



Disaster Risk and Resilience Assessment Framework (DRRAF)

For Prelims: [Telecom Service Providers](#), [Department of Telecommunications \(DoT\)](#), [Coalition for Disaster Resilient Infrastructure \(CDRI\)](#),

For Mains: DDRAF Recommendations for Strengthening Telecom Sector, Major Growth Drivers of the Telecom Sector in India, Major Challenges Related to the Telecom Sector in India.

[Source: PIB](#)

Why in News?

The [Department of Telecommunications \(DoT\)](#) in collaboration with the [Coalition for Disaster Resilient Infrastructure \(CDRI\)](#) has launched a report on the **Disaster Risk and Resilience Assessment Framework (DRRAF)**.

- The report, part of **CDRI's study** on National and Sub-national Disaster Risk & Resilience Assessment, aims **to enhance the resilience of India's telecom sector** against natural disasters.

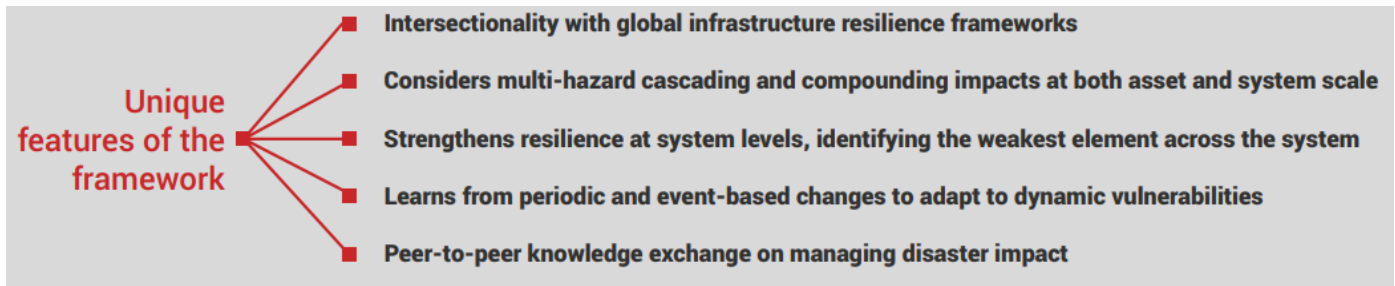
State of Telecom Infrastructure

- Telecom contributes **15% to global GDP** and is projected to reach **USD 2.8 trillion by 2030** (CAGR **6.2%**).
- Disaster risks to infrastructure are rising globally and India is ranked **35th out of 191 countries** in the **UN INFORM Risk Index (2024-25)**.
 - The **UN INFORM Risk Index** is a global, open-source risk assessment tool for humanitarian crises and disasters.
- India faces **high vulnerability** to earthquakes (**58% land area**), floods (**12%**), landslides (**15%**), and forest fires (**10%**), while **5,700 km** of its coastline is at risk from cyclones and tsunamis.

What is Disaster Risk and Resilience Assessment Framework (DRRAF)?

- **About DRRAF:** Developed by **CDRI, DoT, and NDMA**, DDRAF adopts a **system-scale approach covering all** connectivity levels and regions.
 - It aims to reduce infrastructure damage, financial losses, **and enhance emergency connectivity and service restoration** aligning with the **Early Warnings for All (EW4All) by 2027'** initiative.

- **EW4All** was launched by the [UN](#) in **2022** to ensure **global protection from climate-related disasters** through **early warning systems** by year **2027**.
- It assesses and proposes **disaster resilience measures** across **5 key dimensions**:
 - **Technical Planning & Design**: Strengthening telecom infrastructure.
 - **Operations & Maintenance**: Ensuring service continuity.
 - **Policy, Institutions & Processes (PIPs)**: Integrating disaster resilience into governance.
 - **Financial Arrangements**: Promoting risk-sharing mechanisms.
 - **Expertise**: Enhancing sectoral capacity and knowledge exchange.
- It helps stakeholders **identify and address disaster risks** through **targeted resilience measures**.



▪ Key Highlights of the Framework:

- **At State Level**: The study assesses disaster risks in the **telecom sector across 5 states** (Assam, Odisha, Tamil Nadu, Uttarakhand, and Gujarat).
 - The study found that **100% of telecom infrastructure in Assam and Uttarakhand** were exposed to **earthquakes**.
 - **83% of towers in Assam and 57% of towers in Odisha and Tamil Nadu** are affected by **Cyclones**.
 - **43% of the towers of Assam** are exposed to **Floods, followed by Tamil Nadu (33%), Odisha and Gujarat**.
- **At National Level**: A national assessment of 0.77 million telecom towers found **75% exposed to lightning, followed by cyclones (57%), earthquakes (27%), and floods (17%)**.
- **Disaster Risk and Resilience Index (DRRI)**: A new index (**DRRI**) has been developed to assess **telecom tower vulnerability** across different terrains (mountain, plain, coast) based on intensity, frequency, duration, and spatial extent of hazards.

▪ Challenges to Telecom Infrastructure:

- **Structural Vulnerability**: Telecom towers, especially in **coastal areas**, are prone to **damage from high winds and cyclones**.
 - Overhead **fiber-optic cables** are more fragile than underground networks.
- **Power Disruptions**: **Prolonged outages and fuel shortages** for backup generators impact network functionality.
- **Risk to Undersea Cables**: Damage to undersea cable landing stations can disrupt national connectivity, with **repairs requiring specialized equipment and time**.

Read More: [What are the Major Challenges Related to the Telecom Sector in India?](#)

What are the Key Recommendations of the Report for Resilient Telecom Infrastructure?

- **Enhancing Technical Planning & Design**: Strengthen **network redundancy**, submarine cable protection, and **seismic resilience** of telecom towers.
 - Improve interoperability, power backup for data centers, and fiber optic cable protection using common ducts in roads.
- **Developing a Multi-Hazard Information Repository**: Enhance **disaster impact data collection**, develop **sub-district-level multi-hazard zonation maps**, and identify **critical telecom infrastructure** for uninterrupted service.

- **Risk-Informed Governance:** Improve **disaster forecasting**, enforce **resilient building codes** and upgrade the **Sanchar Saathi** portal for grievance redressal.
- **Developing Risk-Sharing Instruments:** Introduce **Parametric Insurance** to enhance financial resilience of telecom operators by providing **predefined payouts based on disaster triggers, ensuring faster recovery.**
- **Enhance Stakeholder Collaboration:** By creating a knowledge-sharing platform, uninterrupted power supply, and establishing **dedicated telecom infrastructure at critical industrial zones** and disaster shelters.

Read More: [What Measures can be Adopt to Revamp India's Telecom Sector?](#)

Drishti Mains Question:

Discuss the vulnerabilities of India's telecom sector to natural disasters and suggest measures to enhance its resilience.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. In India, which of the following review the Independent regulators in sectors like telecommunications, insurance, electricity, etc.? (2019)

1. Ad Hoc Committees set up by the Parliament
2. Parliamentary Department Related Standing Committees
3. Finance Commission
4. Financial Sector Legislative Reforms Commission
5. NITI Aayog

Select the correct answer using the code given below:

- (a) 1 and 2
- (b) 1, 3 and 4
- (c) 3, 4 and 5
- (d) 2 and 5

Ans: (a)

Q. In India, the term “Public Key Infrastructure” is used in the context of (2020)

- (a) Digital security infrastructure
- (b) Food security infrastructure
- (c) Health care and education infrastructure
- (d) Telecommunication and transportation infrastructure

Ans: (a)

Q. Which of the following is/are the aims/aims of the “Digital India” Plan of the Government of India? (2018)

1. Formation of India's own Internet companies like China did.
2. Establish a policy framework to encourage overseas multinational corporations that collect Big Data to build their large data centres within our national geographical boundaries.
3. Connect many of our villages to the Internet and bring Wi-Fi to many of our schools, public places and major tourist centres.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: (b)

PDF Reference URL: <https://www.drishtiias.com/printpdf/disaster-risk-and-resilience-assessment-framework-drraf>

