



Li-ion battery

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Why is in news? MeitY transfers cost effective Li-ion battery recycling technology to nine recycling industries and start-ups

- Ministry of Electronics and Information Technology (MeitY) **transferred cost effective Li-ion battery recycling technology to nine recycling industries and start-ups** as part of Mission LiFE under “**Promote circularity campaign**”.
- The novelty of the **indigenously developed technology** could process assorted types of discarded Li-ion batteries, **recovering more than 95 per cent Lithium (Li), Cobalt (Co), Manganese (Mn) and Nickel (Ni) contents** in the form of their corresponding oxides/carbonates of about 98 per cent purity.
- The recycling process involves leaching followed by hierarchical selective extraction of metal values through solvent extraction process. These secondary raw materials could be used for battery manufacturing or in other potential applications.
- MeitY has developed this technology **under the “Centre of Excellence on E-waste management”** set up at Centre for Material for Electronics Technology (C-MET), Hyderabad in collaboration with Government of Telangana along with industry partner, M/s Greenko Energies Pvt. Ltd., Hyderabad.
- The CEO, NITI Aayog has emphasized that Centre of Excellence (CoE) model of translational R&D, innovation along with partner industry from problem stage. Li Ion battery recycling technology handing over to 9 local industries is a laudable efforts by Ministry of Electronics & Information Technology (MeitY).

Lithium-ion batteries:

- Lithium-ion batteries power the lives of millions of people each day.
- A lithium-ion battery or Li-ion battery is a type of **rechargeable battery**.
- Li-ion batteries **use an intercalated** (Intercalation is the **reversible inclusion or insertion of a molecule** into materials with layered structures) lithium compound as one electrode material, compared to the metallic lithium used in a non-rechargeable lithium battery.
- The battery consists of electrolyte, which allows for ionic movement, and the two electrodes are the constituent components of a lithium-ion battery cell.
- Lithium ions move from the **negative electrode to the positive electrode** during discharge and back when charging.
- The features of the Li-ion battery is **small size, light weight, high energy density, ability to recharge, longer lifespan compared to a lead acid battery, more efficiency, greater driving range, affordable and so on**.
- **Lithium-ion Battery Applications:** From laptops and cell phones to hybrids and electric cars, Telecommunication, Aerospace, Industrial applications, etc.
- **Disadvantages of Li-ion Batteries:**
 - Long charging times.
 - Safety issues as instances of batteries catching fires have been there.
 - Expensive to manufacture.
 - While the Li-ion batteries are seen as sufficiently efficient for applications such as phones and laptops, in case of EVs, these cells still lack the range that would make them a viable alternative to internal combustion engines.