

**GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF SCIENCE & TECHNOLOGY  
LOK SABHA  
UNSTARRED QUESTION No. 2140  
TO BE ANSWERED ON 02/08/2023  
BATTERY RECYCLING TECHNOLOGY**

**2140. SHRIMATI SHARDABEN ANILBHAI PATEL:**

**SHRI MITESH RAMESHBHAI PATEL (BAKABHAI):**

**Will the Minister of SCIENCE & TECHNOLOGY विज्ञान और प्रौद्योगिकी मंत्री be pleased to state:**

- (a) whether it is a fact that battery operated vehicles pose a major demand in inventions of battery storage technology and battery recycling technology, if so, the details thereof;**
- (b) if so, the details of the steps taken by the Government in this regard along with the current research projects being conducted and their outcome therefrom; and**
- (c) the details of the challenges faced by the Government in this research?**

**ANSWER**

**MINISTER OF STATE (INDEPENDENT CHARGE)  
OF THE MINISTRY OF SCIENCE AND TECHNOLOGY  
(DR. JITENDRA SINGH)**

विज्ञान और प्रौद्योगिकी राज्यमंत्री (स्वतंत्र प्रभार)

(डॉ. जितेंद्र सिंह)

**(a) Yes Sir, Battery operated vehicles pose a major demand in inventions in both storage and recycling technologies. All Electric Vehicles (EVs) have energy storage systems, typically batteries to power the vehicle, which requires advancement in storage technologies to make it affordable and attractive in market adoption. In order to balance the supply of raw materials for batteries and keeping in view the thrust on sustainability & circular economy, inventions in battery recycling technologies are also important.**

**(b) The Government is supporting research to develop indigenous capabilities in the area of Lithium-ion (Li-ion) battery electrode materials, cells and battery packs for EVs. Several research projects**

**with significant funding are in progress with an aim to enable indigenous development of battery technologies. Department of Science & Technology (DST) have supported approximately thirty- two R&D-related projects in the area of battery storage, which resulted in several publications and lab level prototypes. Indian Institute of Technology Bhubaneswar & Indian Institute of Technology Kharagpur has developed a Sodium (Na) ion battery pack, a battery management system, a charger, and a cell balancing system for e-bicycle. In addition; two battery recycling technology research projects are also being supported.**

**Central Electro Chemical Research Institute, (CECRI), a lab under Council of Scientific and Industrial Research (CSIR) has established a small scale (1000 cells per day) Lithium- ion cell manufacturing line at its Chennai unit. CSIR also initiated a Bulk Chemical Mission Project to develop a technology that dismantles 100kg spent Lithium Ion Battery (LIB)s and can extract all metals from LIB electrode material and demonstrate at 1kg product level.**

**(c) The key challenge faced by the Government in the research of battery storage technologies is primarily in sourcing of raw materials. Though country's Lithium-ion (Li-ion) battery requirement is huge, there is no domestic manufacturing of Li-ion batteries at present and the majority of the demand is catered through imports. Further, the important raw material resources required such as Lithium, Cobalt are scarce and needs to be imported. There is no established supply chain for electrode materials and components yet in our country. CSIR-National Metallurgical Laboratory (CSIR-NML), Jamshedpur has developed and patented CSIR's first holistic process that can tackle any type of Lithium based batteries, to extract and separate high pure salt products from Lithium, Nickel, Cobalt, Manganese, Aluminium, Copper, and Reusable Graphite.**

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