



BATTERY WASTE MANAGEMENT RULES, 2022 – ENVIRONMENT (MAINS)

Q. Bring out the provisions of the Battery Waste Management Rules, 2022 and suggest measures to address the gap in the sector. (15 marks, 250 words)

News: *Battery recycling rules need to be revamped to make process more efficient and economic*

What's in the news?

- As electric mobility is set to overhaul the transportation sector, it offers a rare chance to make the system sustainable from the ground up — to maximise the recovery of battery material while ensuring that heavy metals and other problematic toxins from this e-waste do not end up in a landfill and contaminate the environment.

Key takeaways:

- A big step in this direction has been the notification of the Battery Waste (Management and Handling) Rules, 2022, which address concerns around lithium-ion batteries from electric vehicles.
- The Rules bring within its ambit all manufacturers, producers, collection centres, importers, re-conditioners, refurbishes, dismantlers, assemblers, dealers, recyclers, auctioneers, vehicle service centres, consumers and bulk consumers.

The Battery Waste Management Rules, 2022: Provisions

1. Coverage:

- a. The rules cover all types of batteries, including Electric Vehicle batteries, portable batteries, automotive batteries, and industrial batteries.

2. Extended Producer Responsibility (EPR):

- a. The producers of batteries are responsible for the collection and recycling/refurbishment of waste batteries and the use of recovered materials from waste into new batteries. Rules prohibit disposal in landfills and incineration.
- b. To meet the EPR obligations, producers may engage themselves or authorise any other entity for the collection, recycling, or refurbishment of waste batteries.

3. Online Portal for exchange of EPR Certificates:

- a. It will enable the setting up of a mechanism and centralized online portal for the exchange of EPR certificates between producers and recyclers/refurbishes to fulfill the obligations of producers.

4. Online Registration:



- a. Online registration & reporting, auditing and committee for monitoring the implementation of rules and taking measures required for removal of difficulties.

5. Principle of Polluter Pays:

- a. Environmental compensation will be imposed for non-fulfilment of Extended Producer Responsibility targets, responsibilities and obligations set out in the rules.

6. Recovery Target:

- a. There is a target for recovery of the battery material — 70% by 2024-25, then 80% by 2026, and 90% after 2026-27 onwards.

7. Environmental compensation Fund:

- a. The funds collected under environmental compensation shall be utilized in the collection and refurbishing or recycling of uncollected and non-recycled waste batteries.

Issues in the rules:

- **Labelling and Information Deficiency:**
 - Current battery labels lack comprehensive information about their chemical composition, impeding effective recycling.
 - Lack of data on metals in lithium-ion batteries hampers recyclers' ability to recover valuable materials efficiently.
- **Design Complexity:**
 - Battery packs often have intricate assembly methods involving welding, adhesive, and screws, making disassembly challenging.
 - Standardizing joining techniques could facilitate automated disassembly.
- **EPR Implementation and Budgeting:**
 - The rules lack a clear directive on the budget that manufacturers should allocate for collecting and recycling spent batteries.
 - This ambiguity may result in low rates paid to recyclers, impacting the efficiency of waste collection and processing.
- **Informal Sector Competition:**
 - As the volume of spent batteries increases, informal collectors might outprice formal collectors, potentially leading to hazardous recycling practices and safety concerns.
- **Chemical Composition Changes:**
 - The shift towards safer but less valuable lithium iron phosphate (LFP) batteries poses a challenge. Recyclers might struggle to recover value due to the minimal lithium content in LFP cells.
- **Safety Standards and Handling:**



- Absence of rules governing the storage, transport, and handling of electric vehicle batteries could pose safety risks, especially if the informal sector becomes more involved.

Steps to be taken:

● Policy Refinement:

- Implement regulations mandating detailed information on battery labels, including chemical composition and recyclability.
- There can be learnings from the European Union's Battery Directive, which empowers recyclers by providing essential data to efficiently separate and recover valuable materials from used batteries.
 - This directive requires battery manufacturers to label their products with information regarding chemical composition, including the presence of hazardous substances, and clear indications of recyclability.

● Incentivize Recycling-Friendly Design:

- There is a need to introduce policies encouraging manufacturers to design batteries with standardized joining methods and eco-friendly materials, facilitating easier disassembly and recycling.

● Budget Allocation Guidelines:

- Define clear guidelines mandating a budget allocation for battery collection and recycling by manufacturers.
- This ensures fair compensation for recyclers and strengthens the waste collection infrastructure.

● Environmental Auditing and Standards:

- Strengthen rules requiring thorough audits for both formal and informal collectors, ensuring compliance with environmental safeguards and safety standards.

● Technological Advancements:

- There is a need to allocate resources for research and development initiatives focusing on innovative technologies for battery recycling, such as efficient disassembly techniques and advanced material recovery processes.
- Develop and implement cutting-edge recycling processes, like solvent-free separation methods and automation, to streamline the recycling of complex battery designs.

- Addressing these gaps will require a concerted effort involving policy-makers, industry stakeholders, technological innovators, and environmental experts.

- A comprehensive approach considering policy adjustments, technological advancements, industry collaboration, and global learning can significantly enhance the effectiveness and sustainability of battery waste management practices.