GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.1274
ANSWERED ON 10.03.2025

DISASTER RESILIENT INFRASTRUCTURE FOR POWER SECTOR (DRIPS)

1274 SMT. JEBI MATHER HISHAM:

Will the Minister of **POWER** be pleased to state:

(a) total allocation and actual expenditure on Disaster Resilient Infrastructure for Power Sector (DRIPS) during last five years, provide State/UT-wise details;

(b) percentage of planned projects that have been completed, provide state/UT-wise details;

(c) measures taken to ensure uninterrupted power supply during natural disasters, provide State/UT-wise details;

(d) steps implemented to restore power supply on a war footing basis post-disaster, provide State/UT-wise details;

(e) current strength of trained personnel for emergency power restoration, provide State/UT-wise details;

(f) whether there are plans to increase this workforce; and

(g) advanced technologies and modern equipment that have been inducted to enhance power sector's disaster resilience, provide State/UT-wise details?

A N S W E R

THE MINISTER OF STATE IN THE MINISTRY OF POWER

(SHRI SHRIPAD NAIK)

(a) to (f) : Electricity being a concurrent subject, supply and distribution of electricity to the consumers is within the purview of the respective State Government/Power Utility. It is the prime responsibility of the State Government/ Power utility to implement disaster resilient infrastructure in disaster prone areas.

There is no separate scheme for providing assistance to States for Disaster Resilient Infrastructure for power sector. However, Disaster resilient infrastructure works specified in the Disaster Management Plan for Power Sector issued by Central Electricity Authority and the Disaster Resilient Works specified by National Disaster Management Authority (NDMA) have been allowed for financial assistance under the ongoing RDSS scheme of Ministry of Power.

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Ministry of Power has prepared the "Disaster Management Plan" for power sector under the provisions of section 37 of the Disaster Management Act, 2005. The plan addresses the emergencies arising due to occurrence of natural hazards such as earthquakes, cyclones, floods, etc. The plan is revised on a regular basis to keep it abreast with the new challenges. Disaster Management Plan for Power Sector published by Central Electricity Authority (CEA) in the year 2022 enumerates the measures required to be taken by Generation, Transmission and Distribution Utilities for Mitigation, Preparedness, Response and Recovery from disasters.

Further, the following provisions for disaster resilience of the system have been provided under Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 and Central Electricity Authority (Grid Standards) Regulations, 2010:

(i) In coastal areas underground cables shall be used.

(ii) Emergency Restoration System (ERS) for restoration of transmission lines of 400 kV and 220 kV lines in order to minimize the outage time of the transmission lines in case of tower failures.

(iii) Gas Insulated Sub-station shall be constructed in seismic prone areas, coastal areas, high altitude areas, very heavily polluted areas etc.

(iv) Aerial Bunched Cables (ABC) or Insulated Cables or covered conductor shall be used in the congested and accident-prone areas.

(v) Wherever required, the vehicle mounted mobile sub-station comprising of trailer, incoming and outgoing high voltage and low voltage gas insulated or hybrid switchgears, power transformer, and associated connectors etc. shall be considered for putting into immediate service to resume power supply in short time in case of emergency or disaster.

In accordance with provisions of Crisis Management Plan (CMP) and Disaster Management Plan (DMP), National Load Despatch Centre (NLDC) has been designated as central control room. Following measures are being taken by the NLDC to deal with crisis/ disaster in the power sector:

(i) Based on the advance warning issued by National Disaster Management Authority (NDMA), advisory containing preventive and contingency measures to be taken for maintaining system reliability and resilience is issued to all the stakeholders.

(ii) Round the clock vigil over the power system scenario is maintained with the help of Supervisory Control and Data Acquisition System/Energy Management System/Wide Area Measurement System (SCADA/EMS/WAMS) by RLDC/NLDC. Measures are taken to maintain system parameters (frequency, voltage, equipment loading).

(iii) Periodic updates on the power supply position, forced outage are shared by NLDC/RLDC (s) with all concerned authorities. Necessary coordination with regional entities/SLDCs is carried out to restore the affected power system elements as soon as possible.

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In addition, mock drill exercises are being conducted periodically by the power utilities in order to be prepared for any eventuality.

(g) : The details of the advanced technologies and modern equipment inducted to enhance the power sector's disaster resilience are indicated below:

(i) Early Warning System (EWS) has been implemented by the Hydro projects to minimize the damage to manpower and equipment.

(ii) MoP launched a Disaster Resource Inventory for Power Sector (DRIPS) portal for managing the inventory of Power System equipments and critical supplies which are essential during the post disaster recovery period to help the utilities to repair the system after any disaster to provide reliable supply to the consumers. Affected States/Organizations can readily see the availability of resources across the country and take quick decisions for requisitioning these resources for mitigating the impact of disaster.

(iii) To strengthen the grid's ability to respond to emergencies, Emergency Restoration Systems (ERS) and extra equipment are used to quickly restore transmission infrastructure. Emergency Response Teams (ERTs) are stationed at key substations and control centres for fast action. Black Start facilities and mobile diesel generators (DG sets) are ready to help restart the system if needed. Phasor Measurement Units (PMUs) monitor real-time faults, improving grid visibility and speeding up corrective actions.

(iv) Ministry of Power has established Computer Security Incident Response Team (CSIRT - Power) as an extended arm of Indian Computer Emergency Response Team (CERT-In) for effective implementation of cyber security measures for the power sector to deal with any crisis due to cyber incidents.

(v) NHPC has inducted several advance technologies and modern equipment to enhance disaster resilience. These include the following:

(I) Internationally used software, ICOLD Bulletins, techniques and engineering codes are used to design flood estimation, Sedimentation Study, Hydrodynamic analysis for hydro-projects.

(II) Early Warning System for flood has been implemented in all Power stations / Projects of NHPC for timely information regarding abnormal increase or decrease in discharge in the river.

(III) To minimize the disasters occurring in hydro projects due to the impacts of climate change especially melting of glaciers, NHPC carries out Glacial Lake Outburst Flood (GLOF) study for all its projects located in Himalayan region in which the glacial lakes in the catchment are identified from various literature, Google earth, WRIS website, NRSC/ISRO reports, ICIMOD reports, and other sources.

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