

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF SCIENCE & TECHNOLOGY  
**RAJYA SABHA**  
**STARRED QUESTION NO. 15**  
ANSWERED ON 02/02/2023

**INVENTIONS IN BATTERY STORAGE TECHNOLOGY AND  
BATTERY RECYCLING TECHNOLOGY**

\* 15. SHRI K.R.N. RAJESHKUMAR:

Will the Minister of Science and Technology be pleased to state:

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

**ANSWER**

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

(a), (b) & (c): A Statement is laid on the table of the House.

**STATEMENT IN RESPECT OF RAJYA SABHA STARRED QUESTION No.15 TO BE ANSWERED ON 02.02.2023 REGARDING 'INVENTIONS IN BATTERY STORAGE TECHNOLOGY AND BATTERY RECYCLING TECHNOLOGY'**

(a) 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 Ministry of Science and Technology 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 is in progress with an aim to enable indigenous development of battery technologies. Department of Science & Technology (DST) & Science & Engineering Research Board (SERB) have supported approximately seventy-five R&D-related projects in the area of battery storage, which resulted in several publications and lab level prototypes. 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. This unit has been already given to an Indian Start-up company to enable local manufacturing of lithium ion battery.

(c) The key challenge faced by the Ministry of Science and Technology 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.

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