

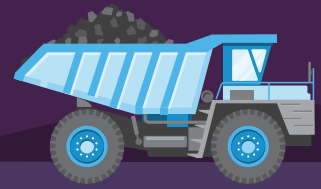


Zinc Mining

Evolution and Growing Importance

September 2022

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Evolving Role of Zinc in Industry

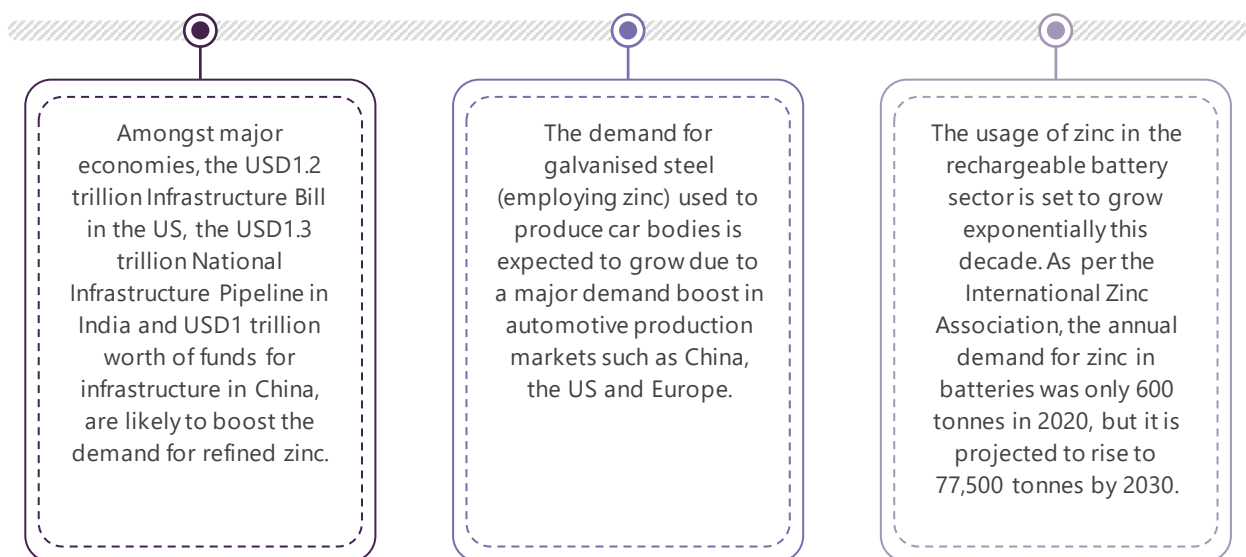
Zinc compounds have been used for nearly 2,500 years to produce brass (an alloy of zinc and copper), but zinc was not acknowledged as a significant element until much later. The Ancient Romans utilized brass extensively to create objects such as coins, kettles and decorative goods. Zinc started gaining prominence in the 1930s owing to the burgeoning automobile and appliance industries, given the importance of zinc and aluminum alloys for these industries.

Today, galvanization consumes around one-third of all the metallic zinc produced. Galvanized steel is utilized to construct suspension bridges, streetlamp posts, safety barriers and automobile bodies. There has been a substantial increase in demand for zinc from developed markets (such as the building, automotive and galvanizing industries) as well as developing markets (such as renewable energy). The demand for electric vehicles (EVs) is increasing for both personal and light commercial use, along with growth in demand for consumer electronics and other high-tech goods. This is further propelling the market for zinc since it is utilized in the batteries employed for these goods. The increased demand has led to a tremendous increase in its prices, which have grown by more than 15 times in the past 60 years.

Zinc Demand: Pull from New and Existing Sectors

Global consumption of refined zinc increased by 6.3% year on year in 2021 to reach just over 14 million tonnes. This expansion included robust growth in the three largest consumer markets of China, Rest of Asia and the EU. The global consumption is expected to grow to 15.2 million tonnes in 2027 owing to strong demand in infrastructure, automotive, consumer products and electric batteries applications.

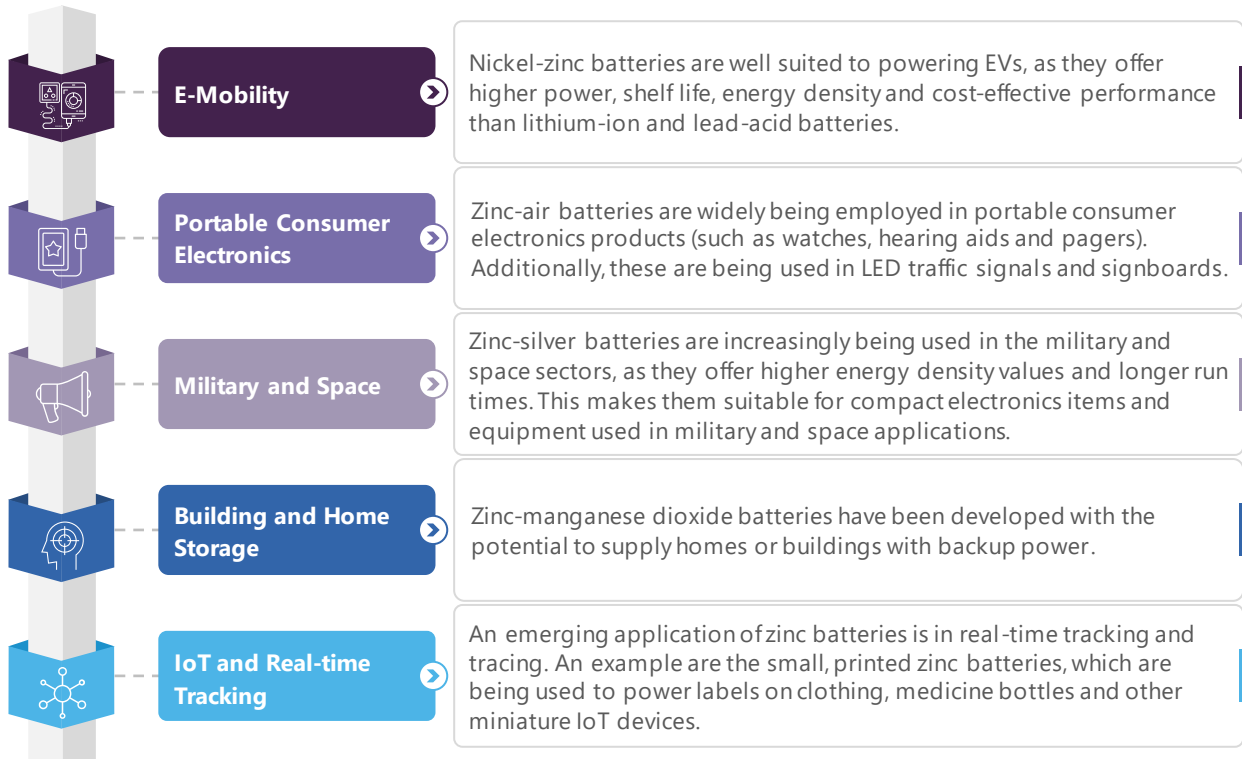
Zinc consumption follows the cycles of world industrial production, due to its primary role in galvanizing steel. The major demand drivers for its surging consumption are the following:



In addition to the above sectors, zinc is expected to witness a rise in demand due to its evolving role in powering up various industries.

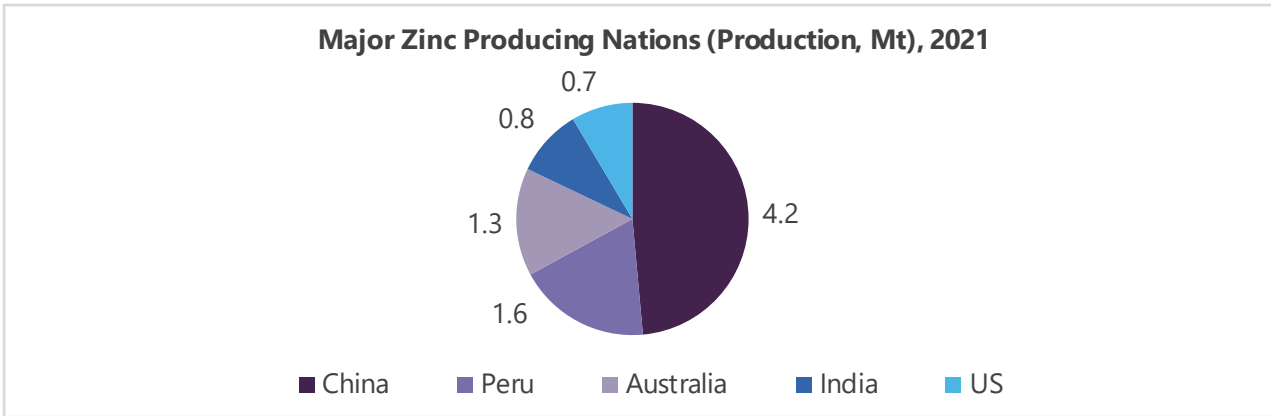
Elevated interest in zinc-ion batteries

With the growing interest in reducing carbon emissions and the dwindling supplies of lithium-ion, the prospects for zinc-based batteries are bright. Here are the key demand sectors for zinc-based batteries, especially when compared with their lithium counterparts.

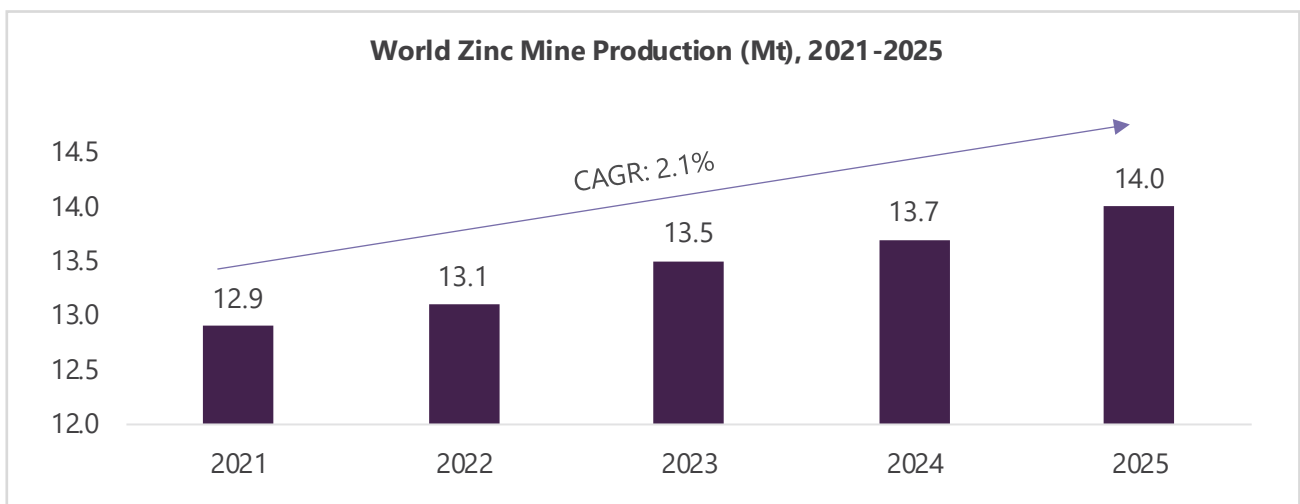


Gearing Up to Upgrade the Zinc Supply Landscape

The soaring demand for zinc makes it important to consider the adequacy of zinc supplies to cater to its versatile applications. World mine production of zinc reached 12.9 million tonnes in 2021. Of the major producers, China's total mine production was flat for the 2021 calendar year at 4.2 million tonnes, while production from Peru, the next biggest producer, increased by 15% year on year in 2021 to reach 1.6 million tonnes. A slew of mining projects in the pipeline are expected to push these numbers up in the coming years.



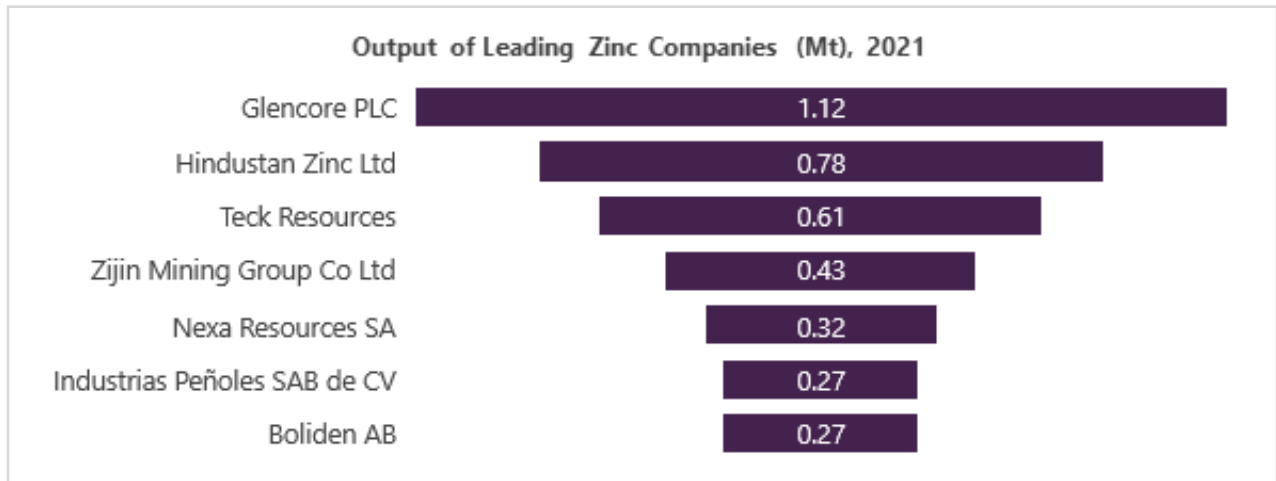
Mine production is projected to rise by 2.1% annually, to reach 14 million tonnes by 2025, as new mine capacity comes online



After COVID-related shutdowns in 2020, the reopening of mines in Peru – such as the Chungar Mining Unit, El Porvenir and Cerro Lindo – and strong production from Antamina, Peru’s largest zinc mine, contributed to the recovery.

Countries such as the US, India, Australia and Mexico are expected to be the key contributors to the zinc growth story. Mexico, in particular, is aiming to improve its annual zinc output by over 200,000 metric tonnes in the next six years via four new projects.

The seven major zinc producers account for nearly 30% of zinc production

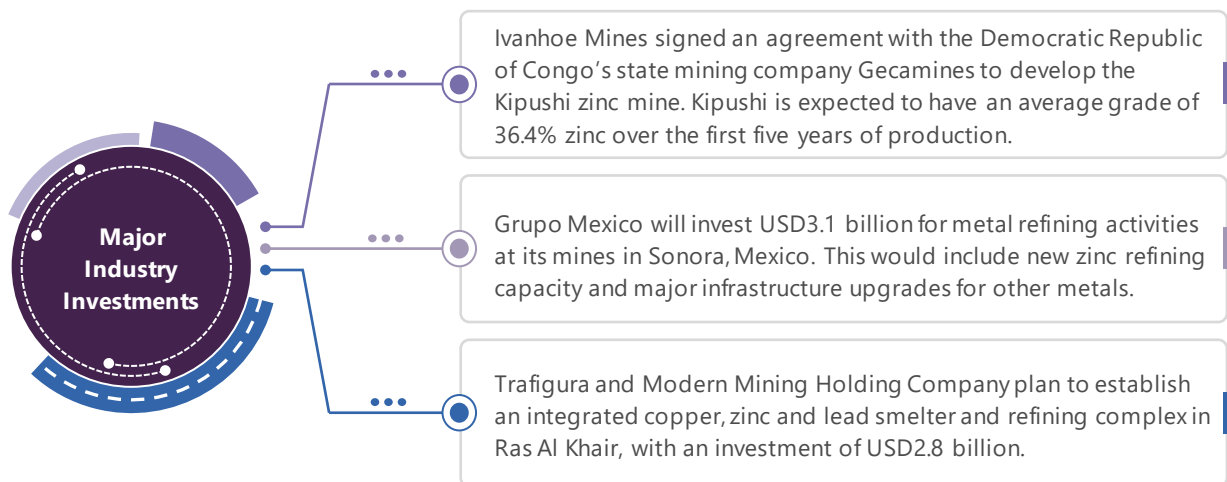


Glencore PLC was the largest producer with a market share of ~9%, followed by Hindustan Zinc Ltd with ~6% and Teck Resources with ~5%.

Key Initiatives in Zinc Supply

Rising investments to tap emerging market opportunities

Industry players are making huge investments in zinc smelting and refining, owing to emerging opportunities in the refined end of the zinc market and low inventories of zinc amid high demand.



Auctioning of new mining licenses

Increased urbanization across major world economies has led to growth of the infrastructure, consumer goods, electronics and automobile sectors. Zinc is a common metal used across these sectors, though its

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stockpile is witnessing historical lows due to the shutdown of zinc mines in China, Canada, Ireland and Australia.

To cater to this demand-supply imbalance, certain countries are auctioning mining licenses to jump onto the zinc bandwagon.



What's Next for Zinc ?

With the world witnessing unprecedented changes, there is a growing impetus towards green and recyclable products. Companies are focusing more on sustainability aspects through sustained R&D efforts, and reducing the carbon footprint and achieving carbon neutrality are at the forefront of their environmental, social and governance (ESG) roadmaps. To achieve these objectives, major zinc firms are carrying out several initiatives to decarbonize their operations.

The infographic features three horizontal panels, each with a company logo on the left and a text box on the right. The background is a dark purple gradient with faint circular patterns.

vedanta zinc international

Vedanta Zinc International is investing ZAR7 billion (USD407 million) in the Gamsberg Phase 2 expansion project in South Africa to produce "green" zinc, increasing its annual output from 300,000 metric tonnes to 500,000 metric tonnes. The company is at an advanced stage of locking in a renewable energy contract to ensure greenness and decarbonization.

HINDUSTAN ZINC Zinc & Silver of India

Hindustan Zinc Limited plans to invest INR3.5 billion (USD44 million) to develop 200 MW of renewable energy capacity. This will aid in decarbonizing its operations and transitioning to the manufacture of green products of zinc.

Korea Zinc

Korea Zinc has agreed to invest USD50 million in energy storage developer Energy Vault and to use its technology to help decarbonize operations at its zinc refinery in Australia.

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