Iran claims to have unearthed massive lithium deposit

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In news– Iranian Ministry of Industry, Mine and Trade has said that a lithium deposit located in the western province of Hamedan contains some 8.5 million metric tons of lithium ore.

Key updates-

- **This is Iran's first lithium find.**
- However, this discovery will not immediately be beneficial to Iran It will take about four years to prepare the lithium mines discovered in Qahavand Plain, Hamadan, for operation, with the deposits stretching across a five-six square kilometer area.
- **According to the US Geological Survey, the world's largest identified lithium resources (not counting Iran) are as follows:** Bolivia, 21 million tons; Argentina, 20 million tons; Chile, 11 million tons; Australia, 7.9 million tons; China, 6.8 million tons.
- India recently established inferred lithium resources of 5.9 million tons in the Reasi district of Jammu and Kashmir.
- **According to the United Nations Framework for Classification for Reserves and Resources of Solid Fuels and Mineral Commodities (UNFC 1997), resources are categorized using the three essential criteria affecting their recoverability:**
    - Economic and commercial viability (E).
    - Field project status and feasibility (F).
    - Geological knowledge (G).
- **India's recent discovery was classified as G4**: implying

that they are a product of a reconnaissance study, rather than more advanced feasibility and commercial viability studies.

- **According to the UNFC, "Reconnaissance study identifies areas of enhanced mineral potential on a regional scale** based primarily on results of regional geological studies, regional geological mapping, airborne and indirect methods, preliminary field inspection, as well as geological inference and extrapolation. The objective is to identify mineralized areas worthy of further investigation towards deposit identification."

- **It is likely that Iran's discovery is also at this stage of categorisation.**
- If that is the case, more work is required to establish the commercial viability of the reserves but also a setup where the mining can be carried out.
- Especially in the context of the economic embargoes Iran faces, this will be a challenge.

The importance of lithium in today's world-

- *Lithium is ubiquitous in modern life, found in all kinds of electronic devices*, from mobile phones to EVs – **basically, anything that requires a rechargeable battery.**
- A battery is made up of an anode, cathode, separator, electrolyte, and two current collectors (positive and negative).
- **Lithium-ion batteries use aqueous electrolyte solutions,** where ions transfer to and fro between the anode (negative electrode generally made of graphite) and cathode (positive electrode made of lithium), triggering the recharge and discharge of electrons.
- Even promising alternatives to the lithium-ion batteries, such as QuantumScape Corp's solid-state lithium-metal battery, continue to use lithium.
- This is primarily due to Lithium's low weight as

compared to other metals (such as nickel, used in traditional batteries) as well as its superior electrochemical potential.

- Lithium has become especially valuable in the context of increasing climate concerns with the internal combustion engine and the rise of electric vehicles (EV) as an alternative.
- **Currently, all EVs use lithium in their battery packs with demand set to rise exponentially over the coming decades.**

Further reading: https://journalsofindia.com/gsi-has-established-inferred-lithium-resources-in-jk/