

FutureBridge

What is?

Biomining: Can it Enhance Mineral Processing and Metal Recovery

Traditional metal processing using chemicals significantly impacts the environment and the efficiency of metal extraction.

Traditional mineral processing often leads to 50% or more ore wastage, resulting in substantial losses.

Chemical metal processing are often energy-intensive, contributing to greenhouse gas emissions and increasing operational costs.

Biomining - Also known as bioleaching, is a natural process that uses microorganisms to extract metals such as Copper, Nickel, Gold, Cobalt, and Zinc from sulfidic ores.

Traditional metal extraction process have

60%

metal recovery rate with significant ore wastage

Mineral extraction and processing contributes

~10%

global greenhouse gas emissions.



Metal recovery rate from biomining is as high as

95%

from low-grade ores

What if?

Biomining Revolutionizes a New Era of Sustainable Mineral Extraction

Biomining has made a substantial impact on global metal production, accounting for 5% of the world's gold and up to 15% of copper got so far.

Maverick BioMetals is a biotechnology company that has developed microbes to recover critical metals such as lithium.

Galderia is developing sustainable extremophile algae that functions as an absorbent to metal and can assist in the recovery of diversified metals from mines.

Transformation Begins...

Major copper producers like Anglo American and Antofagasta have already begun incorporating biomining techniques in their operations in Chile and Peru.

What now?

The BIG questions

If the turnover of copper sourced from the biomining potentially reaches US\$ 50 Bn by 2035, then...

- ❖ How will the metal processing landscape change evolve? What would be the impact on existing mineral processing players?
- ❖ Which countries and regions will develop the necessary ecosystems to drive this transformation?
- ❖ How will regulatory compliance affect the growth prospects of large-scale biomining?

Biomining has the potential to process an additional

3.5Mn tonnes

copper by 2035

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.