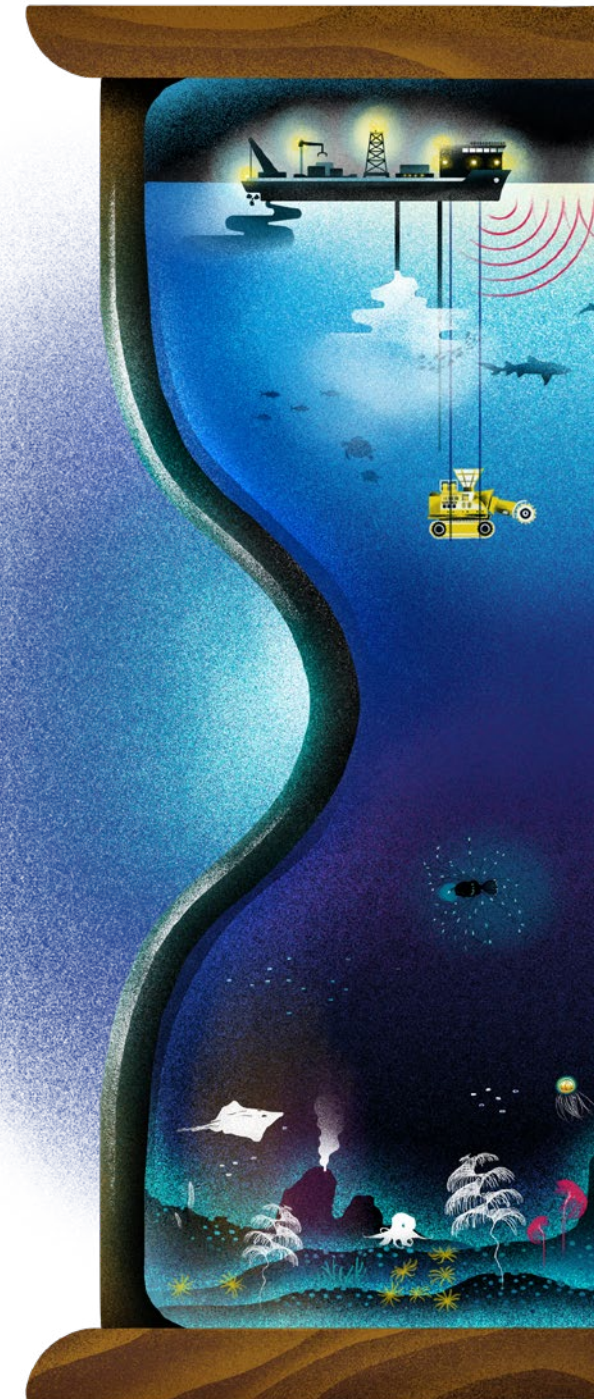
We must rapidly decarbonize our societies and economies to avert the worst effects of decades of burning of fossil fuels. But this must not happen at the expense of nature—one of our most important climate allies—or of human well-being.

The dual climate and biodiversity crises are two sides of the same coin, driven by the unsustainable use of our planet's resources. It is clear: unless we stop treating these emergencies as two separate issues, neither problem will be addressed effectively. This goes beyond conservation. A nature-positive future needs transformative shifts in how we produce, how we consume, how we govern, and what we finance.

We now urgently need to press pause and rethink our relationship with nature and how we can ensure that we can continue to live sustainably on this planet.

While many acknowledge the need for a "green transition" in theory, they cling to their vested interests—hoping coal can be made clean and carbon emissions can be captured instead of eliminated. This thinking will not get us to where we need to be. A prime example of this antiquated thinking is the proposal to open the deep sea to mining.

¹ [lpr_2022_full_report.pdf](#) (panda.org)



KEY FINDINGS

The demand of the seven studied critical raw minerals can be reduced by 58% from now to 2050 with new technology, circular economy models and recycling, as follows:

The demand for raw materials can be reduced by new technologies by:

30% for the seven critical minerals taken together

40-50% for cobalt, nickel and manganese

20% for rare earth elements

In addition to the reduction by technological choices, the demand for raw materials can be further reduced by circular economy strategies by:

18% Between now (2022) and 2030

20% of the total mineral demand could be supplied by recycling between 2022 and 2050

Because of its sheer size, the deep-sea realm constitutes the largest contiguous habitat for species and ecosystem diversity on Earth, and supports many ecosystem processes necessary for life on Earth, including services such as food and climate regulation. Through the United Nations, the world has agreed that this vast segment of our planet is the shared heritage of all humanity.

The existing pressures upon the ocean, and the fact that the deep sea contains a vast number of unexplored and unstudied ecosystems, mean that extreme precaution is necessary at all times. Instead of adding additional stressors further degrading ocean health, we must prioritize ocean protection and restoration, to ensure a healthy ocean that can provide social, economic and cultural benefits for humanity into the future.

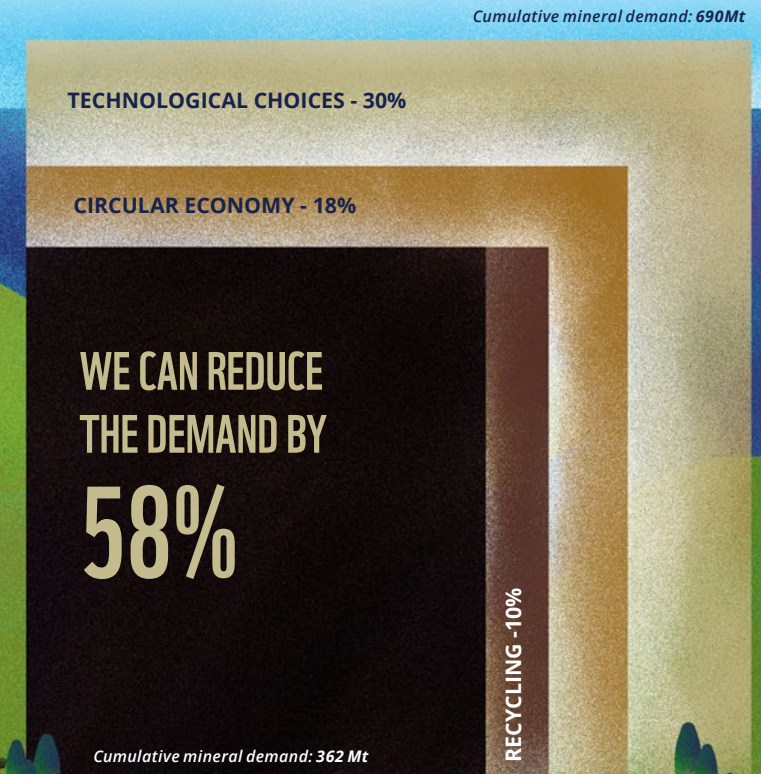
The Circular Economy and Critical Minerals for the Green Transition report was commissioned by WWF and researched, written and published by Sintef, a European research institute.

SMART POLICY AND INVESTMENT CHOICES NEEDED FOR GREEN TRANSITION

The report looks at the mineral demand for a net-zero emissions energy system, based on the technological decarbonisation path of the *Net Zero by 2050*² scenario developed by the International Energy Agency. It focuses on seven critical minerals for the green transition: lithium, cobalt, nickel, manganese, rare earth elements, platinum and copper. These are among the most discussed in studies on potential mineral bottlenecks for new energy technologies and for which demand is expected to grow manyfold.

² Net Zero by 2050 – Analysis - IEA

Most of the mineral needs for the green transition can be supplied by recycled minerals by 2050.



The report explores the different pathways that can influence the demand for critical minerals for a net-zero scenario. The authors analyze these through four different technology scenarios, from a current technology scenario through to an advanced technology scenario, where new technologies low in critical minerals take off and become a larger share of the market share of annual installed capacity by 2050.

These four scenarios are influenced by different technology choices and the level of uptake of new technologies with lower demand of critical minerals, as well as by circular economy strategies including lifetime expansion and reduced demand. In addition, the report explores how current and higher collection and recycling rates can alleviate these potential mineral bottlenecks and discusses the possibilities of different mineral sources aiding the transition, such as reopening old mines, mining of tailings, and urban mining.

Ultimately, the choices made in the next few years by governments through policy interventions, investments and regulations, and by businesses through investments and other business decisions, will shape how much of these minerals will be needed over the next decades and into 2050.

NO NEED FOR DEEP SEA MINERALS

During the next two decades, there will be a need for new minerals entering the supply chains to enable the green transition. But this is no reason for the deep sea to be opened to mining – on the contrary: This temporary minerals need can be covered by confirmed mineral reserves (these confirmed reserves do not include the deep sea), which must be managed with social and environmental responsibility guidelines and standards, such as the Initiative for Responsible Mining Assurance (IRMA)³.

Part of the projected demand for additional raw materials can be met by investing in mineral supply from old mining sites, such as mining of tailings and other mining waste, which constitute a large potential source of minerals and revenue, with possibly lower social and environmental costs.

In order to reduce our material footprint on the planet and keep warming to less than 1.5°, governments need to make the necessary decisions and adopt regulations that enable the shift to new, less resource-intensive technologies and fully circular economies.

This shift lowers the need for virgin resources dramatically, builds an endless lifetime for minerals for the future and therefore makes production and value chains more secure.

There are many technologies in early stages of development that can provide substantial contributions to reducing the demand of critical minerals in the future. There is an increasing number of research grants for the development of low-carbon technologies with low or no critical minerals, as well as for upscaling the best recycling technologies available. The success of these new technologies could mean a change in the minerals bottlenecks for decarbonisation. Here, governments have a role to play in ensuring these grants are being boosted.

Extraction of deep seabed minerals will increase the human footprint on unknown and vulnerable ecosystems. Moreover, the commercial benefits of this type of resource exploitation typically are limited to a few companies, while the risks and deep impacts are borne by wider society and the planet at large.

³ Home - IRMA - The Initiative for Responsible Mining Assurance

THE GREEN TRANSITION DOES NOT NEED DEEP SEABED MINING TO DRIVE A LOW CARBON ECONOMY. IT IS CLEAR THAT THERE IS A PATH AHEAD TO DECARBONISE WITH A MUCH LESSER MATERIAL FOOTPRINT.

It is imperative that governments, business leaders and investors take this path to ensure that the decarbonisation of the economy is responsible and without additional impact upon nature and people.



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Our target is to source 50% of metals for battery cell production from recycling by 2030. As we begin to incorporate more recycled materials into production, we can begin to reduce our dependence on mining finite resources. Aside from the environmental benefits, this improves security of supply of metals and provides an important buffer against price volatility of markets.

- Northvolt⁴

⁴ Revolt: closing the loop on batteries | Northvolt

www.panda.org/noDSM

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Lead No Deep Seabed Mining Initiative



Working to sustain the natural world for the benefit of people and wildlife.

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