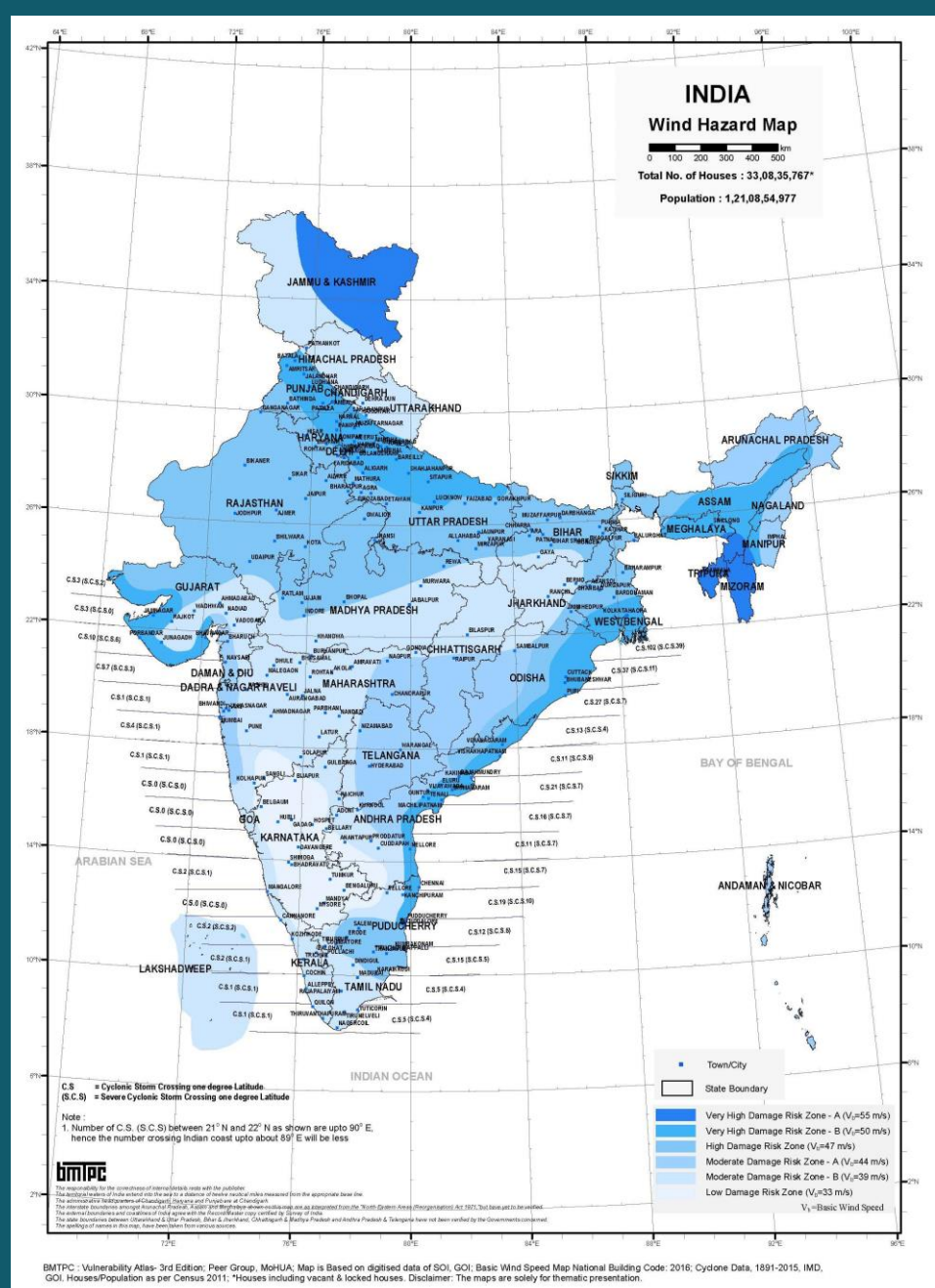
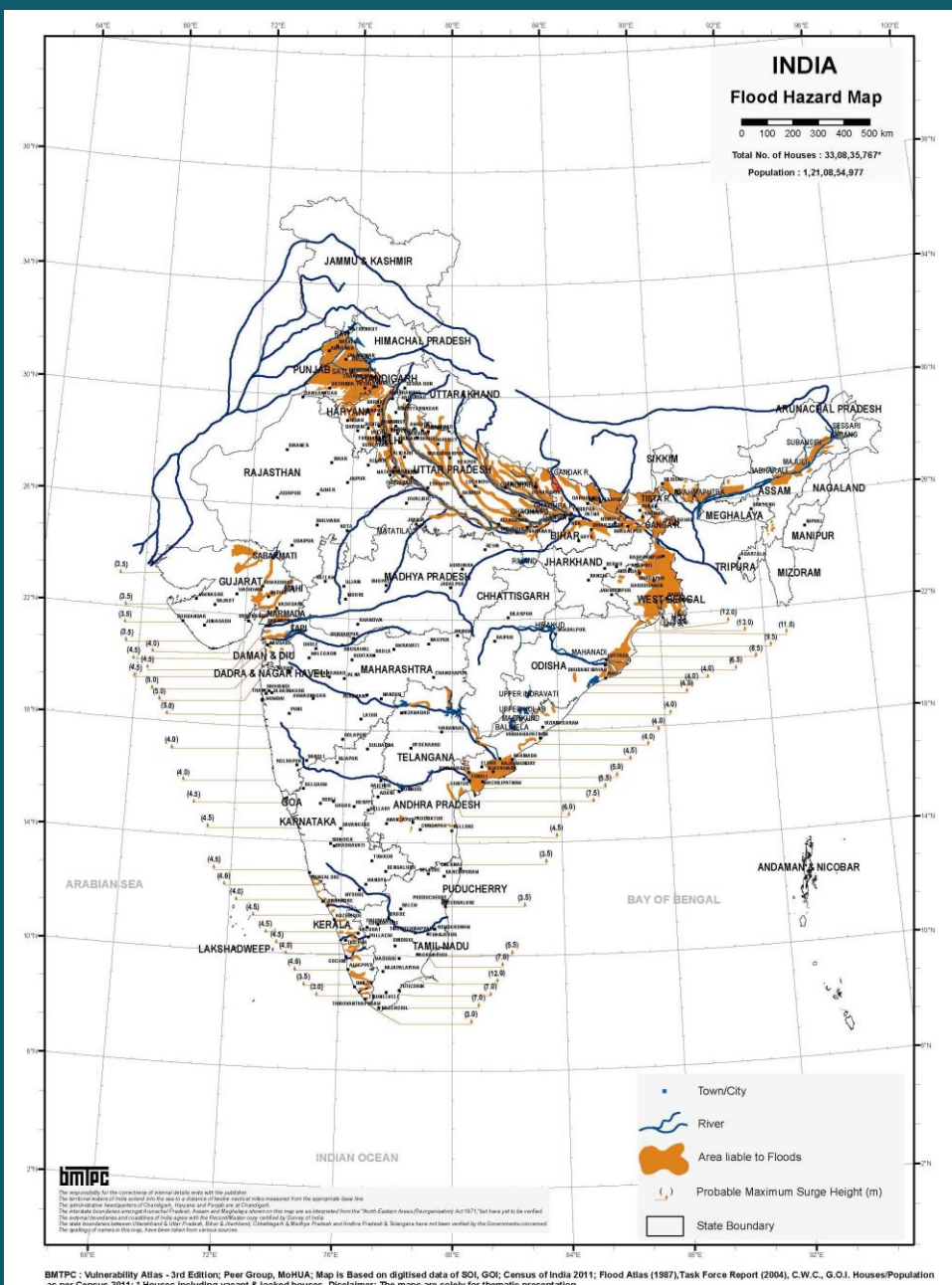
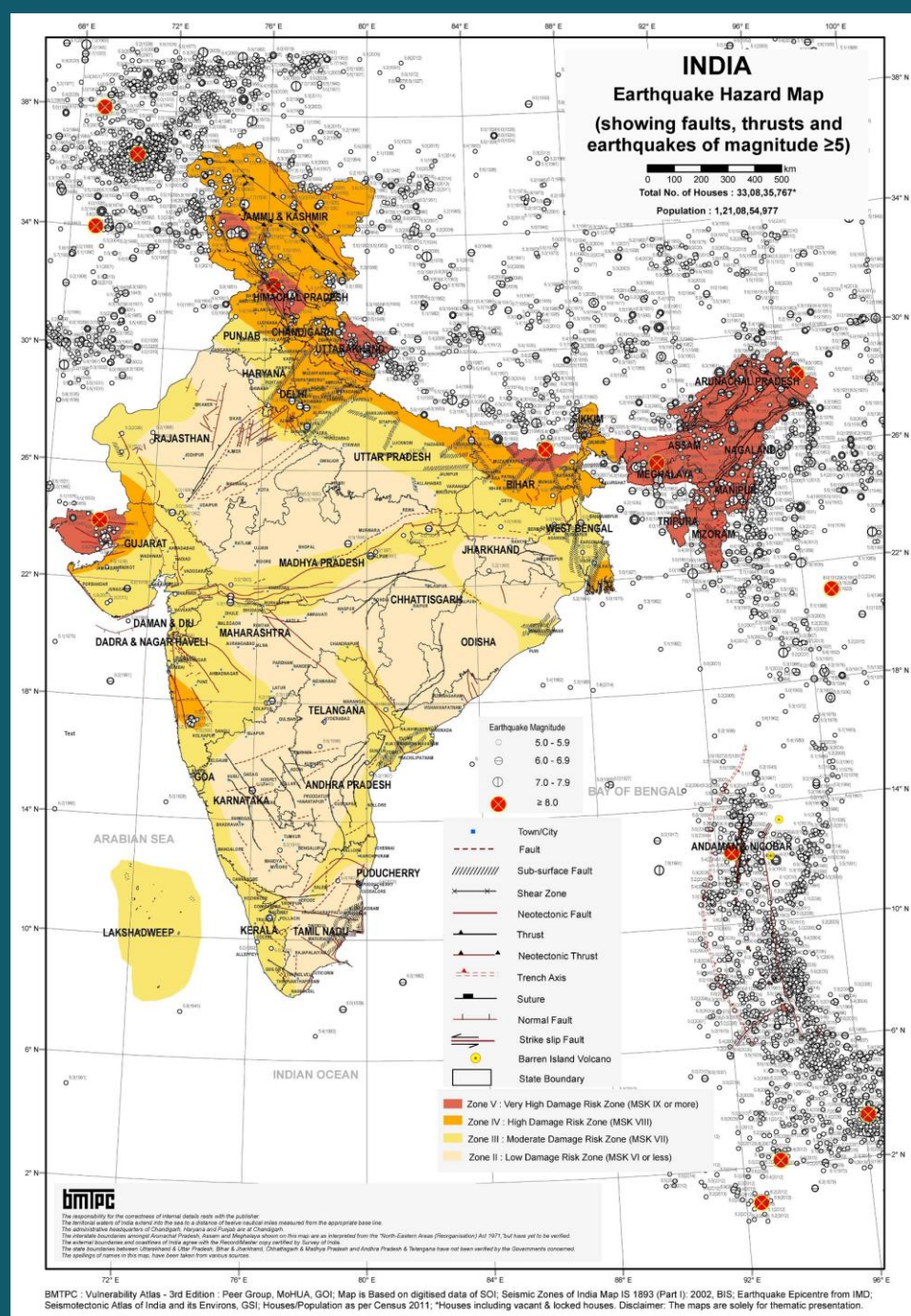


NEED FOR DISASTER RISK RESILIENCE: A CASE OF INDIA



A CASE OF INDIA



In the research article published by Manish Sharma, Nand Kumar and Ashwani Kumar in 2017, the need to resist **urban disaster risk in Indian cities** was generally determined through **disaster profiling** of various regions in India, socially, economically and spatially.

METHOD

While analyzing the disaster profile of India, the data of “Building Materials and Technology Promotion Council (BMTPC)” which is affiliated to the ministry of urban development as a branch of the Indian government has been used. “**The Vulnerability Atlas of India**” has been created by city planners, cartographers, and experts within the body of BMTPC. Survey of India (GSI), Census of India, Bureau of Indian Standards (BIS) are data from Central Water Commission (CWC). (BIS), Central Water Commission (CWC). Atlas has been updated 3 times, in 1997, 2006 and 2019. Published by BMTPC, which specializes in **disaster mitigation and management**, India's **Vulnerability Atlas** is widely used by state governments and agencies as a valuable guide for the development of micro-level action plans to **mitigate the impact of natural disasters**.

In addition, as the main method, these equations have been developed and referenced in the atlas:

$$\text{Resilience} = (\text{Hazard} * \text{Vulnerability}) - \text{Capacity}$$

$$\text{Risk at any place} = [(\text{Hazard} * \text{Vulnerability}) * \text{exposure}] / \text{Capacity}$$

In India, with many vulnerable populations, **disaster risks**, changing topographic profile, diversified socioeconomic profile of people, **unplanned urbanization**, poor institutional and governance, poor infrastructure, uncontrolled development in **high-risk disaster-prone areas**, high human density, epidemics, increased **vulnerabilities** related to **climate change**; risks increase even more.

Briefly, the need for resilience was calculated using the maps of **earthquake, wind, flood hazards** created by India by analyzing the existing housing, population and demographic, spatial characteristics. In the article, **the need for disaster risk resilience** in India has been advocated and the responsibilities and spatial visualizations of the government have been undertaken as a result of the analyzes and spatial visualizations. In addition, online and one-to-one lessons are given by BMTPC on the subject of “**Prevention and Adaptation**”.

KEY WORDS:

VULNERABILITY PROFILE **RESILIENCE**
DISASTER MANAGEMENT **DISASTER LOSS**

CONCLUSION

According to make an inference from the article, Indian cities and other cities in developing countries are at **risk of disasters and climate change** for various reasons. The transformation of a danger into a **disaster** event is based on the fundamental development challenges India faces today and contributes to enhancing its **vulnerability to disaster events**. The environment is deteriorating due to urban growth, **rural and urban poverty persistence, exploitation of natural resources**, environment and inefficient governance and institutional structure, and inadequate service and infrastructure. Current policy and institutional structure should focus on dealing with emergencies and **reducing the vulnerability**, strengthening the **resilience framework** that includes strengthening infrastructure, economic, political and social aspects with **reducing and preventing disaster risk**.

In addition, by promoting awareness campaigns, promoting good urban governance structure, well-informed local governments and sensitive residents is crucial to increase the **city resilience**.

REFERENCES:

- Sharma, M., Kumar, N., Kumar, A., 2017, Need for Disaster Risk Resilience: A case of India, International Research Journal of Engineering and Technology (IRJET), Vol:04, Pg:335-339 retrieved from: <https://www.irjet.net/archives/V4/i11/IRJET-V4I1159.pdf>
- BMTPC, 2019, Vulnerability Atlas Of India (natural Hazard Maps And Damage Risk To Housing), 3rd Edition, Retrieved From: <https://bmtpc.org/DataFiles/CMS/file/VAI2019/background.pdf>

EQUATION OF DISASTER RISK

$$[R = H * V - C]$$

R = RESILIENCE
H = HAZARD
V = VULNERABILITY
C = CAPACITY

Table -1: Countries with highest numbers of deaths due to natural disasters during the period 1997-2017

Sr. No.	Country	No. of deaths
1	Haiti	237382
2	Indonesia	185051
3	Myanmar	139715
4	China	120100
5	India	98700
6	Pakistan	85904
7	Russian Federation (the)	58571
8	Sri Lanka	37574
9	Iran (Islamic Republic of)	32248
10	Venezuela (Bolivarian Republic of)	30319

Source: Extracted from EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium [22]

Table -2: Countries with highest numbers of deaths due to natural disasters during the period 1997-2017

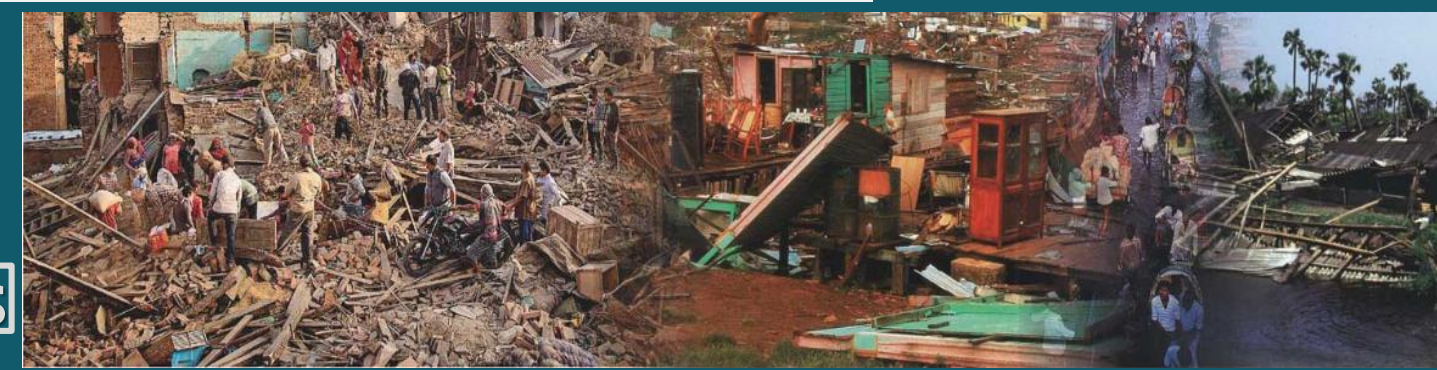
Year	People Affected (million)	Human lives lost due to flood/cyclone/hail storm/earthquake	Houses and Buildings Property Damaged	Amount of Damage or Loss (Rs. Crore)
1990	31.7		1,019,930	10.71
1991	342.7	2299	1,190,109	10.9
1992	190.9	2257	570,969	20.05
1993	262.4	1690	1,529,916	50.8
1994	235.3	9946	1,051,223	10.83
1995	543.5	2344	2,088,355	40.73
1996	549.9	2464	2,376,693	50.43
1997	443.8	3828	1,103,549	NA
1998	521.7	2062	1,563,405	0.72
1999	501.7	3965	3,104,064	1020.97
2000	594.34	12585	2,736,355	800
2001	788.19	>23048	846,878	12000

Source: (Singh, 2017) [23]

Table -3: Trends in India's urbanization: 1961-2011

Census Year	Urban Population (in million)	Percentage urban	Annual exponent of growth rate (%)
1961	78.94	17.97	-
1971	109.11	19.91	3.23
1981	159.46	23.34	3.79
1991	217.18	25.72	3.09
2001	286.12	27.86	2.75
2011	377.10	31.16	2.76

Note: As the 1981 Census was not conducted in Assam, and the 1991 Census was not held in Jammu and Kashmir, the population of India includes projected figures for these states in both those periods. Source: (Tripathi, 2013)



IZMIR INSTITUTE OF TECHNOLOGY
FACULTY OF ARCHITECTURE
CITY & REGIONAL PLANNING
CP385-CASE STUDIES ON
CITY PLANNING & DESIGN
2019-2020 SPRING SEMESTER
LECTURER: DR. DENİZ GERÇEK KURT

02.07.2020

AYŞENUR AYTULUN - 24030212