Planning for Disaster Management in India using IOT

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Abstract— This paper, focuses on challenges of natural disasters in India as well as the tools-technologies for cope up with those challenges.. Disaster Management consists the management functionalities such as planning, organizing, staffing, leading and controlling. Analysis based on past events, ICT technologies for disaster management is used. In this we also provided comparisons of existing various systems which is based on IoT. The purpose of this study is to "How we can use latest technology for the prevention, mitigation and preparation. Changing technologies such as IOT and Artificial Intelligence can help in early alert and control in disaster management.

Keywords— Disasters, Floods, droughts, cyclones, landslides, earthquakes, ICT, IOT, Artificial Intelligence etc.

I. INTRODUCTION

Disastrous events are have been showing off own mastery. From last few decades millions of peoples have lost their lives in natural disasters like flood, tsunami, earthquakes, cyclones etc. According to International Federation of Red Cross and Red Crescent Societies, 3,751 natural hazards events recorded over last 10 year and approximately two billions peoples affected by natural hazards. Estimated cost of damage was US$ 1658 billion in 141 countries. The rapid growth of world's population, pollution and manmade environmental threats that also leads to severe natural disaster in future.

According to International Federation of Red Cross and Red Crescent Societies 84% are weather related hazard and 95

% peoples are affected due to weather related hazards in last ten years.

India is most vulnerable to large number of disasters. According to statistics of Natural Disaster Management Authority [NDMA] of India, more than 58.6 percent of landmass of India is earthquake prone, 12 percent land prone to flood and river erosion, and 7,516 Kms long coastline is prone to cyclones and tsunamis. India is also vulnerable to Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and other man-made disasters. In current scenario, floods in various states of India such as Assam, Maharashtra and Bihar (2019).

Due to natural disasters, that kills thousands of peoples and also destroys billions of dollars of habitat and property each year. So that the need arises for prediction and management of disaster events in uncertain weather environment.

II. INDIA AND DISASTER MANAGEMENT

In India, Government formed different agencies to coordinate response to natural or man-made disasters and for capacity-building in disaster resiliency and crisis response.

Some of these are listed below:

1. National Disaster Management Authority (NDMA)
2. State Disaster Management Authority (SDMA)
3. District Disaster Management Authority (DDMA)
4. National Disaster Response Force (NDRF)

India is at high risk of extinction to various natural disasters because of the geographical as well as climatic condition. According to statistics more than 11 million peoples have directly or indirectly got affected during last decade.

Table 1 shows number of deaths occurred in natural disaster from 1999 to August 2019.

Table I: Natural disasters in India

Disaster Type	Year	Origin (India)	Death Tolls
Landslide	2014	Pune	28
	1998	Mansarovar	380
Earthquakes	2001	Gujarat	20,000
	1999	Chamoli	150
Floods	2019	Maharashtra (August, 2019)	50
	2019	Karnataka (August, 2019)	48
	2019	Bihar (July, 2019)	127
	2019	Orissa (August, 2019)	225
	2019	Kerala (August, 2019)	60
	2007	Bihar	41
	2005	Mumbai	910