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Disaster Recovery Planning Process Study

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ABSTRACT

The current system providing information for disaster management is not effectively utilizing a wealth of information that resides with various organizations. Existing technologies could deliver to disaster managers important new information products that could save lives, reduce damage to property, and lessen the environmental impacts of natural disasters. Continued improvements in technology should help make information more widely, quickly, and reliably available and at less cost. The current situation is characterized by numerous shortcomings that inhibit optimal decision-making for disaster management. The inability to access information and the lack of standardization, coordination, and communication are all obstacles that a disaster information network (DIN) could overcome and prevent disasters effectively.

KEYWORDS

Disaster; Disaster Recovery Plan; Human mortality.

1. Introduction

Disaster is a sudden, calamitous event bringing great damage, loss, and destruction and devastation to life and property. The damage caused by disasters is immeasurable and varies with the geographical location, climate and the type of the earth surface/degree of vulnerability. This influences the mental, socio-economic, political and cultural state of the affected area [1]. Disaster management is an integrated process of planning, organizing, coordinating and implementing measures that are needed for effectively dealing with its impact on people. This includes prevention, mitigation, capacity building, preparedness, response, assessment, rescue and rehabilitation.

The United Nations defines "a disaster as a serious disruption of the functioning of a community or a society. Disasters involve widespread human, material, economic or environmental impacts, which exceed the ability of the affected community or society to cope using its own resources". The Red Cross and Red Crescent societies define disaster management as the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters [2].

2. Features of Disaster

A disaster may have the following main features [3]

- Unpredictability
- Unfamiliarity
- Speed
- Urgency
- Uncertainty
- Threat

3. Background: Disasters Have Both a Physical and Social Component.

Geological and meteorological events are part of our natural environment. From a geological time perspective, earthquakes, landslides, floods, hurricanes, and tornadoes are quite common. 3.2. The social nature of disaster The potential for disaster occurs when people reside in areas prone to earthquakes, hurricanes, floods, tornadoes, hazardous chemical incidents, and other similar events. If people selected not to reside in floodplains, we would not have flood disasters [4].

4. Importance of Disaster Management

Disasters are events that have a huge impact on humans and the environment. Disasters are inevitable, we cannot do anything to prevent these but disaster preparedness is only in our hand. Disasters management requires government intervention and a proper planning as well as funding. It is not necessary that these disasters are always unpredictable [5].

Disaster management aims to reduce the occurrence of disasters and to reduce the impact of those that cannot be prevented. The government White paper and Act on Disaster Management define the roles of Local Authorities as well as Provincial and National government in disaster management. Disaster management forces come into action as soon as a disaster strikes and helps out in relief, rescue and rehabilitation process. These are trained individuals, and are given extensive training to perform in the event of a disaster or a natural calamity and they work as a team to reduce the loss of life and helping the locals getting back to normal life [6].

5. Objectives of Disaster Management

- Promoting a culture of prevention and preparedness by ensuring that Disaster Management receives the highest priority at all levels.
- Encouraging mitigation measures based on state-of-the-art technology and environmental sustainability.
- Mainstreaming Disaster Management concerns into the developmental planning process.
- Developing contemporary forecasting and early warning systems backed by responsive and failsafe communications and Information

Technology (IT) support.

- Promoting a productive partnership with the media to create awareness and contributing towards capacity development.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage [7].

6. Types of Disaster

Disasters can take many different forms, and the duration can range from an hourly disruption to days or weeks of ongoing destruction. Below is a list of the various types of disasters – both natural and man-made or technological in nature – that can impact a community [8].
All disasters are related to specific hazards and the hazards may be categorized.
(1) Natural
(2) Mixed (Natural + Man Made)
(3) Man Made

6.1 Natural disasters

Natural disasters are generally unpredictable types of disasters and the destruction caused by these depends upon the intensity of the disasters. These disasters include floods, hurricanes, earthquakes, Seismic, Volcanic eruption, Tsunami Celestial collision, Climatic, High winds, Precipitation, Lightning, Temperature extremes, Erosion Drought, Desertification, Avalanches.

6.2 Man-made Disasters

Disasters also can be caused by humans. Hazardous materials emergencies include chemical spills and groundwater contamination. These Disasters includes Technological, Release of substances (Chemicals, Biological, Nuclear), Structural failure, Explosions, Cyber attacks, Explosion, Civil Unrest.

6.3 Mixed Natural + human caused

Drought, Desertification, Floods, Erosion Landslides, Health related, Infectious disease, Genetic etc [9].

7. Effects of Disaster

A disaster is an event of sudden calamity causing disruption in normal routing and causing a lot of destruction depending upon the intensity of the disaster. Generally, disaster has the following effects in the concerned areas [10]:

- It completely disrupts the normal day to day life.
- Causes lot of loss in the terms of life and property.
- Leads to a loss of agriculture and animal life as well.
- Disasters hamper developmental projects in an adverse manner.
- Disaster causes destruction to the state of art and infrastructure.
- It negatively influences the emergency systems.
- Normal needs and processes like flood, shelter, health, etc. are affected and deteriorate depending on the intensity and severity of the disaster [11].

8. Phases of Disaster

The National Governor's Association designed phases of disaster model (Figure 1) to help emergency managers prepare for and respond to a disaster, also known as the 'life cycle' of comprehensive emergency management [3]. The four phases of disaster: 1) mitigation; 2) preparedness; 3) response; and 4) recovery.

Figure 1. Phases of disaster.

8.1 Mitigation (Pre-Disaster Mitigation Efforts)

It refers to measures that reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies. This is achieved through risk analysis, which results in information that provide a foundation for typical mitigation measures include establishing building codes, zoning requirements, and constructing barriers such as levees. Effective Mitigation efforts can break the cycle of disaster damage, reconstruction, and repeated damage.

8.2 Preparedness (Education, Outreach and Training, Business Continuity & Emergency Management Planning)

It focuses on understanding how a disaster might impact the community and how education, outreach and training can build capacity to respond to and recover from a disaster. This may include engaging the business community, predisaster strategic planning, and other logistical readiness activities. The disaster preparedness activities guide provides more information on how to better prepare an organization and the business community for a disaster.

8.3 Response (Immediate Response to Stakeholders, Establish Business Recovery Centre)

Response addresses immediate threats presented by the disaster, including saving lives, meeting humanitarian needs (food, shelter, clothing, public health and safety), cleanup, damage assessment, and the start of resource distribution. As the response period progresses, focus shifts from dealing with immediate emergency issues to conducting repairs, restoring utilities, establishing operations for public services (including permitting), and finishing the cleanup process [12].

8.4 Recovery (Post-Disaster Economic Recovery Plan)

Recovery is the fourth phase of disaster and is the restoration of all aspects of the disaster's impact on a community and the return of the local economy to some sense of normalcy. By this time, the impacted region has achieved a degree of physical, environmental, economic and social stability. The recovery phase of disaster can be broken into two periods. The short-term phase typically lasts from six months to at least one year and involves delivering immediate services to businesses.

9. Disaster Knowledge

Factors Disaster knowledge factors can directly or indirectly affect the process and outcomes of disaster management. This study aimed to identify key disaster knowledge factors in managing disasters successfully

through capturing good practices and lessons learned, and to map them against the disaster management cycle.

9.1 Technological Factors

This includes aspects relating to or involving the application of scientific advances including any tool, technique, product, process and method benefiting disaster management. Information and communication technology, and other scientific advances are applicable to the mitigation of natural hazards which consequently helps to save lives and property while reducing the loss of livelihoods. Eg: warning systems, communication systems and structural measures.

9.2 Social Factors

This category includes the aspects relating to human society and its members in managing disasters: initiatives to increase the population's level of education, increase employment opportunity, reduce poverty, enhance the role and participation in decision making, including women that would support preparations for future disasters.

9.3 Environmental Factors

Aspects relating to the natural environment in managing disasters are considered here. Natural barriers such as sand dunes, coral reefs, and mangroves can provide protection from a tsunami as they can reduce the flow velocity.

Disasters create tones of waste, comprising hazardous waste, vegetation, soil, sediment, demolition debris and municipal waste. This waste poses a threat to human health, ground water supplies and the marine environment.

9.4 Legal Factors

These include aspects relating to law, accepted rules, and regulations for managing disasters. Various regulations that apply to routine construction provide for the safe development of infrastructure, capital improvements and land use, ensuring preservation and environmental protection.

9.5 Economic Factors

Economic factors can be classified into two areas: long term economic planning measures and financial aspects. Economic planning measures include aspects relating to production, distribution, and consumption of goods and services in a society.

9.6 Operational / Managerial Factors

This category includes factors relating to the planning, coordination and management of disaster related activities. Participants' lack of skills and knowledge in disaster risk management initiatives is identified as a major issue of reconstruction.

9.7 Institutional Factors

This includes aspects relating to an organization founded and dedicated to disaster management and related activities. An effective institutional arrangement is essential for managing disasters successfully.

10. Guiding Principles-Disaster Planning and Management

- The measures to be adopted for prevention and mitigation of disasters.
- The manner in which mitigation measures shall be integrated with development plans and projects [13].
- The capacity building and preparedness measures to be taken.
- The roles and responsibilities of each department of the government of the state in relation to the measures specified above.
- The roles and responsibilities of different Departments of the government of the state in responding to any threatening disaster situation or disaster.
- The state plan will be reviewed and updated annually.
- Appropriate provisions will be made by the state governments for financing the measures to be carried out under the state plan [14].

11. Conclusion

The current system providing information for disaster management is not effectively utilizing a wealth of information that resides with various organizations. Existing technologies could deliver to disaster managers important new information products that could save lives, reduce damage to property, and lessen the environmental impacts of natural disasters. Continued improvements in technology should help make information more widely, quickly, and reliably available and at less cost. The current situation is characterized by numerous shortcomings that inhibit optimal decision-making for disaster management. The inability to access information and the lack of standardization, coordination, and communication are all obstacles that a disaster information network (DIN) could overcome and prevent disasters effectively.

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