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Counting People is Not Counting Disaster Risk

Context

- India is one of the most disaster-prone countries in the world, with varying degrees of vulnerability across its States; **Odisha stands out** due to its long coastline and repeated exposure to severe cyclones.
- Over the past two decades, Odisha has significantly improved its disaster preparedness, reducing cyclone-related deaths to near zero through investments in early warning systems, evacuation mechanisms, and infrastructure.
- Despite this progress and high exposure to natural hazards, **the 16th Finance Commission** has reduced Odisha's share in disaster funding.
- This paradox highlights **deeper structural issues** in the Commission's allocation formula, raising concerns about the effectiveness and fairness of disaster risk assessment in India.

The Revised Disaster Risk Framework

- **Shift from Additive to Multiplicative Model**

- The 16th Finance Commission introduced a Disaster Risk Index (DRI) based on a multiplicative formula:
- **$DRI = Hazard \times Exposure \times Vulnerability$**
- This marks a departure from the additive approach used by the 15th Finance Commission.
- The new model is theoretically sound, as it reflects the idea that disasters occur only when hazards intersect with exposed and vulnerable populations.
- This new model is **consistent with frameworks proposed by the Intergovernmental Panel on Climate Change**.

- **Increase in Overall Allocation**

- The Commission allocated ₹2,04,401 crore to State Disaster Response Funds, representing a 59.5% increase compared to the previous Commission.
- While this increase is significant, the distribution methodology has produced uneven and controversial outcomes.

Key Flaws in the Allocation Formula

- **Misrepresentation of Exposure**

- The Commission measures exposure using total State population, scaled linearly. This approach is flawed because:
 - Exposure, as defined by the IPCC, refers to populations in hazard-prone areas, not total population.
 - It ignores geographical distribution and concentration of risk.
- As a result, populous States such as Uttar Pradesh and Bihar receive disproportionately high exposure scores, even if large portions of their populations are relatively safe.

- **Impact on Smaller but High-Risk States**

- Despite having the highest hazard score, Odisha receives a lower Disaster Risk Index due to its smaller population.
- This demonstrates that the formula prioritizes demographic size over actual risk exposure.

- **Oversimplified Measurement of Vulnerability**

- Vulnerability is calculated using per capita Net State Domestic Product (NSDP), inverted so that poorer States rank higher.
- While this captures fiscal capacity, it fails to account for:
 - Housing quality
 - Healthcare infrastructure
 - Early warning systems
 - Livelihood dependence on climate-sensitive sectors

- **Case Example: Kerala**

- Kerala, despite experiencing devastating floods in 2018, receives a low vulnerability score due to its relatively high per capita income.
- This highlights how economic averages mask real disaster vulnerability.
- **Case Example: Jharkhand**
 - Jharkhand, though highly vulnerable due to poverty and structural fragility, loses funding share because its population size does not sufficiently boost its overall risk score.
- **Bias Toward Population Size**
 - The multiplicative nature of the formula amplifies the influence of population:
 - Larger States gain disproportionately higher DRI scores
 - Smaller or moderately populated States are penalized
 - Twenty States have lost funding share despite facing real risks
 - This outcome contradicts the objective of a risk-based allocation system.

Consequences of the Current Framework

- The flaws in the formula lead to several critical issues:
 - Misallocation of disaster funds
 - Underserving high-risk but less populous States
 - Ignoring intra-state inequalities
 - Weak alignment with real-world disaster patterns
- Ultimately, the **current model reduces disaster risk assessment** to a population-based calculation rather than a scientifically grounded evaluation.

Proposed Reforms

- **Redefining Exposure**
 - Exposure should be measured as the population residing in hazard-prone areas, such as:
 - Coastal cyclone zones
 - Floodplains
 - Earthquake-prone regions
 - Data from the Building Materials and Technology Promotion Council Vulnerability Atlas and Census records can enable precise mapping.
- **Developing a Composite Vulnerability Index**
 - Vulnerability should include multiple indicators, such as:
 - Housing conditions
 - Health infrastructure
 - Agricultural dependence
 - Insurance coverage
 - Effectiveness of early warning systems
 - These can be derived from national datasets and surveys.
- **Institutionalising Risk Assessment**

- The National Disaster Management Authority should be mandated to develop and publish a standardized Disaster Vulnerability Index.
- This would ensure consistency, transparency, and scientific accuracy in future allocations.

Conclusion

- As climate change intensifies the frequency and severity of natural disasters, the **need for an accurate and equitable disaster funding** framework becomes increasingly urgent.
- States like Odisha, which face high hazard exposure and have invested heavily in preparedness, must not be penalized by flawed methodologies.
- The current allocation model of the 16th Finance Commission, while theoretically sound, fails in its execution.
- **A meaningful reform** must prioritise real exposure and multidimensional vulnerability over simplistic metrics.
- Only then can disaster finance in India move beyond a mere headcount to become a true reflection of risk and resilience.

Counting People is Not Counting Disaster Risk FAQs

Q1. Why is Odisha considered highly disaster-prone?

Ans. Odisha is highly disaster-prone because its long coastline is frequently exposed to severe cyclones.

Q2. What major change was introduced by the 16th Finance Commission in disaster funding allocation?

Ans. The 16th Finance Commission introduced a multiplicative Disaster Risk Index based on hazard, exposure, and vulnerability.

Q3. Why is the use of total population as a measure of exposure flawed?

Ans. The use of total population is flawed because it does not reflect the number of people living in hazard-prone areas.

Q4. How does the formula misrepresent vulnerability in States like Kerala?

The formula misrepresents vulnerability by relying on per capita income, which ignores real disaster risks and infrastructure conditions.

Q5. What role is suggested for the National Disaster Management Authority?

Ans. The National Disaster Management Authority is suggested to develop a standardised disaster vulnerability index for accurate funding allocation.

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