# Re-Exploration of J&K's Lithium Reserve | Jammu & Kashmir | 18 Oct 2024

## Why in News?

Recently, the **5.9 million tonnes** of lithium reserves in Jammu & Kashmir (J&K) are set for re-exploration after failed attempts to auction the reserve due to insufficient exploration data and industry reluctance.

- This move aims to boost India's domestic lithium production, which is critical for energy transitions and reducing dependence on imports.

## Key Points

- **Current Status of the Reserve:**
  - The Salal-Haimana block in the Reasi district of J&K holds an estimated **5.9 million tonnes of** lithium **reserves**. It is India's largest lithium find, announced in February 2023.
    - The Salal-Haimana block also contains **titanium and bauxite,** which may have additional extraction potential .
    - However, the block is still at the **G3 level of exploration**, which involves preliminary prospecting and mapping
- **Re-Exploration to G2 Level:**
  - The Ministry of Mines has directed the Geological Survey of India (GSI) to elevate the exploration to at least the **G2 level.**
    - This involves more detailed surveys and geological studies, which provide better data on the commercial viability of the reserves. Achieving **G2 means clearer reserve estimates and improved resource confidence**.
- **G2 exploration** is more detailed compared to G3. It includes drilling and trenching to estimate the size, grade, and shape of the mineral deposit. **Further exploration to G1 (the final stage) is necessary for a more precise assessment before mining**
- **Lithium Ores and Extraction:**
  - Lithium **is extracted** primarily from **spodumene** (a lithium-bearing mineral found in pegmatites) or from **brine pools where lithium salts** are concentrated. In places like **Chile and Argentina, lithium is mainly extracted from brines, while in Australia, it is mined from spodumene**
- **Challenges Faced in Auctioning:**
  - The first auction attempt in November 2023 failed due to a lack of sufficient bidders. The second attempt, which allowed for a single bidder, also saw no success. The key issue is inadequate exploration data, which makes potential bidders reluctant to commit.
  - Experts caution that detailed exploration should not be rushed, as premature auctioning without solid resource estimates might deter future interest
- **India's Lithium Import Dependency:**
  - India currently imports all its lithium, with lithium-ion battery imports reaching **USD 2.9 billion in 2023-24,** primarily from **China and Hong Kong**. This underscores the importance of developing domestic lithium resources
  - The discovery of lithium in J&K is seen as pivotal for reducing import dependence, particularly as India pushes for electric vehicle (EV) adoption
- **Global Lithium Reserves and India's Efforts:**
  - Globally, **98 million tonnes of lithium** resources exist, but only **26 million tonnes** are considered reserves. Countries like Chile, Australia, and Argentina dominate the market.

India has partnered with Argentina for lithium exploration and is exploring opportunities in Chile, Bolivia, and Australia



## Properties of Lithium

- It is a chemical element with the **symbol Li.**
- It is a soft, **silvery-white metal.**
- Under standard conditions, it is the lightest metal and the lightest solid element.
- It is highly **reactive and flammable**, and must be stored in mineral oil.
- It is an alkali metal and a rare metal.
    - The alkali metals consist of the chemical elements lithium, sodium, potassium, rubidium, caesium, and francium. Together with hydrogen they constitute group, which lies in the s-block of the periodic table.
    - Rare Metals (RM) include **Niobium (Nb), Tantalum (Ta), Lithium (Li), Beryllium (Be), Cesium (Cs) etc. and Rare Earths (RE) include Lanthanum (La) to Lutetium (Lu) besides Scandium (Sc) and Yttrium (Y).**
        - These metals are strategic in nature with wide application in the nuclear and other high tech industries such as **electronics, telecommunication, information**

**technology, space, defense etc.**