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## UNDERSTANDING THE COSTS OF COMMUNICATIONS INFRASTRUCTURE FAILURES IN DISASTER EMERGENCIES

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### **ABSTRACT**

*Communication during and immediately after a disaster situation is an important component of response and recovery, in that it connects affected people, families, and communities with first responders, support systems, and other family members. Reliable and accessible communication and information systems also are key to a community's resilience. The role of communication technology has been recognized as integral to disaster management for a long time. Although application of communication technology has a role in all the four distinct phases of disaster management namely, mitigation, preparedness, response and recovery, most of the application has traditionally been in response and recovery phases. The new communication and information technologies that have emerged over the last two decades lend themselves to greater possibilities of integration of different communication systems. The interoperability of various communication systems including internet, mobile phones, fax, e-mail, radio and television is increasingly becoming functional. As a result, the possibilities for application of communication technologies in mitigation and prevention of disasters are also increasing.*

**KEY-WORDS:** *Communication, mitigation, disasters, management, warning, humanitarian, cyclone*

### **INTRODUCTION**

Among various aspects of Disaster Management, “communication” is one of the most critical requirements. The

word “communicate” implies conveying of thoughts, ideas, warnings, instructions, orders, command, knowledge and information. In the context of disaster management, fail-safe communication is vital during a wide range of actions, from the significant phase of “preparedness” to impart knowledge and information (mass education and public awareness), warning of impending threat of disaster, calling various resources and intimation to authorities and conducting disaster management in general.

## **COMMUNICATION: MEANING AND CONCEPT**

The word “communication” holds a very significant place in all walks of human life. A person is an element of society, nation and the world and cannot live his or her in isolation. He or she has to interact with his or her fellow human beings.

There are two distinct facets of communication; one is the physical one where we use a variety of means using ever progressing technology. Due to modern technology and use of Satellites we broadcast television programmes all over the world. Satellite phones and internet have added new dimensions to global and almost prompt communication. Thus there is no lacking of any type of Hi-Tech. means to communicate. Media (print and electronic) serve as credible and influential agents of communication.

The other aspect which is far more important is the conceptual one. It is necessary to ensure that recipient of communication understands the contents of the message being taken and that he responds to it in the desired manner. This apparently simple requirement carries behind it Herculean efforts of thorough knowledge, clarity and conciseness. The originator must realize the capacity and capability of the receiver to appreciate the message and to react correctly. Thus, content and clarity have to be the essential features of the message being communicated. The content has to be specific, to the point, brief and couched in simple, understandable and clear language with no vagueness. Thus in its modern concept “communication” transcends its traditional meaning of transmission of message but includes the quality of the message itself especially the content, conciseness and comprehensibility.<sup>1</sup>

## **THE IMPORTANCE OF COMMUNICATIONS WHEN DISASTER STRIKES**

Ericsson is celebrating 20 years of Ericsson Response, a program that provides connectivity to humanitarian workers dealing with natural disasters and medical emergency relief efforts. We take a look at how connectivity is at the heart of humanitarian response. In 2000, a group of Ericsson volunteers had an audacious idea. They already understood the power of communication technology and the role it could play during a disaster in a way no one else did. Today, this may seem obvious, but it wasn't then. To provide some context, at the time I was using an Ericsson

<sup>1</sup> <https://www.preservearticles.com/environment/importance-of-proper-communication-in-disaster-preparedness-and-mitigation/1710>

T28 flip phone with voice and texting only – and it was a full seven years before the smartphone took off and mobile internet became a central part of our daily lives.

These volunteers realized that they could provide invaluable assistance to humanitarian workers – that the ability to connect within and outside of a disaster zone would allow them to do their jobs more effectively and ultimately save lives. They started Ericsson Response, an emergency relief program that focuses on providing connectivity to humanitarian workers in the field.

## **CREATING A ROLE FOR HUMANITARIAN COMMUNICATION**

Over the past 20 years, Ericsson volunteers have participated in more than 50 missions in 40 countries around the world. This includes natural disasters like Hurricane Maria on the islands of Dominica and Puerto Rico as well as Cyclone Idai in Mozambique. But it also includes medical emergencies like the Ebola crisis in West Africa and protracted crises in places like South Sudan, Central African Republic and the Democratic Republic of the Congo. Ericsson Response is a stand-by partner to the United Nations World Food Programme (WFP) and a partner of the Emergency Telecommunications Cluster (ETC), a global network of organizations led by the WFP that provides communications in disaster situations. The ETC is on the scene and provides vital security communications services and voice and internet connectivity within 48 hours of a disaster. Our volunteers literally drop everything to be there.<sup>2</sup>

## **IMPORTANCE OF DISASTER MANAGEMENT**

Disaster is a sudden, calamitous and unfortunate event that brings with it great damage, loss, destruction, and devastation to human life as well as property and also hampers the on-going developmental projects in a particular area being affected by the disaster. A disaster has been defined in many ways; World Health Organization has defined disaster as any sudden occurrence of the events that cause damage, ecological disruption, loss of human life, deterioration of health and health services, on a scale sufficient to warrant an extraordinary response from outside the affected community or area. Disaster management is very important to survive in the case of a natural or a major man-made disaster and can be defined 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 a sudden disaster.

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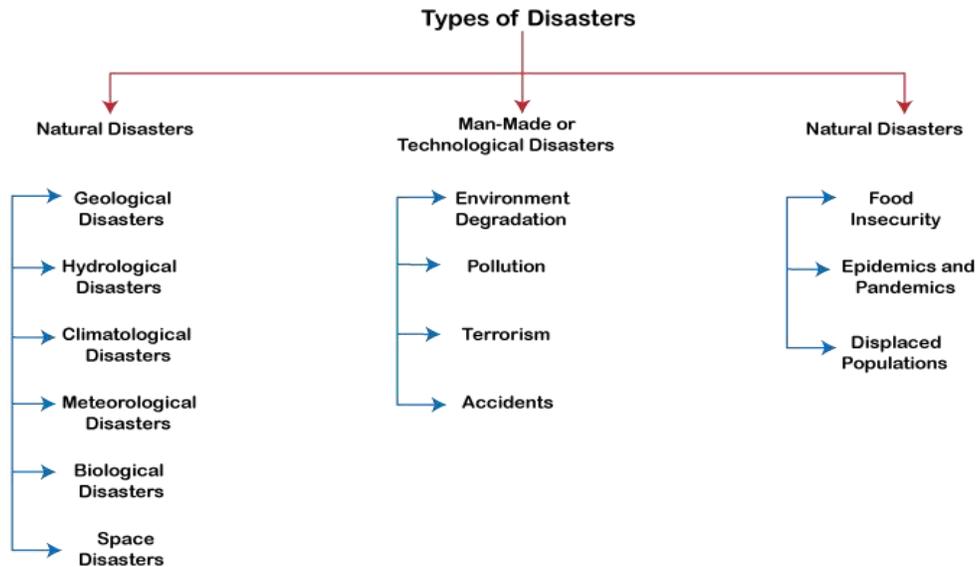
<sup>2</sup> <https://www.ericsson.com/en/blog/2020/5/importance-of-communications-when-disaster-strikes>

The damage caused by disasters is immeasurable and varies with the geographical location, climate and the type of the earth surface/degree of vulnerability. At times there can be disasters where there is no loss of human life and at times these can also cause a huge loss of life and property. This influences the mental, socio-economic, political and cultural state of the affected area. A disaster can be caused by human activities or due to some natural changes. Disasters are events that are unpredictable most of the times. It is important for any government, state or community to manage disasters by being prepared for it in advance. The government provides legislation, allocates resources and does the rational planning and sustainable development. Disaster management and planning is a key part of government work and an issue to be taken up seriously by the concerned authorities.<sup>3</sup>

## TYPES OF DISASTERS

There are many types of disasters and can take different forms. However, all these can be broadly classified into the following three categories:

- Natural Disasters
- Human-made or Technological Disasters
- Complex Emergencies



## TYPES AND EFFECTS OF DISASTERS

<sup>3</sup> <https://targetstudy.com/articles/importance-of-disaster-management.html>

Different types of disasters are distinguished in terms of their nature and extent of impacts. The following are the major types of disasters that are commonly encountered: • Earthquake, • Volcanic eruption, • Tsunami, • Tropical cyclone (typhoon, hurricane), • Flood, • Landslide, • Bushfire (or wildfire), 2 • Drought, • Epidemic, • Major accident, and • Civil unrest. Disasters like earthquakes, hailstorms, avalanches, landslides, etc. occur quite suddenly. Similarly, floods and cyclones occur with some element of .warning yet their occurrence is confined to a short duration.

Drought, on the other hand, spans over a much longer time-frame and its adverse impact will be on the economic activities of people and on the life of an area. The effects are more of a long-lasting nature. Natural disasters may be broadly grouped into major and minor types depending upon their potential to cause damage to human life and property. The disasters like earthquakes, volcanic eruptions, droughts, floods and cyclones could be regarded as major types. The disasters like hailstorms, avalanches, landslides, fire accidents, etc. whose impact is localised and the intensity of the damage is much less than the others may be categorized as minor disasters. Minor disasters like hailstorms, avalanches, landslides and forest fires also occur without any appreciable degree of warning. Almost all of them cause damage to properties and lives. However, areas prone to be affected by such disasters could be identified. Certain precautionary measures could also be taken in the context of potential threat requiring general awareness and preparedness for appropriate responses on the part of the local administration. In addition to these, wartime civil defense or protection measures are also coming under this concept. General Effects of Disasters The typical effects of disasters may be one or more of the following: • Loss of life, • Injury, • Damage to and destruction of property, • Damage to and destruction of plantations and crops, • Disruption of production, • Disruption of lifestyle, • Disruption of transport • Loss of livelihood and occupation to people • Disruption to essential services like electricity, water supply and gas supply, • Damage to national infrastructure • Disruption of communication and other networks • Disruption to government systems and schemes, • Shortage of food resources • Spreading of diseases • National economic loss, and • Sociological effects and • Psychological after effects.<sup>4</sup>

## COMMUNICATION CHALLENGES DURING PAST DISASTERS

- Communication is very important in managing both natural and human made disasters.
- Damage to communications infrastructure, together with electricity supply exacerbated difficulties in carrying out response and recovery efforts during previous disasters that include floods, cyclones, cholera epidemics and road traffic accidents.

<sup>4</sup> [https://www.researchgate.net/profile/A-Balasubramanian/publication/309782796\\_Types\\_of\\_Disasters/links/58c7494d458515478dc11de3/Types-of-Disasters.pdf](https://www.researchgate.net/profile/A-Balasubramanian/publication/309782796_Types_of_Disasters/links/58c7494d458515478dc11de3/Types-of-Disasters.pdf)

- Some disasters are inevitable but the sufferings can be minimized by proper information management and effective early warning systems.
- Effective communication should ensure dissemination of timely, accurate and understandable warning to populations at risk and political authorities.
- Should facilitate appropriate response measures so as to minimise loss and damage
- Communication is important in almost all phases of the disaster management process. Mitigation Preparedness Early Warning Relief Rehabilitation Reconstruction<sup>5</sup>

## NATURE OF INFORMATION

- Early warning information about pending disasters
- distress calls /nature of emergency
- Response activities
- Needs assessment reports,
- Press releases
- Situation reports
- Assistance required
- Number affected etc.

## OUR MEDIA OF COMMUNICATION

- Telephones (Land lines)
- Fax machines
- Mobile phones
- HFR – ZRP,
- Red Cross
- Internet facilities
- Electronic media
- Print media
- Word of mouth,
- Pamphlets,

<sup>5</sup> [https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/Zimbabwe\\_2011/Communication%20challenges%20during%20past%20disasters.pdf](https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/Zimbabwe_2011/Communication%20challenges%20during%20past%20disasters.pdf)

- Flyers

## **SIGNIFICANCE OF COMMUNICATION IN DISASTER PREPAREDNESS AND MITIGATION**

Whenever we talk of “Disaster” we invariably imply the following distinct phases:

- (a) Preventive and preparedness measures for ensuring minimum adverse effects,
- (b) Follow up actions in the event of occurrence of a Disaster, to handle the “Aftermath” and make all efforts to mitigate – i.e.. to minimize to reduce eventual losses/damage to Life and Property.

Unless we have “Communication” at its best in all the required forms we will not be in a position to deal with the above phases to our entire satisfaction. In the aftermath of a disaster, time counts and efficient communication at all levels decides the success of all efforts. It is therefore essential to critically examine the role – and need – of communication. The discussion that follows will critically examine the same in the above mentioned phases.<sup>6</sup>

## **COMMUNICATION DURING THE PHASE OF PREVENTIVE MEASURES**

An in-depth study of all probable causes of disasters likely to occur in the area is to be made, identifying all likely sources of disaster.

Preparedness:

This is the most important phase. The state of Preparedness is to be reached to maximum efficiency to be effective. In this phase, all resources -their types and strength – are worked out, identified and are placed “on call” whenever situation so warrants. This phase requires high degree of dedication and cooperation of all resources. Resources imply police, firemen, medical personnel, transporters, volunteers and above all a sound communication system.<sup>7</sup>

Immediately after A Disaster Occurs:

Communication, in all its forms, plays a most vital role in this phase. The prime requirement of this phase is to convey facts without creating any panic. Also, time element is of utmost importance. Even a minor delay caused due to incomplete or incorrect communications will add to the problem. The intimation of the occurrence of a disaster is to be given, in the laid down priority, to government officials, affected population and news media of all types. This becomes effective only when there are “Check Lists” at all levels and personnel are trained to act

<sup>6</sup> <https://www.power-technology.com/sponsored/the-costs-of-communications-failures-in-disaster-emergencies/>

<sup>7</sup> <https://martinlea.com/communication-problems-in-disaster-situations/>

strictly yet timely according to their respective check lists. In the absence of check lists, chaos will prevail disrupting the smooth responses at required levels.

Aftermath:

Once the laid down actions get under way, the situation is brought to normal, i.e., the cause of disaster is “contained” or has passed away. While this is going on, regular progress of events is intimated to people through proper “media”. The next action by concerned authorities, after normal life is restored, should be to carry ruthless audit of all events, critically analyze faults, weaknesses, lapses, and shortcomings together with impediments, if any is experienced, and introduce measures to overcome/remove them.<sup>8</sup>

It is implied in the above that only correct and efficient communication can (a) prevent occurrence of a disaster or reduce its impact, (b) reduce vital delays in aftermath and (c) in general decide the success of disaster management efforts.

## **TECHNIQUES OF COMMUNICATION**

Efficient communication needs hardware and software systems of considerable sophistication. It is obvious, therefore, that their use needs skills and techniques of high order. In the various phases of Disaster Management, where every minute and every effort are precious, it is the efficient and flawless communication which ensures the success of the operation.

Following are the broad areas where skilled communication is required:

1. Mass Education and Public Awareness.
2. Training of industrial personnel
3. Appraisal of Government Authorities
4. Information to Media
5. Use of Wireless set, and amateur radio (Ham)
6. Use of Telephones, Cell phones and satellite phones
7. Use of INTERNET including e-mail

A concerted effort is required to train every originator and each recipient in order to make the communication effective, so as to achieve the intended objectives.

<sup>8</sup> <https://afterthefireusa.org/disconnected-understanding-communication-system-failures-during-disasters/>

## MODES OF COMMUNICATION

With progressive Hi-Tech means a number of sophisticated equipment is being developed. A broad range of the means of communication is given at Annexure A. The point to note in this list is that hardly any existing mode will ever be obsolete despite inclusion of more modern methods.

Media (electronic and print) are very helpful in disaster management related communications. They serve as very useful conduit between the people and the disaster management personnel.<sup>9</sup>

## RECOMMENDATIONS

Communities living in the disaster prone areas should be equipped with all-weather communication equipment for early warning and communication during periods of disasters Civil protection committees at all levels should be equipped with Faxes, Email and VHF Radios rather than depending on the telephones alone. Satellite radios can also be of help when the transmission towers of our traditional radio channels are damaged in a disaster.

## CONCLUSION

In conclusion, all forms of disasters, whether man-made or natural, impact infants, children, and adolescents throughout the world. Effective and efficient interventions remain the cornerstone of sustaining a child's well-being while reducing untoward complications due to all forms of disasters. Having a deep understanding of pediatric physiology and pathophysiology is crucial to all levels of disaster diagnostics and therapeutics. All nurses and HCPs have an obligation to understand these principles and deliver excellent, compassionate care to the pediatric disaster victim.

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