Lithium's Rapid Growth and the UAE's Clean Energy Future

Lithium has quietly become one of the world's most strategic resources. Once a relatively obscure industrial element, it now sits at the heart of the global clean energy transition. From powering smartphones to fueling electric vehicles (EVs) and stabilising renewable grids, lithium is the essential ingredient in the world's most important batteries. Its rapid growth is not only reshaping commodity markets but also influencing national strategies — and few countries are better placed than the UAE to seize the opportunities it presents.

A market in rapid expansion

Global lithium production and consumption have risen dramatically in recent years. In 2023, worldwide production stood at around 204,000 tons (Li content), while consumption reached 170,000 tons. By 2024, production climbed to roughly 240,000 tons and consumption surged to 220,000 tons — a remarkable 29% increase in demand in just one year.

Yet, despite this surge, prices have been volatile. Average battery-grade lithium carbonate prices dropped sharply from about $41,300 per ton in 2023 to roughly $14,000 in 2024 — a 66% decline. The paradox of strong demand alongside falling prices reflects both the complexities of global supply chains and the cyclical nature of commodity markets.

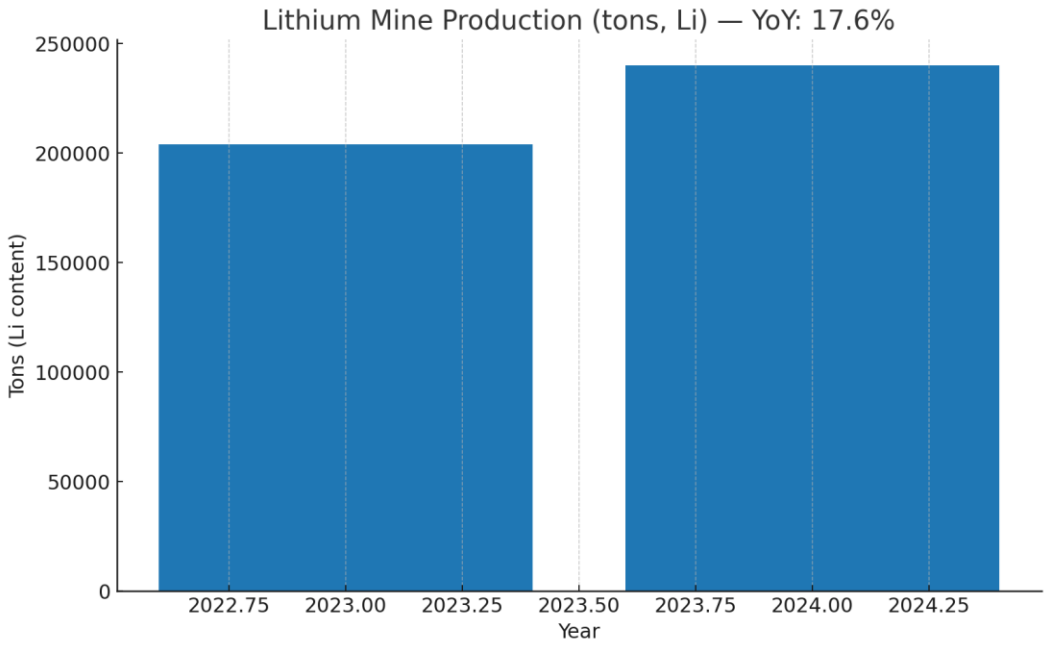

Figure 1 — Lithium mine production (2023–2024).

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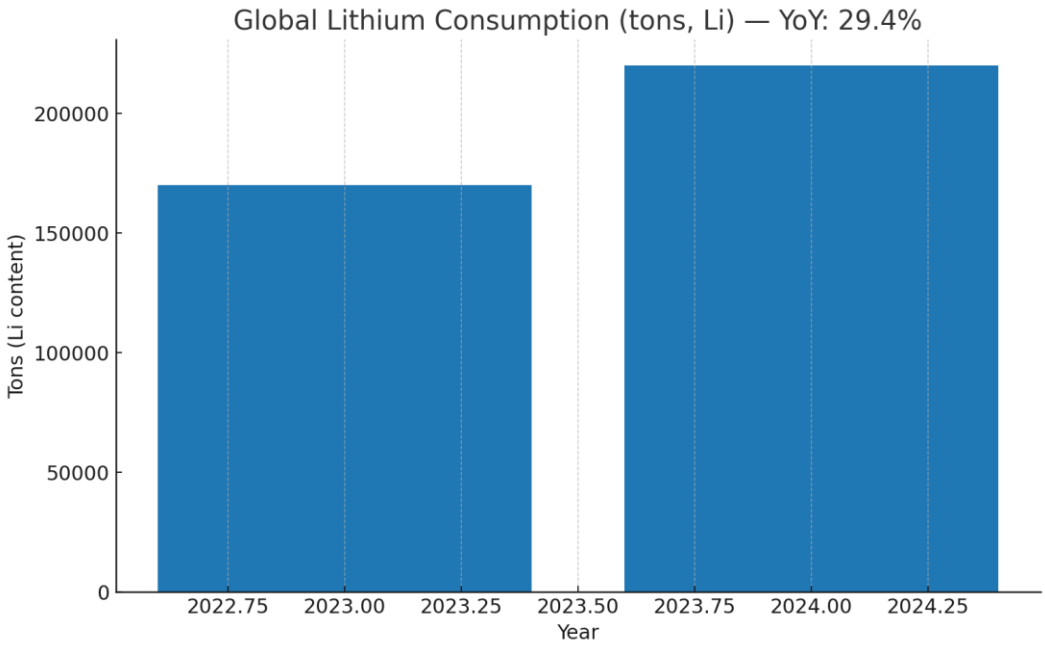

Figure 2 — Global lithium consumption (2023–2024).

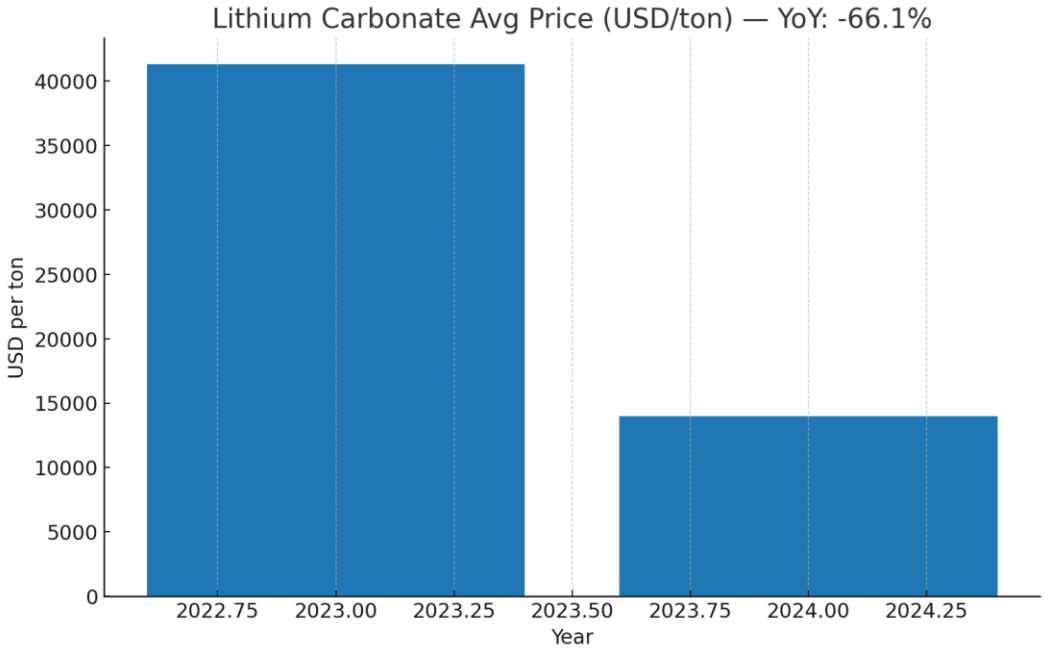

Figure 3 — Lithium carbonate average price (2023–2024).

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The electric vehicle driver

Electric vehicles are the single biggest driver of lithium demand. In 2024, global EV sales rose from 14 million to 17 million units — a 21% increase in just twelve months. Crucially, about 94% of these vehicles use lithium-ion batteries, including advanced chemistries such as NMC, NCA, and LFP.

LFP batteries alone now account for around 31% of the EV battery market, thanks to major producers like Tesla and BYD. According to the International Energy Agency, batteries already represent 85% of global lithium demand. While alternative chemistries such as sodium-ion and solid-state are under development, lithium-ion remains the dominant standard through at least the next decade. In short, the trajectory of EV adoption remains a reliable proxy for the trajectory of lithium demand.

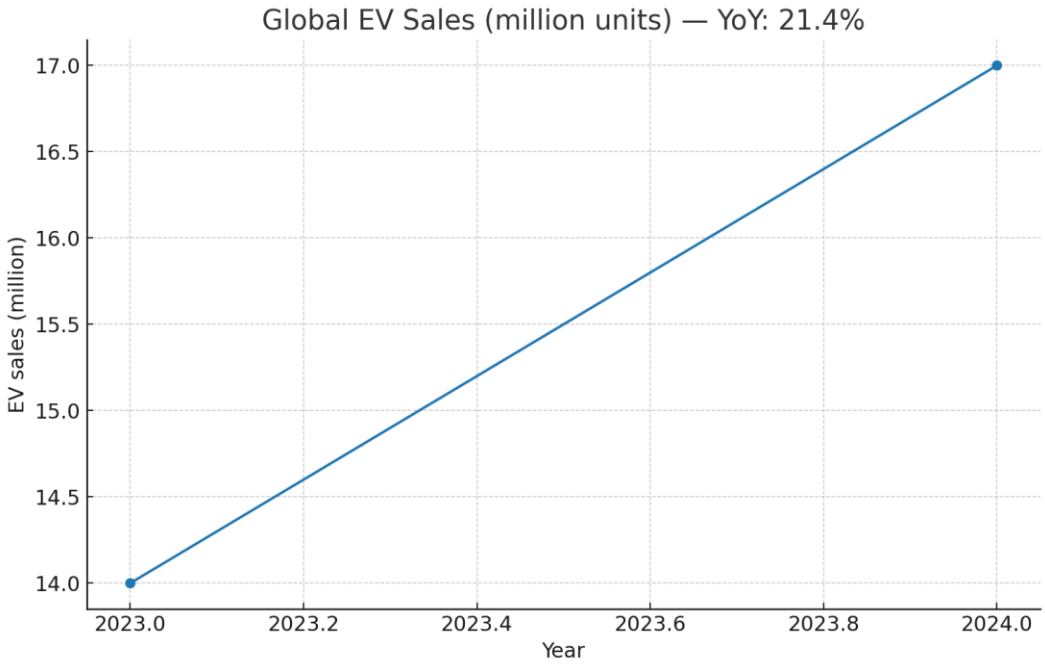

Figure 4 — Global EV sales (2023–2024).

The UAE's strategic role

For the UAE, lithium is not about mines but about vision. As part of its Energy Strategy 2050, the country has pledged between AED 150–200 billion in clean energy investments. This includes large-scale solar projects, nuclear power development, and expanding grid-scale energy storage.

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Masdar, the nation's flagship renewable energy company, has already achieved 51 gigawatts of installed clean energy capacity, marking 51% progress toward its ambitious 100 GW target for 2030. Alongside Masdar, entities such as ADNOC and Mubadala are exploring new avenues in green hydrogen, advanced mobility, and battery storage technologies. These moves underscore the UAE's determination to play a leading role not just in hydrocarbons, but in the global clean energy economy.

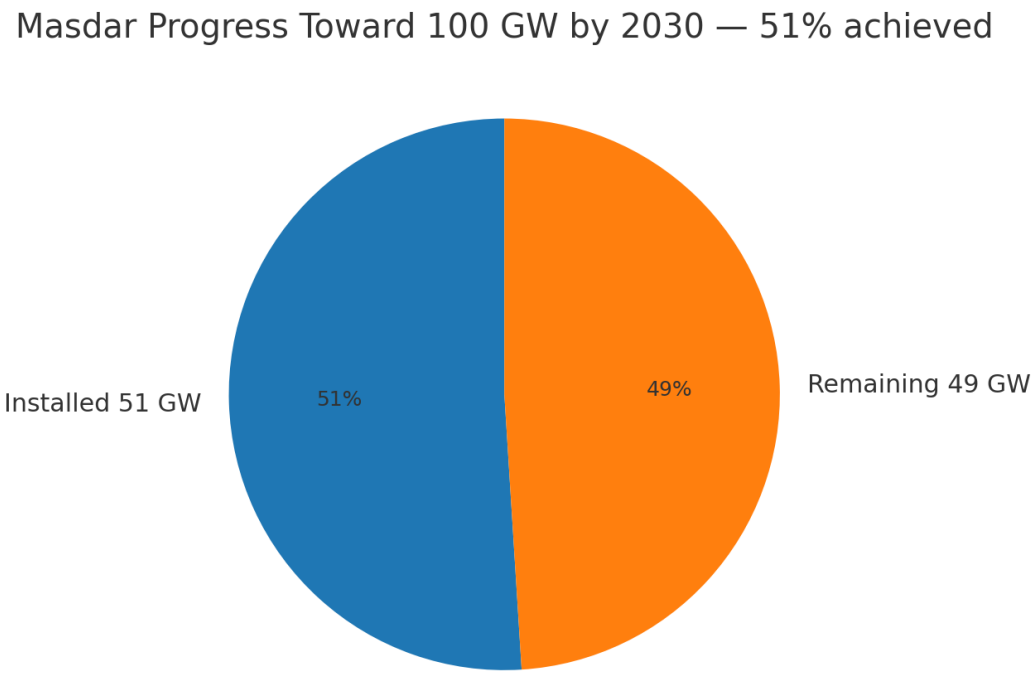

Figure 5 — Masdar progress toward 100 GW by 2030.

Challenges and opportunities

This path is not without challenges. The sharp decline in lithium prices highlights the risk of oversupply cycles. Supply concentration in a few countries — particularly Australia, Chile, and China — raises questions about long-term resilience. Environmental and social issues linked to mining also remain in focus.

For the UAE, the opportunity lies in integrating into the lithium value chain through research, technology partnerships, and downstream investment rather than extraction. With its financial strength, strategic location, and proactive policies, the UAE can capture value by hosting R&D centers, enabling global partnerships, and developing infrastructure for clean mobility and storage solutions.

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Conclusion

Lithium's story is one of scarcity and growth. Demand is climbing at double-digit annual rates, EV adoption is breaking records, and countries worldwide are racing to secure supply. For the UAE, the rise of lithium aligns perfectly with its long-term ambitions: to diversify its energy mix, to lead in innovation, and to anchor itself in the clean energy economy of the future.

As the world electrifies, lithium has become more than just an element. It is a catalyst for transformation — and the UAE is set to be one of the key stages where that transformation unfolds.

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