

# FutureBridge

## What is?

### Rarity of Critical minerals. Can Hydrothermal Vents Solve Rare Earth Shortage?

Critical minerals like lithium, cobalt, and nickel are vital building blocks for many green technologies.

As per IEA, by 2040, total mineral demand from clean energy technologies could double or even quadruple.

Depleting land-based mineral reserves drive the demand for hydrothermal vent mining.

By 2030, it is projected that up to 10% of global production of minerals such as cobalt, copper, and zinc would be sourced from the ocean floor

300

exploration sites for hydrothermal vent mining were identified by 2023

By 2030

10%

global production of critical minerals would be sourced from hydrothermal vent mining

Hydrothermal vent field could contain more than

1000  
metric tons  
of copper deposits

Hydrothermal vents form polymetallic sulfide deposits, with estimated mineral density

6 Mn metric  
tons globally

## What if?

### Beneath the Waves: Hydrothermal Vents and the Rare Earth Revolution

Nautilus Minerals has developed the Seafloor Production Tools (SPTs), including a bulk cutter, and collection machine. These tools are designed to extract massive sulfides around hydrothermal vents

China Ocean Mineral Resources Research and Development Association (COMRA) has developed sophisticated technologies for accessing vents in areas such as the Indian Ocean and the North Pacific

#### Its Started:

The Clarion-Clipperton Zone between Hawaii and Mexico is a hot bed for hydrothermal vent fields exploration.

## What now?

### The BIG questions

If the turnover of rare earth minerals sourced from the hydrothermal vent mining potentially reaches US\$11 Bn by 2030, then...

- Key Players: Which companies will lead in providing hydrothermal vent mining equipment?
- Lucrative Regions: Which areas hold the most potential for hydrothermal vent mining operations?
- Regulatory Impact: How will compliance shape the growth of hydrothermal vent mining?
- Manufacturer Readiness: How can equipment makers prepare for this disruptive opportunity??

By 2030

\$11 Bn

Projected market value of mineral deposits from hydrothermal vents

## About FutureBridge

FutureBridge is a techno-commercial consulting and advisory company. We track and advise on the future of industries from a 1-to-25-year perspective to keep you ahead of the technology curve, propel your growth, identify new opportunities, markets and business models, answer your unknowns, and facilitate best-fit solutions and partnerships using our platforms, programs, and access to global ecosystems and players.