

DISASTER IN INDIA: THE CRY OF THE DAY

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ETYMOLOGICAL MEANING OF DISASTER:

‘Desastre’ is a combination of two terms- ‘Des’ and ‘Astre’. ‘Des’ means bad or evil and ‘Astre’ means star, thus ‘Desastre’ signifying a ‘Bad Star’ or ‘Evil Star’. The root of the word disaster (‘Bad Star’ in Greek and Latin) comes from an astrological theme in which the ancients used to refer to the destruction or deconstruction of a star as a disaster (Ministry of Home Affairs, GOI). So, it may be defined that, as an unexpected happening, causing a huge loss of life and property (Chakraborty & Chakraborty: 2014).

DEFINITION OF DISASTER:

According to International Federation of Red Cross and Red Crescent Societies, disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. The Disaster Management Act, 2005 defines disaster as ‘a condition, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area’. According to UNISDR, a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. The United Nations defines disaster as ‘the occurrence of sudden or major misfortune which disrupts the basic fabric and normal functioning of the society or community’. According to United Nations Development Programme (UNDP) a disaster is defined as ‘a social crisis situation occurring when a physical phenomenon of natural, socio-natural or anthropogenic origin negatively impacts vulnerable populations causing intense, serious and widespread disruption of the normal functioning of the

affected social unit'. Disaster has been defined by WHO as 'any occurrence that causes damage, ecological disruption, loss of human life, deterioration of health and health services on a scale of sufficient to warrant an extra-ordinary response from outside the affected community or area'.

TYPES OF DISASTER:

Disaster may be of two types:

- (01) Natural Disaster (No case within the controlling capability of human being): Earthquake, landslides, volcanic eruptions, floods, tsunami, cyclones etc.
- (02) Man Made Disaster (Human beings are responsible for it).

High Powered Committee (HPC) identified thirty one disasters, categorized into five sub-groups (depending on generic considerations and various departments or ministries dealing with various aspects) in the country. Such as:

- ❖ **Sub-Group 1-Water and Climate Related Disasters:** It includes floods and drainage management, cyclones, tornadoes and hurricanes, hailstorm, cloud burst, heat wave and cold wave, snow avalanches, droughts, sea erosion and thunder and lightning.
- ❖ **Sub-Group 2-Geologically Related Disasters:** It includes landslides and mudflows, earthquake, dam failures or dam bursts and mine fires.
- ❖ **Sub-Group 3-Chemical, Industrial and nuclear Related Disasters:** It includes chemical and industrial and nuclear disasters.
- ❖ **Sub-Group 4-Accident Related Disasters:** it includes forest fires, urban fires, mines flooding oil spill, major building collapse, serial bomb blasts, festival related disasters, electrical disasters and fires, road and rail accidents, boat capsizing and village fire.
- ❖ **Sub-Group 5-Biologically Related Disasters:** It includes Biological disasters and epidemics, pest attacks, cattle epidemics and food poisoning.

CAUSES OF DISASTER:

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. The unique geo-climatic

conditions of the Indian sub-continent make this region, among the most vulnerable to natural disasters in the world (Narayan: 2000). The Indian sub-continent is highly vulnerable to drought, floods, cyclones and earthquakes. The vulnerability of the Indian sub-continent towards disasters, both natural and man made, is widely recognized. Its unique sub-continental dimensions, coupled with facts like its geographical location and the behavior of the monsoon, make it as one of the most hazard prone countries in the world. India is vulnerable to various natural disasters like floods, droughts, cyclone, earthquakes, landslides, avalanches, forest fires and the like (Gupta: 2003).

VARIOUS DISASTERS IN INDIA:

❖ **Flood:** A flood may be termed as overflow of water that submerges land. The European Union (EU) floods Directive defines a flood as a covering by water of land not normally covered by water. In the sense of “flowing water”, the word may also be applied to the inflow of the tide. India is one of the most flood prone countries in the world. The principal reasons for flood lie in the very nature of natural ecological systems in this country, namely, the monsoon, the highly silted river systems and the steep and highly erodible mountains, particularly those of the Himalayan ranges (Ministry of home Affairs, GOI). The average area affected by floods annually is about 8 million hectares while the total area in India liable to floods is 40 million hectares in which Uttar Pradesh has 21.9%, Bihar(12.71%), Assam(9.4%), West Bengal(7.91%), Orissa(4.18%), and other states have 43.9% flood prone area (Sharma & Asutosh, Yojana, March 2012).

❖ **Droughts:** Drought is defined as an acute shortage of water and crop failure that results when the average rainfall is very less than the normal. A drought is an abnormally dry period when there is not enough water to support agriculture, urban or environmental water needs (Shagufta: 2012). Drought is a perennial feature in some states of India. 16% of the country’s total area is drought prone and approximately 50 million people are annually affected by droughts. Infact, persistent drought with less than average rainfall over a long period of time gives rise to serious environmental problems (Sharma & Asutosh, Yojana, March 2012).

❖ **Tropical Cyclones:** The major natural disaster that affects the costal regions of India is cyclone and as India has a coastline of about 7516 kms, it is exposed to nearly 10% of the world’s tropical cyclones (Ministry of home Affairs, GOI). The states of Andhra Pradesh, Odisha, Tamil Nadu and West Bengal on the Eastern coast and Gujarat on the western coast are more vulnerable to cyclone disasters. Tropical cyclones occur mainly in May-June and October-November with primary peak in November and secondary peak in May (Khan & Others, July 2014).

❖ **Heat Wave:** A heat wave is a hazard characterized by heat which is considered extreme and unusual in the area in which it occurs. Extreme positive departures from the normal maximum temperature result in a heat wave during the summer season. Heat waves are rare and require specific combinations of weather events to take place, and may include temperature inversions, katabatic winds or other phenomena (Shagufta: 2012).

❖ **Earthquake:** In recent years, a number of earthquakes have caused thousands of deaths and huge economic losses in India. An earthquake is caused due to sudden release of energy in the Earth's crust that creates seismic waves. So far as the fury of the nature is concerned, earthquake may be regarded as one of the most dangerous and devastating natural hazards. Most of the vulnerable areas are generally located in the Himalayan and sub Himalayan regions, and in Andaman and Nicobar islands. In India, the Himalayan, the sub Himalayan regions, Andaman and Nicobar islands are most vulnerable zone with regard to earthquake(Chakrabarty & Chakrabarty: July 2014).

❖ **Biological Disasters:** Biological disaster define the devastating effects caused by an enormous spread of a certain kind of living organism- that may spread a disease, virus or infestations of plant, animal or insect life on an epidemic or pandemic level. Cholera and influenza H1N1 (Swineflu) outbreaks are examples of biological disasters. Epidemic level biological disasters affect large numbers of people within a given community or area, whereas pandemic-level biological disasters effect a much larger region, sometimes spanning entire continents or the globe. Cholera is an epidemic level biological disaster, while swine flu is a pandemic. Other epidemic examples include Ebola, Dangué fever, Malaria and the Measles (Sood, Yojana, January 2017)

Disaster Management Act- 2005: The Disaster Management Act- 2005, provides for the effective management of disasters and for all matters connected therewith or incidental. It provides for an institutional and operational framework at all levels for disaster prevention, mitigation, preparedness, response, recovery and rehabilitation and for biological disasters, necessary quarantine measures will be legally instituted using private sector health facilities also for comprehensive patient care (Sood, Yojana, January 2017). The Act provides for establishment of:

- National Disaster Management Authority(NDMA)
- State Disaster Management Authority(SDMA)
- District Disaster Management Authority(DDMA)

INDIA IS PLANNING TO ACHIEVE DISASTER RISK REDUCTION BY IMPLEMENTING THE FOLLOWING:

- Identification of key programme or projects of Government of India;
- Identification of entry points within the programme for integration of DRR(structural, nonstructural and other mitigation measures) at various levels viz. national, state and district levels;
- Close co-ordination with concerned departments such as State Planning Commission and Finance Department for promoting DRR measures into development plans and policies;
- Advocacy for allocation of dedicated budget for DRR within the departmental plans;
- Preparation of guidelines for integration of disaster risk reduction measures into development plans of various departments at the district and sub-district levels (DM in India, 2011).

Major Cyclones of India and Bangladesh

Year	Name of the Country	No. of Deaths	Storm surge (Height in ft.)
1737	Hoogli, West Bengal(India)	3,00,000	40'
1876	Bakerganj(Bangladesh)	2,50,000	10'-40'
1885	False Point(Orissa,India)	5,000	22'
1960	Bangladesh	5,490	19'
1961	Bangladesh	11,468	16'
1970	Bangladesh	2,00,000	13'-17'
1971	Paradeep, (Orissa,India)	10,000	7'-20'
1977	Chirala,Andhra Pradesh	10,000	16'-18'
1990	Andhra Pradesh	990	13'-17'
1991	Bangladesh	1,38,000	7'-20'
1998	Probander Cyclone	1,173	--
1999	Paradeep, (Orissa,India)	9,885	30'

Source: IMD Disastrous Weather Events Annual Reports

Number of Heat Waves in India

State	Epoch				1911-2009
	1911-67	1968-77	1978-99	2000-2009	
West Bengal	31	2	28	6	67
Bihar	76	9	28	4	117
Uttar Pradesh	105	6	23	--	134
Rajasthan	27	3	42	14	56
Gujarat,Saurashtra & Kutch	43	1	7	2	53
Punjab	--	2	--	6	8
Himachal Pradesh	--	1	--	1	2
Jammu & Kashmir	--	--	--	--	--
Maharashtra	26	5	35	12	78
Madhya Pradesh	32	4	15	5	56
Orissa	25	8	18	22	73
Andhra Pradesh	21	--	3	2	26
Assam	--	4	19	--	23
Haryana,Delhi & Chandigarh	--	1	2	2	5
Tamil Nadu	5	--	2	1	8
Karnataka	--	--	--	1	1

Source: IMD Disastrous Weather Events Annual Reports, EMDT

Some Significant Earthquakes in India

Date	Epicenter		Location	Magnitude
	Lat(Deg . N)	Lat(Deg. E)		
16 th June 1819	23.6	68.6	Kutch,Gujarat	8.0
10 th June 1869	25	93	Near Cachar,Assam	7.5
30 th May 1885	34.1	74.6	Sopor, J & K	7.0
12 th June 1897	26	91	Shilong Plateau	8.7
4 th April 1905	32.3	76.3	Kangra, HP	8.0
8 th July 1918	24.5	91.0	Srimangal, Assam	7.6
2 nd July 1930	25.8	90.2	Dhubri, Assam	7.1
15 th January 1934	26.6	86.8	Bihar-Nepal Border	8.3
26 th June 1941	12.4	92.5	Andaman Island	8.1
23 rd October 1943	26.8	94.0	Assam	7.2

15 th August 1950	28.5	96.7	Arunachal Pradesh-China Border	8.5
21 st July 1856	23.3	70.0	Anjar, Gujarat	7.0
10 th December 1967	17.37	73.75	Koyna, Maharashtra	6.5
19 th June 1975	32.38	78.49	Kinnuar, HP	6.2
6 th August 1988	25.13	95.15	Manipur-Myanmar Border	6.6
21 st August 1988	26.72	86.63	Bihar-Nepal Border	6.4
20 th October 1991	30.75	78.86	Uttarkhashi, Uttarakhand	6.6
30 th September 1993	18.07	76.62	Latur-Osmanabad, Maharashtra	6.3
22 nd May 1997	23.08	80.06	Jabalpur, MP	6.0
29 th March 1999	30.41	79.42	Chamoli Dist, Uttarakhand	6.8
26 th January 2001	23.40	70.28	Bhuj, Gujarat	7.7
8 th October 2005	34.49	73.15	Kashmir	7.6
<i>Source: IMD Disastrous Weather Events Annual Reports, EMDT</i>				

Year wise Chemical Disasters in Past Decade

SL No.	Year	No. of Incidents	No. of Deaths	No. of Injured	States where the incidents were recorded
01.	2002	06	05	31	Gujarat, Kerala, Maharashtra
02.	2003	06	11	112	AP, Assam, Kerala, MP, Punjab
03.	2004	18	47	91	AP, Gujarat, Haryana, Kerala, MP, Maharashtra, Punjab, Tamilnadu, Uttarakhand, West Bengal, Delhi
04.	2005	11	15	14	AP, Assam, Gujarat, Kerala, Tamilnadu, Uttar Pradesh
05.	2006	16	32	24	AP, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Uttarakhand, Uttar Pradesh, West Bengal
06.	2007	18	37	14	Assam, Gujarat, Kerala, MP, Maharashtra, Punjab, Uttarakhand, West Bengal
07.	2008	23	50	148	AP, Gujarat, Jharkhand, Kerala, Maharashtra, Uttar Pradesh
08.	2009	24	50	128	AP, Assam, Haryana, Kerala, MP, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand, West Bengal
09.	2010	08	12	01	AP, Assam, Maharashtra, Punjab, Uttar Pradesh
TOTAL		130	259	563	
<i>Source: Ministry of Environment and Forests</i>					

Major Stampedes in India: 2005-2010

Month & year	Event	No. of Deaths	Injured
January 2005	Hindu pilgrims stampede near a remote temple in Maharashtra, India	265	--
December 2005	Flood relief supplies were handed out to homeless refugees in southern India	42	--
October 3, 2007	Train station in northern India	14	
March 27, 2008	Indian temple crush during a pilgrimage	8	10
August 3, 2008	At the Naina Devi temple in Himachal Pradesh	138	47
September 30, 2008	At the Chamunda Devi temple in Jodhpur, India	147	--
March 4, 2010	At Ram Janki Temple in Kunda, India	71	200
January 14, 2011	At Sabarimala, Kerala	104	50
<i>Source: NIDM</i>			

Incidents of Nuclear Facilities in India

Date & Month	Place	Event
4 th May 1987	Kalapakkam, India	In an incident during refueling of FBTR, structural deformation happened in some of the fuel assemblies. There was no release of radioactivity. The reactor remained shut down for about two years for restoration which involved development of special tools, inspection and removal of affected fuel assemblies.
13 th May 1992	Tarapur, Maharashtra, India	There was minor tube leak in one heat exchanger which was subsequently replaced. Radioactivity released was within the regulated limits.
31 st March 1993	Bulandshahr, Uttar Pradesh, India	A fire occurred in Turbine building which is not a part of reactor system. This resulted in damage of the steam turbine blades. The reactor was brought to safe shutdown state. The unit was restarted after Regulatory system.
22 nd October 2002	Kalapakkam, India	About 75 kg of sodium from primary sodium purification line at Fast Breeder Test Reactor leaked inside the purification cabin. There was no fire or any release of radioactivity.
April 2010	Mayapuri, Delhi, India	In a radiological accident, an irradiator was sold to metal scrap dealer. The dealer dismantled the irradiator which caused release of radioactive source resulting the exposure to a worker in the shop leads to one fatality.
<i>Source: Babha Atomic Research Centre, Mumbai</i>		

All India Share of Select States (in %): Road Accidents and Registered Motor Vehicles

State/UT	2005	2006	2007	2008(P)
Top 5 States: Share in Total Number of Road Accidents (in %)				
Share of 5 States	54.4	55.4	55.4	55.4
01) Maharashtra	16.5	16.4	15.4	15.6
02) Tamilnadu	12.3	12.0	12.3	12.5
03) Karnataka	9.2	9.4	9.7	9.5
04) Madhya Pradesh	8.0	8.3	8.8	9.0
05) Andhra Pradesh	8.5	9.5	9.2	8.8
Share of the above 5 States in total Registered Vehicle	43.3	43.6	--	--

Source: Transport Research Wing, Ministry of Road Transport & Highways, GOI

Ten Deadliest Natural Disasters

Ran k	Death toll (Estimate)	Event	Location	Date
01.	1,000,000-2,500,000*	China Floods	China	July, November, 1931
02.	900,000-2,000,000	Yellow River Flood	China	September, October, 1887
03.	830,000	Shaanxi Earthquake	Shaanxi Province	January 23, 1556
04.	500,000	Bhola Cyclone	East Pakistan(Now Bangladesh)	November 13, 1970
05.	300,000	India Cyclone	India	November 25, 1839
06.	250,000-300,000	Antioch Earthquake	Antioch, Byzantine Empire (Now Turkey)	May, 1926
07.	242,419(the death toll has been estimated to be as high as 665,000)	Tangshan Earthquake	Tangshan, Hebei, China	July 28, 1976
08.	234,117	Haiyuan Earthquake	Haiyuan, Ningxia-Gansu, China	December 16, 1920
09.	230,210	Indian Ocean Tsunami	Sumatra, Indonesia and also affected India, Srilanka, Maldives	December 26, 2004
10.	222,570	Haiti Earthquake	Port-au-Prince, Haiti	January 12, 2010

*(Source: Shagufta: 2012)(*Estimate by Nova's sources are close to 4 million and yet Encarta's sources report as few as 1 million. Expert estimates report wide variance)*

**Year-wise damage caused due to Floods, Cyclone, Storms,
Landslides, etc during last Ten Years in India**

Year	Live Lost Human (In No.)	Cattle Lost (In No.)	Houses Damaged (In No.)	Cropped areas affected(In Lakh Hectares)
2001-02	834	21,269	3,46,878	18.72
2002-03	898	3,729	4,62,700	21.00
2003-04	1,992	25,393	6,82,209	31.98
2004-05	1,995	12,389	16,03,300	32.53
2005-06	2,698	1,10,997	21,20,012	35.52
2006-07	2,402	4,55,619	19,34,680	70.87
2007-08	3,764	1,19,218	35,27,041	85.13
2008-09	3,405	53,833	16,46,905	35.56
2009-10	1,677	1,28,452	13,59,725	47.13
2010-11	2,310	48,778	13,38,619	46.25
<i>Source: Ministry of Home Affairs(MHA)</i>				

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