

Flood Disasters 2019 in Maharashtra (India), aftermath and Revival for Natives and Tourists

Jagadish Patil¹, Manisha Shinde-Pawar¹ and Rajesh Kanthe²

¹ *Department of Management, Institute of Management and Rural Development Administration, Sangli, Bharati Vidyapeeth (Deemed to be University), Pune, India*

² *Institute of Management, Kolhapur, Bharati Vidyapeeth (Deemed to be University), Pune, India*

(Received 28 September, 2019; accepted 30 December, 2019)

ABSTRACT

Nature challenged to human survival with flood-hit in Maharashtra, other states and fire in Amazon forest in August 2019. In natural disasters like flood and fire emergency alert and short time warnings may have very minute line of separation, but do not allow being proactive to this challenge. With its controllable and uncontrollable varied aftermath story, the disaster taught and forced to all elements of society to be ready to cope with all types of losses. Unfortunately, this disaster showed the lack of mind preparation to accept the alert and to take proactive measures and also deficiency of equipment. This resulted in enormous life, economic and materialistic loss damage. In light of flood and fire at different areas, this case study of disaster in Maharashtra traces to ladders engaged and endorses how to reinstate back to routine through view point for disaster management preparedness, warning and proactive response in predictor stage and revival and systematic reactive response in post disaster stage in form of relief, shelter and material for natives in Sangli and Kolhapur and tourists in Kolhapur.

Key word: Disaster Management, Flood, Fire, Destination, Predictor Stage, Preparedness.

Introduction

Long stay of heavy rain and unplanned reservoir operation, dam water flow management resulting backwater effect in Krishna and Panchganaga River flood hit in Maharashtra in first week of August 2019 is the most severe flood after 2005. So many of villages, agricultural crop farms, homes got divested in Sangli-kolhapur. Consequently serious disruption in the form of loss of materials, property and human lives at least 48 people in Maharashtra, caused to study reasons of disaster, right from is it manmade or natural calamity? What was the proactive measure and steps taken? At What time vulnerable were warned? Why things were out of con-

trol? What was role of Government and local statutory bodies?

This flood caused damage to houses, power lines, business, and infrastructures. It left thousands of happy families shocked with loss of life and relations. Number of tourists were trapped in flood situation. Aftermath involves post disaster planning, control and management.

Disaster Management

Disaster Management in India refers to manage disaster response in the country. 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. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. In the decade 1990-2000, an average of about 4344 people lost their lives and about 30 million people were affected by disasters every year.

Flash Floods

Flash floods are short-term events occurring within six hours of the causative event (heavy rain, dam break, levee failure, rapid snowmelt and ice jams) and often within two hours of the start of high-intensity rainfall. Flash floods are weather related killers.

Steps in Disaster Management

The Predictor Stage

Preparedness

Flood is generally most common, recurrent and frequent disaster. Thousands of families were shifted to help centers and rehabilitation camps escape from the severe effects. And different schools, big halls in nearby areas were turned into rehabilitation camps well equipped with all essentials including medicine and food as around 22000 houses were flooded. This flood damaged homes, cars, other vehicles, uprooted trees, electricity lines, destroyed bridges, roads and infrastructure also. This had damaged more than 4 lakh ha of cultivated land.

The Government of Maharashtra declared a precautionary holiday schools and colleges in Western Maharashtra area and in its suburbs after the India Meteorological Department issued a warning for heavy rain and floods.

August 2019 flood threatened the Maharashtra especially worst affected to Sangli and Kolhapur region more where than 22000 people were shifted to safer locations and National Disaster Response Force (NDRF). People were warned to avoid entry in vulnerable area and river side area mainly. Schools and colleges were closed.

After alert issued in Mumbai, the National Crisis Management Committee took stock of preparedness activities in Maharashtra.

The Warning of Disaster

On 5th August 2019, The Hindu (Indian Meteorological Department) With Heavy rainfall and sud-

den increase in discharge of water from Koyana Dam (more than 50000 cusecs) had been declared in Sangli and Karad (Satara District) areas. And also discharge of water (about 20000 cusecs) from Chandoli Dam disrupted communication between several villages in Sangli and Kolhapur District.

As discussed above warning and alerts of flood issued were on very short time.

Generally three types of colours are used for issuing alert- "Orange", "red" and "yellow alert". The Central Water Commission uses this colour-coded system to alert local people in case of emergency. There are over 700 flood forecasting stations located across the country and a defined "warning level", "danger level" and "highest flood level" for the river on which it is situated as shown in Table No.1. The "warning and danger levels" are generally kept fixed for a river. However, highest flood level keeps changing and alteration is done based on the previous year's record.

Response and Relief Measures to Prediction

Table 1.

Stage of warning	Color code	Level of Water
Alert	Yellow.	Alert Level
Warning	Orange.	Danger Level
Post flood out look	Red.	Highest Level

In spite of warnings issued a day advance by Government, a lot of vulnerable had not shifted and finally were forced to shift. While being rescued to safer place due to fast increase in water level people crowded in boat than its capacity (15-20 people), which resulted in death of 17 people at same place in same boat into strange incident of accident of boat. Their families claim that they had no idea of the level of water and are heavily frustrated due to lacking in of a speedy rescue action plan from the Government. So, questions have been raised about the existing communication channels of the government. Further, there is a need for a suitable and systematic management and techniques to track the locations of flooded people.

The Aftermath Stage

Maharashtra Government, Sangli, and Kolhapur Local Statutory planned and took measures to reinstate the aftermath. But without waiting for government support and by considering emergency of

situation local Volunteers, youth generation in teams initiated to control the hazards and impact. These volunteers consistently taken efforts and supported rescue activities and also provided food, shelter, medicine, materials required to the vulnerable. Theses volunteers used Social Media like Whats App, Facebook communication to organize, to arrange help, to ask and co-ordinate in nearby help and rehabilitation centers, villages.

Effect of Flood in Kolhapur and Sangli District

Around 50 human beings found dead according to news resources. Government Appointed Wadnare committee to investigate and its report was expected to disclose at the end of September 2019 to get the exact numbers.

- As per official data, 4,74,226 people were rescued from 584 villagers and evacuated to temporary 596 shelters in Pune, Sangli, Kolhapur, Satara and Solapur districts.

An assessment of the Krishna river basin by

Table 1

Sr. No	District	Particulars	Numbers
1	Kolhapur	Villages Affected	249
		People Rescued	2,33,150
	Sangli	Villages Affected	108
		People Rescued	1,44,987

South Asia Network on Dams, Rivers and People (SANDRP) shows how mismanagement on releasing the water from various dams worsened the flood situation in Kolhapur, Sangli, and Satara districts of Maharashtra.

Table 2.

Sr. No	Particulars	Numbers
1	Compensation Affected Families	47,428
2	Per Family Compensation Amount Urban Families in Rs	15,000
3	Per Family Compensation Amount Rural Families in Rs	10,000

Table 3

SR.No	District	Alert Level In feet	Danger Level In feet	Highest Observed Flood Level in Aug 2019 In feet
1	Sangli	35	45	57.6
2	Kolhapur	33	43	57

Flood Level for alert given, danger level and Highest observed level

As depicted in Table 3, Flood Alert level based on 2005 update was 35 feet and 33 feet for these two districts Sangli and Kolhapur respectively.

Danger Level observed was 45 feet and 43 feet but in 2019 disaster food water level crossed to highest level and created new marks of highest level as 57.6 feet and 57 feet in Sangli and Kolhapur respectively as shown in Figure 1.

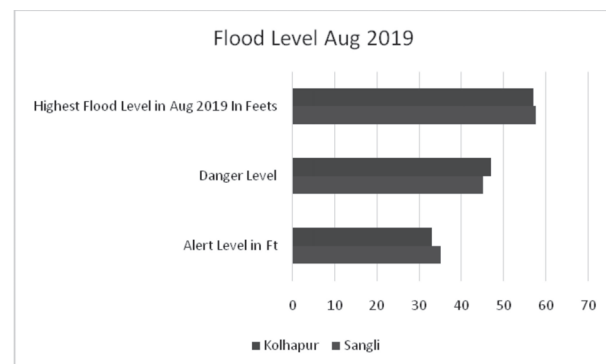


Fig. 1.

Rescue and Disaster Management Initiatives

Rescue and disaster management if done with proper planning and systematic approach then can efficiently deal to face the crisis. It needs to study and analyze history of different places with their geographical distribution, human psychology, awareness and demographical characters to cope with crisis. As per new and media sources informed the rescue support provided by the Government was as:

Table 4 Shows that, NDRF teams were very less in Kolhapur District as compared to Sangli District.

The distribution and flood impact or circumferences observed were not logically managed.

Major Determinants

By identifying different determinants of flood disaster revival policies and actions plans can be designed for future planning and control.

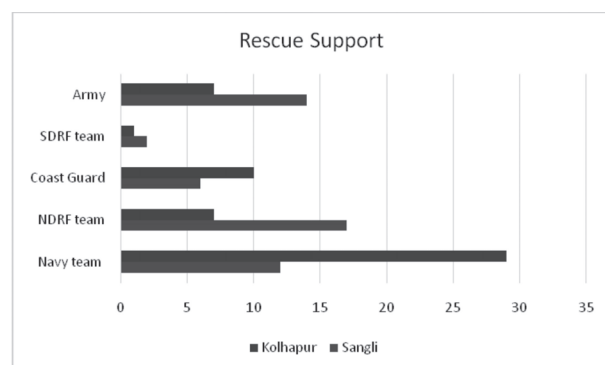


Fig. 2

As represented in Figure 3, the major determinants identified for Flood Emergency Consideration are

Reservoir Operation Schedule and Maintenance

Central water commission statutory body reported Western Maharashtra has 21 Big Size dams and 2354 total number of dams. Despite of that, there are so many small weirs and clay built weirs.

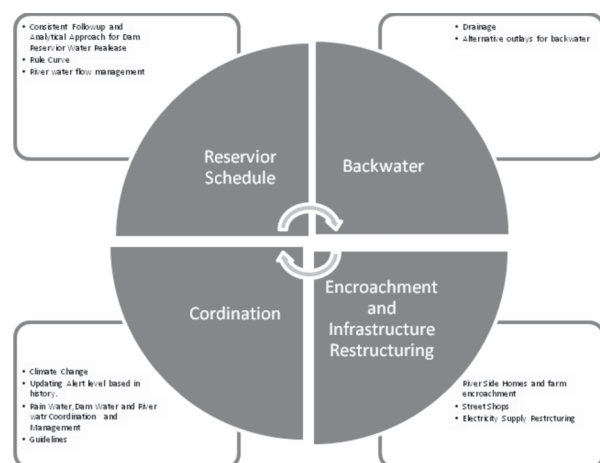


Fig. 3. Reservoir Operation Schedule and Maintenance

Table 4.

SR. No	District	Navy team	NDRF team	Coast Guard	SDRF team	Army
1	Sangli	12	17	06	02	14
2	Kolhapur	29	07	10	01	07

Dams should be robust under raised pressures and deforms. It needs consistent strong concrete foundation and maintained for cracks in the dam core, weak existing structure and embankment.

Assessment of Performance monitoring and expert system for reservoir operations schedule and maintenance can help for consistent improvement.

Coordination

The government appointed committee to investigate the role of dams in floods in Sangli, Satara and Kolhapur district in August 2019, but individual response from victims is challenging task to trace out reality.

After observing the situation and analyzing secondary data available from news media and websites, the researcher found out the major problem in coordination with different aspects as:

- Climate Change
- Updating Alert level based in history.
- Rain Water, Dam Water and River water Coordination and Management
- Guidelines to deal with problems

It is also observed that Karnataka and Maharashtra State government needs inter-state level coordination and cooperation to proactively cope up with flood and dam water management.

Backwater Planning

After observation and discussion with Sangli District Vulnerable people, the researcher found in urban area Backwater planning and alternatives for Flood and Drainage outlay is need of urban area.

d. Encroachment and Infrastructure Restructuring

- River Side Homes and farm encroachment Government should take initiative to re
- Street Shops

Reintegration and relocation of encroachment of street shops to safer places can be initiated with government support to avoid recurrent materialistic and economical loss

- Electricity Supply Restructuring :
Electrical lines, connections, equipment's restructuring

Revival

Not only the citizens and villagers but also tourists need revival of Sangli and Kolhapur, as after flood situation the most famous religious tourist destination is Kolhapur. Lakhs of tourists that is around 15 to 20 lakh devotees visit famous temples Mahalaxmi and Jotiba every year and also Panhala is a popular and pleasant picnic spot in festive and vacation period.

Proactive and Reactive Preparedness

Restoration from one stroke lifelong loss is not easy and so proactive and if needs reactive preparations can care to face such disasters. Revival needs systematic approach and planning based on experiences. Near Time or Real Time record keeping and Tracing of tourists and devotees in rainy season can help to save and facilitate tourists trapped in flood.

Research Motivation

Research in planning and management, decision making systems, expert and recommended systems and automated systems for specific disaster management if encouraged, may give probable recommendations and might be solutions to disaster risks.

Management of system

Specifically trained and appointed local teams with knowledge of geographical, historical analysis coordinating with meteorological teams, may avoid delay and wait for rescue team.

Crisis based Decision and Strong Communication

- i. In Crisis situation, updates of danger extent alerts to vulnerable area and their peers for necessary decision to follow, with presence of mind, right information at right time is very much need of such crisis. Central state-level and local statutory needs to form communication management team.
- ii. As Bramhanal (Sangli District) accident incident flashed in news flow of help after knowing reality and severity of destination increased almost 10 times than earlier, therefore as its not particular one's cup of tea to cope up with reality in crisis helping hands definitely gives revival to crisis area.
- iii. Peers, Civilizations and Public senthusiastic to take in or to care to offer funds, materials in af-

ected area looks for timely information about catastrophe.

Media Management

- i. Exact locations, extent of risk and impact helps to peers, volunteers, teams available for rescue and support with correct information and mostly all are dependent on media information like new channel, social media and tele vision news, website blogs etc.
- ii. Media management involves consideration of new media channels of communication especially social media and public communications.

Effective Website

Disaster, Post-Disaster, rescue, relief details, rehabilitation center details, compensation details, contacts can be updated effectively through specific and special website designed to cope up with the situation.

Best Practices of Destination Management Observed in Flood August 2019:

- Disaster Mitigation Center, Rehabilitation Center and Hospitals
- Rehabilitation Center and NGO on ground Supported by young volunteers.
- Mobile Health Care Units
- Cleaning up after flood.
- Provision of Adequate Funds through Donation of Money to NGOs, Chief Minister Fund.
- Essential Resources and facilities Management and Transportation after Rescue.
- Emergency Camp Tools and Resources, Rescue Teams formed by self-initiated and self-motivated team of volunteers.

Conclusion

Recurrent Floods have destroyed and affected lakhs of families and hundreds of villages in Maharashtra. Short notice, lack of planning in Reservoir operation, encroachment gives scope for improvisation. Reactive measures taken and best strategies implemented by local volunteers seems smooth than Government strategies. Central, Maharashtra State Government and Meteorological Department may execute improved proactive systematic plan and it can be based on some cases like floods in Sangli and Maharashtara in August 2019.

References

- Manisha Shinde-Pawar, 2018. *Ockhi cyclone-2017 far reaching effects*, in UGC Approved Journal; International Society for green, sustainable engineering and Management in April 2018
- Shagun Kapil, Sushmita Sengupta, 2019. "Rain apart, blame the Dam for Maharashtra, Karnataka Floods: Report Poor management of dams exacerbate floods, instead of mitigating them, it adds", DownToEarth Online report on <https://www.downtoearth.org.in/news/water/rains-apart-blame-the-dams-for-maharashtra-karnataka-floods-report-66172>
- Tingsachali, T. 2011. 'Urban flood disaster management', in Procedia Engineering, 1877-7058 © 2012 Published by Elsevier Ltd.
- <https://www.nsc.org/home-safety/safety-topics/emergency-preparedness/flood>
- <https://weather.com/en-IN/india/monsoon/news/2019-09-13-maharashtra-to-prepare-flood-rehabilitation-plan-for-vulnerable>
- <https://www.thehindu.com/news/national/other-states/rains-continue-flood-alert-in-many-areas/article28817033.ece>
- <https://www.financialexpress.com/india-news/floods-in-india-2018-how-to-read-colour-codes-for-warning/1265402/>
- <https://timesofindia.indiatimes.com/city/kolhapur/maharashtra-floods-water-receding-in-kolhapur-and-sangli-relief-operations-continue/articleshow/70616738.cms>
- <https://www.indiatoday.in/india/story/dam-operators-could-have-reduced-floods-in-maharashtra-report-1579535-2019-08-10>
- <https://sandrp.in/>