

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARRED QUESTION NO. 2451
TO BE ANSWERED ON 04.08.2025

Waste Management of Clean Energy Equipment

2451. SHRI DAGGUMALLA PRASADA RAO:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) whether the Government has formulated any guidelines, policies or Standard Operating Procedures (SOPs) for disposal and recycling of waste generated from clean energy infrastructure such as wind turbines, solar photovoltaic panels and batteries;
- (b) if so, the details thereof and if not, the reasons therefor and whether the Government proposes to bring out such guidelines in the near future;
- (c) whether the Government has collected data of waste currently being generated from ageing or decommissioned renewable energy equipment and an estimate for waste expected to be generated over the next decade, if so, the details thereof;
- (d) whether the Government has engaged with States, industry stakeholders and recycling sector experts to draft comprehensive waste management norms for clean energy machinery; and
- (e) the details regarding recycling and disposal centres and mechanisms developed by the Government to handle waste from clean energy infrastructure, State-wise?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI KIRTI VARDHAN SINGH)

(a) to (c) Ministry has comprehensively revised the E-Waste (Management) Rules, 2016 and notified the E-Waste (Management) Rules, 2022 in November, 2022 and the same is in force since 1st April, 2023. These new rules provide for managing e-waste including solar photovoltaic (PV) modules or panels or cells in an environmentally sound manner and putting in place an improved Extended Producer Responsibility (EPR) regime for e-waste recycling wherein all the manufacturer, producer, refurbisher and recycler are required to register on portal developed by the Central Pollution Control Board (CPCB). The new provisions facilitate and channelize the informal sector to formal sector for doing business and ensuring recycling of e-waste in environmentally sound manner. Provisions for environmental compensation and verification & audit have also been introduced. These rules also promote Circular Economy through EPR regime and scientific recycling/disposal of the e-waste.

As per these rules, every manufacturer and producer of solar photo-voltaic modules or panels or cells has been mandated to obtain registration, maintain inventory of solar PV modules, store the waste generated from Solar PV modules/panels/cells up to the year 2034-35, file annual returns, comply with Standard Operating Procedures, and process the waste other than solar PV modules as per the applicable rules or guidelines. Further, Recyclers of

solar photo-voltaic modules or panels or cells have been mandated for recovery of material as laid down by the CPCB.

Following steps have been taken for effective management of E-Waste Rules as under:

- (i) An online E-Waste EPR portal has been developed by CPCB wherein entities such as producers, manufacturers, recyclers and refurbishers of the e-waste are required to be registered.
 - (ii) CPCB has developed guidelines for the scientific and environmentally sound management of e-waste. The guidelines detail the procedures and facilities in terms of machineries and pollution control devices required for the recycling of e-waste in environmentally sound manner.
 - (iii) An action plan for implementation of E-Waste (Management) Rules, 2022 has been prepared by CPCB and the same is being implemented by all the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) in their respective States/UTs. SPCBs/PCCs are submitting quarterly progress report.
 - (iv) The registered entities submit their compliance through Quarterly and Annual Returns on the E-waste Portal.
 - (v) The rules have provided verification and audit of the registered entities by the CPCB or through a designated agency to verify compliance of these rules through random inspection and periodic audit, as deemed appropriate, so as to take action against violations of these rules.
 - (vi) Environmental Compensation (EC) Guidelines under E-Waste (Management) Rules, 2022 have been developed for levying EC on any entity in case of violation of any of the provision of these rules and guidelines issued hereunder.
- (d) & (e) Ministry after consultations with concerned Central Ministries/ Department/ Agencies, electronic/electrical manufacturing associations and recyclers associations prepared and published draft notification on 'E-Waste (Management) Rules, 2022' in May, 2022. Considering comments/suggestion received, final notification on 'E-Waste (Management) Rules, 2022 was notified on 2nd November, 2022 and the same is in force since 1st April, 2023. State wise list of registered recyclers are at **Annexure**.

State wise list of registered recyclers as on 20.07.2025

S. No.	State/UTs	No. of Registered E-Waste Recycler
1.	ANDHRA PRADESH	3
2.	ASSAM	1
3.	BIHAR	1
4.	CHHATTISGARH	1
5.	GUJARAT	32
6.	HARYANA	39
7.	HIMACHAL PRADESH	4
8.	JHARKHAND	2
9.	KARNATAKA	49
10.	KERALA	2
11.	MADHYA PRADESH	9
12.	MAHARASHTRA	62
13.	PUNJAB	8
14.	RAJASTHAN	13
15.	TAMIL NADU	14
16.	TELANGANA	17
17.	UTTAR PRADESH	105
18.	UTTARAKHAND	4
19.	WEST BENGAL	9
	Grand Total	375