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FACT SHEET

DISASTERS

WHAT IS A DISASTER?

We use the term 'disaster' often in our everyday lives. It seems that anything from missing the bus to a lost football game can be a 'disaster'. At the same time we constantly see and hear events such as earthquakes, nuclear accidents or environmental degradation being described as disasters. What then is a disaster?

A disaster can be defined as an event that occurs when a hazard affects a vulnerable population or area. Disasters are often portrayed using the following equation:

Disaster = Hazard * Vulnerability[1]

As this equation shows, the two key elements to a disaster: hazard and vulnerability.

WHAT IS A HAZARD?

Hazards come in a number of forms:

- Natural hazards. These include Hydrometeorological (e.g. cyclones, floods), Geological (e.g. earthquakes, volcanoes) and Biological (e.g. epidemics, locust swarms).
- Technological hazards (e.g. gas leaks, industrial accidents, bridge or building collapses).
- Environmental hazards (e.g. sea level rise, desertification, climate change).

A hazard alone will not cause a disaster. Hazards have to impact on a population or area before they can have disastrous effects. For example, a tsunami travelling over open-ocean is not a disaster, but when it strikes a population located on a coastline, the results can be disastrous.

What is vulnerability?

A population or area being affected by a hazard has to be vulnerable for a disaster to occur. The vulnerability of a population relates to how susceptible it is to the effects of hazards and its ability to cope when struck. Vulnerability is influenced by factors such as location, state of housing, level of preparedness and ability to evacuate and carry out emergency operations. Different populations have different levels of vulnerability, this is one reason why hazards of a similar type and intensity can have quite varied effects on different populations.

The root causes of vulnerability have a deeper origin, however, and to see why a population is vulnerable we must look at issues such as poverty, lack of access to resources, environmental and social conditions. In this way vulnerability has a direct relationship to the social, political and economic situation and the status of human rights. Populations suffering from high levels of poverty are often more vulnerable to hazards due to the fact that people's resources are focussed towards day-to-day survival rather than preparing for the possibility of future disasters. This is reflected in the fact that it is the poorest countries who are the hardest hit by hazards as they are often the most vulnerable.

1 The use of * indicates the interaction between hazard and vulnerability. It is arguable as to whether this stands for + or x.

2 Using the OFDA/CRED International Disasters Data Base (EM-DAT) definition of a disaster event having to fulfil at least one of the following criteria:
* 10 or more people reported killed
* 100 people reported affected
* Declaration of a state of emergency
* Call for international assistance

DISASTERS AND DEVELOPMENT

Development plays a key factor in people's vulnerability to hazards and can have both a positive and negative influence. People in countries that are termed as 'developing' often face issues such as poverty, lack of adequate infrastructure, lack of access to resources, and health issues that can increase their vulnerability to hazards. Development efforts aimed at addressing these types of issues can play a positive role in reducing vulnerability.

Development can also have a negative influence. The influx of new economic systems, rapid urbanisation, altered food production and other socio-economic changes can increase vulnerability. Also, traditional coping methods such as traditional forms of housing, the growing of hazard resistant crops, traditional knowledge of hazards, methods of food storage, and strong community support can be displaced by the process of development. This is often the reason why communities that have a long history of dealing with hazards can become more vulnerable and disaster-prone.

ARE DISASTERS INCREASING?

We often hear that disasters are happening more often and that the results are also becoming more severe. Is this the case? Is our world really becoming more dangerous to live in?

It is clear that the number of disasters affecting the world is increasing. There has been a considerable growth in reported disasters since the beginning of last century, with growth being most notable since the 1940s. 184 disasters[2] were recorded in the period 1940-1949 and some 2773 in the period 1990-1999[3]. These statistics show there were 15 times more disasters reported in the 1990s than in the 1940s. On the surface this seems a staggering increase. Is this due to an increase in the number of hazards affecting people or an increase in people's vulnerability? Or is there some other factor?

Although there is some evidence that certain hydrometeorological hazards, namely cyclones and floods, have been increasing in number and intensity (attributed to the effects of climate change), the number of geological hazards such as earthquakes has not risen significantly. What is clear is that we have seen a growth in world population and over the last fifty years. This growth has occurred not only in areas that are vulnerable to hazards (such as in coastal areas and urban centres) but also in populations that face issues that are known to contribute to vulnerability.

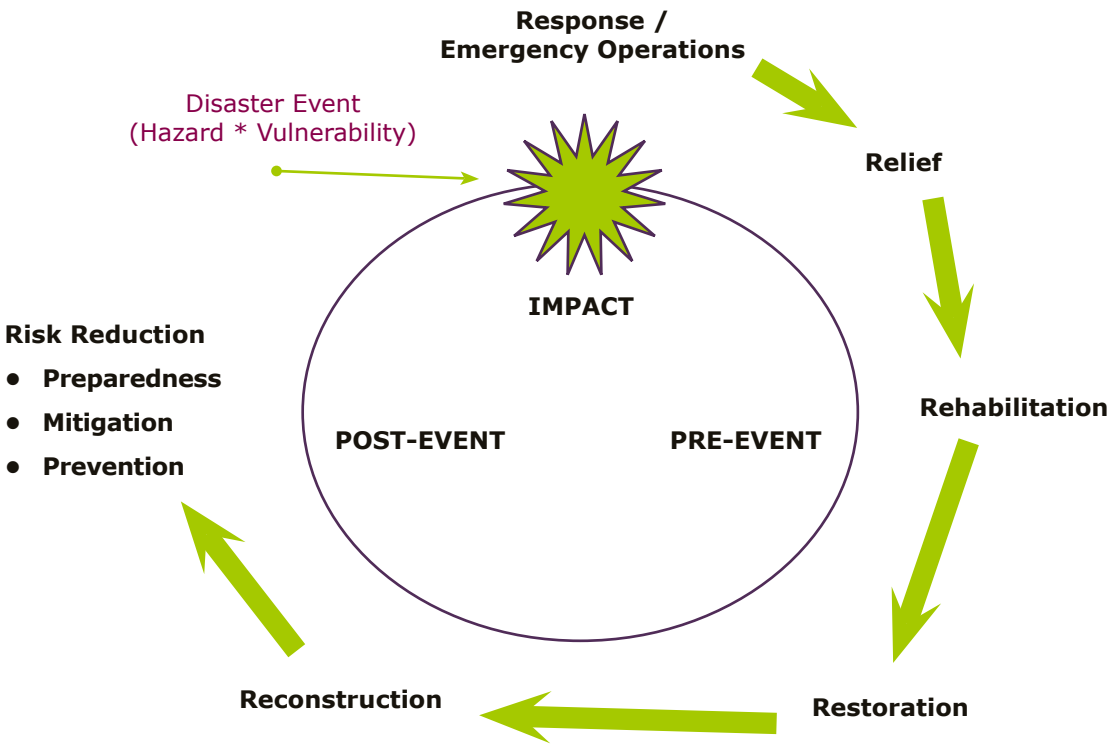
Another consideration has been the rapid development in communication technology over the last fifty years. Improved access to information means disasters are being covered more effectively and accurately than in the past, resulting in the increase in the numbers of disasters reported. The increase in the number of disasters is therefore being influenced by the fact that we are becoming more aware of the disasters that are (and always have been) happening.

The rise in the number of disasters affecting us is a result of a combination of factors. Climate change appears to be creating an increase in hydrometeorological hazards, our improvements in communication technology means more disasters are being reported, and a combination of population growth and an increase in the factors that add to people's vulnerability have contributed to the increase in disaster events. Although not to the extent that the statistics indicate, it does appear our world is becoming a more dangerous place to live for many people.

3 Source: International Strategy for Disaster Reduction http://www.unisdr.org/disaster-statistics/occurrence-trends-century.htm

WHAT IS DISASTER MANAGEMENT?

Disaster management is often described as a cycle that incorporates a number of stages. This can be represented in diagram form:



The stages of the disaster management cycle often require different activities and measures and can involve different time scales. Immediately following a disaster, the post event activities of response and relief operations are implemented as quickly as possible. Rehabilitation, restoration and reconstruction activities can take months and years to complete, and the pre-event activities of preparedness, mitigation and prevention are ongoing measures that are aimed at reducing risk and the impact of future disasters.

CASE STUDY

SURVIVING THE TSUNAMI - THE ONGEE WARNING SYSTEM

With over 300,000 casualties and many thousands more affected, the devastating Indian Ocean Tsunami that struck on Boxing Day 2004 was one of the most tragic disasters of recent times. The need for an Indian Ocean tsunami warning system, similar to one operating in the Pacific, has been loudly voiced and is seen as a priority to avoid a reoccurrence of the event. It appears that on Little Andaman Island, located in the Bay of Burma, when the tsunami struck a warning system was not only already operating and saved the lives of many of the people living there.

Little Andaman Island is inhabited by the Ongee, a small group of indigenous people (numbering 97 at the start of 2005) living a traditional hunter-gatherer lifestyle. The Ongee avoided the destructive force of the *giyangejebey* [4] (tsunami) by heading away from the coast soon after they felt the *lololokobey* (earthquake). An Ongee leader, Totanagey, provides a remarkably accurate understanding of what was about to occur:

" … on the day when giyangejebey (tsunami) came, the water went away from the land very quickly and like the breathing-in-and-out-of-the-body the sea water had to come back very rapidly and in a big way!"[5]

Ongee traditional knowledge of tsunamis and their close observation of the environment acted as a warning system that allowed them to know what was happening and retreat from the area that would soon be swamped by the intruding waters. Through a lack of understanding, many of the victims of the tsunami in other countries were killed by doing what the Ongee knew was fatal: advancing out onto the temporarily dry seabed.

The use of traditional knowledge to avoid disaster is not exclusive to the Ongee. Many peoples around the world have a long history of living and dealing with natural hazards, and have developed ways of coping when they strike. Traditional knowledge was a key element in reducing their vulnerability, and, as evident with the Ongee and the Indian Ocean tsunami, can still be an effective means to avoid disaster.

4 Giyangejebey in the Ongee language is a verb that literally means "solid earth becoming fluid, like the sea-water." Source: Pandya, V. (2005) "When land became water: Tsunami and Onges of Little Andaman island"

5 Source: Pandya, V. (2005) "When land became water: Tsunami and Onges of Little Andaman island"

REFERENCE

Peduzzi, P. (2005) Is climate change increasing the frequency of hazardous events? The Environment Times, Feb 2005.

Pandya, V. (2005) When land became water: Tsunami and Onges of Little Andaman Island.

Twigg, J. (2004) Disaster Risk Reduction: mitigation and preparedness in development and emergency programming. *Humanitarian Practice Network Good Practice Review, Number 9, March 2004.*

Lewis, J. (1999) Development in disaster prone places: Studies of vulnerability. *Intermediate Technology Publications, London.*

Twigg J. & Bhatt, M.R. (1998) Understanding vulnerability: South Asian perspectives *Intermediate Technology Publications, London.*