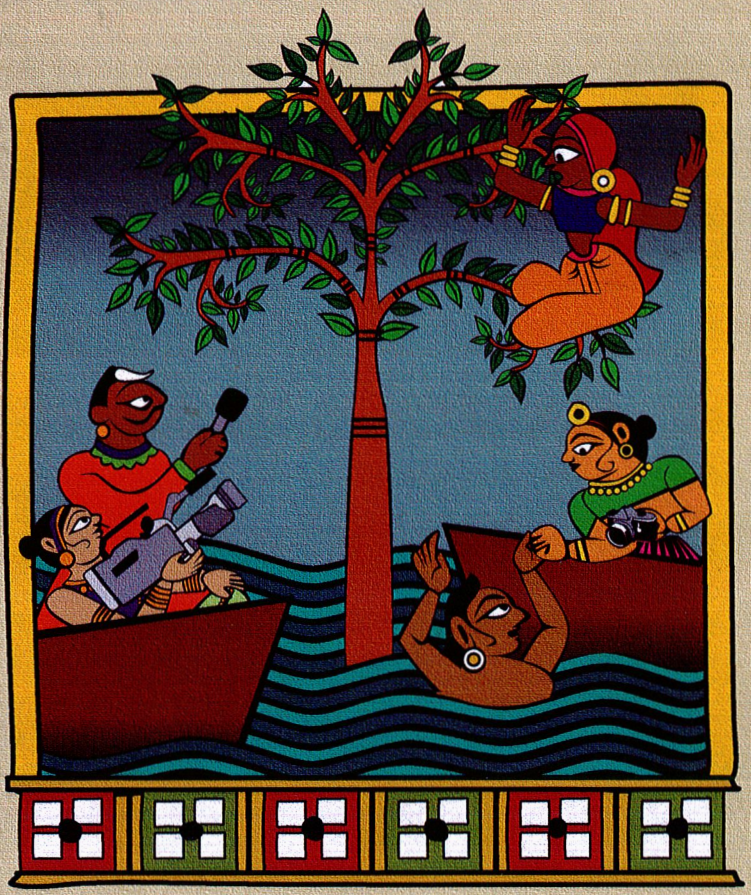
Disaster Communication

A Resource Kit for Media



Amjad Bhatti
Madhavi Malalgoda Ariyabandu

A Duryog Nivaran Publication
2002

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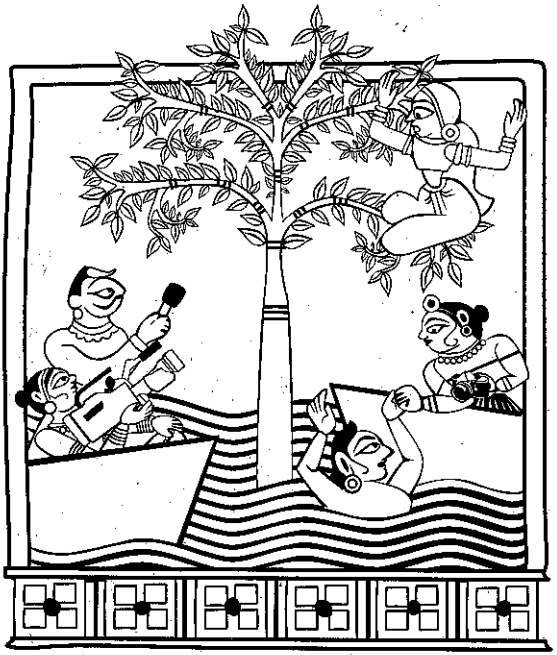

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Madhavi Malalgoda Ariyabandu is a development researcher with special focus on political economy of development and disasters. She has designed and coordinated a number of research and training initiatives on livelihood options in disaster risk reduction, gender issues in disasters; and has analysed disaster management policies with special reference to the member countries of South Asia. She has considerable experience in interacting with the communities living with disasters in South Asia. Madhavi authored the book 'Defeating Disasters; Ideas for Action, and co- edited the publications 'Seeing Disasters Differently-Visions and Suggestions', and 'Disaster Risk Reduction in South Asia'.

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ITDG South Asia and Journalists Resource Centre are member organisations of Duryog Nivaran, South Asia network for disaster mitigation.

ITDG is an international development agency that promotes appropriate technology options around the world. It was begun by E.F. Schumacher, the famous economist and author of the widely read book *Small is Beautiful.* ITDG has been in operation in Sri Lanka since 1989. ITDG South Asia currently works in the areas of energy, transport, manufacturing, agro processing and disaster mitigation.

ITDG
PRACTICAL ANSWERS TO POVERTY

Journalists Resource Centre is a research, training and resource organization on media and development issues, which specifically addresses the information needs of media professionals. It provides research and training input to media and development organizations through its publications and by organizing multi-stakeholder consultative meetings.

JRC

Duryog Nivaran is a network of individuals and organisations working in South Asia who are committed to promoting an alternative perspective on disasters and vulnerability as a basis for disaster mitigation in the region. The network's aim is to reduce the vulnerability of communities to disasters and conflicts by integrating the alternative perspective at conceptual, policy and implementation levels of disaster mitigation and development programmes in the South Asian region.

Duryog Nivaran

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Contents

Introduction

This book aims to improve the South Asian media's coverage of disasters. It attempts to do this in two ways: first, by providing the media with a better understanding of disasters and their causes; second, by showing how to adopt a more progressive approach to gathering and presenting news that could stimulate more effective action by policy makers and the public.

There are different ways of viewing disasters and dealing with them. The dominant approach, influenced by scientific attitudes, focuses on hazards rather than the disasters that they cause, does not look at disaster trends, and is largely reactive to disasters when they occur. The alternative paradigm that is now being promoted by the Duryog Nivaran network and many other organizations in South Asia, links the rising impact of disasters to the growing vulnerability of human society. It emphasizes measures to prevent disasters from taking place or minimize their impact – an approach that should be integrated with development planning.

The media has an important role to play in protecting people from disasters, by educating the public about risks and hazards, transmitting forecasts and warnings, and challenging policy makers and disaster managers to improve their performance. There has been a great deal of criticism of the media's treatment of disasters – notably its focus on the consequences of disasters

rather than their causes, and its stereotyped and erroneous portrayal of disaster-struck communities as passive victims.

As well as discussing these and related problems in some detail, the book offers practical guidance to reporters and editors on more intelligent approaches to disaster news-gathering and how media coverage can play a more socially responsible role in helping to reduce disasters' impact. Several case studies support the discussion. There is also background material on the nature and impact of disasters in South Asia, policies and structures for dealing with them in the five countries covered (Bangladesh, India, Nepal, Pakistan and Sri Lanka), disaster terminology, organizations to contact and sources of further information.

Chapter 1
Disasters: Definitions and Debates

Summary

This chapter is an introductory narrative intended to improve media understanding of disaster issues. The chapter reviews various definitions of disasters and discusses the missing elements in the dominant discourse on disaster management. It introduces alternative perspectives on risk reduction, hazard assessment and community-based disaster preparedness. It also presents arguments for a shift in paradigm: from emergency management to risk management.

An updated and informed media exposed to current debates on disasters and aware of alternative options for managing risk can play an effective role in bringing about changes in policy and informing public opinion to build risk-free societies across the South Asian region. This chapter outlines some of these issues.

1.1 What is a disaster?

The term 'disaster' is defined in different ways. For example:

> *Concise Oxford Dictionary:* Sudden or great misfortune, calamity.
>
> *Webster's Dictionary*: A sudden calamitous event producing great material damage, loss and distress.
>
> *Asian Development Bank Disaster Manager's Handbook*: An event natural or man-made, sudden or progressive, which impacts with such severity that the affected community has to respond by taking exceptional measures.[1]

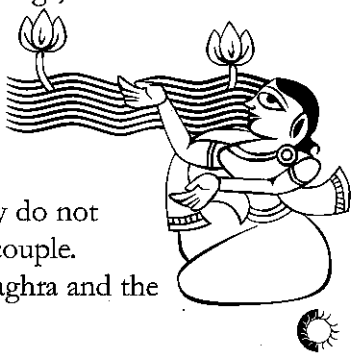
Disasters are as old as human history. Archival evidence from South Asian countries reveals a variety of ways of looking at disasters and devising locally relevant counter disaster strategies. Traditionally, *Do'aa* (prayer) and *Dawa* (medicine/ action) were two guiding principles for communities in managing calamities and related stress. Ceremonial sacrifices were offered to please the gods of nature, although practical preventive and recovery measures were also undertaken. A variety of appropriate and locally designed technologies were employed to avoid or protect against disasters. For instance, traditional wooden buildings in parts of the Himalaya are designed to withstand earthquakes, and many communities have well-established procedures for protecting their belongings in time of flood.

[1] Carter N, *Disaster Management, A Disaster Manager's Handbook*, Asian Development Bank, Manila (1991)

Kinship with rivers

Formerly, people related personally to rivers. That is why most rivers are called mothers. The great saint Vishwamitra called the Kosi his elder sister. The mighty Brahmaputra is deemed to be a patriarch. The Ganga, said to be the wife of King Shantanu, is seen by Indians as their mother. The Narmada, daughter-in-law of the king Mandhata, was married to Purukutsya.

Kaka Kalelkar, a renowned social worker and a Gandhian, treated the Markandi, a small river flowing past his village, as a childhood friend.



When the Brahmaputra and Dibang, in Assam, are in spate and their waters mingle, the locals believe that they are tying the nuptial knot. Before trying to protect themselves from floods, they do not forget to offer gifts to the newly-wed couple. There is a similar legend about the Ghaghra and the Taraina in Uttar Pradesh.[2]

However, modern thinking on disasters has often been unfairly critical of traditional disaster management practices. Current thinking on disasters and their management falls into two main paradigms.

(a) Conventional paradigm

The conventional paradigm is influenced by natural science and applied science approaches. The natural science approach equates hazards and hazardous events and also perceives disasters as synonymous with hazards. It emphasizes research into geophysical and hydro-meteorological processes. Disaster management activities focus on

[2] Mishra DK, *Living with the politics of floods: the mystery of flood control.* People's Science Institute, Dehradun (2002).

monitoring of hazards and prediction of hazardous events.

The applied science approach emphasizes documenting and analyzing losses and damages associated with hazardous events. It determines the magnitude of a disaster in relation to the magnitude of losses incurred. Initiatives influenced by this approach focus on research into the exposure and resistance of physical structures.

(b) Alternative paradigm

The alternative paradigm is based on a combination of social science and holistic approaches. The social science approach brings the idea of 'vulnerability' into disaster management discourse. It links disasters to vulnerability, which is degree of lack of capacity of households, communities and societies to absorb the impact of hazardous events and recover from them. This approach maintains clearly that hazards are natural but disasters are not. It also shows that the magnitude of a disaster is related to differential vulnerability between and within communities. Differences in age, gender, caste, social and economic status are among the factors making different groups of people more or less vulnerable to disasters.

The holistic approach is an important constituent of the alternative paradigm. It maintains that disasters are closely related to unsustainable development. It explains that risk scenarios are combinations of capacities, vulnerabilities, losses and hazards. The holistic approach regards disasters as socio-natural hazards.

[3] Duryog Nivaran/ITDG, *Disasters and Vulnerability in South Asia. Programme of work for Duryog Nivaran: a South Asian initiative on disaster mitigation.* Duryog Nivaran/ITDG, Colombo (1994)

Dominant perspective[3]	Alternative perspective
Disasters/conflicts viewed as isolated events.	Disasters/conflicts are part of the normal process of development.
Linkages with conditions in society during normal times less analyzed.	Analyzing linkages with society during normal times is fundamental for understanding disasters/conflicts.
Technical/law and order solutions dominant.	Emphasis on solutions that change relationships and structures in society. The objective is to reduce people's vulnerability and strengthen their capacity.
Centralized institutions dominate intervention strategies. Less participation of people, who are treated as 'victims'.	Decentralized institutions dominate intervention strategies. Participation of people paramount in intervention strategies; people treated as 'partners' in development.
Implementing agencies less accountable and their processes less transparent to people.	Ensuring accountability and transparency emphasized in implementation.
Interventions are made after the event occurs.	Mitigation of disasters/conflicts the fundamental aim.
The objective of intervention is to return to the situation before the event.	Disasters/conflicts viewed as opportunities for social transformation.

1.2 What is disaster management?

Disaster management is defined as 'applied science which seeks, by the systematic observation and analysis of disasters, to improve measures relating to prevention, mitigation, preparedness, emergency response and recovery'.[4]

There are various approaches to disaster management. The two main ones can be explained as follows.

(a) Dominant approach

The dominant approach to disaster management is largely influenced by relief and mitigation paradigms. The relief paradigm focuses on emergency management after a disaster has occurred. It addresses food, shelter and health issues. Whereas in pre-disaster scenario it is limited to contingency planning, undertaking evacuation activities, stockpiling relief goods, and locating shelters and secure areas.

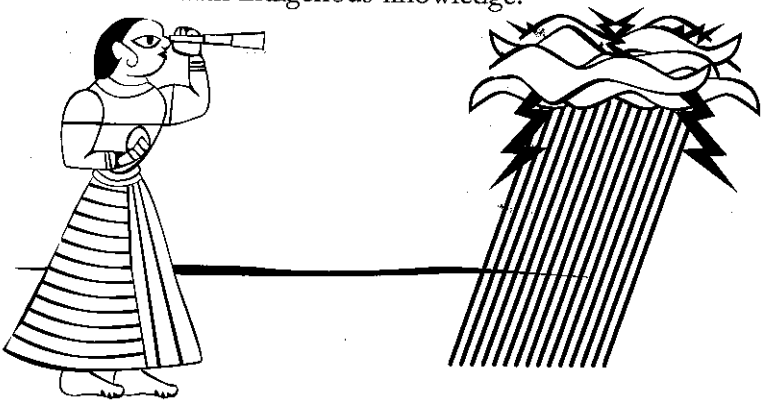
The mitigation paradigm emphasizes identification of hazard-prone localities and looks into the patterns of physical vulnerability. It stresses mitigation of hazards and physical vulnerability through structural measures (e.g. embankments, dykes, reinforcing structures, protective bunds), relocation, retrofitting, zoning, building codes, etc.

[4] Duryog Nivaran/ITDG, *Disasters and Vulnerability in South Asia. Programme of work for Duryog Nivaran: a South Asian initiative on disaster mitigation.* Duryog Nivaran/ITDG, Colombo (1994)

(b) Alternative approach

The alternative approach to disaster management is formulated on development and risk reduction paradigms. The development paradigm focuses on the causal factors and processes of vulnerability. It demands increased capacity to absorb losses and recover from them at household, community and societal levels. It also emphasizes non-structural mitigation measures (e.g. ensuring secure livelihoods and living environment, increasing income, early warning systems, building organisational capacity to manage hazards, improving knowledge and skills, land property ownership and access to credit as well as technological innovations).

The risk reduction paradigm lays its emphasis on hazard, vulnerability, capacity and understanding people's knowledge about risk before addressing any potential disaster. It seeks the optimization of existing coping strategies in the face of loss, based on the notion of local solutions to global problems. It also advocates that households and communities at risk should be treated as subjects rather than objects. The risk reduction paradigm in disaster management combines technical and scientific views with indigenous knowledge.



Clash of interpretations

An argument over definitions of the words 'hazard' and 'disaster' was observed in a workshop on disaster reporting organized by the Journalists Resource Centre, Islamabad Chapter, in 2000. The disagreement was between a government official and a presenter at the workshop. The presenter defined 'hazard' as a potential disaster while the government official maintained that the disaster comes first and then the hazard follows.

This issue generated a heated debate among the participants. There was a thorough discussion on the definitions and differences between 'hazard' and 'disaster'. Most of the participants disagreed with official's stance and commented that this definitional misconception is also reflected in government disaster policies that tend to react to disasters instead of addressing hazards, government believes disasters rather than hazards are the issue. Recent studies on disasters clearly maintain that it is hazard which turns into disaster because of the low level of structural and non-structural resilience.

1.3 What is vulnerability?

All the evidence points to a steep and continuing rise in deaths and injuries from disasters since the 1960s, and there is general consensus among researchers and insurers that the number of disasters is increasing. This rise cannot be explained by a parallel rise in the number of earthquakes, cyclones and the like. What we are seeing is an increase in the effects of disasters on people – or, in other words, an increase in people's vulnerability to disasters.

It is the social, cultural, economic and political environment that makes people vulnerable. This is most apparent in the economic pressures that force many of the poor to live in cheap but dangerous locations such as flood plains and unstable hillsides; but there are many less visible underlying factors – social and political as well as economic – that affect people's ability to protect themselves against disasters or to recover from them.

Some groups are more vulnerable than others. Vulnerability is not just poverty, but the poor tend to be the most vulnerable. The influence of poverty and the development process on vulnerability to disasters is now well established. Being poor, and having no choice, increase vulnerability to disasters. Class, caste, ethnicity, gender, disability and age are other factors affecting people's vulnerability. Those who are already at an economic or social disadvantage because of one or more of these characteristics tend to be more likely to suffer during disasters.[5]

[5] Twigg J, 'Disasters, development and vulnerability'. In Twigg J (ed.) *Development at Risk? Natural Disasters and the Third World.* UK National Coordination Committee for the IDNDR, London (1998)

Poverty and disaster – a cyclone in India

A wealthy and a poor family live 100 meters apart near the coast of Andhra Pradesh in southeast India.

The wealthy family has six members, a brick house, six cattle and three acres of land. The head of the household owns a small grain business and has a truck. The poor family (husband, wife and two children) has a thatch and pole house, an ox and calf, half an acre of poor land and sharecropping rights for another quarter of acre.

When the cyclone strikes, the wealthy farmer has received a warning on his radio and leaves the area with his family and valuables in the truck. The storm surge (flood) partly destroys his house and the roof is taken off by the wind. Three cattle are drowned and his fields are flooded, destroying the crops. The youngest child of the poor family is drowned; their house is destroyed; both animals are drowned; their fields are flooded and the crops ruined.

The wealthy family use their savings to rebuild the house within a week. They replace the cattle, and plough and replant their fields. The poor family does not have savings and has to borrow money for essential shelter from a local money lender at exorbitant rates of interest. They manage to buy a calf but have to hire bullocks for ploughing their field, which they do too late since many others are in the same position and draught animals are in short supply. As a result, they go through a hungry period eight months after the cyclone.[6]

[6] Blaikie P *et al.*, *At Risk: natural hazards, people's vulnerability, and disasters.* Routledge, London (1994) (after studies by Peter Winchester).

As an example, consider the earthquake that struck San Fernando, California, in 1971. The quake registered 6.4 on the Richter Scale. Yet San Fernando, with a population of over seven million, suffered only minor damage and 58 deaths. One year later, an earthquake of magnitude 6.0 struck Managua, Nicaragua, and reduced the centre of the city to rubble, killing an estimated 6,000 people.[7] What was the difference between the two locations that caused such a disparity and made one an 'earthquake' while the other was a 'disaster'? Different levels of development of structures and resistance of people to withstand the assault directly determined the extent of damage.

A hazard becomes disaster when it interacts with vulnerabilities, be they physical or socio-economic. No less importantly, it has to be recognized that even when the prime mover in a famine is a natural occurrence such as a flood or a drought, its impact on population will depend on how society is organized.[8]

Duryog Nivaran is improving our understanding of vulnerability by collecting and presenting well-researched case studies and perspectives that are relevant to the realities of South Asia. The material is wide-ranging: it includes women in urban and rural districts of the Indian state of Gujarat, who face a range of hazards; men and women in the Thar desert and fertile Punjab in Pakistan who also face a variety of hazards including drought, earthquakes and floods ; and Nepali villagers living under the threat of landslides. Yet, though the circumstances are different, every case demonstrates the complex interaction between the forces of nature and the forces of society that combine to create disaster.

[7] Cuny FC, *Disaster and Development.* Oxford University Press, Oxford (1983).

[8] Drèze J, Sen A, *Poverty and Famines. Hunger and Public Action.* Oxford University Press, New Delhi (1989)

Disasters can only be understood and prevented by addressing all these factors.

Risk and vulnerability: some definitions

Risk

- Risk includes two elements – the likelihood of something happening and the consequences if it happens.
- Risk occurs where factors and processes are sufficiently measurable for believable probability distributions to be assigned to the range of possible outcomes.

These definitions indicate the importance not only of recognizing that risk occurs but also of being able to measure its level (e.g. severe, moderate, or minor).

Vulnerability

- Vulnerability is the susceptibility to harm of those at risk.
- Vulnerability is the coping capacity of those at risk.
- Vulnerability is the degree of susceptibility and resilience of the community and environment to hazards.
- Vulnerability depends on the characteristics of a person or group in terms of capacity to anticipate, cope with, resist and recover from the impact of hazard.[9]

[9] Definitions of vulnerability from: Beer T, Ziolkowski F, 'Environmental Risk Assessment: An Australian Perspective'. Report to Environmental Protection Agency, AGPS Canberra (1995); Dovers S, 'Risk, uncertainty and ignorance: policy process and institutional issues'. Background paper, Fenner Conference on the Environment: Risk and Uncertainty in Environmental Management, Canberra (1995). Definitions of risk from Handmer J, 'Issues Emerging from Natural Hazard Research and Emergency Management', Background paper, Fenner Conference on the Environment: Risk and Uncertainty in Environmental Management, Canberra (1995); Emergency Management Australia, *National Emergency Management Competency Standards*, EMA (1995); Blaikie P. *et al.*, *At Risk: natural hazards, people's vulnerability, and disasters*. Routledge, London (1994)

Risk can only be managed if those who are vulnerable are identified. As Salter comments, risk and vulnerability are inextricably linked and therefore vulnerability must be understood if risk is to be managed.[10]

1.4 What is the community-based approach?

The 'community-based' or 'bottom-up' approach is not new in development discussion. However, this is a relatively new concept in disaster mitigation. With the identification of the direct link between development and disasters, the issue is now being given some attention.

It is increasingly becoming evident that with appropriate support in skills development and infrastructure, communities can play a central role in disaster management and in emergencies.

The place and the role of the community in disaster preparedness and mitigation varies depending on the approach one takes.

The dominant approach to dealing with disasters offers no space for community-based initiatives, since it sees communities/victims as a part of the problem for which solutions need to be worked out. Communities are considered victims and beneficiaries of interventions by outside experts.

The alternative perspective promoted by Duryog Nivaran and others sees the community as a part of the solution – indeed, as an important part of it. A

[10] Salter J, 'Towards a Better Disaster Management Methodology', *Australian Journal of Emergency* Management 10(4) (1995)

sustainable way of addressing disasters, disaster preparedness and emergency management lies in recognizing the community as a resource. This approach makes it possible to find solutions within the community, and makes communities and victims less dependent on outside help and relief.[11]

Communities and victims are a valuable resource because:

- They are knowledgeable about disasters happening in their own environment and are sometimes able to forecast them.
- They are rich in experience of coping, both in preparedness and in emergencies. Their coping methods – practised over time and derived from their own experience – suit the local environment best. The richness and diversity of ordinary people's coping strategies is certainly a resource to be recognized.

Communities respond to their real priorities in the context of all the constraints they face, including social, economic and political pressures, whereas outside experts never see the full picture.[12] By itself, community capacity is not sufficient for effective disaster mitigation. But it is a vital part of any integrated and sustainable disaster mitigation strategy. With the changing nature and the increasing intensity of the impact of disasters, community efforts need to be particularly supported since there are a number of barriers to the full realization of community efforts:

[11] Ariyabandu MM, *Defeating Disasters: Ideas for Action.* ITDG South Asia/Duryog Nivaran, Colombo (1999)

[12] Maskrey A, *Disaster Mitigation: A Community Based Approach.* Oxfam, Oxford (1989)

- Lack of resources
- Inadequate access to information on time
- Inadequate technologies
- Lack of capacity in community organizations
- Difficulties in negotiating with governments and other agencies
- Lack of control over structural factors (such as land and produce markets)

An effective disaster mitigation strategy should take action to remove these barriers to facilitate the full potential of community efforts by:

- Recognizing their resourcefulness
- Identifying the gaps in community coping methods, and providing support
    - With the required skills
    - With infrastructure (for example information, warning systems)
    - With appropriate financial and human resources
    - In strengthening community organizations

1.5 Why are gender issues important in disasters?

We have seen how the degree of vulnerability to disasters varies according to a number of socio-economic influences. Gender is a significant factor among these. The importance of gender issues in development programmes is now widely recognized. At present there is hardly any international or national development plan that does not include gender analysis as an integral part. However, there is little understanding of gender aspects of risk and vulnerability to disasters – not only in South Asia, but worldwide.

There is an evident lack of awareness of this issue at both practitioner and policy levels among actors engaged in disaster mitigation and management. Gender analysis is practically absent in disaster planning in South Asia.[13]

However, the different natures of the needs and concerns of men and women facing disasters are now surfacing from the accounts of emergency workers, and from the few research studies on this subject.

Case studies from Duryog Nivaran's publication *South Asian Women: Facing Disasters, Securing Life*[14] outline the different roles and responsibilities men and women take in disaster situations, and the differences in the degrees of risk they face individually in such situations.

[13] Ariyabandu M M, *Defeating Disasters: Ideas for Action.* ITDG South Asia/Duryog Nivaran, Colombo (1999)

[14] Fernando P, Fernando V (eds) *South Asian Women: Facing Disasters, Securing Life.* ITDG/Duryog Nivaran, Colombo (1997).

Most of the gender-related differences in disasters arise from the different roles and responsibilities men and women undertake in their day-to-day lives. In most South Asian societies women have almost the entire responsibility for maintaining the household: they are responsible for providing food and water for family survival, and taking care of the sick and the old. In a disaster, irrespective of the losses and trauma, women still have this responsibility. Disaster managers' lack of awareness of gender differences has resulted in insensitive and ineffective relief operations that largely bypass women's needs and their potential to assist in mitigation and relief work.

Women and men perform distinct disaster preparedness activities. At grassroots level women take an active part both in membership and leadership in community disaster issues where they often outnumber men. But in larger, more formal emergency planning organizations women are less well represented, and markedly absent from decision-making positions. This appears to be true for both the developed and developing world.[15]

The most important issue deserving emphasis is that, contrary to popular perceptions, women are not helpless victims but display great strength in extreme situations. They possess skills, resilience and extensive knowledge about appropriate coping strategies, but their capacity remains largely invisible.

Women's strength is demonstrated in preparing for emergencies, saving life during emergencies and building livelihoods in post-emergency situations.

[15] Enarson E, Morrow B (eds), *The Gendered Terrain of Disaster: Through Women's Eyes*. Praeger, Westport CT (1998).

Therefore, women are an asset and a resource, which is under-utilized.

Experience on the ground suggests that the technological and managerial skills women use to run their households and families can be used in disaster management and such a contribution can greatly help a community response effort.

Defying convention

Sabiha Khatun is a 76-year-old widow from the island of Hatiya in Bangladesh. This island is frequently affected by floods and cyclones. She lost her husband to a cyclone in 1970, and that incident encouraged her to take action to prepare her community to face natural hazards of this nature. She has educated herself about preparedness measures, discussing them with the local authorities, and she has started sharing her knowledge with her community. She formed a women's organization in 1985 to empower women with knowledge and skills in income generation and savings, health, and rehabilitation of disaster victims. This organization was the driving force behind women moving into safer areas during the 1991 cyclone.

The normal practice is for women to remain inside the house even in the face of impending disasters since to leave is a violation of *purda*. Women moving out of their homes to go to the cyclone shelters was opposed initially by the male members of the community, but was endorsed soon after, when they had seen the effects. Sabiha Khatun has defied the barriers of culture and age to ensure a more secure way of life for her community.[16]

[16] Duryog Nivaran, *South Asian Women: Facing Disasters, Securing Life.* Video. Duryog Nivaran, Colombo (1998).

Apart from practical concerns, understanding gender relations in disasters is important for strategic reasons. In times of disaster, ill informed emergency interventions can seriously affect the long-term social relationships between women and men regarding access to resources, information and decision-making.[17]

1.6 Why do people live with risks?

People do not willingly embrace the risk of death or economic devastation, but short-term pressures such as the need to earn money and feed a family may oblige them to face the more remote risk of disaster.

For example, a study of Nawalapitiya in the central hills of Sri Lanka in 2000 found that people continued to live in houses condemned by the authorities as unsuitable for occupation due to the threat of landslides and rock falls. The houses, built in the 1950s as Railway Department staff quarters, showed clear signs of weakness such as cracks in the walls, constantly damp floors and tilted roofs. Their inhabitants were aware of the high risk but chose to live there rather than moving to a safer area offered as an alternative by the government. The people said that moving further away would deny them their daily earnings, access to schools and health care, which are much more pressing problems on a day-to-day basis than landslides.[18]

[17] See the case studies in Fernando P, Fernando V (eds) *South Asian Women: Facing Disasters, Securing Life.* ITDG/Duryog Nivaran, Colombo (1997).

[18] Interviews conducted for the research study, 'Livelihoods Options for Disaster Risk Reduction in Landslide Prone Areas in Sri Lanka, ITDG South Asia, Colombo 2000

Good floods and bad floods

Not all flooding in Bangladesh is harmful. Farmers need some flood waters to grow rice in the fields. The main rice crop, known as *aman*, is cultivated in the monsoon months of June-August and is specially adapted to those wet conditions. Family diets also gain in protein from the fish caught in flooded lands during the monsoon.

The Bangla language distinguishes between beneficial 'inundations' of different kinds and what we would call a 'flood'.[19]

1.7 Is disaster prevention cost-effective?

More effective prevention strategies would save not only tens of billions of dollars, but save tens of thousands of lives. Funds currently spent on intervention and relief could be devoted to enhancing equitable and sustainable development instead, which would further reduce the risk for war and disaster. Building a culture of prevention is not easy. While the costs of prevention have to be paid on the present, its benefits lie in a distant future. Moreover, the benefits are not tangible; they are the disasters that did NOT happen. (UN Secretary-General Kofi Annan)[20]

The positive economic impact of mitigation efforts is difficult to quantify, and to demonstrate. But the available evidence and calculations clearly show that prevention is cost-effective.

The World Bank and United States Geological Survey calculated that economic losses

[19] Twigg J (ed) *Living with disaster.* Rugby, ITDG (1998)

[20] UN Secretary General, 'Introduction to the Secretary General's annual report on the work of the organisations of the United Nations (1999)

worldwide from natural disasters in the 1990s could be reduced by $280 billion if $40 billion were invested in preparedness, mitigation and prevention strategies.[21]

More simply, Nandawathie, a widow from the Moneragala District in Southeastern Sri Lanka, who had to walk 2-3 km several times each day in the dry season to collect pots of water, spending about 4 hours on the task, built a rainwater harvesting tank in her compound as a drought mitigation measure. She invested Rs 4,000[22] on the tank, which can hold 5,000 litres of potable water. The water collected in the rainy season is sufficient for most of her family's domestic needs and for cultivating some vegetables. With the savings in time and added vegetable yield, she was able to open a small shop which brings her an added income of Rs 1,500/- a month.[23]

At national level, incorporation of disaster prevention in development plans will provide added economic stability for further investments. The power crises in Sri Lanka in 1996 amply demonstrated this position. Sri Lanka depends on hydro electricity for over 80% of its power supplies. A lasting and severe drought spell substantially reduced the country's water resources, severely affecting power generation. The drought was predicted, and back-up plans for alternative sources of energy supply were drawn up and presented by the Ceylon Electricity Board well on time. But political and other bureaucratic factors did not allow the proposed measures to be implemented.

[21] Dilley M, Heyman BN, 'ENSO and Disaster: Droughts, Floods and El Niño/Southern Oscillation Warm Events'. *Disasters* 19 (3) (1995).

[22] The total construction cost of the rainwater harvesting tank is Sri Lanka Rs 10,000. The balance Rs.6,000 was invested by the project.

[23] Unpublished data from ITDG South Asia Food and Water Security Project.

This drought had a direct impact on the livelihoods of communities living from agriculture. The agricultural sector suffered most from the drought: consequently, total agricultural output registered a 5% decline. The power crisis resulting from the drought affected all the other sectors of the economy. This unstable situation had a long-term effect on both local and foreign investments, when the country was badly in need of such investment. The Central Bank of Sri Lanka urged the importance of reducing dependence on hydro power, which is highly vulnerable to weather conditions, and of having back-up plans. It was difficult to mitigate the severe impact of drought on the agricultural sector, but with appropriate preparedness it would have been possible to save the country from the power crisis resulting from the drought.[24]

[24] Ariyabandu M M, *Defeating Disasters; Ideas for Action*, ITDG South Asia/Duryog Nivaran, Colombo (1999)

1.8 What are the guiding principles for a 'paradigm shift' in disaster management?

As discussed earlier in this chapter, the dominant perspective of disaster management is relief-based and supply-driven. The central focus of national governments and donors is to support relief mechanisms instead of strengthening preparedness régimes. Investment in disaster mitigation and preparedness is minimal. In the early 1990s it was estimated that resources expended on preparedness and mitigation worldwide accounted for only 4% of all the money spent on disaster related work each year.[25] Since then, relief budgets have risen sharply to deal with the consequences of numerous conflicts, and it is likely that the percentage spent on preventing disasters has fallen still lower.

Even within the international agencies who recognize and endorse disaster mitigation, investments are at a very low level. For instance, the disaster preparedness budget of the UK Government's Overseas Development Administration (now Department for International Development) in the financial year 1994/5 was just 1.04% of its total emergency aid budget for the year. Many major donors do not have specific disaster preparedness budgets. The picture is similar in most national government investments too.

Recent studies of disaster risk reduction in South Asia[26] resolutely advocate a 'paradigm shift' in disaster management to achieve higher levels of resilience, both structural and non-structural. The

[25] UNESCO, *Disaster Reduction, Environment and Development.* UNESCO, Paris (1993)

[26] Carried out as part of a regional research project on "Livelihood Options for Disaster Risk Reduction in South Asia" coordinated by ITDG South Asia.

paradigm requires strengthening risk management instead of concentrating on emergency management. It is recommended that disaster preparedness is incorporated in mainstream development planning at national and regional levels, and that livelihood options for at-risk communities are enhanced to effectively reduce the risks and damages related to disasters. The community-based approach described earlier is an integral component of the new paradigm.

1.9 Is a paradigm shift taking place in disaster management?

The 1990s were declared the International Decade for Natural Disaster Reduction (IDNDR) by the member states of the United Nations. The founding resolution established an International Framework of Action calling upon all governments to assume primary responsibility for formulating national disaster mitigation programmes and other policies, institutional structures and action plans which would reduce the consequences of natural disasters.[27]

The explicit goals set out by the IDNDR indicate that the international community at the highest level grasped of the gravity of the problem: its magnitude and the growing threats natural disasters pose to stability and economic development across the globe. The programme targets declared by IDNDR required each country to conduct a national hazard risk assessment, to

[27] IDNDR *Final Report, Scientific and Technical Committee*, IDNDR, Geneva (1999)

incorporate a sustained disaster mitigation strategy into the national economic development plan, and to ensure improved access to effective early warning practices at all levels. These targets indicate conceptual acceptance of elements of the paradigm shift towards more integrated risk management.

Assessment of the outcomes of the IDNDR indicated that it resulted in taking the broad concepts of paradigm shift, recognizing the linkages between disaster, development and the natural resource environment, to wider audiences. The Decade clearly carried the message that sustainable economic growth and development cannot be achieved without taking measures to reduce losses from natural disasters. It was also instrumental in generating widespread acceptance of the fact that uncontrolled adverse human practices are a contributory factor towards increased risk. According to its final report, the Decade succeeded in raising recognition of the feasibility of natural disaster reduction, and provided a global opportunity to increase public awareness, to motivate professionals in official bodies, and to engage scientists and technical interests in the promotion of new programmes.

Response to paradigm shift – countries in South Asia

The IDNDR called upon national governments to demonstrate a policy commitment to reduce their vulnerability through declarations, legislation, policy decisions, and actions at the highest level. This would require the progressive implementation of disaster assessment and reduction plans at national and community levels. Without such a policy commitment, disaster mitigation practices (which are a long-term investment to protect people and other assets) will not be assigned a high priority, particularly by developing countries which are hard-pressed to find financial resources to manage short-term crises. 130 countries responded to the IDNDR's call by establishing national committees or focal points, which ranged from highly effective to inactive in their performance.[28]

The South Asian countries under discussion – Bangladesh, India, Nepal, Pakistan and Sri Lanka – are at different stages in terms of how they are organized to manage disasters. The differences are substantial. Understanding and planning, institutional structures, constitutional and legal frameworks, and management practices show substantial variations between countries. A few countries have advanced to take the concepts of paradigm shift and culture of preparedness on board, initiating a process of change in institutional structures, policies and planning; but others are still following decades-old codes and regulations, with an emphasis on emergency relief (see Chapter 6 for details).

Bangladesh, India and Sri Lanka have taken some initial steps, such as appointing committees at the highest level to assess the disaster situation, introducing measures to support the required institutional structures, preparing plans and drafting legal enactments. The most recent national-level plans in all three countries include elements of disaster preparedness and mitigation. For example, the mission statement of the National Disaster Management Centre (NDMC) Sri Lanka is 'to protect human life, property and the environment

from natural disaster through awareness, prevention, preparedness, mitigation, and coordination'.[29]

India has moved forward to the extent of preparing 'vulnerability based'[30] national plans and guidelines for the preparation of district- and community-level plans. Sri Lanka is still at the stage of finalizing the national plan pending cabinet approval and getting the institutional structure in place. A Disaster Counter-Measures Act has been drafted and presented to the cabinet for approval. In Bangladesh, an institutional structure has been set out, with a disaster management system spreading from national to union level, and a Disaster Management Legislative Act has been drafted. According to the Secretary of the Ministry of Disaster Management and Relief, 'The Government apparatus and the administrative machinery has discarded the old concept of relief distribution and adopted the new concept of disaster mitigation'.[31] These developments can be seen as a beginning of a process. However, substantial work remains to be done in making a change.

In Nepal and Pakistan, the organizational structure and disaster policies still have a strong emergency response and relief focus. Hardly any new developments seem to have taken place since the IDNDR. In both countries, institutional and management moves for disaster preparedness are not visible. The existing institutional and policy frameworks do not adequately support preparedness elements even at the conceptual level. Apart from occasional mention, policy and planning documents do not seriously address or incorporate concepts of preparedness, prevention and risk reduction.

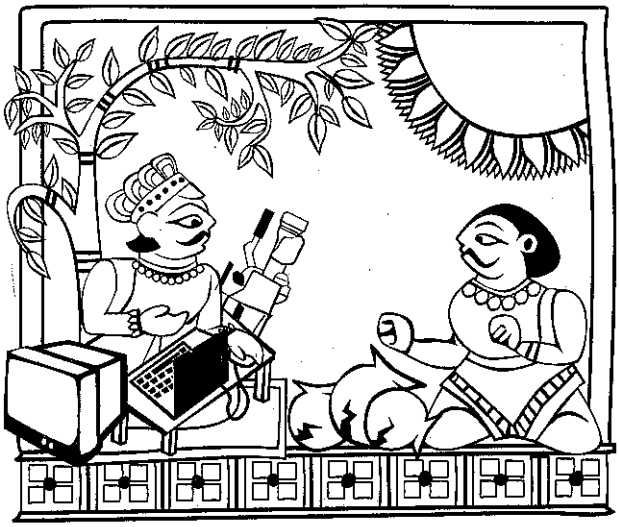
[28] IDNDR *Final Report, Scientific and Technical Committee*, IDNDR, Geneva (1999)

[29] National Disaster Management Centre, *National Plan for Disaster Management.* National Disaster Management Centre, Ministry of Social Services, Sri Lanka (2000)

[30] High Powered Committee on Disaster Management, *Report of the High Powered Committee on Disaster Management,* Ministry Of Agriculture, Government of India (2001)

[31] Amin AR, Country Position Paper prepared for the Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi (1999)

Chapter 2
Disasters and Communications Media



Summary

This chapter is a preliminary discussion of the process of information selection and communications in the current market context and the general role of communication in modern societies. It also attempts to locate the role of communication in disaster risk reduction, defines the process of risk communication and gives some examples of effective risk communication.

The main functions of communication, considered in its broadest sense in any social system are: information, socialization, motivation, debate and discussion, education, cultural promotion, entertainment and integration. Communication has become a vital need for communities and collective entities. It would be difficult for societies as a whole to survive today, if they were not properly informed about political affairs, local and international events or weather conditions. In short, communication functions are linked to all the needs that people have, both material and non-material.[1]

2.1 Mass communications and the market

Communication, in the most simple terms, is the process of sending and receiving information. As communication theories suggest, it is essentially a social affair. With the advent of industrialization, urbanization and modernization, the structures of social communication have changed massively in line with the changing material basis of society. Post-modern corporate entrepreneurship, along with so many other institutions, has also reshaped the structure, method and content of social communication in our present period of history. The scope of communication has been extended from individuals to groups, from groups to nations, and from national to trans-national levels. As an integral part of globalization, information and communications technologies (ICTs) have brought about radical changes in the methods, structures and impact of communications, with negative and positive results.

Peter Golding and Graham Murdock put it this way:

> Everyone, from politicians to academics, now agrees that public communications systems are part of the 'cultural industries'. The popularity of this tag points to a growing awareness that these organizations are both similar to and different from other industries. On the one hand, they clearly have a range of features in common with other areas of production and are increasingly integrated into the general industrial structure. On the other hand it is

[1] Mohanty, BB, 'Media and Democracy'. Paper presented to International Conference on Media for Democracy, organised by the Worldview International Foundation, Colombo, 30-31 May (2001).

equally clear that the goods they manufacture – newspapers, advertisements, television programs, and feature films –play a pivotal role in organizing the images and discourses through which people make sense of the world.[2]

Mass communication systems organize themselves under the discipline of the market. They produce and manufacture news items, articles, editorials, features and so on, and package them in a way that creates and sustains marketability among a large and growing audience. The masses, for the mass media, are a market. Information becomes a commodity – accessible only at a price – and readers or viewers become information consumers. Thus, media organizations, it is believed, are compelled to cater to audience interests and needs in order to win over, maintain and expand their audience markets.[3]

It can be questioned whether the media feels compelled to cater to the interests and needs of its audience or whether, more often, it *creates* needs and *constructs* interests for its audience, whose members are treated as subjects. There is considerable concern about this issue: some media critics have argued that the media sets the terms of discourse for its audience. It transmits images that it feels are acceptable, whether they are needs-based and culturally communicative to its audience or not. Therefore, there is a 'long standing concern with the way the mass media operates ideologically, to sustain and support relations of domination'.[4]

[2] Golding P, Murdock G, 'Culture, Communications and Political Economy'. Undated essay (n.d.).

[3] Gunasekara L, 'Hard Sell and Solidarity: News Media and Disasters in Sri Lanka'. Paper presented at Duryog Nivaran Policy Forum Future of Mitigation: South Asian Disasters, New Delhi, February 5-6 (1999).

[4] Golding P, Murdock G, 'Culture, Communications and Political Economy'. Undated essay (n.d.).

The debate goes on. Is the mass media really communicating with the masses? Is the media a private or public institution? Does it have to act only according to the dictates of market forces or does it also have some social role? Will corporate compulsions permit it to assume the functions of social auditing and generating pro-people information or will it keep relying on easily saleable products of fear, power and glamour?

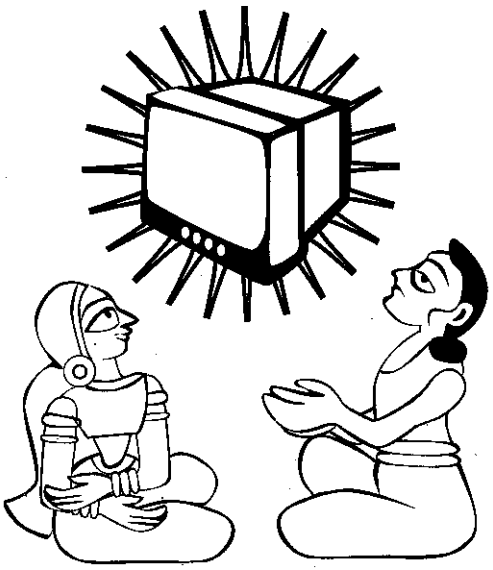
There are various vantage points from which to look at these questions. From the normative perspective, it can be argued that the media has to act as a public interest institution by putting forward public concerns and interests. It *should* be a watchdog, it *should* act as a steward of public trust, and it *should* become a building block for communities. This approach assigns a heavy moral agenda to the media which it is not ready to recognize, perhaps, for many internal and external reasons.

The other viewpoint, which is largely influenced by consumer rights discourse, is to let the media operate as a private business within the principles of profit, while still making it a socially responsible enterprise. Distortions and inequalities in the market system have to be changed by public intervention.

This discourse leaves room for citizens' groups, and consumers' and readers' associations to undertake civil and rights-based initiatives to bring media communication back on track to include the interests of its audience and needs of its consumers, if not for social or moral reasons then at least for its corporate interests.

There is, however, a growing realization within the media that for longer-term market sustainability it will have to develop a reciprocal relationship with its multiple and diverse audiences – including the marginalized masses.

Peter Golding and Graham Murdock suggest that in an ideal situation, communicating systems would contribute to these conditions in two important ways. Firstly, they would provide people with access to the information, advice and analysis that would enable them to know their rights and claim them effectively. Secondly, they would provide the broadest possible range of information, interpretation and debate on areas that involve political choices and enable people to register dissent and propose alternatives.[5] This is the way in which the mass media can include excluded groups and communities in its communication régime.



[5] Golding P, Murdock G, 'Culture, Communications and Political Economy'. Undated essay (n.d.).

2.2 Communication and disaster risk reduction

The media's convergence with disaster mitigation derives from its initiatives to inform, educate and empower communities with relevant knowledge for influencing public action and policy towards disaster preparedness and mitigation.

Natural hazards are inevitable natural phenomena. Their transition into disasters is often a result of the socio-structural organization and behaviour of society. Disasters do not have to cause such considerable loss of life and property or social dislocation. At best, some disasters can be prevented and the impact of others largely mitigated or reduced. Communications of all sorts have a pivotal role in reducing the loss of life and property arising from disasters.[6]

Mass communication is inextricably entwined with disasters and hazards mitigation. The role of communication in reducing the risk of disaster is manifold. It can be divided into five broad categories:[7]

1. *Technical communication systems*, such as satellites, remote sensing devices and computer networks, and other technology-based communication systems that research, predict, track, and provide early warning of natural hazard events.

[6] Tarjanne P, 'Foreword' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/disas1.htm

[7] Cate FH, 'The Media and Disaster Reduction: Roundtable on the Media, Scientific Information and Disasters at the United Nations World Conference on Natural Disaster Reduction' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/disas3.htm

2. *Disaster-site communication* maintains links with disaster response offices, the government, the affected population, and sources of emergency relief supplies.

3. *Organizational communications* are essential for the effective, dependable operation and interaction of private, governmental, and multinational disaster prevention and relief organizations

4. *Communication for scientific development and policy formulation* happens between scientists, engineers, government officials, other response officials, insurers, the media, and the public to develop our knowledge of natural hazards and how to keep them from becoming disasters.

5. *Public education and communication* through electronic and print media, wired and cellular telephones, and alternative media educate the public about natural hazards and disaster prevention, warn of approaching hazards, and facilitate public discussions about disaster preparedness and response.

Prevention starts with information. It has been proved in many cases that where information was adequately transmitted to at-risk communities through the media, communities were able to take timely actions to avert considerable damage to life and livelihoods.

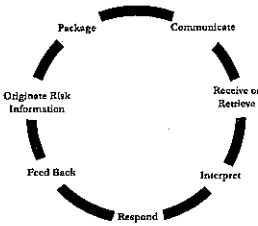
Warning dissemination

Better warning systems have been instrumental in evacuating vulnerable groups, moving livestock to safety and mobilizing emergency services and resources.

Three abilities constitute the basis of early warning:

- The first, largely technical, is the ability to identify a potential risk or the likelihood of a hazardous phenomenon occurring which threatens a vulnerable population.
- Second, is the ability to identify accurately the vulnerability of the population at which a warning needs to be directed.
- The third ability, which requires considerable social and cultural awareness, is the communication of information to specific recipients about the threat in sufficient time and with sufficient clarity that they take action to avert negative consequences.[8]

[8] Sharma VK, 'Natural Disaster Management in India'. Paper presented at Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi (1999)



2.3 The risk communication cycle

The process of risk communication is one whereby individuals:

1. hear a warning message
2. understand its content
3. internalize or believe the salience of its message
4. confirm their interpretation with others, and
5. act or respond to its message to save their lives and property.

Risk communication, therefore, is not value-free or purpose-free; rather it is aimed at invoking some desirable response by the public leading to risk reduction through disaster preparedness régimes.

In risk communication, like any other communication form, three basic actions are involved: originating, communicating and receiving information. Experts on hydrology, meteorology, seismology, geology and other related disciplines will *originate* risk-related information, intermediaries (government, the media) will *encode* and *communicate* it and finally the target audience will *receive* and *decode* the messages in the packaged information. In some cases, when early warning is not available, the disaster event itself becomes the origin of the information.

Every message in such cases carries content to influence the receiver's behaviour. The intended result of the message is what Lasswell[9] calls *destination.* The source, message, receiver, channel and destination make up the circle of communication, yet perhaps the most important factor is the social context in which communication is taking place.

[9] Lasswell HD 'The structure and function of communication in society' in L Bryson (ed) *The Communication of Ideas.* Harper, New York (1984).

The enormous amount of information available means that there must be a strict selection by both parties. The sender makes a selection of the information to transmit, and the receiver selects information to process. This process is known as *selective exposure* and *selective avoidance* in social psychology.[10] In the context of risk, packaging of information by its sender is never apolitical since it intends to generate a desired response on the part of the receiver. The processing of information by the receiver in turn is always selective, since he/she receives what he/she wants and is able to understand and utilize. Therefore, the risk information that is made available and transferred to at-risk communities may be accurate but the level of precision varies greatly.

Communication is possible only when both parties – receiver and sender – are equally engaged in the process.[11] According to Covello *et al.*, risk communication is 'any purposeful exchange of scientific information between interested parties regarding health or environmental risk' or 'the act of conveying or transmitting information between interested parties about levels of health or environmental risk; or decisions, actions or politics aimed at managing or controlling such risks'. The same writers identify four areas in which risk communication is applied, namely:

- Informing and educating
- Stimulating behavioural change and taking protective measures
- Issuing disaster warnings and emergency information
- Exchange of information on, and common approaches to, risk issues[12]

[10] Gutteling JM, Wiegman O, *Exploring Risk Comm*unication. Kluwer Academic Publishers, The Netherlands (1996)

[11] Humayun S, Untitled proceedings of focus group discussion on media communications, Islamabad (2001)

[12] Covello, V.T., Sandman, P.M., and Slovic, P. *Risk communication, risk statistics, and risk comparisons: A manual for plant managers*, Chemical Manufacturers Association, Washington DC. (1988)

The media's role in human disaster

David Shukman, who reported on the devastating Mozambique floods of 2000, assessed the media's impact on the crisis for the BBC World Service programme Omnibus.

There was one extraordinarily powerful sight that guaranteed that the floods suffered by Mozambique last year would get top billing from news organizations around the world. Video pictures captured the heart-stopping moment when a brave South African winch man, dangling from a battered military helicopter, reached into a tree and rescued a young mother and the baby girl, Rositha, whom she had just delivered. It was an image that defined the disaster: the swirling deadly waters of the Limpopo, the plucky but overwhelmed South African helicopter crews, the chance of saving new life amid so much carnage. No wonder news teams rushed to Mozambique in ever greater numbers. The airport of the capital Maputo was soon swarming with journalists and cameramen.

There is no doubt that the high profile of the disaster yielded many major benefits. Governments all over the world were suddenly galvanized into action. From the British Ministry of Defence, the Pentagon, the German armed forces and many others came helicopters and rubber boats and personnel to join the rescue effort. Aid started pouring in. The charities were on the scene with sacks of food, plastic sheeting and medicines. And in the longer-term, Mozambique found itself receiving some $400m in aid for reconstruction. So far so good.

The price of publicity

Yet, along with many other journalists covering these events, I found myself asking a few potentially awkward questions about this response, this 'circus' as some commentators unkindly call it.

First there was the risk posed by the helicopters hired by all news organizations. Essential to coverage, too small to be of any real use in the rescue effort, these aircraft were instead deployed for long hours above and near the tree-tops where rescues were taking place –

the only way to get us in the media to the scene of the story. But the talk among many cameramen, aid-workers and military aircrews was that the powerful downdraft from the rotor-blades of so many aircraft might have endangered the flood victims themselves – people who were exhausted and weak, shaken by the blast of air turbulence and unable to cling any longer to their branches.

Making the headlines

It is a truly horrible thought and it left many of us journalists feeling queasy, at the very least. If that had happened – and there is no concrete proof, there never can be – was it right to bring to the world's attention the terrible hardship of Mozambique at the expense of a few unlucky souls? What price profile?

Second, and far harder, is the issue of choice: which stories do we choose to cover? Critics ask why we gave far more coverage to the floods in Mozambique – where the dead numbered hundreds – than the floods in Orissa which killed thousands. Or why we did so much on Mozambique when only a few hundred miles away the endless wars of the Congo and beyond it Angola are only aired very occasionally.

One answer is practical. Some stories are easier and safer to get at. The Limpopo flood-zone was only an hour's helicopter fight from Maputo where satellite dishes and production support could be established. Orissa was far more remote. Another answer is unavoidably blunt: that some stories produce more dramatic pictures than others and catch the imagination, as baby Rositha did. TV organizations need not apologize for that – they are in a visual medium after all.

For the charities and aid organizations, this debate is crucial. They need publicity to maintain their revenue. They cannot afford not be seen at certain disasters, even if privately some say they could be better deployed elsewhere. Ultimately what matters though is whether people in need of help receive it; and that we in the media play a positive role in that, and also realize that that might not always be the case.

2.4 Risk perception

It is important to understand how risk is perceived, assessed, evaluated and judged by a particular community under the threat of a natural hazard. The dilemma of communication arises when risk information is transmitted to the people without appreciating the *perceptual preferences* of the target constituency. Social context and popularly shared perceptions of disaster are often overlooked, and what is called 'semantic noise' pollutes the risk message and its meanings. Communication, in this case, fails to achieve its objectives.

Some studies of risk have validated the notion that *risk has different meanings to different groups.*[13] Slovic identifies the difference in risk assessment by comparing an expert's view and a layperson's view of risk. Experts judge a risk through objective indicators, while the public perceives the risk more subjectively. There are further dimensions that underlie this *subjective risk perception*. One dimension, labeled *dread risk* by Slovic, is characterized by notions of threat, catastrophic potential, fatal consequences, the unfair distribution of risks and benefits, and perceived lack of controllability. Another dimension is described as *unknown risk:* where risk is recognized to be unknown, not perceivable or new. Slovic's study also indicates that the perceived controllability of risk, its catastrophic potential and knowledge of it influence the relationship between risk perception, perceived benefits, and acceptability.[14]

[13] Slovic P, 'Perception of Risk', *Science* 236 No.4799: 280-5 (1987); Vlek CAJ, Stallen PJM, *Personal judgements of risks: on risks, advantageousness, acceptability of individual, societal and industrial activities.* University of Groningen, The Netherlands (1979); Cvetkovich G, Vlek CAJ, Earle TC, *Designing technological hazard information programs: Towards a model of risk adaptive decision making.* C.A.J. (1989); Gutteling JM, Wiegman O, *Exploring Risk Communication.* Kluwer Academic Publishers, The Netherlands (1996).

[14] Slovic P, 'Perception of Risk', *Science* 236 No.4799: 280-5 (1987); Gutteling JM, Wiegman O, *Exploring Risk Communication.* Kluwer Academic Publishers, The Netherlands (1996).

The gap between risk as *perceived* and risk as *accepted* is shown by the example of some riverine communities in central Punjab, Pakistan, that desire flood since they believe that flood waters will bring minerals and more fertility to their lands.[15] Perceived risks and perceived benefits are relevant factors in decision-making about hazardous phenomena. Risks can also be divided more simplistically into familiar, unfamiliar, voluntary and involuntary forms.

2.5 Bridging the risk information gap

A journalist communicating information about risk should keep in mind that the information he/she is transmitting through the media has a strong bearing on the response of the at-risk community and individuals. Disaster reporters can warn people and the government about a disaster well before it strikes. The risk communication cycle is completed when risk information helps determine actions by communities and the government against a looming disaster. Risk communication, if goes astray or does not complete its cycle, can create disastrous impacts on the community at risk, but if packaged and targeted well can reduce losses and save many human lives.

[15] Interview with Poo'a Waris, village farmer (1999).

(1) The media's impact

There can be tangible and intangible dividends if the active participation of the media in disaster debates is ensured.

Tangible: It has been proved in many cases, that there is a visible decrease in the amount of human and material losses where the level of hazard awareness and preparedness is raised. Thus, through an effective risk communication system we can reduce damages from recurring natural disasters. Decreases in disaster-related losses will spare sizeable resources that can be diverted towards development.

Intangible: Through the convergence between the media and disaster mitigation efforts, the risk responses of disaster-prone communities can be made quicker and their capacities to cope with disasters can be further strengthened. An informed media can also influence policy change from relief towards preparedness strategies and can bridge the information gap between communities and counter-disaster organizations. Through effective risk communication and continuous hazard awareness, a behavioural and attitudinal change can take place at individual and collective level.

(2) Examples of effective risk communication[16]

In November 1970, a tropical cyclone combined with a high tide struck southern Bangladesh, leaving more than 300,000 people dead and 1.3 million homeless. In May 1985, a comparable cyclone and storm surge hit the same area. This time, according to IDNDR Director Dr. Olavi Elo, there was better local dissemination of disaster warnings and the people were better prepared to respond to them. The loss of life, although still high, was 10,000 or about 3% of that of 1970. When a devastating cyclone struck the same area of Bangladesh in May 1994, fewer than 1,000 people died. The dramatic difference, according to Mohammad Saeed-ur-Rehman, Director of the Bangladesh Disaster Preparedness Centre, was a new early warning system that allows radio stations to alert people in low-lying areas. Mr. Rehman maintained the 'media did wonderful work'.

Researchers have noted the remarkably different impacts of the 1977 cyclone in Andhra Pradesh, India, which killed 10,000 people, and a similar storm in the same area 13 years later, which killed 910. In the latter case, risk communication was effective.

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[16] Cate FH, 'The Media and Disaster Reduction: Roundtable on the Media, Scientific Information and Disasters at the United Nations World Conference on Natural Disaster Reduction' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://wwwannenberg.nwu.edu/pubs/disas/disas3.htm

A successful campaign to reduce risk

Early in December 1994 , the Sulod tribes people informed the disaster response agency CRREED that 38 villages along the Tapaz and Jamindan border in Canpiz Province would be converted into a military reservation (33,000 ha), where the Philippine Armed Forces could carry out military exercises, including bombing practice and firing. This area included communities supported by CRREED in disaster preparedness and mitigation. Common hazards are drought, militarization, epidemics and typhoons.

In February 1995, seven villages received a letter from the Peralta Army Camp which informed them about the plan to evacuate them. Alarmed by the developments, CRREED convened CBO leaders from the Tapaz area, NGOs and human rights advocates, in order to discuss responses to the issue. The output of the discussion was the formation of Task Force Sulod whose aim it was to support the Sulod tribes to defend their land and the gains of the CBOs regarding their development initiatives and organizing work. The priorities of the Task Force were close monitoring of the area, carrying out a fact-finding mission, and networking with government organizations and NGOs. The Citizens' Disaster Response

Center (CDRC) was also requested to support the Task Force in its efforts.

In March 1995, the military practised bombing for one day, causing the evacuation of more than one hundred families for three days. Then, a coordinating body among the affected villages was formed to resist any attempt by the military to evacuate them and to make fellow Sulodnon aware of their right to defend their ancestral lands. The Task Force Sulod held dialogues with local government officials, and informed the public through the media about the events in Canpiz Province. A conference on the situation of the Sulodnons was organized. CDRC sponsored and participated in this gathering, and facilitated distribution of the Task Force's press releases to the national media.

The dialogues with local government organizations and the publicity about the military reservation affecting 38 villages made the military reconsider its stand on several issues and led to the following: recognition of the existence of an indigenous people known as the Sulodnons, limiting future war exercises to a smaller 'impact area' and not the whole 33,000 ha they claimed as their reservation, and a decision to cancel the exercise planned for the summer of 1995.

Such examples confirm that emergency preparedness and early warning measures save lives and money. The media can play an important role in strengthening early warning systems.

Chapter 3
Redefining Disaster Reporting

Summary

This chapter reviews discussions about disaster reporting, synthesizes its common features and outlines a 'process approach' as a form of good practice. The chapter explains the concepts of a pyramid and ABC of disaster news, and elaborates on phases in disaster reporting – aiming at more effective disaster communication.

3.1 Background: discussions on disaster reporting

Though discussion of the media-disaster relationship is not new, yet there is little schematic literature dealing with the issue in detail compared to the literature on other aspects of disaster management, preparedness, prevention and mitigation. Nonetheless, the available literature helps us to arrive at an acceptable definition of disaster reporting.

In February 1979 a workshop on Disasters and the Mass Media was organized in Washington DC[1] which provides some insights into disaster reporting, though it relates mainly to the disaster experiences and media systems of industrialized countries (one paper discusses media coverage of the Indian Andhra Pradesh cyclone of 1977 and the African Sahel drought of the early 1970s).[2] The workshop reviewed the state of the art in disaster reporting and discussed how the media's perception of disasters is different from that of social scientists. The workshop found that there had been minimal research on mass media reporting of disasters, and most of the existing studies had concentrated on media activities in disaster warning or immediate post-impact periods. It is probably not surprising, says the executive summary of the workshop report, that conventional wisdom rather than scientific measurement is the basis for most assessments of the mass media's performance in times of disasters.

[1] The workshop was sponsored by the Committee on Disasters and the Mass Media of the National Academy of Science National Research Council in Washington DC.

[2] Rogers EM, Sood RS, 'Mass Media Communication and Disasters: A Content Analysis of Media Coverage of the Andhra Pradesh Cyclone and the Sahel Drought'. In *Disasters and the Mass Media.* Washington DC: National Academy of Sciences (1980).

Gary A. Kreps, one of the presenters at the workshop, defined disaster reporting as:

> ...educational programmes on hazards mitigation and disaster preparedness; media advanced disaster predictions and warnings; and media news reports of disaster impacts resulting in rescue, relief and restoration activities.[3]

In the same year the Australian Counter-Disaster College published a report of proceedings of a Media (Broadcasters) Study Group. The group was invited to study the broadcast media in disasters, and to formulate guidelines for commercial radio broadcasters. Mr. A. Thompson, a member of the study group, laid down the following guidelines for communicators to attend to in relation to disasters:

1. Inform the public on various matters to raise their level of preparedness.
2. Inform the public about the current situation.
3. Inform the public about what has happened.
4. Inform the public about the prognosis or diagnosis.
5. Advise the public on courses of action appropriate to the event.
6. Advise the public on the action being taken by authorities and aid groups.
7. Relay messages concerning the welfare of isolated groups within the community.
8. Maintain a reassuring presence.[4]

[3] Kreps GA, 'Research Needs and Policy Issues on Mass Media Disaster Reporting'. In *Disasters and the Mass Media.* Washington DC: National Academy of Sciences (1980).

[4] Thomson. A, *The Role of Television.* The Australian Counter Disaster College (1979)

During the 1990s a number of meetings and publications have improved our understanding of the role and potential of the media in disaster reduction. Some of the most significant developments are outlined here.

Annenberg Washington Program

The Annenberg Washington Program first explored the link between communications and disaster mitigation in 1986.[5] Since then the program has continued to organize discussions and produced papers on various media-disaster linkages. The issues covered have included Chernobyl: Law and Communication; Disaster Communication: The Mitigation and Management of Sudden Catastrophes (1988); Lessons in Emergency: Communications of Disaster from the Disasters of 1988 (1989); Conference on Disaster Communication in Tampere, Finland (1991); Disaster Communications and Information Management in the International Federation of Red Cross and Red Crescent Societies: A Strategic Assessment (1992); Media, Disaster Relief and Images of the Developing World (1993-94); and The Media, Scientific Information and Disasters (1994).

The Tampere Declaration on Disaster Communication

From May 20-22, 1991, 120 experts in communications and disaster management from more than 25 countries met in Tampere, Finland, for a Conference on Disaster Communications, Mr. Mauri Pekkarinen,

[5] In October 1986, the Annenberg Washington Program sponsored a workshop on Global Disasters and International Information Flows exploring the more effective use of communications in response to the release of radioactive material at the Chernobyl and Three Mile Island nuclear power stations, and other natural and man-made disasters. Participants from Canada, China, Italy, Japan, Mexico, the United Kingdom and the United States addressed methods for improving the speed and accuracy of post-disaster communications.

Finland's Minister of the Interior, identified some of the aspirations shared by many of the delegates to the Tampere Conference:

> We think that communications offer several possibilities to be used by emergency management systems. Before a disaster strikes it is possible to predict the approaching hazard, to alert the emergency authorities, to raise awareness among the public and to warn the people in a disaster stricken country.
>
> After a disaster has struck it is possible to collect information, to assess damage, to provide leaders of rescue activities with means of cooperation for relief and assistance procedures, to transmit news and information to news agencies and representatives of the mass media about on-going efforts and rescue measures...
>
> Disaster work organizations operate rationally only when the communication systems are effective.[6]

At the conclusion of three days of intensive discussions, the conference participants agreed to The Tampere Declaration on Disaster Communications (see Annex C), addressing the urgent need to coordinate and improve national and international communications capabilities to reduce loss of life and damage to property and the environment as a result of natural and man-made disasters.

[6] 'The Tampere Declaration on Disaster Communications' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/

Disasters, relief and the media

Jonathan Benthall's book *Disasters, Relief and the Media*, published in 1993,[7] was a valuable contribution, which developed a critical perspective. The book discussed the politics of images and narratives of disaster relief at length. It also deconstructed the imagery and visual representation used by Western media and Western NGOs and explored how advertising posters of disaster victims in the South represented a hang-over from colonial patronage. It adamantly criticized the 'cultural style' of Western donors and NGOs that, according to the book, were constructing passive representations of non-Western disaster victims.

IDNDR Yokohama Conference

The International Decade for Natural Disaster Reduction (IDNDR) Secretariat convened an international roundtable on The Media, Scientific Information and Disasters at the United Nations World Conference on Natural Disaster Reduction in Yokohama, Japan, in 1994. The roundtable examined important issues about the roles of, and the relationship between, the media, scientists, relief organizations, and government officials, in generating, transmitting, and responding to disaster-related information. Its conclusions and recommendations set out two key principles and several specific recommendations.

[7] Benthall J, *Disasters, Relief and the Media* I.B Tauris & Company Ltd, London (1993)

Principles

1. The media throughout the world play a vital role in educating the public about disasters, warning of hazards, gathering and transmitting information about affected areas, alerting government officials, relief organizations and the public to specific needs, and facilitating discussions about disaster preparedness and response.

2. Timely, accurate and sensitive communications in the face of natural hazards are demonstrated, cost-effective means of saving lives, reducing property damage, and increasing public understanding. Such communications can educate, warn, inform and empower people to take practical steps to protect themselves from natural hazards.

Recommendations

1. Scientific and disaster mitigation organizations should seek to develop working relationships with the media based on mutual trust and the recognition of different characteristics, goals, and needs. Regular, effective communication between these disparate groups, before, during, and after disaster events can greatly enhance those relationships.

2. Disaster mitigation organizations should seek to provide reliable information to the media, as early as possible, in a concise and readily understandable form, and linked, where possible, to newsworthy events.

3. Disaster mitigation organizations should seek to identify and communicate specific themes and messages, both through the mass media and in other alternative forms of communication.

4. The media and disaster mitigation organizations should take advantage of opportunities to work together, and to provide relevant training for reporters and field personnel to enhance disaster preparedness, mitigation and relief efforts and the timeliness, quality, and accuracy of reporting about natural hazards.

5. Media organizations should address disaster prevention and reduction in coverage relating to disasters. Disaster mitigation organizations and the media should identify and communicate the public-specific measures that have either succeeded or failed to reduce the impact of natural hazards.

6. Media organizations are encouraged to evaluate their reporting about natural hazards and disaster preparedness, and, where appropriate, to work with disaster mitigation organizations to improve the quality, accuracy, and thoroughness of such reporting.

The *Yokohama Strategy and Plan of Action for a Safer World* produced by the conference as a whole also addressed the important role of the media and of public education. Its suggestions were:

- Establish and implement educational and information programmes aimed at generating general public awareness, with special emphasis on policy makers and major groups in order to ensure support for, and the effectiveness of, disaster reduction programmes.

- Enroll the media as a contributing factor in awareness raising, education and opinion building in order to increase recognition of the potential of disaster reduction to save human lives and protect property.

- Collect and disseminate documentation and information to improve public awareness of natural disasters and the potential for reducing their impacts.[8]

[8] IDNDR, *Yokohama Strategy and Plan of Action for a Safer World: guidelines for disaster prevention, preparedness and mitigation.* New York and Geneva, IDNDR (1995).

The Geneva Mandate On Disaster Reduction

International Decade for Natural Disaster Reduction
IDNDR International Programme Forum, 5-9 July 1999

We have to act decisively now, to guarantee a safer world for future generations. We must build on progress achieved during the IDNDR, so that risk management and disaster reduction become essential elements of government policies. The Yokohama Strategy (1994) and the strategy "A Safer World in the 21st Century: Risk and Disaster Reduction" (1999) chart the course. Political will is essential to ensure that appropriate policies and institutional arrangements foster a culture of prevention at all levels of our societies.

We shall adopt and implement policy measures at the international, regional, sub-regional, national and local levels aimed at reducing the vulnerability of our societies to both natural and technological hazards through proactive rather than reactive approaches. These measures shall have as main objectives the establishment of hazard-resilient communities and the protection of people from the threat of disasters. They shall also contribute to safeguarding our natural and economic resources, and our social wellbeing and livelihoods.

Furthermore, scientific, social and economic research, and technological and planning applications will be required at all levels and from a wide range of disciplines in order to support risk management and effective reduction of our vulnerabilities. In this connection, there is need for increased information exchange, improved early warning capacities, technology transfer and technical co-operation among all countries, paying particular attention to the most vulnerable and affected.

These last ten years have shown the multi sectoral, interdisciplinary and cross-cutting nature of broad risk management and its contribution to disaster reduction. Continued interaction and co-operation on the above basis, among all disciplines and institutions concerned, are

considered essential to accomplish commonly agreed objectives and priorities. This interaction shall be based on the strengthening of co-operation and partnerships engendered by the IDNDR Programme.

We stress the importance of developing and strengthening regional approaches dedicated to disaster reduction in order to take account of local specificity and needs. We emphasize in this respect, the need to support institutional initiatives and mechanisms for strengthening regional, sub-regional national and local capabilities, coordination, and applied research. We recognise the particular need for establishing an institutional arrangement to coordinate disaster reduction in Africa, and in this regard, invite existing and evolving mechanisms for inter-regional co-operation to accord priority to these concerns.

Appropriate financial resources will be needed to ensure the development and implementation of prevention and mitigation policies and programmes in all countries particularly developing countries. Innovative approaches should be explored including the funding of international initiatives. However, full use should be made of existing regional and national financial mechanisms involving those communities most directly exposed to risks. All bilateral and multilateral development assistance should include disaster reduction components.

We recommend to the international community and to the United Nations that, based on the proven success of the functional responsibilities and organizational arrangements during the IDNDR, the international co-operative framework for disaster reduction be maintained and strengthened. This framework should ensure partnership and synergy among all elements of risk management and disaster reduction, and promote a shift from a mentality of reaction to a culture of prevention. The growing threat of political, social and economic disruption caused by natural and technological disasters calls for bold action from member States of the United Nations in this regard.

Geneva, 9 July 1999[9]

Discussions and developments in South Asia

There is a dearth of organized and specific literature on definitional and technical aspects of disaster reporting in South Asia. However, some research efforts have been undertaken recently to develop a framework that can be applied to understanding the disaster phenomenon, analyze linkages and suggest policy options in the geo-social context of South Asia. Duryog Nivaran is successfully bringing the disaster-development debate to policy, media, donor and community levels. A number of media-focused workshops on disaster issues in the region have been organized: in Colombo (1996, 1998), Dhaka (1997), New Delhi (1999), Islamabad (1998-99-2001), Kathmandu (1999, 2002), and Hyderabad (2000).[10]

The regional Policy Forum on 'South Asian disasters and the future of mitigation' held in Delhi in 1999 recommended setting up a South Asia Media Group on Disaster Mitigation to explore the possibilities of linking journalists within South Asia on disaster issues and developing guidelines for engaging the media more actively in disaster mitigation in the region. This group is currently in its formative phase.

[9] http://www.unisdr.org/unisdr/intention.htm

[10] For more details visit: www.syberwurx/jrc or email info@rdpi.com.pk

3.2 A process approach to disaster reporting

Drawing upon this background discussion of disaster reporting at international and regional levels, the rest of this chapter attempts to redefine disaster reporting in the South Asian context by exploring the contours of disasters themselves. First, it discuses the elements of newsworthiness in disasters and explains the 'process' approach towards disaster reporting. Then it identifies entry points for a journalist to look at different dimensions of disasters instead of merely banking on emergencies. It also touches on how the cycle of risk communication is completed and how a consistent follow-up can be undertaken for more informed disaster communication.

The media does cover disasters, but the reporting pattern is over-occupied with an event-based approach. However, a 'process approach', which looks at disasters as part of the normal development process and interprets disaster reduction as part of the unfinished agenda of development, provides deeper insights to readers and policy forums. A sudden disaster event can be put in context by asking how it occurred, why it occurred, and if it could have been averted.

The process approach to disaster reporting can challenge mythological explanations of disaster and can also make governments more responsive to disaster issues. Usually, a reactive response by the media without data and sound interpretation distorts the substance of an issue which may be crucial to public life. Particularly in the case of

disasters, the media needs to understand disasters against their geological, meteorological and socio-economic backdrops. The media should try to investigate why some sections of society are more vulnerable than others. How does the structure of ownership in a given society determine vulnerability to disasters? How and why are land-use regulations made and implemented? What has the government done to map hazards? Have responsible institutions developed a 'vulnerability atlas' of the area where they are working against disasters?

Event-driven reporting is 'passive' journalism, while process-based reporting contributes to 'active' journalism. Amartya Sen points out in this regard that:

> ...an active newspaper system can lead to early and effective intervention by the government. One of the roles of the press is to make it 'too expensive' in political terms for the government to be callous and lethargic, and this can be decisive since famines are extremely easy to prevent by early intervention. Indeed, it appears that no country with a free press and scope for oppositional politics has ever experienced a major famine.[11]

Also, through a process-led approach, the media can initiate public debate on the existing arrangements for disaster management. Where are the gaps? What is the level of coordination between and within disaster organizations? Does

[11] Drèze J, Sen A, *The Political Economy of Hunger*, Oxford, Clarendon Press (1990), Vol I, p.6.

government include at-risk and victim communities in sharing early warning information and in decision-making about relief distribution?

Some South Asian countries have disaster legislation in place but others do not. The media can keep an eye on the enforceable rights of citizens and at-risk communities where legal guarantees for disaster preparedness are in place. In the case where there is no legal framework, the media can initiate a debate on the need for disaster preparedness legislation. For instance, journalists in Pakistan and Nepal can bring to public notice the question why their governments are lagging behind in making institutional arrangements for disaster preparedness.

The real drama is in the process

On May 22, 2000 a man in Balochistan Province, Pakistan, was reported to have sold his 15-year-old daughter to buy relief goods as the province experienced one of the worst droughts in years. The story was published with 'super lead' status in many newspapers in Pakistan. It brought drought issues into the limelight, yet the story made it to the front page only because it had a drama in its narration, and had 'shock value'. It was a painful event, therefore it attracted the media; yet the processes behind the event were treated as a side story.

P. Sainath in his book *Everybody Loves a Good Drought* reviews these gaps left by the media and comments that the press has viewed drought and scarcity as events. And the belief that only events, not processes, make news distorts understanding. Some of the best reports on poverty suffer from trying to dramatize it as an event. The real drama is in the process.

Deforestation has much to do with drought. But being a process, it becomes a 'feature'. And then it disappears into the newspaper ghetto called 'ecology' - presumed to be of interest only to rabid 'Greens'.

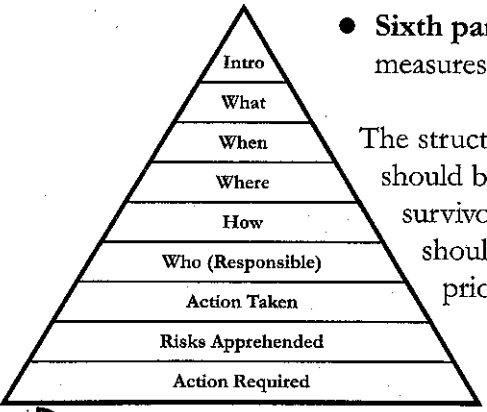
Related factors like skewed landholding patterns, vicious usury, limited livelihood options and no social support system should be viewed in conjunction with the sale of daughters they result in.

The process-based approach looks at disaster management as an integral part of mainstream development planning. Yet most official planners have not recognized the fact that by spending a little money on disaster preparedness, they could prevent huge financial and human losses. The media can conduct such surveys to inform the public that disaster management should be drawn into mainstream development planning. It should not be dealt with as an isolated issue of contingency.

3.3 The disaster news pyramid

There are various methods and techniques for dealing with disaster issues in the news media. For instance, in the case of spot reporting – when a disaster has occurred and the reporter is supposed to file a daily report to their organization – the construction of disaster news should follow the following pattern:

- **First part:** Introduction based on the brief (not more than three lines) about the event and damage.
- **Second part:** Where it occurred and when.
- **Third part:** Why it occurred (give interpretations, quoting multiple sources like experts, government and victims themselves).
- **Fourth part:** Whose responsibility was it? Was there enough warning? Could it have been predicted? Could it have been averted? Could the damage incurred have been controlled with earlier interventions?
- **Fifth part:** What are the current situation and related threats?
- **Sixth part:** What are the recommended measures?



The structure and content of disaster news should be aimed at supporting victims and survivors to cope better with trauma and should also guide the government in prioritizing its emergency measures.

3.4 ABC of disaster news

The letters ABC stand for: accuracy, balance and clarity. In the case of disaster news these three basic principles must be strictly adhered to. Inaccurate, unbalanced and unclear information about any disaster has very dangerous ramifications for the collective psyche and response of people. When media stories are unbalanced or unclear, it can create panic and anxiety – and as a result the media source may lose credibility during the disaster. Accuracy about the extent of risk, balance in narrating facts and clarity on recommended measures are hallmarks of good disaster news.

E.C Parker[12] recommends that in covering disasters, reporters should provide calm, clear, specific, explanatory information, free of speculations. The aim should never be to sensationalize, but rather to make people understand what has happened and to give them perspectives on the scope of the catastrophe, its causes and its foreseeable results. If help is needed, it should not be called for in general terms. The media should specify the aid required and how it should be delivered.

3.5 Origins of news stories

There are essentially three origins of a news story:

1. Disaster events such as floods, earthquakes, fires, and aeroplane crashes. These events are believed to be inherently unpredictable by

[12] Parker EC, 'What is Right and Wrong with the Media?' in *Disasters and the Mass Media.* Washington DC: National Academy of Sciences (1980).

the media, and journalists respond after the occurrence. News stories about disasters follow a predictable pattern. Early reports, which frequently overestimate the severity of the disaster, rely on ordinary people because they are frequently the only witnesses. Later stories, assuming the story is newsworthy enough, become developing news over several days. For post-occurrence stories, officials and victims/survivors are usually the primary sources of information.

2. Created and 'subsidized' news is more frequent than unpredicted news. It occurs because a person, group or organization does something newsworthy and/or seeks press attention. Public relations practitioners participate in the process of news making.

3. 'Enterprise' news is made when journalists *act* rather than *react* as they do in a disaster or tragedy. This is called enterprise news because the editor or reporter takes the initiative on a story.

What is widely missing in the media is 'enterprise' news in relation to disasters. Journalists are in the habit of waiting for a disaster to strike instead of seeking information about the probability of a calamity. In the following part of this chapter, various forms of 'enterprise' news reporting are discussed.

3.6 Phases in disaster reporting

There are as many phases in disaster reporting as in a disaster itself. Usually, disaster reporting is confined to 'spot reporting' and then perhaps it does not remain a news item despite the fact that the crisis does not disappear. A disaster may persist for months and sometimes for years but nevertheless remains neglected, because the thrilling news media does not cater for stale realities, anymore.

For the convenience of understanding, disasters can be divided into the following four major phases. In each phase there is much for the media to attend to and report back.

1. *Non-disaster phase:* In this phase there is apparent calm and no possibility of disaster and perhaps these are times when the public and policy makers both drift into forgetfulness and become oblivious to the fact that disasters can happen at any time. These are the times when journalists can discuss policy issues in their write-ups, conduct interviews and initiate a debate on issues of disaster legislation, and can make policy makers and the public realize that this is the time for long-term disaster planning. This phase also allows a motivated journalist to undertake research and enhance his or her capacity to understand the dynamics of various kinds of disaster. In the non-disaster phase, stories can be developed about what government and non-government disaster organizations are engaged in. Are they

developing a strategy or have they become apathetic towards the issue? How are communities interacting with forces of nature? Are they filling water channels with debris, which may reduce the channels' capacity to store and carry water in the monsoon? Have barrage administrations started de-silting drives to maintain their water storage capacity? Are people living in mountains cutting trees, which can cause landslides in summer?

Refusing safety?

Multan: An unusual thing was noticed by this correspondent during the recent floods in Multan and Muzaffargarh districts: that the marooned people were refusing to shift to the relief camps set up by the administration for them. Even army jawans, who were called by the civil administration to help in evacuation work, failed to convince the people to move to safer places for the protection of their families and themselves.

When this correspondent probed the matter, it was learnt that not a single camp had been established by the government where flood victims could stay with their wives and young daughters with a sense of security. Or at least where women could sleep separately from men during the nights. These camps also lacked toilet facilities. So it was difficult for womenfolk to maintain their privacy as thousands of marooned people used to take shelter at the government-run camps.

In the 1992 floods, the families of flood victims were teased at the camps by the people who visited the dykes to witness the flood

2. *Pre-disaster phase:* In this phase the media can collect and disseminate information related to early warnings and communicate weather forecasts to communities at risk. During these periods, the media can also report on how government departments, disaster-related organizations and communities are preparing for potential risk. What is the accuracy of weather forecasting and what are the counter-disaster arrangements at the disposal of government and people living in hazardous areas? Is there enough coordination between and within responsible departments and has the public

phenomenon. These refugees were also deprived of their remaining valuables by dacoits as no security arrangements had been made at the camps.

Thus now people prefer to stay at their flooded houses facing a lot of threats to their lives. 'How can I take my wife and young daughters to a safe but strange area when there are no proper arrangements for women to sleep separately and live relaxed?' said a middle-aged flood victim sitting on the roof of his mud house that could collapse any time.

'This is not the first time that we have been caught unexpectedly by the roaring flood water. Now flood visits our houses annually', said a fellow victim.

'We are only worried about what will follow this menace – devastation, annihilation of standing crops, rebuilding the collapsed houses, spread of various diseases and famine-like situation', said a family elder.[13]

[13] Klasra R, *Dawn*, Lahore, 15.9.1997.

been informed about measures undertaken to cope with any eventuality? Journalists can assess and report vulnerability issues and can explain to the readers which sections of society and which areas are more vulnerable and who should be given priority in response. The media should review structural and non-structural inputs and it should also be ascertained whether pre-disaster measures are demand-based or supply-driven. Pre-disaster education and awareness advice can make a visible difference.

3. *Post-disaster phase:* The media has a more crucial role to play when a disaster has struck and entered the emergency phase. In an emergency the media can play:
    - o The news and information role
    - o The disaster control assistance role: the transmission of information from the field/spot and instructions from the authorities to the risk-prone community .
    - o The disaster information input role: the transmission of relevant information from the community to the authorities, which contributes to their decision-making capability.

In the post-disaster phase one can focus on immediate issues of recovery and rehabilitation, and indicators of accessibility, equity, efficiency, quality, transparency and accountability should be observed in relief distribution activities.

3.7 Towards effective disaster communication

The mass media should be aware of the following issues in disaster management in order to develop effective disaster communications.

(a) *Hazard identification*: Hazard identification is primarily a technical task which should be undertaken by specialists (e.g. in geology or hydrology). However, in the case of recurring disasters like floods, drought and landslides, the observations of communities based on their historical experiences can provide information to support further investigations. Reporters and editors, wherever they are based, can learn about the information known to local inhabitants and can use it to further identify hazards faced by the area. For instance, a district correspondent should be aware of the areas that can be hit by floods, landslides, etc., and he/she should file reports on potential hazards in the area he/she belongs to or is based in. A newly appointed or transferred city reporter should first of all acquire information about the potential hazards known to the people of that area and city. This will help the reporter to develop advanced stories on the issue in question. Journalists can look at national and local governments' hazard identification surveys. These can serve as useful background documents for advanced analysis and informed reports.

(b) *Risk assessment/communication:* The difference between hazard assessment and risk assessment has to be noted. Hazard assessment tells us about the origin and nature of the phenomemon, while risk assessment is about the possible threat, behaviour and perceived severity of the hazardous phenomenon (flood, earthquake, landslides, etc.). Risk assessment and communication is, thus, an issue on which the media can take a lead. As discussed above, information supplied quickly about a risk can trigger an early action. The media can issue regular early warnings on water flows and levels in rivers, and can also report about possible threats (e.g. which points are more vulnerable and what structural measures are needed beforehand to prevent disaster). As a part of a risk assessment exercise the current state of embankments and protective bunds can be examined and can be reported in the newspapers by analyzing whether these structures would be strong enough to withstand a severe hazard event. Information based on risk assessment can also be transmitted to vulnerable communities and government organizations to alarm and alert both. However, risk assessment has to be made very carefully, as it should not lead to under-warning or over-warning, which can result in inappropriate responses by community and other organizations.

(c) *Avoidance measures:* There is another crucial entry point for the media in disaster situations: it can advise the public on avoidance and preventive measures. These preventive measures are not what the media can develop on its own – rather they should be fed into media content by experts on disasters. For instance a flood expert can give answers to questions such as the following. What is the danger level of the water? What measures can risk-prone communities take to save their life and livelihoods? What preventive measures can be applied to avoid water-related contamination? This kind of information should be sought by the media to be further disseminated to communities.

(d) *Early warning:* Early warnings transmit messages to individuals, households, groups and the community, informing them about the impending danger and what to do to prevent, avoid or minimize damage.[14] When dealing with the early warning phase, media people may take into account that the interplay of the following elements will make an early warning chain more effective:

- warning source
- warning content
- the mode of communication
- the perceived warning certainty and belief
- the warning confirmation and its social context

[14] Asian Disaster Preparedness Center, *Trainers Guide on Community Based Disaster Management.* ADPC, Bangkok (2001).

Economic impact of disasters

The economic costs of disasters can be broken down into three types.

Direct costs. The capital cost of assets (such as buildings, other physical infrastructure, raw materials and the like) destroyed or damaged in a disaster. Crop losses are often included in such calculations.

Indirect costs. Damage to the flow of goods and services. They include, for example, lower output from factories that have been destroyed or damaged; loss of sales income due to damaged infrastructure such as roads and ports; and the costs associated with having to purchase more expensive materials or other inputs where normal – cheaper – sources of supply are affected. They also include the costs of medical expenses and lost productivity arising from increased disease, injury and death.

Secondary effects. The short- and long-term impacts of a disaster on overall economic performance. These may include a deterioration in external trade and government budget balances, the reallocation of planned government spending and increased indebtedness. Disasters can also affect the pattern of income distribution or the scale and incidence of poverty.[15]

[15] Benson C, 'The cost of disasters' in Twigg J (ed.) *Development at Risk? Natural Disasters and the Third World.* London: UK National Co-ordination Committee for the IDNDR (1998)

(e) *Damage assessment:* Natural disasters do not only have readily perceptible effects, such as those caused by earthquakes, storms and floods. They also have consequences that develop slowly or only appear long after the event, for instance, crop destruction by pests arriving in the wake of a disaster or shortage of essential products arising several months after it. In schematic terms, the effects of a disaster are classified as direct, indirect and secondary (see the box on economic impact of disasters). Damage assessment, in its technical aspects, may not fall in the arena of journalists. However, this background classification may help in digging out stories and developing ideas for covering damage assessment drives by the government and other organizations. Some studies also suggest that in the process of damage assessment, disasters' impact on social sectors (i.e. health, education) and effects on municipal services can be ascertained and disseminated through the media.

(f) *Relief auditing:* Relief auditing is perhaps one of the strongest entry points, where the media can play a very effective role. This includes investigating and examining the decision-making and delivery mechanisms for relief distribution. The best stories during disasters that the media has been able to generate are those where misappropriation and politicization of relief distribution was unearthed. During the process of relief auditing one can also examine the damage assessment criteria on the basis of which relief is being delivered, and whether it is not discriminatory towards marginalized groups (e.g. the poor, women, minorities and children).

Minimum standards in disaster response

Meeting essential human needs and restoring life with dignity are core principles that should inform all humanitarian action. Through the Humanitarian Charter and Minimum Standards in Disaster Response (commonly known as the Sphere Project),[16] defined levels of service in water supply, sanitation, nutrition, food aid, shelter, site planning and health care are linked explicitly to fundamental human rights and humanitarian principles.

The burden of responsibility for providing humanitarian assistance falls on many shoulders. The people directly affected by a disaster and their neighbours are always the first to respond in any crisis. Yet it is the duty of governments and international bodies to exercise their political will to prevent, mitigate and alleviate disasters wherever possible. When people and their normal support systems are no longer able to meet basic human needs, assistance from humanitarian agencies is required.

(g) *Organization of self-help and effective response to risk:* Risk warning shapes risk response. However, there is no stimulus-response formula, as posited by the mechanical behaviourists. In many cases it has been observed that a sort of 'normalcy bias' exists in disaster-prone communities in South Asia. People do not respond to early warnings and refuse to leave their places because of their assumed cultural ties with the land and location under threat. In such cases the media can contribute by analyzing and seeking objective explanations to counter the 'normalcy bias' and can also assist communities, through information, in organizing an effective response to the risk

[16] A programme of the Steering Committee for Humanitarian Response and InterAction, with VOICE, ICRC and ICVA.

and strengthening their potential to counter risk on a self-help basis. The response of the public to warnings is directly related to the level of public awareness or the frequency of such events. Public awareness of hazards is essential for desired responses to risk information.[17]

In some cases risk response may have to lead to *evacuation*, which is explained as an organized movement of people from an area of risk to a safe location. Phases of evacuation are: warning, indication to move, actual evacuation, evacuation centre management and return to the former location or transfer to a new place.[18] Journalists can keep an eye on these movements and develop feature stories on various dimensions of response by the disaster-prone or disaster-hit communities.

[17] For advanced study see Lee B, Davis I (eds) , *Forecasts and warnings.* United Kingdom National Coordination Committee for the International Decade for Natural Disaster Reduction, London (1998).

[18] Asian Disaster Preparedness Center, *Trainers Guide on Community Based Disaster Management.* ADPC, Bangkok (2001).

Possible functions of the mass media in disasters		
Time Frame	**Slow-onset Disasters**	**Sudden Disasters**
Pre-disaster	o Redefining events. o Agenda setting (bringing the event to the public's attention; highlighting the event).	o Disseminating preparedness information. o Sending warnings to the threatened population. o Speedily disseminating news of the event.
Immediately post-disaster	o Informing decision makers. o Monitoring the event. o Estimating its seriousness. o Providing relief information.	o Determining its cause. o Estimating its seriousness. o Providing damage and casualty estimates (perhaps challenging official estimates). o Detailing relief needs.
Short-term relief	o Monitoring the event. o Reporting relief operations and their effects.	o Monitoring the event. o Reporting relief operations. o Locating defects and errors. o Obtaining accurate information.
Long-term relief (decreased media attention)	o Updating status reports. o Reporting wrongdoing. o Following long-term relief activities.	o Updating status reports. o Reporting wrongdoing. o Following long-term relief activities.

Chapter 4
Disaster Reporting in South Asia: Current Patterns

Summary

This chapter critically evaluates media perceptions and treatment of disasters, identifies gaps in current patterns of coverage and outlines operational constraints faced by the media in the South Asian context. These observations are based on five years' experience and interaction with communications media in the region regarding disaster reporting and disaster mitigation.

4.1 Media perception and treatment of disasters

A close look at current patterns of media response towards disasters in South Asia reveals that, despite the fact that the media – both print and electronic – does give considerable attention to disasters, mainstream media perception is still largely influenced by the *dominant perspective* that treats disasters as isolated events and focuses on emergency activities and measures (see Chapter 1).[1] Disasters in South Asia are dealt with using a 'retrospective approach': journalists react to events and file their write-ups after something has happened.

'Disaster always makes a good catchy lead story all around, so what particularly new are you trying to introduce in disaster reporting?' replied a Pakistani journalist when asked about the need for improvement in the way journalists currently cover disasters. The South Asian media largely perceives a disaster as an event of nature, which carries elements of drama, misery and sensation. Sudden disasters are covered with an event-based approach; slow-onset disasters require the 'process approach' (see Chapter 3), which has yet to become part of media training on disaster reporting. Even more serious than the sensationalizing of disasters is the media's almost total neglect of the causes and consequences of disasters.

[1] There is not much research and literature available on the media's perception of disasters in the South Asian context. There are occasional statements, comments or write-ups by researchers, journalists and analysts, but these do not provide academically authoritative findings. The observations here are based on interviews conducted on various occasions with journalists from South Asian countries, and on discussions at media workshops and sessions organized by Duryog Nivaran from 1996 to 2002 (see Chapter 3).

Veteran journalist Lakshman Gunasekara explains it with an example. The bombing of the Central Bank in the economic heart of Colombo, Sri Lanka, was lucrative news for the media. In fact the Sri Lanka Rupavahini Corporation won an Asian television award because its immediate coverage of the bomb attack was the single most purchased news item by Asian TV stations that year. However, there was little coverage of the aftermath of the bombing or of different aspects of the recovery – for example, the fate of the survivors, urban renewal, the change it has brought to the city's financial centre, architectural problems and new designs.[2]

The press and party politics

A 1986 study interviewed 29 media people in India, including editors, senior correspondents and reporters working for English and regional language dailies and periodicals, about their coverage of the environment. It found a commonly held view among the interviewees that the Indian press, including senior editors, was interested only in party politics and terribly disoriented vis-à-vis the environment. While middle-level media-men (in the 25-45 year age group) were generally sensitive to the subject, older staff such as sub-editors and news editors, who decided the placement and selection of stories, were most often ignorant about it. Consequently, environment stories were not included on the important pages.[3]

[2] Gunasekara L, 'Hard Sell and Solidarity: News Media and Disasters in Sri Lanka'. Paper presented at Duryog Nivaran Policy Forum Future of Mitigation: South Asian Disasters, New Delhi, February 5-6 (1999).

[3] Asian Forum of Environmental Journalism and ESCAP *Reporting on the Environment: A handbook for journalists* (1988) p.69

There also has to be panic, horror and drama in a story to win media attention. Sainath asks readers to remember the plague in 1994 in India and the hysteria it caused. That made the front page almost everywhere in the world. Actually, plague scientists are even not sure it was plague that took 54 lives. By contrast tuberculosis (TB) claims over 450,000 lives every year in India, but it gets into few newspaper columns.[4]

The deputy editor of *India Today*, Swapan Dasgupta, commenting on patterns of media coverage of disasters in India, says:

> Disaster reporting in India has traditionally followed a formula. First there are the gruesome horror stories, followed by accusations that the Government willfully connived in the disaster, followed by the stories how official machinery is insensitive to the sufferings, followed by the alarmist fears of epidemics and, finally, the exposé of the wholesale loot of relief material.[5]

Lakshman Gunasekara advises us to look at disaster reporting in the context of the overall process of social communication in our countries. He notes:

> One of the most notable features of the Sri Lankan media's behavior in relation to disasters is the media's tendency to react more to the sudden, very powerful disasters rather than to slowly developing disaster situations in which the power of the impact is not immediately or very vividly noticeable.[6]

[4] Sainath P, 'Get the Picture? The Media Elite Don't'. Gemini News Agency. http://www.oneworld.org/gemini/freebies/gemini2.html (1999).

[5] *India Today*, 2001-02-12

[6] Gunasekara L, 'Hard Sell and Solidarity: News Media and Disasters in Sri Lanka'. Paper presented at Duryog Nivaran Policy Forum Future of Mitigation: South Asian Disasters, New Delhi, February 5-6 (1999).

Dramatic misery and the media

In 1995 there was a drought in Bangladesh. The falling water table was a natural phenomenon due to the delay in the monsoon. The media reported that the drought was due to the Farakka Dam holding water back. This was a political angle to the story and made it more attractive to the journalists. Some reporters manufactured figures, quotes and even pictures of the drought.

Drought causes more damage in Bangladesh than floods but it gets little systematic coverage because it is less dramatic. Another reason for unbalanced reporting on disasters is that the urban newspaper reader or advertiser is rarely affected by the crisis. The privileged classes have a stake in political crises but not in disasters that mainly affect the poor.

Local journalists do not take the trouble or are not allowed the time to report on individual, family or community methods of coping with disasters. As life returns to normal in disaster-affected areas the media disappears. A few agencies and NGOs remain in the area. Some agencies have invested money in initiating a more positive approach towards disasters in the media. But the basic tendency of journalists flying in to describe the disaster continues.[7]

The media's definition of disaster is different from that of social scientists. The difference lies, perhaps, in their professional pursuits. Journalists, being professional 'generalists', do not find enough time to take disasters as a special 'beat'; instead, they are just one of the many assignments that arise occasionally. The media is not attracted by routine. A disaster loses its importance when it becomes a chronic issue for a certain community or country. Reporters, usually, do not attend to situations that people have accepted as part of their way of life.

[7] Chowdhury A, 'Misery is more interesting to report'. In Fernando P, Fernando V (eds) *South Asian Women: Facing Disasters, Securing Life.* ITDG/Duryog Nivaran, Colombo (1997).

Correspondingly, there is no tradition of having full-time environmental or disaster reporters in news organizations: both 'beats' come under the general category of 'development journalism' – which is still in its formative phase in South Asian media discourse. There seems to be a lack of initiative amongst the mass media to report actively and consistently on risk systems, as the greater part of news publications is occupied by hard news: political and conflict issues. Other acute public concerns, which lack obvious political elements, go either unreported or under-reported.

4.2 Biases in the perception and treatment of disasters

Several kinds of bias influence the media's views of disasters and their coverage of disaster issues.

(1) Sudden-slow bias

Media treatment of disasters varies from event to event. It treats sudden disasters and slow-onset disasters differently. Researchers agree that the mass media generally classifies slow-onset or creeping disasters as non-issues. Floods, landslides, earthquakes, cyclones and other disasters that have the geo-. meteorological characteristics of 'suddenness' win, obviously, a prominent place in newspapers and are also breaking news in the electronic media. But disasters like drought, desertification, ecological degradation and deforestation, making their way slowly and steadily to erode the livelihoods of at-risk

communities, do not catch the attention of the media so quickly or so prominently. They are seen as routine; they provide no thrill so do not make front-page news. A disaster, for a newsman, becomes a disaster only when it strikes. Slow-onset events, no matter how disastrous they are in their impact, do not qualify as newsworthy.

(2) Centre-periphery bias

Most big news organizations with national and sub-national or provincial areas of coverage are based in urban centres. News is collected from various points spread all over the country, province or state, and processed and controlled centrally at production houses in city centres with all the necessary equipment and technical support. In dozens of examples it has been observed that if a disaster strikes a metropolis or its nearby area, it will be covered well and enthusiastically by almost all media outfits. But if it occurs, as in most cases, in areas far away from the production house, there is a strong possibility that the event will either go unreported or remain under-reported. Due to logistical constraints, perhaps, media based in urban centres do not give sufficient space or time to disasters occurring in peripheral areas. A large number of disasters occurring in remote areas may never catch media attention and will remain unvisited.

Lakshman Gunasekara has compared two events happening in different parts of Sri Lanka to remind us how disaster events are

not assessed by the media on the basis of their severity or magnitude of effect. Rather, rural-urban factors play a major role in journalists' judgments of the relative importance of the two events. A massive flood that hit Colombo for just two days in June 1992 and temporarily displaced several thousand poor people, received enormous coverage. Not only was the spot-reporting on a large scale but the follow-up coverage went on for months after the event. There were editorials, analytical articles, letters to editors, news reports, commentaries by experts and demands by the media to know who should be held responsible for the floods; there was also a rigorous examination of the city's drainage systems. By contrast, massive floods which affected nearly a third of country, in the northern, north-central and eastern regions, in December 1993 did not get half as much coverage although twice as many people were affected for a longer period.

On July 23rd, 2001 two extreme events happened at two different places in Pakistan. The first case was a flash flood (termed an 'unpredictable thunderstorm')[8] in the twin cities of Rawalpindi and Islamabad. In the other case a severe landslide occurred in Dhadhar, a remote village in the north. A brief review of newspapers and TV reporting of these two disaster events showed that floods in Nullah Leh in Rawalpindi secured a prominent place in all English-language and Urdu-language

[8] This is what Dr. Qmar-uz-Zaman Director General, Metrology Department, Pakistan said in a TV interview (July 2001).

newspapers and magazines, while the Dhadhar landslides provided a newsworthy story on the news pages only for a couple of days. Although Peshawar-based news organizations in the same province as Dhadhar gave considerable attention the landslides there, this was not followed up by national-level media.

The urban-based media does provide disaster-related information to its readers and affected communities in rural areas, but sometimes the information it packages and processes either reaches the target group too late or it carries fatal inaccuracies, which creates serious problems for victims. In the case of Nepal, for example, it is generally considered that June, July, August and September are months of heavy monsoon. Viplob Prathik, a journalist working with the Nepali version of the magazine *Himal*, reveals that it is at this time of year that the country's Kathmandu-centric media produces incomplete and confusing reports on floods in the Mahakali, Karnali, Gandak and Kosi rivers which originate in the Himalayan range and are tributaries of the River Ganga. Instead of merely dwelling on the adverse impacts that floods cause, it would be more pertinent to look at the state of warning systems and forecasting methodologies. 'Basically, a flood warning system', Prathik explains, 'endeavours to warn the public about a possible disastrous occurrence, giving them time to take precautionary measures'. But in some

instances broadcast media only report on damages instead of providing early information to victims in remote areas.[9]

A severe flood may occur in a far-flung rural area. But if the flood subsides within days without giving enough time for urban-based media teams to travel, it loses its 'timeliness' and 'currency' – which are some of the most important and basic news values. Many such disasters remain unable to catch media attention because of distance bias. Some journalists from Hyderabad, Pakistan, once complained that they were not allowed by their news organizations to cover issues in remote areas as it cost a lot to travel there and the stories did not help to sell newspapers. It was found that over a six-year period some journalists based in Hyderabad could not visit drought-hit areas in Thar which is a drive of about five hours from the city.

(3) Elite bias

'We have seen if the Prime Minster visits some calamity-hit area, every reporter will rush there and report disaster, otherwise no one bothers to go out in the field and cover miseries', says Mazhar Arif, a former press secretary to the former President of Pakistan.[10]

It is true that the media plays quite eagerly on the 'prominence'[11] factor, as this is one important determinant that gives value to news. Disasters and risks are not exempted

[9] Prathik V, 'A Himalayan Moan'. In Rajakarunanayake S, Ariyabandu MM (eds) *Seeing Disasters Differently: Visions and Suggestions.* Duryog Nivaran, Colombo (1999).

[10] Rajakarunanayake S, Ariyabandu MM (eds) *Seeing Disasters Differently: Visions and Suggestions.* Duryog Nivaran, Colombo (1999).

[11] Occurrences featuring well-known individuals or institutions are newsworthy. Being well known may spring either from the power the person or institution possesses or from their celebrity.

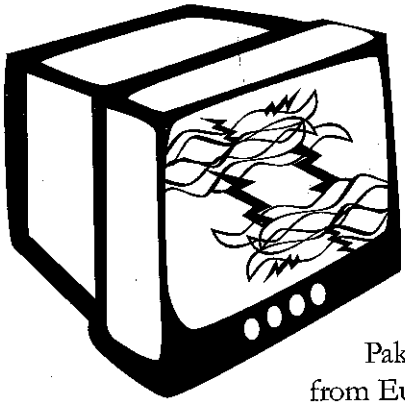
from this over-emphasized criterion of newsworthiness. News is the information about the people who matter. Who is saying something is important; what is being said is not. The media tends to lean towards the tragedies of the prominent. There are cases where the media has given attention to certain natural or health hazards because the victim was not an ordinary person. In the case of AIDS it is said that the discovery of the human immunodeficiency virus in 1983 sparked interest mostly in the scientific aspects of the disease and its transmission. 'But it was not until a Hollywood leading man and a young school boy succumbed to the disease – two people with whom the white, middle class, heterosexual mainstream could identify – that the media and the public recognized AIDS as a social phenomenon and a threat to public health ... The media discovered AIDS not because of the statistical measures of its world importance', Professor Everett M. Rogers asserts, 'but because two famous people – Rock Hudson and Ryan White – got it and gave the story a human touch'.[12]

The prominent Indian journalist P. Sainath criticizes the media's élite bias towards disasters by pointing out that between 1997 and the middle of 1999 as many as 400 cotton farmers committed suicide in the southern Indian state of Andhra Pradesh. Many of the farmers killed themselves by swallowing their overpriced pesticides. The

[12] Cited in Gerteis M, *Violence, Public Health and the Media.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University and the Center for Health Communication of the Harvard School of Public Health, Washington DC (1994).

story, as reported by Sainath, did not make the cover of a single major English news magazine in India. 'So how do you get covered if you are not rich?' Sainath asks. 'Maybe you have to die in large numbers in one spot at one time', he replies to his own question.[13]

(4) Shock-value bias



'If it bleeds, it leads.' This is the most commonly known slogan in newsrooms when it comes to selecting a lead for daily copy. The media looks for shock value in disaster news. Zafaryab Ahmad – a Pakistani journalist who was implicated in a sedition case for working on a documentary on child labour in Pakistan – reflects that when journalists from Europe come to cover an election, for instance, they ask: where will violence take place? For them, violence is a story: if there is no violence, there is no story. 'They look for dead bodies', he complained, 'death is story, life is not'.[14]

'The bad news', according to Rashid Rehman, an experienced journalist based in Lahore, 'if it continues, has to get worse and worse in order to attract the same attention'. Thus bad news, for the media, is always the good news. Events that do not invoke emotions of shock are usually left out of the news sheets. Shock and inexperience have

[13] Sainath P, 'Get the Picture? The Media Elite Don't'. Gemini News Agency. http://www.oneworld.org/gemini/freebies/gemini2.html (1999).

[14] Rajakarunanayake S, Ariyabandu MM (eds) *Seeing Disasters Differently: Visions and Suggestions.* Duryog Nivaran, Colombo (1999)

often impaired the editorial judgments of disaster reporters leading to sensational reports that can be criticized easily. In the pursuit of creating a shock out of disaster news, there is a risk of being insensitive towards the victim who is supposedly the main character of the news story.

(5) Constituency bias

The 'constituency' in media discourse, as defined by Lakshman Gunasekara, is those with whom media people are linked by various socio-cultural factors. These include: common language, religion, ideology, social class identity, and ethnic identity.[15] In the case of disaster coverage, they fall prey to 'constituency bias'. There are examples where the media has attached identity affiliations to disaster events. It is not that the media gives obvious ethnic titles to these disaster events, but the way it looks at these disasters and reports on them sometimes becomes ethnically influenced and the event loses its physical autonomy.

There are examples of the ethnicizing of disasters, where the media attaches a political overtone to a certain disaster, thus underplaying its human impact. This happens primarily when the media starts giving more attention to its constituency – ethnic, political or religious – than to its audience, which is diverse and multiple. Then the media becomes a party to the issue. The much talked about development project

[15] Rajakarunanayake S, Ariyabandu MM (eds) *Seeing Disasters Differently: Visions and Suggestions.* Duryog Nivaran, Colombo (1999)

of the Kalabagh Dam in Pakistan offers a good example. The Pakistani press is divided over the Kalabagh Dam. There is a clear conflict between the Sindhi and Punjabi dominated Urdu media over the issue. The Sindhi media rejects the dam proposal outright as it fears that it will benefit Punjab while affecting other three provinces – Sindh, North Western Frontier Province (NWFP) and some parts of Balochistan – negatively. The Sindhi press makes the point strongly that the dam will bring ecological and environmental disaster to the Indus basin through the desertification of green and fertile lands. It is pertinent to mention here that the elected governments of Sindh, NWFP and Balochistan have rejected the Kalabagh Dam proposal. But, on the other hand, the chief editor of a national daily from Punjab has gone to the Lahore High Court and filed a petition in favour of the Kalabagh Dam requesting the court to order the Federal Government to start construction in the 'national interest'. The media on both sides is catering to its respective constituencies rather than presenting the multi-dimensional negative and positive aspects of the proposed project to its audience. There are occasions when the media is party to identity conflicts, and disaster or development coverage against this backdrop is plagued with partisan and selective judgments, which oversimplifies complex issues and sensationalizes public opinion along ethnic divides.

4.3 Disaster stereotypes and operational constraints

Stereotypes

In most South Asian countries the media tends to reinforce social biases instead of inspiring its audience towards social change. It perpetuates simplistic, reductionist and fatalistic explanations of disasters and does not provide its readers with alternative explanations as how one can script one's own destiny. And disasters are not merely 'God's punishment' – rather, they have scientific and social characteristics, and some if not all of them can be addressed and damages controlled through timely preparedness measures. The media seems to be hung-up on stereotypes of disasters, not investigating the processes that cause them and informing people about what can be done in our societies to prevent them. The media could use its leverage to question such worn-out interpretations.

Operational Constraints

Brain Wenham, former managing director of BBC Radio, has pointed out while discussing the limitations of the media that '...[people] frequently complain that the media have "got it wrong," whereas in truth, the media lack adequate information to judge ... Contrary to general opinion, the news media is not hostile to good news *per se*, but they often do not recognize it when they see it ... In part, the problem is that, being for the most part generalist and firemen, reporters lack the time to become fully conversant with the inwardness of any specialty or discipline.' [16]

[16] Wenham B, 'The Media and Disasters: Building a Better Understanding'. In Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/disas6.htm

Here are some of the main operational constraints within which the media operates:

(a) ***Deadline 'syndrome':*** The most determining factor in the process of news production is that copy has to go to press before a stipulated time. Sometimes when a disaster event occurs the reporter, despite his/her desire, cannot collect sufficient background information in time. In this case the reporter is left with no option but to put together whatever he/she has to hand and send it to the newsroom. In these circumstances disaster stories sometimes give inaccurate information or misquote sources. Libraries and already indexed information on disasters can help avoid this and reporters can refer to background information if such arrangements are already put in place.

(b) ***Space limitations:*** The news media have to cover hundreds of news stories related to a variety of interests and disciplines, all within a limited space or time. In such situations, important information may have to be cut out. This limits the treatment of disaster news. The commercial interests of news proprietors are also decisive factors in the allocation of space and prominence.

Different angles to disaster

The roles which individuals and agencies are expected to play fall far short of their potential. A reporter's role is constrained by the limits set by his editor. The editor responds to consumer needs, pointing out what his readers want. The media is seriously concerned with disasters and the journalist's role in reporting disasters is an important one. The tendency is to report on natural disasters from a political perspective, because this is what the journalists know.

Few journalists are really sure why they should be involved in disaster situations. Many agencies that provide relief and rehabilitation assistance have their own disaster 'angle' and offer sponsored trips to media men. This is a good idea. Such trips should influence the process of mitigating disasters through a process of empathy and understanding.

Nearly 150,000 people were killed during a four-hour period when a cyclone struck the Bangladeshi coast in 1991. Warnings had been ignored because earlier warnings had come to nothing. The first forty-eight hours saw little relief reaching the area. It was only on the third day that boats with food and water reached the affected people.

The first media reports came from helicopters that could not land. They spoke of the massive deaths and devastation. National and international news agencies crowded into the area. International news agencies set up media focal centres. Soon the disaster became a media event. The local media began a scramble for more harrowing stories and Bangladesh made headlines internationally.[17]

[17] Chowdhury A, 'Misery is more interesting to report'. In Fernando P, Fernando V (eds) *South Asian Women: Facing Disasters, Securing Life*. ITDG/Duryog Nivaran, Colombo (1997).

(c) ***Logistics:*** It is not always the case that journalists do not want to report issues of public interest or that they have no motivation to inform their readers about the risks and threats they are going to face. But the lack of logistical support from news organizations hampers quick and efficient disaster reporting.

(d) ***Capacity crisis:*** There is no coordinated mechanism of on-the-job training for working journalists in the media industry. Having no access to modern skills and knowledge of new issues, journalists may become de-motivated and cannot cope with the growing challenges from professional and public expectations. Lack of capacity and skill to understand and treat complex issues like disasters and the environment seriously affects reporting quality. In South Asian countries, the regional press and local correspondents have a great role to play in the particular case of disaster coverage, but they are not trained in such issues and in some cases are not full-time employees. The primary burden of reporting regional disasters may lie with these journalists, yet they lack capacity, resources and training to respond desirably.

(e) ***Obstacles in access to information:*** In the case of disasters, governments tend to hide information as this may expose negligence on the part of government machinery, while the media tends to overstate the casualty and loss figures and the extent of the crisis. The absence of legal and formal frameworks to access official information in South Asian countries hampers transparent disaster reporting and leaves too much room for 'rumour reporting' in the case of emergencies. When information is concealed, rumours rule the minds and imaginations of people. For example, in the case of Pakistan the Official Secrets Act of 1923 is still in place and no amendment has been introduced to date. The Act strategically controls and conceals information of public interest. In this situation, journalists have to bank on informal and personal connections to obtain official information that might have a strong bearing on communities at risk. In many cases information about various disasters is declared 'classified' and findings are never made public. This operational constraint can be addressed by putting a legal framework in place, which enables citizens and journalists to seek information about decisions that affect them directly.

Chapter 5
Improving coverage of disasters

Summary

This chapter discusses criteria for newsworthiness, how they are misapplied in the case of disasters, and how they could be applied more constructively. It also outlines approaches to be followed in reporting disasters. A checklist is presented giving guidance on how to develop appropriate news stories. Ethical issues involved in disaster coverage are also discussed.

5.1 Criteria of newsworthiness

The following are standard elements that determine the content and presentation of news.

1. *Impact:* The significance, importance, or consequences of an event or trend: the greater the consequence, and the larger the number of people for whom an event is important, the greater its newsworthiness.

2. *Timeliness:* The more recent the event, the more newsworthy it is. In some cases timeliness is relative. An event may have occurred in the past but only have been learned about recently.

3. *Prominence:* Occurrences featuring well-known individuals or institutions are newsworthy.

4. *Proximity:* Closeness of the occurrence to the audience may be gauged either geographically – events nearby, all other things being equal, are more important than distant ones – or in terms of the assumed values, interest and expectations of the news audience.

5. *The Bizarre:* The unusual, unorthodox, or unexpected attracts attention. Dog bites man is not news but man bites dog is news.

6. *Conflict:* Controversy and open clashes are newsworthy, inviting attention on their own, almost regardless of what the conflict is over. Conflicts reveal underlying causes of disagreement between individuals and institutions in a society.

7. *Currency:* Occasionally something becomes an idea whose time has come. The matter assumes a life of its own, and for a time gains momentum in news reportage.

8. *Entertainment:* Stories that have more of an entertainment factor may compete with any of the above criteria – not that some other news values can not also have entertainment value.

9. *Human interest:* Human interest stories are generally soft news although human interest angles can be found in most hard news stories. A flood, for instance, will undoubtedly have many human interest angles: a child re-united with its parents after two days, a boy who lost his dog, or families returning to their mud-filled homes.

Many times the links between important information and stories that appear newsworthy in the eyes of the media and the public are difficult to establish, as suggested by a report from the UN Food and Agriculture Organization (FAO). 'When images of tortured, starving faces and bloated bodies of dying children lead the nightly news, the world rushes food and assistance to the hungry. As the food aid arrives, it feeds the news as well as the

starving'. Despite the impression shared by many observers that Africa is 'a continent of recurring famine', the report by FAO confirms that it is drought, not famine, that is Africa's 'principal natural disaster'. The report explains further that 'famine is not the necessary outcome of drought, there are proven strategies to reduce the effects of drought and prevent even the most vulnerable population from starving.' One may recall the example of 1992 when 12 southern African countries were hit by a drought that caused great crop failure. But timely intervention by the international community and rapid response by the countries involved prevented the drought from turning into a famine. 'The unprecedented early response prevented a famine and as such a major news story ... What went largely unreported', the FAO complains, was the 'story about millions who could have died but did not.'

As the above example and others presented in earlier chapters of this book suggest, the media does not report hazards but covers disasters. Drought, in the light of the criteria of newsworthiness, is not news, yet famine is. The media has the potential and responsibility to help avert such slow-onset disasters through timely and informed coverage, provided that the criteria of newsworthiness in relation to disasters are redefined.

Media coverage – a double-edged sword

Spectacular images of heliborne rescues on live TV were beamed around the world during the Mozambique floods of 2000. The subsequent influx of material and financial aid, culminating in pledges of US$ 470 million to reconstruct Mozambique, were at least partly due to this international media coverage.

During the 2001 floods, however, negative media coverage may have been partly responsible for a meaner international response. In 2001, floods hit the Zambeze valley – steeper-sided and less densely populated than the flood plain of the Limpopo which flooded in 2000. Along the Zambeze, many farmers live above – but farm fields below – the flood level. This led to the unexpected phenomenon of people declining to be rescued. Although their fields were under water, their houses were secure, they had brought their livestock near their homes and they had food stocks, so they chose to stay put.

The TV cameras came with the helicopters, but then went away when there were no dramatic rescues. On 17 March 2001, BBC correspondent David Shukman actually wrote in a leading European magazine that the unwillingness of people to be rescued meant it was 'a bogus disaster' and Mozambique was 'faking it'.

Shukman also complained that 'international teams had flown in to perform a high profile rescue, but instead found themselves shuttling food around'. However, the idea that international aircraft alone are responsible for disaster rescue is a media and aid industry myth. Of the 53,000 people saved in 2000 and 2001, all but 4 per cent were rescued by Mozambicans and other African operators. And 63 percent of survivors were saved by boats.

While the large number of international planes that came after the flood were often too late to rescue anyone from trees or rooftops,

they nevertheless saved thousands of lives, precisely because they transported food to those who were stranded. 'Shuttling food' may not be high profile, it does not make good TV and it doesn't create such a warm glow in the hearts of donors – but it is what's needed in floods like this.

However, the result in 2001 was less TV coverage, less donor interest, and therefore fewer planes and less food. By late March, with the press long gone, people were running out of food – and the river was not falling. More than 500 people a day, on foot and in boats, were making their way to accommodation centres. The roads in the Zambeze valley had turned from dirt to mud. Airlifts were the only way to get food to people, but there were just 20 aircraft to do the job. By May, there were 220,000 people in 65 centres. With less foreign aid, and especially fewer planes, conditions in the centres were not as good as during 2000. The Ministry of Health reported 'severe nutritional problems' in some centres and there were reports of cholera.

What can be learned from this experience of positive media coverage one year and negative coverage the next? Perhaps, as part of preparing for disasters, aid organizations could consider building closer relationships with journalists. Explaining to the media in advance the specific, unique contexts of each disaster could prove of positive benefit to both aid agencies and, more importantly, those at the receiving end of aid.[1]

The 'impact' and 'bizarre' criteria of newsworthiness are usually overlooked in decisions about disaster news. The focus is largely on the criteria of 'timeliness' and 'conflict', as these give currency to the news and are thought to make it easier and quicker to manage. People live in the present, who cares for the future? This is, perhaps, the guiding principle for the media when looking at disasters.

[1] IFRC, *World Disasters Report 2002*, International Federation of Red Cross and Red Crescent Societies, Geneva, Switzerland (2002)

The 'bizarre' criterion in news selection signifies the unusual, unorthodox, or unexpected. It attracts the public, it makes news. The media is very good at playing with this particular factor which sometimes ends up as titillation – this involves everything from the new fashions in men's and women's swim wear to an in-depth series on legal prostitution.[2] The bizarre factor can help to do away with 'orthodox' social biases and also can make way for mobility in thinking. It may lead people to reject repressive moral controls in some societies. Yet the media sometimes fails to realize the potential of this factor in newsworthiness by reducing it to fun and fashion. If this factor is taken as a reference point for assessing the newsworthiness of a disaster, then new, radical, unusual and unorthodox assertions on disaster mitigation, weather predictability, flood controls and so on can be brought onto the news desks as they can offer alternative thinking and can change the stereotypes of *fate* and *relief*. They are news because they have 'newness' in their perspective. But dominant media trends often fail to harness the potential of the bizarre to present alternative perspectives on disaster.

[2] Cyber College, International Campus http://www.cybercollege.com/newscrit.htm (2002)

5.2 Checklist for disaster reporters

The following checklist gives some general guidelines for journalists, including reporters and news editors, who intend to report about or write on disaster issues. It identifies disaster-related issues and also covers basics of news-writing.[3]

(1) Writing basics

Does your story contain the following:

What

'The news'. The event (flood, earthquake, cyclone,thunderstorm, explosion etc.).

Who

Victims, survivors, damaged physical structures (differential impact on men, women, children, poor, rich, the young and elderly).

Where

Location of an event and scope of impact. Was the location already declared hazardous? What made the place or community the target of the disaster? Proximity of the place to the hazard.

When

Time and duration of an event and its expected aftermath.

Why

An explanation of why an event occurred, the causal factors that led to disaster, the technical, social and political linkages

[3] The checklist has been drawn up primarily on the basis of experience in the field, and discussions with a number of South Asian journalists. It has also greatly benefited from the guidelines prepared by the Asian Forum of Journalists: *Reporting on the Environment: A handbook for journalists*. United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), Bangkok (1988).

involved in the making of the disaster. What was the structure of vulnerabilities? Have you covered the viewpoints of various stakeholders to find out how they explained the event differently?

How

This can often be answered as the steps leading to or following a news event. How is the government and communities preparing to cope with the disaster? What structural and non-structural measures are required for short-term and long-term disaster management? Who will ascertain needs and how to prioritize interventions?

Relevance to readers

How will this information affect your readers? Is there any way to involve people in the story to make it more interesting?

Impact

Who has been affected by the news? What has been and will be the impact? Will it influence policy or inform the public? Does your story have potential to trigger a debate on or mobilize public action against the post-hoc system of disaster management?

Recommended actions

What do people need to do when a threatening event occurs? What precautions should they take? Who should they contact if they have a problem? How can they work to improve the situation in the short and long terms?

(2) *Article organization*

Lead

Is your lead sentence, paragraph or introduction interesting enough to draw readers into your story? Is it accurate? Does it avoid sensationalism?

News

Have you decided what the main news in your story is? Have you brought this news in at the start of your article or is it sidelined somewhere towards the end?

Details

Do you have the information for your article arranged in descending order of importance? Are the important facts high in the story and the details towards the end? (See the explanation of the pyramid of disaster news in Chapter 3.)

Sticking to the point

Did you stick to the main point in your story and not diverge into secondary issues until you had fully covered the main news?

Transition

Have you helped readers to follow your move from one major idea to the next by providing transitional words or phrases?

Conciseness

Is your article as tightly written as you can make it? Have you eliminated irrelevant information and quotations? Have you edited your sentences carefully to cut out unnecessary words?

(3) Clarity

Audience

Have you identified the readers of your article? Is the information, particularly the technical information you are providing, understandable to them?

Background

Have you decided how much background information or technical detail is needed in this article to help the readers you have identified above?

Explanations

Have you provided explanations of complex technical information for your readers and are these explanations clear? Are they meaningful as well? If you used technical terms such as cusec, Richter Scale, epicenter or El Niño, did you use any analogy or comparison to make such terms meaningful to people?

Translation tools

Have you used any of these helpful translation aids to explain information?

1. Analogies
2. Metaphors or similes
3. Definitions
4. Descriptions
5. Comparisons drawn from the readers' daily life
6. Background explanation which helps to provide context for an issue or event

7. Explanations which help people to understand what something is and how it works

Numbers

Have you made sure that any numbers and figures you used are consistent and not confusing? Have you avoided mixing measurement terms such as millions and crores, which confuses readers? Have you tried to find some appropriate ratio or comparison that will help people to understand the numbers?

Technical jargon

Have you avoided using technical jargon? If you have had to use it, have you defined or explained it immediately after its use? Is it defined so that the average reader will understand it?

(4) Sources

Balance

Have you balanced your articles by including views from all sides?

Credibility

Are your sources credible experts? Have you checked them out with other experts if needed? Have you included enough information in your article to show readers that your sources are expert or believable?

Active reporting

Have you made every effort to go beyond just taking a press release or government handout to develop the story fully by looking for good sources? Have you gone out to listen to involved stakeholders? Have you included victims' voices in your story? Did you meet official and private experts to verify controversial claims, if any? Did you visit the location of the disaster? Were you able to obtain some official correspondence or documents related to the issue, which can make your story stronger?

Sources

Have you checked with as many of the following sources as possible?

1. Local and national government officials
2. Lower-level government employees in relevant agencies who might be knowledgeable
3. Scientists or engineers from a university
4. Scientists, doctors or engineers from a research institution
5. Scientists or doctors from a hospital
6. Police, military, fire or ambulance officials on the scene
7. Knowledgeable NGO representatives
8. Individual people affected by an event
9. Officials of international organizations who might have a broader view of disaster issues
10. Locally engaged social, political and religious activists

11. Onlookers and eye-witnesses
12. Disaster and civil defence-related government and non-government organizations
13. Meteorological services

Additional sources

Did you ask any of the above-mentioned people for recommendations of other people you might interview to find out more on the subject? Did you ask them for the names of people who might disagree with their views on the issue involved?

Disaster-development linkages

Does your story explain the interrelationships between disasters and development involved in the issues you are writing about? Does it show how these interrelationships will or could be affected by an event, a change in policy, or a plan to develop a region?

Impact

Does your article explain the impact of the event on people living there, on governments, on the economy? Do you take a multidimensional look at impact? Do you point out how it will or could relate directly to readers' lives? Do you note if it will be important for them in the future?

Flow charts

Have you sketched a drawing or flow diagram for yourself that traces the steps or stages in the disaster event or identifies

involved parties and processes? This helps you to organize your story and reminds you to cover all parts, including important geo-social interrelationships.

Illustrations

Have you looked for or planned to include photographs, drawings, graphs, charts or maps that can help to illustrate disaster-related linkages for your readers?

(5) Writing style

Have you avoided all of the following writing problems?

1. Long sentences
2. Long paragraphs or paragraphs with more than two topics
3. Confusing wording
4. Words that readers would not understand and that are not explained
5. Excessive technical jargon
6. Ponderous, long and meaningless quotations
7. Statements in interviews or speeches that are not attributed to the speakers
8. Words that could be interpreted by readers in more than one way
9. Clichéd phrases
10. Misspelled words, words incorrectly used, grammatical problems

5.3 Choosing the appropriate form

Apart from spot reporting, which has to be a complete written or audio-visual narrative of the occurrence of a disaster, the following forms can help to develop further reports, write-ups and follow-up stories on disasters.

(1) Investigative features

These can include probes into the technical and administrative causes of disasters. Such features help to inform citizens and victims about scientific factors and gaps in policy and practice that contributed to the disaster. Investigative features take time as they involve collecting information from many stakeholders to arrive at findings.

If done well, such features can stimulate public action and mobilize political opinion to fill policy and practice gaps, and can create an opportunity for changes in stereotyped thinking. Investigative features on disasters can also lead towards assigning responsibility and help to develop alternatives.

(2) Comment

A journalist can develop an informed comment on a disaster event by comparing it with similar events in other countries and communities. Knowledge about disasters can be shared through this comment and suggestions can be proposed to donors, the government and the community itself. Comments should be brief and sharp in message and should go into news pages.

(3) Survey

In the post-disaster phase surveys can be conducted in disaster-stricken communities to ascertain the level and flow of emergency activities and materials. They can examine whether relief goods meet the International Humanitarian Charter of Minimum Standards in Disaster Relief (see Chapter 3) and are appropriate to the needs and demands of victims.

(4) Editorial

Editorials represent the official comment of the news organization. They can have a significant effect on policy and public forums. Strong editorial comments backed by sound information can trigger a debate. If editorial judgments on complex scientific and technical issues are ill-informed, they can very easily mislead public opinion. In the case of disasters, editorial judgments are often influenced by shock value and so are ineffective in suggesting serious changes at policy and public levels. But an argumentative editorial comment on disasters that is backed by facts and sound interpretation can be one way of pushing the disaster debate ahead.

(5) Follow-up dossier

Journalists sometimes complain that they don't have enough time and adequate logistic support to go to the field and report on disasters. This gap has to be addressed. However, there can also be good desk stories on disasters. A follow-up dossier may

sometimes be more useful than field reporting. Such a dossier contains a brief background of the ongoing disaster, referring to already published statements and news items, and develops a perspective on the issue in question. The dossier can be an interpretative piece.

A sample follow-up dossier

Drought Threatens Another Disaster in Cyclone-Ravaged India

Written by Stephanie Kriner, Staff Writer, DisasterRelief.org

A huge consignment of wool blankets recently arrived in the Indian state of Orissa – in the midst of a heat wave. The blankets were meant for victims of last year's devastating cyclone; just a few weeks ago, they were desperately needed for thousands left homeless during India's chilly nights. But as temperatures soar and people struggle to find water in India's parched western landscape, the blankets are an ironic reminder of the varying weather extremes that have plagued the country in recent months.

First there was the cyclone, which battered Orissa on October 29, with winds up to 155 mph and caused massive waves to crash into the coast, leaving some 10,000 people dead. Now Orissa and four other western states – Gujarat, Rajasthan, Madhya Pradesh and Andhra Pradesh – are suffering the country's worst drought in decades.

Despite warnings of a looming famine, media reports have conflicting accounts of the severity of the crisis. Livestock have died as pasturelands dry and thousands have been reported to have fled their villages in search of food and water. Aid groups say that

in some areas, only government supplies of water are available. Very few human deaths have been attributed to the drought, and Indian officials claim that the situation is under control. However, media accounts describe people who trek for hours in search of drinking water. Others clamber in nearly dry wells to collect the last drops of water from the bottom. In one town, villagers are digging a trench to capture any rain that may fall. 'There is no water. Water is available only once every 10 to 15 days. Cattle are dying,' one woman told Reuters. 'Villagers are migrating to other places. There is no food grain.'

The drought has also led to violence. The Asian Age newspaper recently reported that four people were killed while protesting Gujarat's water policy, and thousands rioted there last weekend, beating police officers in an attempt to access scarce water supplies.

The drought is the worst to hit Gujarat in 100 years. Sixteen of its 27 districts are affected and 26 of Rajasthan's 32 districts are affected. State officials said that all of the men in nearly 1,000 villages in western Rajasthan had fled to other regions in search of food and water for their families because their crops had failed for the second consecutive year. Women and children left behind are forced to walk miles for water.

While insisting that the country is not in the midst of a crisis, Prime Minister Atal Behari Vajpayee urged Indians to donate, and the government has sent trainloads of food, animal fodder and water to Gujarat and Rajasthan, where more than 50 million are in danger of starvation. Some 8 million tons of wheat and rice will also be sent. They will be taken from government food reserves, which total 26 million tons. The government has said that it has enough grain stocks to avert a famine.

'The next two or three months are crucial. Whatever resources the

Centre (central government) has, we will commit them,' Agriculture Minister Sunderlal Patwa told the Indian Parliament after a six-hour debate about how to handle drought.

Still, many people are afraid that the worst is yet to come in the even hotter months of May and June when temperatures average 48 degrees Celsius (118.8 degrees Fahrenheit). More fears have arisen over reports that rains during the coming four-month monsoon season would be less than average and that this season would mimic last year's when precipitation was normal but erratic, skipping some of the areas hit by drought this year. The monsoon season begins in mid June.

A state-run research agency, the Centre for Mathematical Modeling and Computer Simulation, has reported that India would receive about 789 mm of rainfall during the coming monsoon compared with 840 mm last year. India's weather bureau is expected to give its official monsoon forecast in the last week of May.

Whatever the outcome, this season's monsoon will determine the future of millions of farmers who depend on the rains for their livelihood. India receives about 80 percent of its rainfall from the southwest monsoon. The situation will be most desperate in Orissa State, where cropland already took a massive beating from the cyclone.

After the Cyclone, UN prepares Orissa for Heat Wave

Officials had already predicted that a loss of tree cover in Orissa would lead to a heat wave. Temperatures in some parts of the state have already touched 43 degrees Celsius (109.4 degrees Fahrenheit) and humidity in some coastal districts has reached 92 percent.

In anticipation of the weather, the United Nations developed a heat wave preparedness plan to help those left homeless by the cyclone to deal with the harsh conditions. The plan includes 250 special

heat and monsoon shelters in eight districts that were critically hit by the cyclone. The shelters will also function as health and drinking water centres for women and children.

Plans are also underway to provide India with an early warning system to prepare for the next cyclone. Indian space and meteorological authorities are developing a forecasting system that will be used in conjunction with global positioning systems that track the early movements of storms.

As India begins to take to heart the lessons it learned from the cyclone, Anil Agarwal, a former member of the World Water Commission, said that more government action must be taken to avoid future droughts as well. 'To provide lasting relief against drought the government will need to go beyond promises,' he wrote in the Indian Express. 'It should prepare a concrete plan of action to develop a mass movement for water harvesting'.[4]

(6) Exposure visits

Journalists can inform and educate themselves about disasters and their impact by making visits to various disaster-hit places. These exposure visits can also include: weather forecasting offices, counter-disaster departments and community-based disaster management projects being implemented by NGOs.

[4] http://www.reliefweb.org

5.4 Connecting the media

The media should cultivate its external relationships to obtain background information, which makes disaster stories more comprehensive and informative. Greater media connectivity with disaster-related organizations and communities would diversify the content of reports. There are several links journalists could make more use of to get ready references on disaster issues.

(1) Government

The burden of responsibility for averting disasters and responding in emergencies lies primarily with governments. Governments have established a variety of administrative structures to respond to disaster events. For example, there are weather forecasting installations that provide weather-related information on a regular basis. The media can develop regular contact with these departments and monitor what government organizations are doing. If gaps are found, that makes a good story, warning the government to redefine the situation and reorganize its disaster management system.

At times of disaster governments tend to understate figures of human and economic losses to avoid embarrassment, although in some cases they overstate these figures to attract international aid. In both cases governments try to influence the media to toe the official line. The media should be vigilant here and report according to independent assessments.

In certain cases government administration attempts to hide alarming information to avoid 'panic flight' – i.e. it is feared if early warning is provided to at-risk communities they may get frightened and run away, which can cause turmoil and panic. In such cases the media has to handle information carefully in the best interest of communities at risk.

(2) Disaster experts and donors

In some cases disasters become too complex for media personnel to understand. In these cases the media has to develop a close liaison with disaster experts to seek background information that can be presented in simplified form.

Disaster experts are involved in various kinds of research and they prepare informative papers, but these are not widely disseminated. The media can also explore the possibilities of producing such papers or developing features based on the ideas discussed in them. Also there are some opportunities where international donors prepare their strategies for work in particular countries. These papers and strategies can be brought before the public for broader discussion.

By interacting with these organizations and individuals, journalists can keep themselves updated on policy and academic developments in the realm of disaster

mitigation. The media can, however, also investigate the activities undertaken by donors to find out whether they are victim-sensitive and contributing to disaster mitigation or not. Similarly, donors can be informed about the priorities in relation to disaster mitigation that are being set by the national government and local disaster organizations, and how these have come about. The media can also take on the role of influencing policy in favour of disaster management.

(3) Communities

The most important relationship that the media has to consider seriously is with at-risk communities. Communities and people at risk can give the media solid information based on their experiences. Communities play many roles in this respect: they are at risk, victims and survivors. The community is the best source of information about its problems; the people are the best sources of pro-people information.[5] A permanent interaction with communities at risk can enable journalists to think creatively about news story ideas. The media can inform the public and provide a firm basis for at-risk communities to take early action.

When disasters have taken place the voices of victims are often not heard once the emergency is over. The media can give voice to the victims when the organizations responsible are neglecting their demands.

[5] Sham H in weekly *Awami Panchayet* (February 2002)

Through a close interaction with communities, the media can cover all three phases of disasters with more accurate and sensitive information. The media can also make it a point that affected communities should be involved at decision making in all stages.

(4) NGOs

It has been accepted as a matter of fact that the media throughout the world plays a vital role in educating the public about disasters, warning of hazards, gathering and transmitting information about affected areas, alerting government officials, relief organizations and the public to specific needs and facilitating discussions about disaster preparedness and response. For the media to fill these roles more effectively it has to establish and strengthen working relationships with scientific institutions and disaster mitigation organizations.

Former UN IDNDR official Terry Jeggle has stressed the importance of creating and taking advantage of mechanisms for journalists and disaster mitigation officials to spend more time together and learn about each other's work.[6] One vital factor in effective communication is the creation and repetition of precise messages, both through the mass media and other forms of communication. Such messages can empower people to take practical steps to protect themselves from natural hazards and to demand that private and governmental organizations pay attention to disaster prevention, mitigation and response.

[6] Cited in Cate FH, 'The Media and Disaster Reduction: Roundtable on the Media, Scientific Information and Disasters at the United Nations World Conference on Natural Disaster Reduction' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/disas3.htm

Convergence

The chairman of the International Programme for the Development of Communication (IPDC), UNESCO, has drawn a few important conclusions on recent developments affecting the media's external linkages.

1. Interaction between the media and civil society is an ongoing dynamic process in many developing countries.

2. New technologies can enhance and facilitate this process, if and when they are being used in a cost-effective and economic way.

3. New waves of technology, especially digitalization and compression, can provide new ways of linking the media and civil society.

4. Independent and responsible media that serve civil society cannot be created and sustained by market forces alone. They need ongoing support and encouragement.

In recent history, there has been a rapid growth of NGOs in the countries of South Asia, some of which are involved in disaster mitigation and many more in relief work. There is a general impression – some believe, created by the media – that NGOs are not doing what they claim. As a result, NGOs

and the media do not enjoy a good rapport. However, there is a need to develop an atmosphere in which points of convergence between the two sectors can be explored. Through creating an atmosphere conducive to mutual learning the quality of work, on both sides, can be improved. It is through NGOs that gaps left by the state are addressed and it is through the media that official agencies are held accountable to the public. There is greater room for NGOs and the media to interact on public interest issues and develop coherent strategies of inter-institutional communication.

However, NGOs should also provide relevant information as required and facilitate the media to develop informed analysis of disaster issues, and they should share the reports and papers they produce at various national and international events. Media staff, given the material they usually deal with, would also naturally be interested in knowing about sources of funding for disaster work and the mechanisms of spending and distribution. For the sake of transparency and upgrading the level of trust and credibility amongst the media and the public, NGOs ought to share such information, as this will contribute to the process of social auditing and will stop the media playing on unfounded rumours.

5.5 Imagery and ethics in disaster reporting

A major ethical complaint against the media is that it too often contributes to panic in disasters while failing to take affirmative steps to help prevent them or alleviate their impact.[7] This admittedly contestable statement is just one of the moral issues in disaster reporting.

Perhaps the most significant ethical question concerns imagery. Some audiences and analysts have raised questions about the way the media (and international relief organizations) present images of disaster victims in the form of still photos and video reports. Oxfam's 1991 report on images noted:

> An image has a lot of power. It conveys information and excites emotions. It provokes response, and it can leave a lasting impression. But the power of images can be damaging if they are handled insensitively. They can generalize, oversimplify and distort. They can reinforce stereotypes. They can deny people their dignity.[8]

It is not only the media that is to blame here. Sometimes relief organizations overstate or overplay the disaster situation for fund-raising campaigns by constructing disaster imagery, which may suit them but mislead public opinion and create politically incorrect impressions. Such examples abound.

[7] Parker EC, 'What is Right and Wrong with the Media?' in *Disasters and the Mass Media.* Washington DC: National Academy of Sciences (1980).

[8] 'Oxfam and Images', internal report of Images Working Group, April 1991.

Long before Oxfam argued the need to develop a code of conduct that avoided 'disaster pornography', the NGO itself had manufactured insensitive disaster imagery. Oxfam's own news bulletin some 25 years ago quoted an Indian drought victim saying that drought may be 'too big a problem for God; but perhaps Oxfam can do something'.[9] This quote suited organizational pride, of course, but also reflected a desire to manipulate misery for the benefit of public relations.

A Save the Children poster published in 1981 entititled 'Sentenced to Death' shows a healthy white hand holding onto the wrinkled black hand of a child. And at the bottom of the poster an appeal reads 'Support our emergency aid programmes for the victims of disaster'. The poster, quite glaringly, gives racist images of victim and saviour. Some researchers have pointed out that anti-racists sometimes claim that charity appeals representing starving Africans embody a particularly racist, colonialist motivation. It is true that virtually all appeals for charity until the 1980s tended to picture helpless, passive victims and heroic saviours. Virtually all imagery of disasters in 'distant lands' was patronizing to the victims.[10]

In 1993-94, the Annenberg Washington Program sponsored a year-long project examining the impact of images of the developing world portrayed by and through the western media. The Program noted that much of the media throughout the industrialized world shared an image of developing countries that was incomplete and inaccurate. The report showed that the efforts of the media to alert the public and report the news accurately and promptly, and of

[9] Quoted by Jean Drèze, 'Famine prevention in Africa', in Drèze J, Sen A, *The Political Economy of Hunger,* Oxford, Clarendon Press (1990), Vol. 2, p.128.

[10] Benthall J, *Disasters, Relief and the Media* I.B Tauris & Company Ltd, London (1993)

relief organizations to motivate public and governmental support and save human lives, inadvertently contributed to this image. Because Western audiences often lack knowledge of developing countries, reports of exceptional events, such as famines or floods, may foster misimpressions of the developing world.[11]

It is dehumanizing to stick a camera and a microphone in the face of an injured or bereaved person and demand a statement. It is wrong for reporters and editors to use the human elements in a disaster to feed the morbid curiosity of viewers, listeners, and readers.[12]

Since the 1980s, NGOs have made considerable efforts to overturn such stereotyped imagery, and have developed several models and guidelines of good practice.[13]

Save the Children UK published, *Focus on Images* in 1991, which suggests such things as: no more pictures of dominant relief workers dispensing aid to passive villagers; a disabled person should if possible be photographed doing something rather than sitting in a wheelchair; cropping and captioning should be sensitive to the dignity of individuals and communities; coverage must be both accurate and balanced.[14]

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[11] Cate FH, 'The Media and Disaster Reduction: Roundtable on the Media, Scientific Information and Disasters at the United Nations World Conference on Natural Disaster Reduction' in Cate FH (ed) *International Disaster Communications: Harnessing the Power of Communications to Avert Disasters and Save Lives.* The Annenberg Washington Program in Communications Policy Studies of Northwestern University, Washington (1994) http://www.annenberg.nwu.edu/pubs/disas/disas3.htm

[12] Parker EC, 'What is Right and Wrong with the Media?' in *Disasters and the Mass Media.* Washington DC: National Academy of Sciences (1980).

[13] The BBC has prepared formal guidelines for producers and editors that also cover disaster reporting. The section on 'Accidents and Disasters' says: bodies should not normally or needlessly be shown; great care should be taken even when they are covered by blankets; show as little as possible of the news gathering process unless it is part of the story. *BBC Guidelines for Factual Programmes.* BBC, London (n.d.)

[14] Save the Children Fund (UK) *Focus on Images.* London: Save the Children (1991).

Oxfam's 1991 report (referred to above) suggests that images:

1. Should respect people's dignity as individuals.

2. Challenge our prejudices rather than reinforce them.

3. In disaster situations, select images that represent need but do not portray people merely as recipients of aid.

In April 1989 the General Assembly of European NGOs adopted its *Code of Conduct on Images and Messages Relating to the Third World*. This is designed to counter fatalistic images of the Third World by providing:

> 'more realistic and more complete information, thereby increasing awareness of the intrinsic value of all civilizations, of the limitations of our own society and of the need for a more universal development which requires NGOs to provide the public with truthful and objective information which respects not only the human dignity of the people in question but the intelligence of the public at large.'

The Code's practical guidelines are quoted here in full:

1. Avoid *catastrophic or idyllic images* which appeal to charity and lead to a clear conscience rather than consideration of the root problems;

2. All people must be presented as human beings and sufficient information provided as to their social, cultural and economic environment so that their *cultural identity and dignity* are preserved. Culture should be presented as an integral part of development in the South;

3. Accounts given by the people concerned should be presented rather than the interpretations of a third party;

4. People's ability to take responsibility for themselves must be highlighted;

5. A message should be formulated in such a way that generalizations are avoided in the minds of the public;

6. The internal and external obstacles to development should be clearly shown;

7. Interdependence and joint responsibility in underdevelopment should be emphasized;

8. The causes of poverty (political, structural or natural) should be apparent in a message in order to enable the public to become

aware of the history and real situation in the Third World, and the structural foundations of these countries before colonization. It is the situation today, coupled with a knowledge of the past which should be the starting point for examining ways in which extreme poverty and oppression can be eliminated. Power struggles and vested interests should be exposed and oppression and injustice denounced;

9. Messages should avoid all forms of discrimination (racial, sexual, cultural, religious, socio-economic);

10. The image of our Third World partners as dependent, poor and powerless is most often applied to women who are invariably portrayed as dependent victims, or worse still, simply do not figure in the picture. An improvement in the images used in educational material on the Third World evidently requires a positive change in the images projected of Southern women;

11. Southern partners should be consulted in the formulation of all messages;

12. If a NGO calls on the services of other partners (institutions, organizations or private companies) for a fund raising activity, it should ensure that all parties respect the recommendations of this Code. Reference should be made to the Code in the sponsoring contract(s) between the NGO and its partner(s).

Although most of the above-mentioned guidelines are meant primarily for NGOs, journalists can also use them as a code of ethics while covering disasters. It is generally observed that the media is preoccupied with 'death and dying' and in so doing it tends to be more attentive towards the weaknesses of victims and sometimes fails to recognize their capacities. Every disaster has heroes, and the media can try to locate heroes in disasters who coped with calamity valiantly. Those men, women and structures that withstood the disaster need to be highlighted to inspire similar behaviour.

The emotional dimension of disaster should also be attended to. The psychological rehabilitation of disaster victims is often not taken into account in rehabilitation strategies. The media can support disaster victims to come out of the trauma caused by disaster by listening to them and healing them through sharing their experiences.

Chapter 6
Disasters in South Asia

Summary

This chapter gives an overview of disasters in South Asia. It outlines geographical aspects and institutional structures in each country, and identifies gaps in disaster management regimes. Identification of these gaps is expected to give insights to the media to develop more informed disaster communications in South Asian countries and at regional level.

6.1 Introduction: disaster impacts and issues

(1) Impact

Natural disasters have become a severe global problem. Deaths, displacement and damages resulting from natural disasters are colossal. During the 1990s global economic losses from

major natural catastrophes averaged more than US$40 billion a year. In 1998 alone natural disasters claimed the lives of more than 50,000 people and caused economic losses exceeding US$90 billion.[1]

In South Asia during the period 1987-1996, the annual average number of deaths from natural disasters amounted to 50, 695, while 77, 250,041 people were affected.[2] In 2001, disasters killed 22,215 people in South Asia while India and Pakistan record 36,651,662 and 1,315,211 respectively as the number of people affected in that year. During the past decade (1992-2001) natural and man-made (industrial/technological) disasters have claimed 96,285 deaths in the sub-continent.[3] The table below shows the picture in South Asia for the 25-year period from 1971-1995.[4]

What is more alarming is the significant rising trend in disasters' impact. Economic losses worldwide during the 1990s were almost three times greater than those recorded in the years 1980-1989.[5]

Each and every country in the world is affected by natural disasters; however, their nature and magnitude, the damages caused, and how they are

[1] IDNDR, *Final Report of the Scientific and Technical Committee of the International Decade for Natural Disaster Reduction*, IDNDR, Geneva (1999)

[2] IFRC, *World Disasters Report 2000*. Geneva: IFRC (2000)

[3] IFRC, *World Disasters Report 2002*. Geneva: IFRC (2002)

[4] IFRC, *World Disasters Report 1997*. Geneva: IFRC (1997)

[5] IDNDR, *Final Report of the Scientific and Technical Committee of the International Decade for Natural Disaster Reduction*, IDNDR, Geneva (1999)

Country	Annual average no. of people killed	Annual average no. of people affected
Bangladesh	31,870	10,867,802
India	4,728	63,723,255
Pakistan	575	1,023,233
Nepal	365	251,819
Sri Lanka	73	558,508

managed, vary widely. This book focuses on natural disasters in the South Asian sub-continent, how they are managed and mismanaged, and aims to provide condensed resource material on the subject.

Owing to its geographical location, the South Asian sub-continent is widely exposed to a variety of hazards such as floods, droughts, cyclones and earthquakes. During the past decade alone there have been a number of major natural disasters which brought about thousands of deaths and massive destruction: the cyclone in Orissa (1999), earthquakes in Latur (1996), and Gujarat (2001) in India, cyclone (1991) and floods (1998) in Bangladesh, and flash floods in Nepal (1993).

Damages caused by the earthquake in Gujarat, India, in 2001 are estimated at US$5 billion.[6] It resulted in a death toll of 19,727, injured 166,000 and made 600,000 people homeless. In the cyclone which hit Orissa India in 1999 it is estimated that 20,000 people and 700,000 cattle died, while 20 million people were made homeless. The total loss caused by the cyclone, which was given the title 'super cyclone', is estimated at US$6.7 billion.[7] The floods in Bangladesh in 1998 resulted in a total shortfall of crop production of about 2.2 million MT. They affected 1,423,320 acres of standing crops and damaged 4,528km of embankments. The death toll was 918.[8]

Apart from such widely reported large-scale disasters, medium- and small-scale disasters occur frequently in all the countries in the sub-continent that do not receive media publicity and international attention.

[6] http://cires.colorado.edu/~bilham/Gujarat2001.html

[7] Sahni P, Dhameja A, 'Livelihood Options for Cyclone Risk Reduction with Special Reference to the Orissa Super Cyclone', *Research Study for the Livelihood Options for Disaster Risk Reduction in South Asia*, ITDG South Asia, 2000

[8] http://www.bangladeshonline.com/gob/flood98/foreign_1.htm

A number of observations can be made on the disaster situation in the sub-continent today in comparison to the past.

- There are marked differences in the pattern of occurrence of disasters, i.e. their frequency and nature, and the locations affected.
- More people are affected; there is more death, displacement and damage to property.
- Disasters have become a regular occurrence in almost all countries in the sub-continent.
- The effects of a single disaster can be felt across political borders.
- More people are living in high-risk areas prone to natural hazards, and development plans are failing to tackle this problem.
- Expenditure on relief and rehabilitation has increased greatly.
- Countries in the sub-continent show wide disparities in terms of how the issues of disasters are addressed.

In some countries there is a growing consciousness of the problem, there are institutional structures at the state level, and there is a growing body of professionals working on the subject. In others, levels of management are basic, often guided by regulations dating back decades.

(2) Legislation

In all five countries issues related to natural disasters are covered under the legal frameworks for environment, land use, water resources, human settlements, etc. While many of these have not been drafted to take disaster management concerns into account, they are expected to provide a framework for natural resource management leading to hazard and risk reduction. However, it is questionable to what extent these linkages are understood and addressed in a comprehensive manner. Further, parallel to these various legal enactments, there is a vast number of bodies – departments, authorities, boards and committees – with the authority to enforce legislation and regulations, whose functions often overlap, creating situations of confusion and implementation bottlenecks.

Recent situation assessments carried out in Bangladesh, India and Sri Lanka clearly point out the need for appropriate legislation for implementing effective disaster mitigation measures. The Government of Bangladesh has identified legislation as an important part of its non-structural mitigation measures and a Disaster Mitigation Legislation Act has been drafted.

India clearly identifies the importance of an operational framework for disaster prevention, where legislation has a key role in supporting the cause of developing a disaster-free country. There are individually relevant acts such as the Environment Protection Act and Public Liability Insurance Act, but there is no enactment either of the Union or of any State Government dealing with disaster management in a comprehensive

manner. In the absence of such an enactment, the government's High Powered Committee (HPC) on Disaster Management has prepared a National Calamity Management Act, aiming at ensuring efficiency and effective management, greater coordination and responsiveness with respect to the prevention, mitigation of disasters.

The draft Disaster Management Plan in Sri Lanka states that there are a number of relevant policy guidelines, government circulars and Gazette notifications issued at different points. The plan points out the necessity of replacing existing *ad hoc* measures, and suggests taking stock of these and bringing them under the purview of a general Disaster Management Legislation and Relief and Rehabilitation Policy.

Nepal and Pakistan continue to operate within legal frameworks and provisions enacted a few decades ago. The Natural Disaster Relief Act in Nepal dates back to 1982, while in Pakistan the National Calamities (Prevention and Relief) Act is from 1958. The focus of these is on emergency management; provisions for incorporating preparedness action are absent. In Nepal, there is no specific constitutional provision for disaster management. National policies on related issues address disaster-related concerns. These include policies on protection of the environment, development of science and technology, and increasing the pace of rural development. In Pakistan, the National Calamities (Prevention and Relief) Act provides the framework for disaster management, conferring special powers on provincial Relief Commissioners enabling them to respond during emergencies.

In all five countries, existing legislation is inadequate for effective disaster management. Although current frameworks may be adequate in terms of general planning, they have not been framed with a focus on natural disasters. Therefore they do not give sufficient space to institutionalizing preparedness, emergency response, and long-term rehabilitation of natural disaster victims as a process.

(3) Coordination

The shift from emergency management to disaster preparedness requires coordination between many government departments and ministries and with others such as international organizations and NGOs. At best this is a difficult issue, since communication between different government departments, ministries and other bodies is non-existent, except in isolated situations. Moreover, an effective paradigm shift (see Chapter 1) demands integration of development planning with natural disaster management, two spheres which have been handled by separate institutions in all five countries for many decades.

The authorities concerned have recognized these gaps in coordination and identified them as a major hindrance to effective integrated planning and implementation in each country. A number of major calamities in the recent past in South Asia have shown that hazards, disasters and geography do not recognize political borders. The coordination gaps in this regard are prominent at the South Asia regional level where the need for greater, more effective national and regional coordination is strongly recognized. There are proposals for specific

coordinating bodies at country level to be appointed that would take a holistic perspective of disaster management. In terms of regional cooperation, initiating effective dialogue at inter-country level, and demanding that existing South Asian regional bodies such as the South Asia Association for Regional Cooperation (SAARC) take the issues on board are seen as immediate requirements.

(4) Community participation

There has been much discussion of community participation in development interventions; however in disaster management this is a relatively new idea. Communities are still usually seen as 'disaster victims' who require external support to recover from the aftermath of a disaster. In the past, there were hardly any references to the capacities and knowledge communities have, as individuals and collectively, to cope with and recover from disasters of various degrees.

The paradigm shift and alternative perspective on disasters (Chapter 1) assign a key role to community participation at all stages of disaster management: preparedness, crisis management and rehabilitation. Moreover, recent studies of communities living with disaster risk in South Asia[9] indicate that under the vulnerable conditions in which most people live, coping with hazards and disaster risk is part of their regular livelihoods. Thus, they possess an enormous amount of locally relevant knowledge and information accumulated over generations. It is encouraging to note that the resourcefulness, knowledge and capacities of communities are increasingly being brought into the limelight, with the

[9] These studies were carried out in Bangladesh, Nepal, India, Pakistan and Sri Lanka as part of ITDG South Asia's project 'Livelihood Options for Disaster Risk Reduction'.

argument that it is communities that know their own living environment best, and thus have the best insights for protecting themselves.

Recognition of and attitudes towards community participation by government structures for disaster management vary. The Indian HPC report notes 'community as an institution in itself is emerging as the most powerful among the entire mechanism of disaster administration'. The document recommends that creating awareness among the community through education, training and information dissemination about disasters and empowering them to cope with hazards are all adopted as mitigation strategies.[10]

Sri Lanka's National Disaster Management Plan notes that participation of the community in all aspects of hazards and disasters enhances the community's ability to respond and recover from a disaster. The plan envisages open dialogue, delegating responsibilities, engaging communities in decision making, training and providing guidance as strategies to enlist community participation.[11]

However, the role of the community, and ways and means of getting its engagement, are not sufficiently identified in official documentation. This is an area where substantial gaps in approaches and methodologies are noted. Common problem areas highlighted in getting community participation are: lack of cohesion within the community, disinterest in mitigation activities that do not bring tangible rewards, dependence on relief, and political interference leading to disruption of long-term programmes.

[10] National Centre for Disaster Management, *Report of the High Powered Committee on Disaster Management.* Ministry of Agriculture, Government of India (2001)

[11] National Disaster Management Centre *National Plan for Disaster Management.* National Disaster Management Centre, Ministry of Social Services, Sri Lanka (2000)

6.2 Country Profiles

Bangladesh

The People's Republic of Bangladesh borders the Bay of Bengal, between Burma and India. Etymologically, the word Bangladesh is derived from the cognate *vanga*, which literally means wetland. It occupies the delta where the rivers Padma, Brahmaputra, Meghna and their tributaries meet and drain into the Bay of Bengal. The total catchment area of these rivers is 1.7 million sq km, but as much as 93% of this area lies outside Bangladesh, in India, Nepal, China and Bhutan.[12] The annual rainfall ranges from 2300-5000 mm. Such a wet environment creates arable land, and therefore the economy is traditionally agrarian. However the silt-laden, unstable land makes it vulnerable to frequent monsoons and floods. Formally known as East Pakistan, Bangladesh won independence after a brief war in 1971.

The main disasters that strike Bangladesh are floods, tropical cyclones and landslides.

Floods Floods are an annual occurrence in Bangladesh. The four main kinds of natural flood affecting Bangladesh are flash floods, river floods, rainwater floods, and storm surges. Many floods are attributed to human activities too.

[12] Matin, Nilufar, *Corporate Social Responsibility and Natural Disaster Reduction: Insights from Bangladesh*, Benfield Greig Hazard Research Centre, University College London (2002) http://www.bghrc.com

Flash floods are caused by run-off during exceptionally heavy rainfall occurring over neighbouring upland areas. They occur most frequently at the foot of the northern and eastern hills, sometimes several times a year. They are also common along the Teesta, Atrai and little Jamuna rivers in the northwest and in valleys within upland regions. Flash floods rise and fall rapidly, usually within a few days. They may also flow rapidly along river channels and over the land. Water levels in some eastern rivers can rise by several metres within 24-28 hours. They do not however cause extensive damage to crops and property.

River floods result from snowmelt in the high Himalayas and heavy monsoon rainfall over the Himalayas, the Assam and the Tripura Hills and the upper Brahmaputra and Ganges floodplains, outside Bangladesh. River floods extend beyond the active floodplains and damage crops on parts of the adjoining meander floodplains, mainly alongside distributary channels. However the timing and duration of the floods are important determinants of crop damage. Sediments deposited in channels reduce the drainage capacity of minor rivers as well as irrigation and drainage canals. Severe floods, which cause extensive damage to crops and property, occur at average intervals of 7-10 years.

Rainwater floods are caused by heavy rainfall occurring over floodplain and terrace areas within Bangladesh. Heavy pre-monsoon rainfall between the months of April and May causes local run-off to accumulate in floodplain depressions and in the lower parts of valleys within the Madhupur Tract. Later, between the months of June and August,

local rainwater is increasingly 'ponded' on the land by the rising water-levels in adjoining rivers. Rainwater flooding is characteristic of meander floodplains, major floodplain basins, and old estuarine floodplains. Early floods can cause damage to rice and jute crops.

Man-made floods are caused mainly by the sudden breaching of an embankment at a time when there is a difference in elevation of several metres between the external river level and the land inside the embankment. It can also be caused by the release of water from dams at high rates, failure of a major dam or barrage on one of the major rivers or their tributaries and ponding of water behind road, railway and flood embankments following heavy rainfall.

Cyclones Due to the geographic location of Bangladesh, severe cyclones are common in the 710 km long coastal belt and cause vast damage to life and property. In April 1991 flooding occurred due to tidal surges caused by a cyclone in the Bay of Bengal causing the death of about 140,000 people and damage of several thousand hectares of crops and property.[13] The main cause of loss of life and damage is storm surges: raised sea levels caused by a combination of the low barometric pressure and strong onshore winds associated with tropical cyclones. They cause sudden but temporary flooding of coastal areas with seawater or brackish estuarine water for a few kilometres inland during the passage of cyclones and are responsible for most of the casualties caused by cyclones. Floods caused by cyclones and the mitigation measures they require differ from those occurring on the river floodplains.

[13] http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGL/swlwpnr/Banglade/e_climhz.htm

Droughts Droughts are common in Bangladesh. They affect water supplies and plant growth leading to loss of production, food shortages and starvation. In comparison with floods and especially cyclones, droughts are slow to manifest themselves and are relatively more pervasive. Depending on the intensity of drought, the estimated yield reduction of different crops varies from 10% to 70% . Drought tends to affect western districts more severely, especially when the monsoon is curtailed.[14] It is estimated that in 1983 drought affected 20 million people.

Institutional Structures

Bangladesh at present has an elaborate disaster management system, from national down to Union level. The system has taken the concept of disaster mitigation on board, discarding the old concept of relief and rehabilitation.[15]

The structure of the Bangladesh Disaster Management System comprises:

- Ministry of Disaster Management and Relief (MDMR)
- Disaster Management Bureau (DMB)
- National Disaster Management Council (NDMC)
- Inter-Ministerial Disaster Management Coordination Committee (IMDMCC)
- National Disaster Management Advisory Committee (NDMAC)
- District, Upazila and Union Disaster Management Committees

This structure supports policy formulation and coordination of disaster management at national level. The focal point for disaster-related issues is

[14] http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGL/swlwpnr/Banglade/e_climhz.htm

[15] Amin AR, Country Position Paper [Bangladesh] prepared for the Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi (1999)

the Ministry of Disaster Management and Relief (MDMR). The Disaster Management Bureau (DMB) assists the Ministry with information, in all phases of disasters. The Ministry supplies information to NDMC and IMDMCC and assists them in taking decisions. The NDMC, headed by the Prime Minister, formulates policies and guidelines on disaster management. The Secretary of the Ministry coordinates the activities of all officials directly and indirectly engaged in emergency relief work. Bangladesh is the only South Asian country to have set up a separate ministry for disaster management and relief.

Bangladesh has taken steps to move from disaster response towards concepts of disaster management involving prevention/mitigation, preparedness, response, and recovery and development. This is reflected in actions such as:

- Documentation of physical and social aspects of natural hazards in areas most susceptible to natural hazards, and development of a hazard index for each Thana and District.
- Initiation of the project Support to Comprehensive Disaster Management with support from UNDP and UNICEF for training, planning and institutional build-up covering 19 high-risk flood-prone and cyclone-prone districts. This project aims at :
    - o Strengthening disaster management through support to disaster management committees at District, Thana and Union levels.
    - o Provision of relevant operational guidelines in the form of a disaster management handbook.

- Improvement of warning systems.
- Building up awareness at all levels of society on reducing disaster risk and losses.

The Government of Bangladesh has initiated both structural and non-structural measures for disaster mitigation. The structural mitigation measures include construction of over 1840 cyclone and 200 flood shelters, construction of 3,900 km of coastal embankments and construction of drainage channels extending 4,774 km.[16]

The non-structural mitigation action includes legislation, training and public awareness raising, institution building and warning systems. A Disaster Management Legislation Act has been drafted, which gives provision for the formulation of disaster management policy and planning relating to preparedness, emergency measures, and rehabilitation programmes.

The Disaster Management Bureau (DMB) has been conducting training and public awareness programmes for all stakeholders, which include government and officials, public representatives, NGO officials, local leaders, representatives of the mass media, teachers, religious institutions and communities.

The Government of Bangladesh has also taken steps to improve the early warning capabilities of relevant government organizations such as the Storm Warning Centre, Flood Forecasting and Warning Centre, and Bangladesh Water Development Board.

[16] Amin AR, Country Position Paper [Bangladesh] prepared for the Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi (1999).

To maintain coordination amongst the Ministries and other line agencies concerned, the Government of Bangladesh has formulated a set of mechanisms. The guidelines, the *Standing Orders on Disaster,* have been introduced as a basic tool in this regard.

The country has been experiencing the severe adverse effect of natural disasters on development efforts over a long time. Thus, its overall development plans recognize the linkages with disaster management. The draft plan for the period 1995-2010 suggests the establishment of a National Environmental Policy, National Environmental Management Action Plan, Bangladesh Water and Flood Management Strategy, and Flood Action Plan Studies.

In addition, there are orders from the Prime Minister to prepare three kinds of physical plan: for cyclone-prone areas, flood-prone areas and normal areas.

The main gaps experienced are in the areas of:

- Collaboration in getting timely provision of meteorological and hydrological information from neighbouring countries for cyclone and flood forecasting.
- Overall coordination between government institutions and NGOs, and plans for efficient and systematic management of disasters.
- Public awareness at the grass-roots level
- Finances and technology
- Political commitment of governments of neighbouring countries, particularly India and Nepal

Links and sources

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Socio-economic information http://www.odci.gov/cia/publications/factbook/bg.html

RDRS Bangladesh
http://www.bangla.net/rdrs

FAO
http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGL/swlwpnr/Banglade/e_climhz.htm

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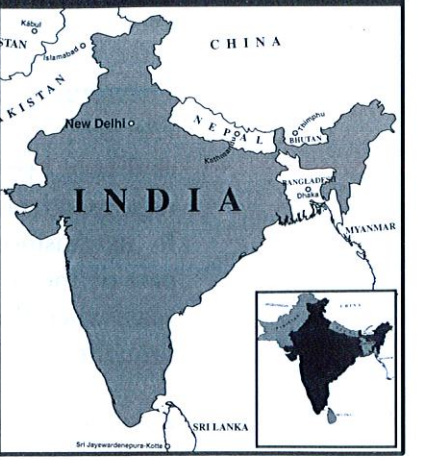
India



Covering an area of 3,287,590 sq. km, India shares its borders with Pakistan, Nepal, China, Bangladesh, Burma and Bhutan. It is covered by water on three sides, with the Bay of Bengal in the east, the Arabian Sea in the west and the Indian Ocean in the south. Its vast population speaks over 1500 languages and dialects. At present the Republic of India comprises 25 states and 7 Union Territories. Geographically and climatically too the country is very diverse, including snow-capped Himalayas in the north, tropical maritime climate in the south, desert in the west, alluvial plains in the east and a plateau in the central region. The River Ganges rising in the Himalayas and ending in the Bay of Bengal is the life source of the people in the north. The country on the whole has four seasons: winter, summer, spring and the monsoonal rains.

Different parts of India are affected by different calamities: floods, tropical cyclones, droughts, earthquakes, hailstorms, avalanches, fires and accidents from time to time.

Floods The country is divided into four flood regions according to the river systems. They are the Brahmaputra region, Ganga region, Indus region and the Central and Deccan regions (comprising the rivers Narmada, Tapti and all rivers flowing south eastwards). It is estimated that

an average of 40 million hectares are subjected to floods annually.

Droughts Thirty percent of the land area receives less than 750mm rainfall per year and is classified as drought-prone. Besides this there are other regions, which receive medium rainfall and are said to be transitional zones. The rivers in the southern part of the country are fed by the rains and in the years when the rains fail these regions suffer from drought-like situations.

Cyclones The coastline of India extends over up to about 8,000km, and is affected by 5 to 6 cyclones every year, out of which 2 to 3 are more often than not severe. Cyclones occur mainly in the months between April and May and October and November.

Earthquakes 56 percent of the total area constitutes an active seismic zone. The northern regions are the most susceptible to earthquakes.

Institutional Structures

National organizations for disaster management

Disaster management is the responsibility of the State Governments. The Central Government has a supportive role, which includes provision of physical and financial resources, and complementary measures in sectors such as transport, early warning, and interstate movement of food grains or relief material. There is a National Crisis Management Committee (NCMC) constituted in the cabinet secretariat. NCMC is

headed by the secretary to the Prime Minister and includes the secretaries of other supporting ministries. For natural disasters, the Ministry of Agriculture was the nodal Ministry until recently; this responsibility has now been conferred upon the Ministry of Home Affairs. In the event of a disaster, a multi-disciplinary Central Government Team at the invitation of the affected State carries out a disaster assessment and makes recommendations for assistance.

State-level organization

Disaster preparedness and response in the State is delegated to the Relief and Rehabilitation Department or the Department of Revenue. The Crisis Management Group at the State level, headed by the Chief Secretary of the Government, comprises all the related agencies,

Each State has a Calamity Relief Fund (CRF) administered by a State-level Committee. The size of the fund is determined by the vulnerability of the State to different disasters. There is a national Contingency Action Plan which is updated every year to facilitate the launching of relief operations without delay. At the State level, the State Relief Commissioner or the Secretary of the Department of Revenue directs and controls relief operations through District Collectors and Deputy Commissioners. At District level, a coordination and review committee is constituted, chaired by the Collector, with participation of all other related agencies and departments.

As part of the preparedness and mitigation measures, there are a number of institutions such

as the India Meteorological Department, Central Water Commission, and National Remote Sensing Agency, which have the mandate for forecasting and warning about cyclones, floods and earthquakes. In addition a number of structural measures are taken, such as construction of embankments and drainage channels to prevent and mitigate floods, irrigation development to meet drought, building cyclone shelters, and afforestation of coastal areas to give protection against cyclones.

As part of long-term mitigation measures the country has initiated programmes based on the goals of the IDNDR. The institutional structures for this include the central Natural Disaster Management Programme (NDMP), implemented since 1993 which aims to enhance national capacity for disaster reduction, preparedness and mitigation, and to create awareness among the community. This programme has set up the National Centre for Disaster Management (NCDM) and separate Disaster Management Faculties in 14 State-level training institutes. It is also engaged in documentation of major disasters, training, awareness building and education campaigns.

In India, a High Powered Committee (HPC) on Disaster Management was set up in 1999 (with the approval of the Prime Minister) by the Ministry of Agriculture, along with the National Disaster Response Plan. This was the first attempt in India towards drawing up a systematic, comprehensive, and holistic approach towards disasters. The initial mandate of the HPC was to prepare management

plans for natural disasters; however later on it was expanded to include man-made disasters and developing plans of action encompassing disasters of all origins.

The work of the HPC, according to its report, is seen as an initial step on the long journey to take the country towards disaster preparedness. The next step in the process is identified as setting up an all-party National Committee on Disaster Management under the Chairmanship of the Prime Minister, to implement the recommendations of the HPC and follow-up action. The HPC has already been converted into a Working Group, under the Vice-Chairman of the National Committee.[17]

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[17] National Centre for Disaster Management, *Report of the High Powered Committee on Disaster Management*, Ministry of Agriculture, Government of India (2001)

Nepal

Nepal boasts seven of the world's eight highest peaks, including Mount Everest. 80% of the land area of 147,181 sq. km is made up of mountains and hills. It is also a landlocked country with its nearest point to the sea being 960 km away. It has a unique altitudinal variation from 60 m at Jhapa in the south to 8,848 m at Mt. Everest, quite a big variation in such a small country. The Terai plain, a low and flat land (100-300 m), stretches along the southern part of the country next to the Indian border.

Nepal is exposed to most disaster types including earthquakes, floods, landslides, droughts, storms, avalanches, hailstorms, fires, epidemics and ecological hazards. A wide range of physiological, geological, ecological, meteorological and demographic factors contribute to the vulnerability of the country to disasters. Major factors contributing to disasters are rapid population growth, slow economic development, a high degree of environmental degradation, fragility of the land mass and high elevation of the mountain slopes

Earthquakes Nepal lies in a region of high seismic activity. Earthquakes with magnitudes of 5 to 8 on the Richter scale have been experienced throughout the country and 279 earthquakes with epicentres in Nepal and magnitudes above 3.9 have been recorded. The country's high seismicity is related to the presence of active faults between tectonic plates along the Himalayas. Chains of active faults run for around 100 km, interrupted by inactive sections. There are also active faults in the lower Himalayas and along the southern slopes of the Siwalik range. One main reason for Nepal's vulnerability to earthquakes is the poor construction of public buildings and houses especially in densely populated areas like Kathmandu. The earthquake of 15th January 1934 was the most lethal natural disaster in Nepal's history: it killed 9,040 people.

Floods and landslides Floods and landslides are often interrelated in Nepal. Some landslides are triggered by riverbank erosion, and some flash floods are aggravated by landslides in the areas adjoining riverbanks. Both these phenomena occur during the monsoon season. Glacial lake outburst floods are common in the Himalayan region, and are triggered by a wide range of hydrological, geological and seismic factors. Disastrous flash floods usually occur in Nepal when landslides or debris block a river for several hours and the water is then released suddenly, inundating areas downstream. Continuous heavy rainfall may also cause flash floods in many rivers originating in hilly regions. Flash floods may also be caused by an avalanche, snowstorm or cloudburst.
A significant number of landslides – estimated at

over 12,000 – occur each year. Various natural and man-made factors contribute to the high incidence of landslides. Natural factors include steep slopes, undercutting of river banks by rivers, weathered, fractured and weak rocks in the mountains, high rainfall and seismic activities. Man-made factors responsible for landslides are intensive deforestation, improper agriculture and irrigation practices, overgrazing on the slopes, quarrying for construction materials, and construction of infrastructure beyond the bearing capacities of the hill slopes. Landslides frequently occur in the monsoon season following an earthquake.

Fire Most fires occur during summer, particularly in the Terai region when the temperatures are high and strong winds occur. Some of the reasons for the fire outbreaks are poor use of fire, for cooking and other purposes, and lack of adequate fire safety measures. Forest fires are also common in some hilly areas.

Institutional Structures

The national policy on disasters has two main components: precautionary measures, and emergency response and relief.[18]

The policy on disaster management covers the following aspects:

- Identification of hazards and vulnerability, formulation of plans for preparedness, response, mitigation, reconstruction and rehabilitation, and integration of these with the national development plan.

[18] Upadhya M, 'Disaster management in Nepal: A growing challenge for Nepal'. Paper presented at the Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi, February 5-6 (1999)

- Identification of the activities of key agencies and preparation of standard operating procedures.

- Preparation of the necessary legal framework for land use planning, water and forest management, and building codes.

- Building awareness of the causes and effects of natural disasters, and ways of combatting them.

- Provision of rescue and relief measures.

- Mobilizing resources in the field of technology transfer, human resource development, and acquisition of materials.

There are provisions made to ensure implementation of these policies, which include:

- Constitutional provision: there are 16 different national policies related to natural disasters.

- A master plan for the forestry sector, in order to reduce the risks of national disasters such as floods, landslides, desertification and soil erosion.

- The National Disaster Relief Act proclaimed in 1982 which constituted a Central Disaster Relief Committee under the chairmanship of the Home Minister. Similar Disaster Relief Committees have been formed at the Regional, District and local levels to carry

out and coordinate rescue and relief operations and rehabilitation and resettlement programmes, and to conduct awareness-raising programmes..

- The Nepal National Building Code has developed a strategy and model municipal by-laws and a draft act to assist their implementation as part of earthquake preparedness.

The Ministry of Home (MOH) is the key agency in the institutional structure for disaster management. MOH is the only agency that has the mandate for carrying out rescue and relief operations. The Central Disaster Management Committee and district and local committees are under the Ministry.

Other agencies involved include the Ministry of Forest and Soil Conservation, which is engaged in stabilizing natural and man-made landslides by afforestation and construction of check dams and other low-cost structures. The Ministry of Water Resources, through the Water Induced Disaster Prevention Training Centre, aims to strengthen the government's capacity to cope with water induced disasters through training and technological development.

Agencies such as the Department of Irrigation, Mines and Geology, and Department of Roads have linkages with disaster management. The Nepal Red Cross Society (NRCS) in co-operation with the government handles relief distribution for the government. It maintains warehouses of disaster relief materials in all districts. This is the

primary agency for responding to any kind of disaster. Only in areas where NRCS is unable to operate does the government takes over responsibility for relief distribution.

The main gaps in the existing structure and policy are:

- Absence of a well-developed disaster preparedness and prevention component: the disaster policy emphasizes post-disaster operations such as emergency response and relief.

- Although the need for environmental protection is recognized in disaster policy and in the related constitutional provisions, the absence of a proper policy on human settlement results in exposure to risk and in environmental damages.

- Absence of coordination between the different agencies attending to disaster-related issues is a major gap. There is no single agency to coordinate and integrate the efforts of various organizations.

- The engagement of people in disaster management at present is minimal. The conventional methods of mitigation and rehabilitation are expensive and make communities more dependent on government assistance. The absence of simple, low-cost, human-scale methods of disaster preparedness and mitigation is a significant weakness.

- The lack of disaster-development linkages in locally planned development activities is another area of concern. Disaster risk analysis is virtually non-existent in many development plans.

- The prevailing outlook towards disasters seems to act as a major barrier in bringing about disaster preparedness and mitigation. Disasters are often seen as acts of God, which cannot be prevented.

- The absence of early warning systems and public awareness focused on disaster preparedness.

Links and sources

LWF Nepal
www.azeecon-lwf.com

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Upadhya M, 'Disaster management in Nepal: A growing challenge for Nepal'. Paper presented at the Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi, February 5-6 (1999)

Pakistan

The Islamic Republic of Pakistan lies between latitudes 24 and 37 degrees north and longitudes 62 and 75 degrees east covering a total land area of 798,095 sq km. Pakistan shares its borders with Iran to the west, India in the southeast, Afghanistan in the north-west, and China in the north. The Arabian Sea lies to its south. Pakistan is a land of great topographic and climatic contrasts. The topography varies from coastal beaches, sandy deserts, plateaus, plains, high mountains to snow-covered peaks. The country is geographically divided into three areas: the northern highlands, the Indus river plains and the Baluchistan plateau.

The climate in Pakistan is characterised by low rainfall and extreme variations in temperature. 59.3% of the total land area is classified as rangelands which receive less than 200mm annual rainfall. The southern slopes of the Himalayas and the sub-mountainous tract receive higher rainfall from 760 to 1270 mm.[19]

Pakistan has four seasons. The monsoons are between July and August.

[19] http://www.pak.gov.pk/public/people/index.html

Vulnerability to Natural Hazards

Pakistan is vulnerable to most natural hazards. It is prone to floods, earthquakes, droughts and cyclonic storms. Being densely populated, the impact of these natural phenomena is widely felt in the country.

Floods Floods are by far the most frequent hazard and can have devastating effects: those of 1950, 1992 and 1998 caused many deaths (2900, 1334 and 1000 respectively). They occur during the monsoon period of July to September due to heavy rain in the plains and the catchment area of the rivers, together with snow melting in the mountains. With the swelling of the rivers heavy flooding occurs causing great destruction to lives and livelihoods. Punjab, North Western Frontier Province and some parts of Sindh are frequently hit by floods. The most recent serious floods, in July 2001, hit NWFP, Rawalpindi, and Islamabad. These disrupted the power supply and communications in the capital, and severely damaged infrastructure. The floods caused 226 deaths, damages to 5000 houses and an estimated loss of 1000 cattle.[20] In the NWFP the rains also triggered landslides, which resulted in 15 deaths and large numbers of destroyed houses.

Drought The main reason for drought is failure of the monsoon. In recent years drought is reported to have brought extensive damages to Balochsistan, Sindh and Southern Punjab where the average annual rainfall is low (200-250 mm). Severe drought periods in 2000 and 2002 affected livelihoods, resulted in human deaths, pushed tens of thousands people to migrate, and killed large

[20] http://www.cred.be/emdat/profiles/natural/pakistan.htm

numbers of cattle. The drought of 2000 led to 143 deaths and affected 2,200, 000 people.[21] In 2002 Tharpakar in Sindh province has been affected by an ongoing severe drought, which requires emergency assistance and food aid.

Earthquakes Pakistan lies in a seismic belt and therefore suffers from frequent earthquakes of small magnitudes. The devastation can be immense because of the poor quality of buildings. There was a major earthquake in Quetta, Balochistan, in 1935 when the entire city was destroyed, and 30,000-60,000 people perished. The most recent significant earthquake occurred in 2001, in Sindh (which also hit Gujarat in India) resulting in 12 deaths and over 900,000 becoming affected.

Cyclones Although not a frequent phenomenon, cyclones can cause large-scale damage. The period 1975-2001 records 14 cyclones. The coastal areas of Sindh are most vulnerable. A cyclone in 1965 killed over 1000 people in Sindh, while the most recent cyclone which hit two districts in Southern Sindh killed 258 and left over 666,000 affected. Economic losses were severe with over 75,000 houses destroyed and crops and agricultural land inundated.[22]

[21] http://www.cred.be/emdat/profiles/natural/pakistan.htm

[22] http://www.cred.be/emdat/profiles/natural/pakistan.htm

Institutional Structures

While disaster management is recognized as an important discipline, the institutional structure to support effective disaster management remains limited.

The Emergency Relief Cell (ERC) in the Cabinet Division at the federal level serves as the focal point for disasters. The primary mandate of the ERC, as its title suggests, lies in the area of supplying emergency relief. The Provincial Governments and the local administration provide relief in calamities. The role of the Federal Government is to assist in terms of resource gaps.

There is no disaster management policy except for the National Disaster Plan prepared by ERC way back in 1974. The plan covers procedures, organizational set-up, the primary responsibilities of implementing agencies and standard procedures for the monitoring of disaster operations. The plan encompasses all disaster situations and multiple contingencies.

The ERC coordinate the activities of all the related agencies: federal divisions, provincial governments, semi-governmental, international and national aid giving agencies in the conduct of operation of relief. It also administers the Prime Minister's Flood Relief Fund, which is maintained at the Federal level. The ERC operates an Emergency Control Room, which coordinates the situation during calamities by liaising with relevant agencies such as the Federal Flood Commission, Meteorological Department, and Provincial Governments.[23]

[23] Shaikh MA, 'Disaster Management in Pakistan', paper prepared for Duryog Nivaran Policy Forum 'Future of Mitigation, South Asian Disasters', New Delhi, February 5-6 (1999)

The ERC maintains a warehouse in the capital, Islamabad, stocking essential non-perishable relief items such as medicines, blankets, clothing and tents. In addition there is a Relief Goods Dispatch Organisation located in Karachi,. This is responsible for receiving and dispatching all relief goods from foreign and local agencies in the event of a disaster. The ERC also maintains an Aviation Squadron with a fleet of 6 helicopters, whose task is to assist rescue operations and enable officials to visit the affected areas.

The Meteorological Department with its 73 Met Stations spread across the country is the main agency engaged in disaster management. The Department plays a key role in flood forecasting. Seismological stations set up under the Met Department monitor information related to earthquakes.

The Federal Flood Commission is another key agency in disaster management. The Commission is responsible for preparing flood protection plans for the country, approval of flood control and protection schemes prepared by provincial governments, preparation of regulations, measures for improving forecasting and flood warning systems, research for flood control and protection, and maintaining and evaluating progress in implementing the National Flood Protection Plan.

Links

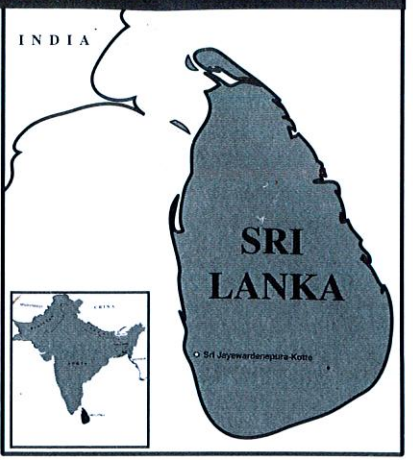
FAO Desert Locust Bulletin
http://www.fao.org/NEWS/GLOBAL/LOCUSTS/234bull/234BULL.HTM

Pakistan Government Meteorological Department
http://www.met.gov.pk/

OCHA Situation Reports
http://www.vita.org/disaster/sitrep/0072.html

World Bank
http://www.worldbank.org/html/extdr/regions.htm

Sri Lanka



Sri Lanka is an island situated south of India and separated from the Indian subcontinent by a strip of shallow water, the Palk Strait, which at its narrowest is about 40 km wide. Because of its shape and location it is called the teardrop of India. It has the Gulf of Mannar to its west, the Indian Ocean to its south and the Bay of Bengal to its east. With a total land area of 65,525 square kilometers inhabited by 19.5 million people, the country is among the most densely populated in the world, ranking 19th in the order of high density.[24]

Sri Lanka is mountainous in the central region and all rivers originate from the central hills and flow down to the sea. Pidurutalagala is the highest peak at 8281 feet. The main rivers are the Mahaweli, KaluGanga, Deduru Oya and Maha Oya. Sri Lanka has a tropical climate fed by two monsoons born in the Indian Ocean and two brief inter-monsoon periods. There is considerable variation in rainfall and evaporation as the topography changes from highlands to coastal plains.

Sri Lanka is prone to floods, cyclones, droughts and landslides. Floods and landslides are more localized and seasonal while droughts and cyclones are more widespread and occasional.

[24] Maddumabandara CM, *Natural Resources of Sri Lanka* (2001)

Floods The main causes of the frequent occurrence of floods are heavy seasonal rainfall, deforestation, lack of flood protection schemes and unplanned development activities. Floods are an annual occurrence bringing tremendous damage to life and livelihoods.

Wet-zone rivers such as *Kelani, Kalu, Nilwala* and *Gin* are most prone to flooding, affecting both urban centres and rural areas. While the wet zone suffers periodic river breaching, the country's vast dry zone plains are not spared calamitous flooding. When the dry zone is subject to unusually wet weather in the form of inter-monsoons or depressions, the extent of flooding and damage caused are often greater than in the wet zone. Among the most disastrous floods reported are those of 1989 (which took 325 lives), 1969, 1984, 1986 and 1982.[25]

Landslides Landslides occur in areas that receive 1000-4000mm of annual rainfall. Eight of Sri Lanka's 25 districts are prone to landslides: of these *Nuwara Eliya, Kandy, Ratnapura* and *Badulla* districts are heavily prone to landslide disasters. Some 12,000 square kilometers of the country are designated as vulnerable to landslides.[26]

A combination of heavy rainfall, geology and unsafe land use practices has led to intermittent landslides throughout the hill country. Road construction, clearing forests for cultivation and development projects often pave the ground for mass landsliding, by disturbing slopes in equilibrium. The last two decades recorded a number of large landslides, with axial lengths over

[25] Dissanaike T, 'Management of Natural Disasters in Sri Lanka', unpublished report, ITDG South Asia (2002)

[26] National Disaster Management Centre *National Plan for Disaster Management.* National Disaster Management Centre, Ministry of Social Services, Sri Lanka (2000)

one kilometre. Monsoons in 2002 caused landslides in three administrative districts, claiming a number of lives and damaging houses.

Sri Lanka has produced detailed maps of landslide vulnerability in five districts with studies continuing in two more.

Droughts Severe droughts have been reported in Sri Lanka every decade since the 1930s. Large droughts are expected once a decade. The failure or inadequacy of the south-west monsoon often results in island-wide shortages of water, drying up of reservoirs and crop failure. Apart from severe droughts, there is a slow, constant drought suffered by a large portion of the dry-zone population that goes virtually unnoticed by authorities, planners, local government or bureaucrats. Each year, somewhere in Sri Lanka people are faced with droughts of short duration and local significance.

Drought affects a major portion of the population who depend on small-scale agri-business, and subsistence farmers in rain-fed agriculture areas. The direct impacts are loss of crops, livestock, and income opportunities. During the most recent drought in 2001 approximately 370,000 families were affected in the dry plains of the country. Relief meted out to these families cost Rs. 400 million.[27] The drought of 1987 affected 2,200,000 people.

Cyclones In Sri Lanka cyclonic storms and gale-force winds are also bound up with monsoon activity or severe weather changes in the Bay of

[27] Dissanaike T, 'Management of Natural Disasters in Sri Lanka', unpublished report, ITDG South Asia (2002)

Bengal. Sri Lanka lies in the periphery of the tropical cyclone belt and the impact of cyclones is less severe than on other nations. However, the cyclone which hit the east coast in November 1978 took 740 lives.

Sri Lanka's definition of a cyclone refers to wind speeds of over 118 km per hour, while a cyclonic storm has wind speeds of 62-117 km/h.[28] During the period 1881-2001 eleven cyclonic storms and five cyclones crossed the Sri Lankan coast. Cyclonic storms occur mainly during north-east monsoon conditions, the overwhelming majority of these (85%) during the month of December.

National policies and structures

Disaster management in Sri Lanka has taken a new turn since 1991. A cabinet sub-committee has been appointed by the Government to prepare a disaster preparedness and mitigation plan, and a national policy framework. An initial framework for a 'Disaster Counter Measures Act' was prepared in 1992, which was later made in to a complete document, to be passed in the Parliament. However, political circumstances such as changes in governments, and the turbulent political climate in the country have kept it from being passed to date. Last tabled at the Parliament in 2001, the Act is once again being amended. Despite the absence of a disaster policy or legislation the National Disaster Management Centre (NDMC) was established in 1996 under the Ministry of Social Services to initiate the activities proposed in the draft policy framework.

[28] Amaradasa NA, Cyclone Movements Affecting Weather in Sri Lanka, proceedings of the workshop on the role of R&D Institutions in Natural Disaster Management, Sri Lanka Meteorological Department, Colombo (2001)

Disaster management comes under the purview of the Ministry of Social Services. The NDMC and the Department of Social Services are the two main institutions responsible, functioning directly under the Ministry. The NDMC is the policy making and servicing secretariat, and coordinates activities with other relevant institutions. The Department of Social Services implements post-disaster relief and rehabilitation programmes over the entire country under the guidance of the Ministry of Social Services, with assistance from and coordination with provincial- and district-level administrative authorities such as Provincial Councils, District Secretariats and Divisional Secretariats. Institutions under the proposed organizational framework will be as follows:

1. The National Disaster Preparedness and Mitigation Council, which will be appointed by the President under the provision of the proposed Disaster Counter-Measures Act. This will be the apex body with authority for policy making, directing and coordinating with the institutions involved in disaster management.

2. The National Disaster Preparedness and Mitigation Centre. This will be the agency with the mandate to coordinate the implementing activities of the entire organizational network. The Centre's functions include acting as an information centre in close relation with Technical Advisory Groups and other committees.

3. Technical Advisory Groups are to be appointed for four main aspects of disaster management to perform as think tanks for the NDMC, providing advice, guidance, and instructions.

4. Provincial, District, Divisional and Hamlet Disaster Preparedness and Mitigation Committees.

These committees are to be organized under the chairmanship of the administrative chief of the relevant administrative area. Vigilance groups are to be set up in different administrative areas of the country in collaboration with the members of Disaster Preparedness and Mitigation Committees and with other public officials and individuals. The main function of a vigilance group is communicating signals relating to disasters. The main feature of the whole plan is its linkage between all levels from national to grassroots to make an integrated effort for disaster management.

National Disaster Management Plan

The current National Disaster Management Plan (NDMP) was formulated by a committee appointed by the cabinet sub-committee. The plan is expected to be implemented in terms of the National Disaster Counter Measures Act at national, provincial, district divisional and village level. The roles of concerned institutions, NGOs and community-based organizations are defined in terms of mitigation, response and coordination. The plan includes everyday activities and long-term planning, specifying measures that are to be taken during and following a disaster. It seeks to address

policy and administrative issues, private sector involvement, research and partnership with the community and also coordination between different stakeholders and implementing agencies.

The plan draws special attention to natural disasters such as floods, landslides and epidemics, as well as to industrial accidents. It has classified disaster preparedness and mitigation activities under the following four main headings:

1. Preparedness and prevention actions.
2. Relief operations
3. Recovery, rehabilitation and reconstruction
4. Awareness creation and public education

The plan also includes a national policy framework as follows:

1. Inclusion of improved professional practices in the areas of agriculture, land use planning, construction and maintenance.
2. Encouragement of participation of NGOs, private institutions and individuals, and soliciting and directing private donations to recipients in affected areas.
3. Fostering scientific and engineering studies (e.g. landslide hazard mapping) as tools for sustainable development.
4. Shifting emphasis to pre-disaster planning and preparedness, while sustaining and further improving post-disaster relief, recovery and rehabilitation capabilities.
5. Integration of disaster prevention and preparedness in the national as well as sub-national planning process.

Gaps in the system

The institutional framework itself has been struggling to come into place since 1991, undergoing numerous changes and delays. The main gaps identified in the current system of operation include poor coordination between various agencies, and lack of training and education for officials and the public, resulting in poor awareness, absence of proper warning systems, inadequate emphasis on disaster preparedness, lack of finances and delays in relief distribution.

Links and sources

Asian Disaster Reduction Center
http://www.adrc.or.jp/countryreport/LKA/index.html

World Resources Institute
http://www.wri.org/wri/wdces/sr83_186.html

Dissanaike T, 'Management of Natural Disasters in Sri Lanka', unpublished report, ITDG South Asia (2002)

Annex A
Disaster Dictionary

This is largely drawn from definitions developed by scientific and disaster research institutions, the main ones being the Asian Disaster Preparedness Center, the Disaster Relief Library (http://www.disasterrelief.org/Library/Dictionary), ReliefWeb (http://www.reliefweb.org) and Asian Forum of Environmental Journalists and ESCAP *Reporting on the Environment: A handbook for journalists*, Bangkok (1988)

Acid rain

This should be called acid precipitation because it includes rain, snow, sleet, fog and any other form of precipitation. It is produced as industrial by-products in emissions of sulphur and nitrogen oxides from burning coal and petroleum products. Found throughout the world, its heaviest concentrations are in urban areas. Among other things it harms aquatic wildlife, corrodes monuments and bridges, destroys exterior paint, kills forests and damages some agricultural soils. It makes drinking water toxic by leaching lead from pipes.

Afforestation

Conversion of bare or cultivated land into forest. See 'reforestation'.

Agricultural waste

Poultry and livestock manure or residual materials in liquid or solid form generated in the production and marketing of poultry, livestock, fur-bearing animals and their products, rice straw, rice husks and other plant wastes.

Air pollution

The introduction of substances into the air which makes it impure.

Alpha radiation

Alpha rays consists of nuclei of the element helium and carry a positive charge. They do not penetrate strongly, but do great damage in a small area . See 'radiation'.

Aquifer

A geological formation which is usually composed of rock, gravel, sand or other porous material and which yields water to wells or springs. Can be polluted by introduction of pollutants through poorly capped wells, injection waste disposal and other entries below ground.

Background radiation

Radiation that occurs naturally in the environment from cosmic rays and radon, or from atomic tests and other nuclear activities carried out by man.

Beta radiation

Beta particles are electrons emitted from the nucleus of an atom and carry a single negative charge. They penetrate more than alpha rays, can cause skin burns and, when ingested, cancer. See 'radiation'.

Bioaccumulative

A characteristic of chemicals in species when the rate of intake into a living organism is greater than the rate of excretion, or metabolism. This results in an increase in tissue concentration relative to the exposure concentration.

Biological hazardous waste

Any substance of human or animal origin, excluding food wastes, which is disposed of and which could harbour or transmit pathogenic organisms. Such waste includes tissues, blood elements, excreta, secretions, bandages and related substances.

Biomass

Any organic material that can be turned into fuel-wood; includes dry plants and organic wastes.

Carcinogen

Substance that causes cancers. Some substances may be indirect carcinogens, which damage some body cells that then become sensitive to other substances that cause cancer.

Carrying capacity

A concept which holds that the maximum amount of life supportable by a natural biological system is determined by the maximum yield it can sustain without suffering damage. The maximum sustainable yield is determined by the system's size and regenerative powers.

Chlorofluorocarbons (CFCs)

Manufactured gases used in refigerators, air conditioners, solvents, food freezants and sterilants, and for making plastic foam used in fast-food containers, cups, insulation, packing material and other products. When released into the earth's atmosphere they react chemically and damage the ozone layer, thereby exposing people to dangerous levels of ultraviolet radiation from the sun.

Chlorofluoromethanes

A subgroup of chlorofluorocarbons which react the same way to destroy ozone in the atmosphere.

Coral reef degradation

Caused by natural and man made events including hurricanes, earthquakes, volcanic eruptions, disruptive invasion by marine organisms, chemical pollution, pesticide pollution, and destructive fishing methods such as dynamiting or bumping the coral bottom with fish-net weights.

Cyclone/Hurricane/Typhoon

The terms hurricane and typhoon are regional names for a strong 'tropical cyclone.' All originate in tropical or sub-tropical waters and must spawn winds in excess of 74 miles per hour.

Hurricane -- north Atlantic Ocean
Typhoon -- Pacific Ocean east of the international date line
Severe tropical cyclone -- southwest Pacific Ocean, southeast Indian Ocean
Tropical cyclone -- southwest Indian Ocean

The most intense tropical cyclone on record is Typhoon Tip in the northwest Pacific Ocean, which on October 12, 1979 had winds gusting as high as 190 mph.

Deforestation

The loss of forests due to collection of fuelwood, commercial logging, shifting cultivation, grazing, road construction, ranching, mining and fire. Leads to soil erosion and flooding and endangers wildlife through habitat destruction.

Desertification

A process whereby the productivity of the land is reduced through deforestation, water logging and salinization, chemical degradation by nutrient leaching, and range-land mismanagement such as overgrazing, soil erosion and aridity and semi aridity.

Disaster

An unforeseen and often sudden event that causes great damage, destruction and human suffering. Though often triggered by a natural hazard, disasters can have human origins. An event is classified as a disaster when it results in a serious disruption of the functioning of society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using only its own resourses. The term is sometimes also used to describe a catastrophic situation in which the normal patterns of life (or eco-systems) have been disrupted and extraordinary, emergency interventions are required to save and preserve human lives and/or the environment. Disasters are frequently categorized according to their perceived causes and speed of impact.

Disaster management

A collective term encompassing all aspects of planning for and responding to disasters, including both pre-and post-disaster activities. It may involve the management of both the risks and consequences of disasters.

Displaced Person

A term usually applied to people fleeing their homes because of an armed conflict, civil disturbance or natural disaster. It refers to people as long as they remain within the borders of their own country. Once they cross into another country they are defined, in most cases, as refugees.

Dissolved oxygen

Oxygen found in water and required by organisms for survival. As the amount of sewage increases in water, bacteria multiply to feed on the sewage and consume more oxygen, thereby decreasing the amount in the water available for use by other animals living there.

Drought

A normal, recurring feature of climate that originates from a lack of precipitation over an extended period of time, usually a season or more. Droughts can occur in virtually all climates. The precise definition depends on the region, but the definition is often determined by comparing recent precipitation against a 30-year average. In some areas, precipitation that is only 75% of the 30-year average is considered a drought.

Earthquake

A shaking of the earth caused by a sudden movement of rock beneath its surface. An earthquake occurs on a fault, which is a thin layer of crushed rock between two blocks of rock. A fault can range in length from a few centimetres to thousands of miles. The San Andreas fault in California is 650 miles long and ten miles deep in places. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up and the rocks slip suddenly, releasing energy in waves that travel through the rock to cause the shaking that we feel during an earthquake. The National Earthquake Information Center

locates about 12,000 to 14,000 earthquakes annually. That's about 35 a day. Based on long-term historical records, about 18 major earthquakes (7.0 - 7.9 on the Richter Scale) and one great earthquake (8.0 or above) are expected in any given year.

Ecosytem

The interacting system of the biological community and its non-living environment.

Emergency

An extraordinary situation where there are serious and immediate threats to human life as the result of a disaster, the imminent threat of disaster, the cumulative process of neglect, civil conflict, environmental degradation and social-economic conditions. An emergency can encompass a situation in which there is clear and marked deterioration in the coping abilities of a group or community.

Environmental reporting

Communicating information about interrelationships between man and the natural and man-made environment, events or conditions.

Erosion

The loss of surface soil through the action of precipitation and wind. Leads to sedimentation and siltation of water-ways which destroy aquatic and marine habitats, make water undrinkable and clog water-dependent industrial machinery and other intake equipment.

Famine

A lengthy period of time during which people experience a severe lack of food. War, poverty, drought, floods, volcanic eruptions, earthquakes and other disasters can cause famines. According to the United Nations, an estimated 20 percent of the populations of developing countries – more than 800 million people – are food-deficient. Although worldwide food production has improved over the past few decades, famine is still a threat in many areas of the world, including sub-Saharan Africa and South Asia.

Flood

Floods, especially flash floods, kill more people each year than hurricanes, tornadoes wind storms or lightning. Flood water can be deceptively strong. Fresh water moving at 4 mph (a brisk walking pace) exerts a force of about 66 pounds on each square foot of anything it encounters. Double the water speed to 8 mph and the force suddenly rises to about 264 pounds per square foot. That's enough force to punch a car or light truck off a flooded road if water reaches up to door level.

Food security

Access by all people at all times to enough food for an active, healthy life. Its essential elements are availability of food and ability to acquire it. The UN Food and Agriculture Organisation's definition of food security includes the following requirements :

adequate supply, stable supply, and access to the supply (including adequate consumption, adequate income in relation to food prices and access to employment). Food insecurity is the lack of access to enough food. There are two kinds of food insecurity: chronic food insecurity which results in a continuously inadequate diet, and acute food insecurity which is a temporary decline in a household's access to enough food.

Fly ash

The airborne combustion residue from burning coal or other fuels. Consists mainly of various oxides and silicates. Major sources are pulverized coal-burning boilers.

Gamma ray irradiation

Experimental hazardous waste chemical treatment method which disinfects waste by utilizing gamma radiation to destroy disease-causing organisms.

Gamma rays

Electromagnetic rays similar to X-rays, emitted from an unstable atom's nucleus, which travel in straight paths at the speed of light, penetrate matter readily, but do not make the material radioactive. They penetrate a greater area than alpha or beta rays, but do less damage because they are a weaker form of radiation.

Geneva Conventions

A series of international agreements that provide the legal basis for the International Red Cross and Red Crescent Movement. They reaffirm the value of human life and dignity during times of war. The first Convention protects the wounded, the sick, medical personnel and chaplains on the battlefield. The second Convention extends the protections to those at sea. The third Convention protects prisoners of war, and the fourth Convention protects civilians in enemy and occupied territories. Two additions, called Protocols, extend protection to civilian populations.

Greenhouse effect

The theory that continued burning of fossil fuels will increase concentrations of carbon dioxide in the atmosphere, thereby trapping additional heat and moisture. In time, this will raise temperature levels.

Ground water

The portion of the subsurface water which is in the zone of saturation where nearly all openings between soil particles are filled with water. The top of the zone of saturation in the ground is called the water table.

Habitat

The sum of total environmental conditions of a specific place that is occupied by an organism, a population or a community.

Hazard

A hazard is a natural or human-made phenomenon which may cause physical damage, economic losses, or threaten human life and well-being if it occurs in an area of human settlement, agricultural or industrial activity. Note, however, that in engineering, the term is used in a more specific, mathematical sense to mean the probability of the occurrence, within a specified period of time and given area, of a particular, potentially damaging phenomenon of given severity or intensity.

Hazard assessment

The process of estimating, for defined areas, the probabilities of the occurrence of potentially damaging phenomena of given magnitude within a specified period of time. Hazard assessment involves analysis of formal and informal historical records and skilled interpretation of existing topographical, geological, geomorphological, hydrological and land-use maps.

Hazard mapping

The process of establishing geographically where and to what extent particular phenomena are likely to pose a threat to people, property, infrastructure, and economic activities. Hazard mapping represents the results of hazard assessment on a map, showing the frequency/ probability of occurrence of various magnitudes or durations.

Hazardous waste

Any waste which is ignitable, corrosive, reactive or toxic and which may pose a substantial or potential hazard to human health and safety or to the environment when improperly managed (reactive refers to the ability to enter into a violent chemical reaction which may involve an explosion or fumes).

HazMats

'Techno jargon' for hazardous materials which, if released or misused, could pose a threat to people and the environment. HazMats can be explosives, flammable and combustible substances, poisons and radioactive materials.

Heavy metals

See 'toxic metals'.

Human-made disaster

A disaster or emergency situation whose principal, direct causes are identifiable human actions, deliberate or otherwise. Apart from 'technological disasters' this mainly involves situations in which civilian populations suffer casualties, loss of property, basic services and means of livelihood as a result of war, civil strife, other conflict or policy implementation. In many cases, people are forced to leave their homes, giving rise to congregations of refugees or internally displaced persons.

Hydrocarbons

Any of a large class of organic compounds containing only carbon and hydrogen. The molecular structure of hydrocarbon compounds varies from the simplest, methane, to heavier and more complex molecules such as octane, a constituent of crude oil and natural gas, which are often referred to as hydrocarbons or hydrocarbon fuels.

Hydrological quandary

A phenomenon occurring in Bangladesh, where marine salt water flows into rivers and deprives people of fresh water, ruins the aquatic habitat and fishing, and destroys water-dependent industrial machinery and other intakes.

Landmine

Any munition placed under, on or near the ground and designed to be detonated by the presence, proximity or contact of a person or vehicle. The International Committee of the Red Cross estimates that there are 110 million active mines scattered in 64 countries. About 2 million new mines are laid each year. More than 2,000 people are killed or maimed each month in landmine explosions. Most victims are civilians. The ICRC is committed to a worldwide ban on the production, stockpiling, transfer and use of all anti-personnel mines.

Leachate

A liquid, usually rainwater, that percolates through a landfill and which frequently is contaminated by materials dissolved from the waste in the landfill.

Mitigation

The process of preventing disasters or reducing related hazards. Methods of limiting damage can be as simple as placing a fuse box higher on a wall in a flood-prone area, or as costly as strengthening a building's structure to withstand an earthquake.

Monsoon

A weather season characterized by very heavy rainfall that affects the regions that border the Indian Ocean, especially in the Arabian Sea. The very heavy rainfall appears to result from a reversal of seasonal wind direction that blows from the southwest during one half of the year and from the northeast during the other.

Mutagen

Substance that alters the genetic material (DNA) of sperm and egg cells and leads to undesired inherited conditions.

Natural hazards

Natural phenomena which can occur in proximity to and pose a threat to people, structures or economic assets and may cause disaster. They are caused by biological, geological, seismic, hydrological, or meteorological conditions or processes in the natural environment.

Examples of natural phenomena which may be hazardous

Atmospheric	**Hydrologic**	**Seismic**
Hailstorms	Coastal flooding	Fault ruptures
Hurricanes	Desertification	Ground shaking
Lightning	Drought	Lateral spreading
Thunderstorms	Erosion	Liquefaction
Tornadoes	River floods	Seiches
Tropical storms	Storm surges	Tsunamis
Volcanic	**Other Geologic**	**Wild fire**
Ashfalls	Debris avalanches	forest
Lava flows	Rockfalls	Savannah
Projectiles and Lateral blasts	Submarine slides	Urban conflagration
Pyroclastic flows	Subsidence	
Tephra (ashes, Cinders, lapilli)		

Non-point-source pollution

Pollutants emanating from an unconfined or unchannelled source, including agricultural run off, drainage or seepage and air contamination from landfills or surface impoundments.

Ocean dumping

The use of various techniques for disposing of hazardous and other wastes in open seas. Has included bulk disposal of liquid or slurry-type wastes, hazardous sludges from dredged materials and the sinking of containerized hazardous substances.

Overfishing

The practice of commercial and non-commercial fishing which depletes a fishery by catching so many adult fish that not enough remain to breed and replenish the population. Overfishing exceeds the carrying capacity of a fishery.

Overgrazing

The practice of grazing too many ruminants on land unable to recover its vegetation or of grazing ruminants on land not suitable for grazing because of its slope. Overgrazing exceeds the carrying capacity of pasture.

Ozone hole

A growing hole in the stratospheric ozone layer appearing larger each year over the Antarctic for a few weeks in October.

Ozone layer

A stratospheric layer composed of ozone, a form of oxygen with three atoms to the molecule. Ozone forms from 6 to 35 (reports vary as to the number) miles above the earth when high energy ultraviolet light in sunlight strikes oxygen molecules, splitting them into oxygen atoms, which when free attach themselves to other oxygen molecules. A potential effect of this loss is increased incidence of skin cancer. An unrelated ozone problem occurs as ground-level ozone or smog, a respiratory-irritant pollutant, which forms in a series of chemical reactions when urban air pollutants react with sunlight and oxygen.

Phytotoxic

Poisonous to plants.

Point-source pollution

Any pollution from a confined and discrete conveyance such as a pipe, ditch, channel, tunnel, well, fissure, container, rolling stock, concentrated animal-feeding operation or vessel or other floating craft. The return flow from irrigated agriculture is generally not considered point source pollution

Pollution

Contamination of air, water, land or other natural resources that will or is likely to create a nuisance or render such resources harmful to public health or which is harmful to domestic, public, commercial, industrial, agricultural, recreational or other legitimate

beneficial uses, or to livestock, wild animals, birds, fish or other life.

Polychlorinated biphenyls (PCBs)

A series of hazardous compounds used for a number of industrial purposes. PCBs are toxic to some marine life at concentrations of a few parts per billion and are known to cause skin diseases and even death in humans at higher concentrations. PCBs are persistent in the environment and do not decompose easily. They biomagnify up the food chain: that is, they concentrate in high and higher amounts as larger animals eat a number of smaller animals that have ingested PCBs directly or in turn from still smaller organisms.

Post-disaster assessment

The process of determining the impact of disaster or events on society, the needs for immediate, emergency measures to save and sustain the lives of survivors, and the possibilities for expediting recovery and development.

Preparedness

Measures to ensure the readiness and ability of society to forecast and take precautionary measures in advance of imminent threat, and to respond to and cope with the effects of disaster by organizing and facilitating timely and effective rescue, relief and appropriate post disaster assistance.

Radiation

Measured in two ways: in disintegration at the source and in dose absorbed. Measured in becquerels or curies, it is nuclear particles and rays emitted by decaying atoms in a radioactive source as they change to more stable forms. A roentgen or coulomb is the measurement of X-or negatively charged ions in gas. A gray (another term is rad) is the measure of radiation energy, in joules, deposited in or absorbed by the body. A rem is the biological dose equivalent measurement that qualifies a gray (or rad) with other mitigating factors. A dose of 600 rem will usually result in a person's death within 60 days.

Radioactive waste

Conventional materials that have been contaminated with radiation. In the United States, radioactive wastes are not classified as hazardous, but are controlled by various specific government regulations.

Reforestation

The replanting of cut or bare forest. See 'afforestation'.

Refugee

The fine points of definition vary under different bodies of international law, but generally, this term applies to people who have fled their country to avoid persecution or the threat of persecution on account of race, religion, nationality, membership of a particular social group or political opinion.

International humanitarian law defines refugees more broadly, including displaced persons who have fled their homes during armed conflicts but have not left their homeland.

Richter Scale

A scale used to measure the magnitude of an earthquake or seismic disturbance in terms of the energy dissipated. Level 2 on the Richter Scale indicates the smallest earthquake that can be felt; 4.5 is an earthquake causing slight damage, 8.5 is a very severe earthquake, likely to cause extensive damage.

Risk

Risk is defined as the expected losses (lives lost, persons injured, damage to property, and disruption of economic activity or livelihood) caused by a particular phenomenon. Risk is a function of the probability of particular occurrences and the losses each would cause. Some analysts use the term to mean the probability of a disaster occurring and resulting in particular level of loss. A societal element is said to be 'at risk' or 'vulnerable', when it is exposed to known hazards and is likely to be adversely affected by the impact of those hazards if and when they occur. The communities, structures, services, or activities concerned are described as 'elements at risk'.

Risk analysis

The process of determining the nature and scale of losses and damage due to hazards which can be anticipated in particular areas during specified time periods. Evaluation of risk is the social and political judgment of various risks by the individuals and communities that face them. This involves trading off perceived risks against potential benefits and also includes balancing scientific judgments against other factors and beliefs..

Risk mapping

The presentation of the results of risk assessment on a map, showing the levels of expected losses which can be anticipated in specific areas, during a particular time period, as a result of particular disaster hazards.

Run-off

Water which, having fallen, flows across the surface of the ground (or a landfill or other accumulation of material), picking up materials such as soil, agricultural chemicals and other transportable material, continuing into a water course.

Salinization

Destruction of productive land by an increase in its salt content. Occurs frequently in over-irrigated soil when evaporation of water at the soil's surface draws up salts from underground rocks and soils, causing salts to crystallize and interfere with root growth.

Sedimentation

The accumulation of earthy matter (soil and mineral particles) washed into a river or other water body, normally by erosion, which settles on the bottom. Another use of the word is as a hazardous waste physical treatment method which separates and removes suspended particles that are heavier than the liquid in which they are present by gravitational settling.

Siltation

The same as sedimentation.

Slow-onset disasters (also called Creeping Disasters or Slow-onset Emergencies)

Situations in which the ability of people to sustain their livelihood slowly declines to a point where survival is jeopardized. Such situations are typically brought on or precipitated by ecological, economic or political conditions.

Sludge

Solid, semi-solid or liquid waste from municipal, commercial or industrial waste-treatment facilities, waste water treatment plants and air pollution control facilities. In discussions of environment controls, the mud-like residue that results from the cleaning process of scrubbers or certain other devices designed to prevent solid particles from entering the environment.

Solid erosion

Movement of soil due to wind, rain and related natural forces that carry surface soil down slopes towards streams and on into rivers and eventually bays and the oceans.

Solid waste

Waste including, but not limited to, municipal, residual or hazardous waste, including solid, liquid, semi-solid or contained gaseous materials.

Species extinction

Elimination of any species of living thing as a result of habitat destruction, hunting for sport and trophies and collection and hunting for food, pleasure, research and trade. The 'incidental take' of mammals and other marine life during fishing threatens certain species.

Sudden-onset natural disasters

Sudden calamities caused by natural phenomena such as earthquakes, floods, tropical storms and volcanic eruptions. They strike with little or no warning and have an immediate adverse effect on human populations, activities, and economic systems.

Sustainable development

The concept of using resources in an ecologically sound manner so that they will be sustainable over the long term. Put another way, by the Executive Secretary of ESCAP, it is 'an approach to progress that meets the needs of the present without compromising the ability of future generations to meet their needs'

Technological disasters

Situations in which large numbers of people, property, infrastructure, or economic activity are directly and adversely affected by major industrial accidents, severe pollution incidents, nuclear accidents, transportation accidents, major fires, or explosions.

Teratogenic

A substance which alters the formation of cells, tissues and organs and which results in physiological and biochemical changes in a foetus during growth.

Thermal pollution

A harmful increase in water temperature caused by discharging heated coolant water, particularly from electricity generating stations. Harms aquatic life and any interdependent species, such as birds and mammals, using the same habitat.

Tornado

A violently rotating column of wind extending to the ground from the base of a thunderstorm cloud. Wind speeds can vary from 72 mph to almost 300 mph; however only about one percent of tornadoes in the U.S. reach 200 mph wind speeds. A tornado's intensity is measured on the Fujita wind damage scale.

Toxic metals

Often called heavy metals because most are high-density metallic elements such as mercury, chromium, cadmium, arsenic and lead, which are generally toxic to plant and animal life in low concentrations. Aluminum, however, is a light metal which nevertheless is toxic to plants and stunts their growth.

Toxic substances

Poisonous substances known or believed to be harmful to people's health, often producing chronic, irreversible physical problems and possibly harming subsequent generations. Examples are acrylonitrile, arsenic, asbestos, benzene, beryllium, cadmium, chloroform, chromates, EDB, ethylene oxide, mercury, PCBs and many others.

Toxic waste

A waste that poses a substantial present or potential hazard to human health or the environment when improperly managed. It includes wastes that are poisonous, carcinogenic, or mutagenic.

Tsunami

A seismic sea wave that is potentially the most catastrophic of all ocean waves. It is generated by tectonic displacement – a volcano, landslide or earthquake – of the seafloor, which in turn causes a sudden displacement of the water above and the formation of a small group of water waves having wavelength equal to the water depth

(up to several thousand metres) at the point of origin. The resulting waves can be devastating to low-lying coastal areas.

Volcano

A hole in the earth's crust that serves as a vent for molten rock and gases from below the earth's surface. The volcano forms from a buildup of ash and lava around the hole. There are some 1,500 volcanoes that have erupted in the past 10,000 years and are thus considered active. The deadliest eruption may have been in Tambora, Indonesia, in 1815. About 92,000 people died as a result of the eruption itself and the disease and starvation that followed.

Vulnerability

The extent to which an individual, community, sub-group, structure, service, or geographic area is likely to be damaged or disrupted by the impact of a particular disaster hazard.

Vulnerability analysis

The process of estimating vulnerability to potential disaster hazards of specified elements at risk. For engineering purposes, vulnerability analysis involves the analysis of theoretical and empirical data concerning the effects of particular phenomena on particular types of structures. For more general socio-economic purposes, it involves consideration of all significant elements in society, including physical, social and economic considerations (both short-and

long-term), and the extent to which essential services and traditional and local coping mechanisms are able to continue functioning.

Waterlogging

Soaking of agricultural land caused by a rising water-table or excessive irrigation. Compacts soil, deprives roots of oxygen and contributes to salinization.

Water pollution

The introduction of substances which make water impure compared with undisturbed water. Usually this comes from soil erosion, introduction of poisonous chemicals from industries and spills and introduction of domestic sewage or industrial and agricultural wastes.

Water-table

The top of the zone of saturation in the ground see 'ground water'.

Annex B
Disaster Statistics

Top 10 Natural Disasters Bangladesh

Disaster	Date	Killed	Disaster	Date	Affected
Famine	1943	1,900,000	Flood	1988	73,000,000
Epidemic	1918	393,000	Flood	1987	73,000,000
Wind storm	1970	300,000	Flood	1974	38,000,000
Wind storm	1991	138,866	Flood	1984	30,000,000
Wind storm	1942	61,000	Drought	1983	20,000,000
Wind storm	1965	36,000	Flood	1968	15,889,616
Flood	1974	28,700	Wind storm	1991	15,438,849
Wind storm	1965	12,047	Flood	1998	15,000,050
Wind storm	1963	11,500	Flood	1995	12,656,006
Wind storm	1961	11,000	Flood	1993	11,469,537

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters India

Disaster	Date	Killed	Disaster	Date	Affected
Epidemic	1920	2,000,000	Drought	1987	300,000,000
Drought	1942	1,500,000	Drought	1979	190,000,000
Epidemic	1907	1,300,000	Flood	1993	128,000,000
Drought	1900	1,250,000	Drought	1982	100,000,000
Drought	1966	500,000	Drought	1983	100,000,000
Drought	1967	500,000	Drought	1972	100,000,000
Epidemic	1920	500,000	Drought	1973	100,000,000
Drought	1965	500,000	Drought	2000	90,000,000
Epidemic	1926	423,000	Drought	1965	50,000,000
Epidemic	1924	300,000	Drought	1966	50,000,000

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters Nepal

Disaster*	Date	Killed	Disaster	Date	Affected
Earthquake	15-Jan-34	9,040	Drought	19-May-80	3,500,000
Epidemic	15-Jun-91	1,334	Drought	1973	900,000
Flood	23-Aug-93	1,048	Flood	23-Aug-93	553,268
Epidemic	Nov-63	1,000	Flood	Aug-87	351,000
Flood	12-Jul-96	768	Earthquake	20-Aug-88	301,016
Earthquake	20-Aug-88	709	Earthquake	29-Jul-80	275,600
Flood	29-Sep-81	650	Flood	Sep-83	200,050
Epidemic	Apr-92	640	Flood	12-Jul-96	151,382
Flood	15-Aug-70	350	Slide	Aug-75	75,000
Flood	4-Oct-68	276	Flood	Jul-98	70,000

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters Pakistan

Disaster	Date	Killed	Disaster	Date	Affected
Earthquake	31-May-35	60,000	Flood	Sep-92	12,324,024
Wind storm	15-Dec-65	10,000	Flood	9-Aug-92	6,184,418
Earthquake	28-Dec-74	4,700	Flood	2-Aug-76	5,566,000
Earthquake	27-Nov-45	4,000	Flood	Aug-73	4,800,000
Flood	1950	2,900	Flood	Jul-78	2,246,000
Flood	Sep-92	1,334	Drought	Mar-00	2,200,000
Flood	3-Mar-98	1,000	Flood	22-Jul-95	1,255,000
Flood	Jun-77	848	Flood	24-Aug-96	1,186,131
Wind storm	14-Nov-93	609	Flood	Jun-77	1,022,000
Extreme temp	11-Jun-91	523	Flood	Aug-88	1,000,000

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters
Sri Lanka

Disaster	Date	Killed	Disaster	Date	Affected
Wind storm	24-Nov-78	740	Drought	1987	2,200,000
Flood	30-May-89	325	Drought	1982	2,000,000
Wind storm	22-Dec-64	206	Drought	1983	1,800,000
Wind storm	25-Dec-57	200	Flood	Dec-83	1,250,000
Slide	8-Oct-93	65	Wind storm	24-Nov-78	1,005,000
Flood	25-Dec-69	62	Flood	25-Dec-69	1,000,000
Epidemic	Nov-87	53	Drought	Aug-01	1,000,000
Flood	24-May-84	45	Drought	Mar-89	806,000
Flood	Jan-86	43	Flood	30-May-89	501,000
Flood	12-Dec-82	34	Flood	27-Nov-94	478,150

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters
Bhutan

Disaster	Date	Killed	Disaster	Date	Affected
Flood	Aug-00	200	Flood	Aug-00	1,000
Flood	6-Oct-94	22	Flood	6-Oct-94	600
Wild fire	Jan-99	-	Wild fire	Jan-99	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Top 10 Natural Disasters
Maldives

Disaster	Date	Killed	Disaster	Date	Affected
Epidemic	Mar-78	219	Wind storm	May-91	23,849
Wind storm	May-91	-	Epidemic	Mar-78	11,258
Flood	11-Apr-87	-	Flood	11-Apr-87	300
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Source:"EM-DAT: The OFDA/CRED International Disaster Database, Université catholique de Louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in India

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Events	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	23	20,842	36,707,955	1	20	-
2000	23	3,270	131,217,994	2	-	90,000,000
1999	13	11,286	42,046,906	-	-	-
1998	16	9,424	34,478,987	-	-	-
1997	12	2,524	30,388,115	-	-	-
1996	10	2,280	9,348,010	1	-	-
1995	7	2,855	33,826,535	-	-	-
1994	6	2,448	12,496,350	-	-	-
1993	11	11,285	129,503,091	1	-	1,175,000
1992	9	1,360	481,910	-	-	-
1991	12	3,347	8,579,383	1	500	-
1990	14	2,488	8,020,000	-	-	-
1989	9	2,115	3,702,000	-	-	-
1988	13	7,424	44,224,978	-	-	-
1987	12	2,080	318,380,000	2	410	300,000,000
1986	14	1,287	6,306,900	-	-	-
1985	13	3,461	11,255,456	-	-	-
1984	15	6,084	20,362,900	-	-	-
1983	11	1,634	101,806,800	1	-	100,000,000
1982	7	2,194	138,800,493	1	-	100,000,000
1981	8	1,870	16,131,700	-	-	-
1980	18	3,946	32,051,067	-	-	-
1979	13	1,734	229,620,884	2	-	200,000,000
1978	13	7,841	32,004,200	-	-	-
1977	5	14,766	15,533,891	-	-	-
1976	6	270	600,000	-	-	-
1975	7	898	34,002,000	-	-	-
1900-74*	140	7,750,777	343,146,755	9	3,000,000	300,666,000

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
1	20,005	16,066,812	4	89	58,878	9	358	20,555,265
-	-	-	8	242	1,851	6	2,509	41,186,035
1	100	477,394	5	281	79,504	2	554	27,620,000
-	-	-	2	807	15,238	3	2,131	29,602,200
1	43	126,500	2	48	585	5	1,957	30,259,000
-	-	-	1	60	900	4	1,366	2,012,110
-	-	-	-	-	-	2	1,479	32,707,000
-	-	-	1	53	5,150	2	2,015	12,062,600
1	9,782	195,566	-	-	-	5	1,297	128,060,000
-	-	-	-	-	-	5	940	481,810
1	1,500	54,383	1	185	-	8	1,037	8,525,000
-	-	-	2	148	18,000	3	203	2,000
-	-	-	1	200	-	2	1,609	2,000
2	384	20,003,778	3	3,911	-	3	2,100	22,321,000
-	-	-	1	90	-	4	1,314	18,300,000
1	3	-	2	265	11,600	3	251	495,000
-	-	-	3	1,321	456	6	1,328	11,150,000
2	20	900	3	4,510	27,000	5	740	19,000,000
-	-	-	-	-	-	5	852	250,000
-	-	-	1	118	-	2	932	33,500,000
1	212	-	-	-	-	1	553	16,000,000
4	63	44	3	1,040	-	5	2,411	32,051,023
1	-	-	1	215	-	4	253	28,010,000
-	-	-	4	2,206	1,000	2	4,610	32,000,000
-	-	-	1	-	9,091	2	560	1,045,000
-	-	-	-	-	- -		-	
1	47	-	-	-	-	1	350	34,000,000
11	84,325	52,292	6	4,526,029	13,576	62	14,536	22,040,610

Chronological Table of Natural Disasters in India

(b) Slides; Volcanoes; Wild fires; Wind storms;
Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	3	98	-	-	-	-
2000	3	227	100	-	-	-
1999	-	-	-	-	-	-
1998	5	374	200,156	-	-	-
1997	2	51	2,030	-	-	-
1996	1	48	-	-	-	-
1995	3	690	1,119,535	-	-	-
1994	-	-	-	-	-	-
1993	1	20	25	-	-	-
1992	2	120	-	-	-	-
1991	-	-	-	-	-	-
1990	1	30	-	-	-	-
1989	2	86	-	-	-	-
1988	2	505	-	-	-	-
1987	-	-	-	-	-	-
1986	2	153	2,500,200	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	1	150	-	-	-	-
1979	2	272	5,112	-	-	-
1978	1	64	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	5	1,609	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	3	99	27,000	2	173	-
-	-	-	1	-	30,000	3	292	8
1	6	-	3	10,205	13,870,008	1	140	-
-	-	-	4	3,471	4,661,393	2	2,641	-
-	-	-	1	25	-	1	400	-
-	-	-	3	806	7,335,000	-	-	-
-	-	-	1	128	-	1	558	-
-	-	-	2	219	428,600	1	161	-
-	-	-	2	186	72,500	1	-	-
-	-	-	1	25	100	1	275	-
-	-	-	1	125	-	-	-	-
-	-	-	6	1,843	8,000,000	2	264	-
-	-	-	2	93	3,700,000	2	127	-
-	-	-	1	74	1,900,000	2	450	200
-	-	-	4	166	80,000	1	100	-
-	-	-	5	390	3,300,100	1	225	-
-	-	-	3	709	105,000	1	103	-
1	-	-	3	524	1,335,000	1	290	-
-	-	-	5	782	1,556,800	-	-	-
-	-	-	2	744	5,300,493	1	400	-
-	-	-	5	805	131,700	1	300	-
-	-	-	3	153	-	2	129	-
-	-	-	1	594	1,605,772	2	400	-
-	-	-	5	811	3,200	1	150	-
-	-	-	2	14,206	14,479,800	-	-	-
-	-	-	6	270	600,000	-	-	-
-	-	-	5	501	2,000	-	-	-
-	-	-	40	122,466	20,374,277	7	1,812	

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Bangladesh

(a) Total; Droughts/famines; Earthquakes; Epidemics; Flood s

Year	Total Events	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	7	100	728,800	-	-	-
2000	15	222	2,852,141	-	-	-
1999	7	132	558,030	-	-	-
1998	8	732	15,449,600	-	-	-
1997	9	622	4,719,428	-	-	-
1996	9	1,041	6,457,010	-	-	-
1995	10	1,992	23,512,637	-	-	-
1994	9	350	1,054,109	-	-	-
1993	12	684	16,625,293	-	-	-
1992	6	238	76,500	-	-	-
1991	8	142,169	21,037,149	-	-	-
1990	7	1,013	2,030,170	-	-	-
1989	7	1,185	5,304,000	1	-	5,000,000
1988	7	3,506	83,574,160	-	-	-
1987	6	3,766	73,601,200	-	-	-
1986	7	379	3,175,100	-	-	-
1985	7	11,048	2,231,300	-	-	-
1984	3	2,150	30,000,000	-	-	-
1983	10	1,430	27,165,350	1	-	20,000,000
1982	2	2,696	481,460	-	-	-
1981	3	1,085	2,037,000	-	-	-
1980	2	666	10,001,050	-	-	-
1979	3	71	2,150	1	18	2,000
1978	4	1,176	400,100	-	-	-
1977	6	907	234,711	-	-	-
1976	3	215	4,000,200	-	-	-
1975	-	-	-	-	-	-
1900-74*	57	2,789,048	83,014,337	3	1,900,000	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	2	9	700,000
1	-	1,000	3	31	26,214	2	42	2,667,188
1	6	15,200	-	-	-	2	48	441,320
-	-	-	1	151	185,306	1	140	15,000,050
1	21	200	1	64	14,330	1	79	900,030
-	-	-	1	20	10,000	2	55	6,328,319
-	-	-	2	400	21,236	3	700	21,117,331
-	-	-	-	-	-	4	116	395,100
-	-	-	1	38	5,660	3	194	15,751,613
-	-	-	1	200	-	3	15	75,200
-	-	-	2	2,700	1,608,000	3	300	3,990,000
-	-	-	-	-	-	2	231	2,011,600
-	-	-	1	20	-	1	180	200,000
1	2	100	-	-	-	2	2,440	73,000,000
-	-	-	3	750	601,200	2	3,004	73,000,000
-	-	-	1	165	52,000	2	30	400,000
-	-	-	2	900	-	1	27	400,000
-	-	-	1	950	-	2	1,200	30,000,000
-	-	-	1	500	-	4	245	7,160,000
-	-	-	1	2,696	173,460	1	-	308,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	655	10,000,000
-	-	-	-	-	-	-	-	-
-	-	-	1	129	-	1	17	400,000
-	-	-	1	260	10,461	2	13	213,650
-	-	-	-	-	-	1	168	4,000,000
-	-	-	-	-	-	-	-	-
-	-	-	1	393,000	-	10	39,467	65,389,616

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Bangladesh

(b) Slides; Volcanoes; Wild fires; Wind storms;
Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	-	-	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	-	-	-	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	-	-	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	4	85	26,800	1	6	2,000
-	-	-	7	99	145,729	2	50	12,010
-	-	-	4	78	101,510	-	-	-
-	-	-	5	321	230,244	1	120	34,000
-	-	-	5	425	3,804,868	1	33	-
-	-	-	5	766	118,691	1	200	-
-	-	-	4	772	2,374,070	1	120	-
-	-	-	4	205	659,009	1	29	-
-	-	-	8	452	868,020	-	-	-
-	-	-	2	23	1,300	-	-	-
-	-	-	2	####	15,439,149	1	182	-
-	-	-	4	715	18,570	1	67	-
-	-	-	2	815	104,000	2	170	-
-	-	-	4	1,064	10,574,060	-	-	-
-	-	-	1	12	-	-	-	-
-	-	-	4	184	2,723,100	-	-	-
-	-	-	3	10,121	1,831,300	1	-	-
-	-	-	-	-	-	-	-	-
-	-	-	4	685	5,350	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	3	1,085	2,037,000	-	-	-
-	-	-	1	11	1,050	-	-	-
-	-	-	2	53	150	-	-	-
-	-	-	2	1,030	100	-	-	-
-	-	-	3	634	10,600	-	-	-
-	-	-	2	47	200	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	43	####	17,624,721	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Nepal

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Events	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	3	170	21,261	-	-	-
2000	3	463	50,662	-	-	-
1999	3	352	23,012	-	-	-
1998	4	510	70,300	-	-	-
1997	2	105	1,388	-	-	-
1996	3	903	152,025	-	-	-
1995	4	446	14,180	-	-	-
1994	-	-	-	-	-	-
1993	2	1,076	553,468	-	-	-
1992	2	696	100,000	-	-	-
1991	3	1,391	45,988	-	-	-
1990	2	180	6,300	-	-	-
1989	1	49	-	-	-	-
1988	4	912	301,016	-	-	-
1987	3	188	351,010	-	-	-
1986	4	23	-	-	-	-
1985	1	46	62,557	-	-	-
1984	1	200	-	-	-	-
1983	2	207	200,050	-	-	-
1982	1	92	-	-	-	-
1981	2	750	20,000	-	-	-
1980	2	100	3,775,600	1	-	3,500,000
1979	-	-	-	-	-	-
1978	1	130	27,748	-	-	-
1977	-	-	-	-	-	-
1976	1	150	-	-	-	-
1975	1	125	75,000	-	-	-
1900-74*	14	11,099	946,124	4	-	900,000

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	2	26	242	-	-	-
-	-	-	2	319	592	1	144	50,070
-	-	-	1	150	944	1	170	18,068
-	-	-	2	185	300	2	325	70,000
-	-	-	1	85	1,388	-	-	-
-	-	-	1	115	624	1	768	151,382
-	-	-	1	126	646	1	140	13,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	1,048	553,268
-	-	-	1	640	50,000	-	-	-
-	-	-	1	1,334	45,341	1	51	482
-	-	-	1	150	3,800	1	30	2,500
-	-	-	-	-	-	-	-	-
1	709	301,016	-	-	-	1	27	-
-	-	-	-	-	-	1	188	351,000
-	-	-	-	-	-	2	22	-
-	-	-	-	-	-	1	46	62,557
-	-	-	-	-	-	1	200	-
-	-	-	-	-	-	1	186	200,050
-	-	-	-	-	-	1	92	-
-	-	-	-	-	-	2	750	20,000
1	100	275,600	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	130	27,748
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
2	9,120	20,100	2	1,017	5,024	3	686	21,000

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Nepal

(b) Slides; Volcanoes; Wild fires; Wind storms;

Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	1	144	21,019	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	1	20	-	-	-	-
1996	-	-	-	-	-	-
1995	2	180	534	-	-	-
1994	-	-	-	-	-	-
1993	1	28	200	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	1	49	-	-	-	-
1988	1	106	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	1	21	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	1	150	-	-	-	-
1975	1	125	75,000	-	-	-
1900-74*	3	276	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
1	32	4,000	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	20	19	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
1	56	50,000	-	-	-	-	-	-
-	-	-	1	6	165	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	70	-	-	-	-
-	-	-	1	-	-	1	-	10
-	-	-	2	1	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Pakistan

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Event	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	8	337	1,319,983	1	80	-
2000	5	276	2,200,258	1	143	2,200,000
1999	5	303	667,861	-	-	-
1998	4	1,108	212,917	-	-	-
1997	6	362	861,484	-	-	-
1996	3	187	1,186,131	-	-	-
1995	2	463	1,255,000	-	-	-
1994	3	352	840,036	-	-	-
1993	5	682	261,609	-	-	-
1992	5	1,650	18,515,242	-	-	-
1991	4	872	205,494	-	-	-
1990	4	42	246	-	-	-
1989	1	20	142,400	-	-	-
1988	3	282	1,000,000	-	-	-
1987	-	-	-	-	-	-
1986	1	11	250	-	-	-
1985	-	-	-	-	-	-
1984	3	43	2,012	-	-	-
1983	5	146	64,460	-	-	-
1982	2	68	10,000	-	-	-
1981	3	358	3,600	-	-	-
1980	2	93	86,223	-	-	-
1979	2	83	3,200	-	-	-
1978	1	393	2,246,000	-	-	-
1977	1	848	1,022,000	-	-	-
1976	1	338	5,566,000	-	-	-
1975	1	14	-	-	-	-
1900-74*	27	83,633	6,031,602	1	-	300,000

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
1	12	914,292	1	-	5,000	2	226	400,191
-	-	-	3	109	258	-	-	-
-	-	-	-	-	-	2	34	1,043
-	-	-	1	83	9,917	1	1,000	200,000
1	50	10,100	-	-	-	2	171	851,384
-	-	-	-	-	-	1	111	1,186,131
-	-	-	-	-	-	2	463	1,255,000
-	-	-	-	-	-	1	316	840,016
-	-	-	-	-	-	1	15	261,295
2	40	6,600	-	-	-	2	1,555	18,508,442
1	300	205,244	-	-	-	1	24	-
3	24	246	-	-	-	-	-	-
-	-	-	-	-	-	1	20	142,400
-	-	-	-	-	-	1	196	1,000,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
2	4	12	-	-	-	1	39	2,000
2	12	60	-	-	-	1	39	64,300
1	-	-	-	-	-	1	68	10,000
1	220	3,000	-	-	-	1	82	-
-	-	-	-	-	-	1	75	86,200
-	-	-	-	-	-	1	13	3,200
-	-	-	-	-	-	1	393	2,246,000
-	-	-	-	-	-	1	848	1,022,000
-	-	-	-	-	-	1	338	5,566,000
-	-	-	-	-	-	-	-	-
6	68,700	50,200	1	37	1,075	11	4,287	5,270,327

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Pakistan

(b) Slides; Volcanoes; Wild fires; Wind storms;

Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	1	15	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	1	13	3,000	-	-	-
1997	-	-	-	-	-	-
1996	1	44	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	2	58	314	-	-	-
1992	-	-	-	-	-	-
1991	1	25	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	1	50	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	2	95	100	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	1	48	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	1	4	500	1	-	-
-	-	-	-	-	-	1	24	-
-	-	-	2	258	666,818	1	11	-
-	-	-	1	12	-	-	-	-
-	-	-	2	41	-	1	100	-
-	-	-	-	-	-	1	32	-
-	-	-	-	-	-	-	-	-
-	-	-	2	36	20	-	-	-
-	-	-	1	609	-	1	-	-
-	-	-	1	55	200	-	-	-
-	-	-	-	-	-	1	523	250
-	-	-	-	-	-	1	18	-
-	-	-	-	-	-	-	-	-
-	-	-	1	36	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	11	250	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	56	600	-	-	-
-	-	-	1	18	23	-	-	-
-	-	-	-	-	-	1	70	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	14	-
-	-	-	5	10,450	410,000	2	111	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Sri Lanka

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Events	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	2	-	1,000,160	1	-	1,000,000
2000	4	10	840,113	-	-	-
1999	4	20	610,451	-	-	-
1998	1	-	135,000	-	-	-
1997	-	-	-	-	-	-
1996	1	-	10,000	-	-	-
1995	1	3	120,000	-	-	-
1994	3	-	728,150	-	-	-
1993	3	73	330,130	-	-	-
1992	2	15	655,950	-	-	-
1991	1	27	297,151	-	-	-
1990	2	33	440,000	-	-	-
1989	2	325	1,307,000	1	-	806,000
1988	-	-	-	-	-	-
1987	2	53	2,200,000	1	-	2,200,000
1986	1	43	64,485	-	-	-
1985	1	-	8,000	-	-	-
1984	4	51	575,000	-	-	-
1983	2	3	3,050,000	1	-	1,800,000
1982	3	54	2,130,000	1	-	2,000,000
1981	2	7	20,000	1	-	-
1980	1	-	-	1	-	-
1979	1	-	-	1	-	-
1978	3	750	1,007,000	-	-	-
1977	3	27	250,728	1	-	250,000
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	7	544	2,652,347	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	1	-	160
-	-	-	1	2	113	2	3	465,000
-	-	-	1	1	5,936	2	8	604,485
-	-	-	-	-	-	1	-	135,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	10,000
-	-	-	-	-	-	1	3	120,000
-	-	-	-	-	-	3	-	728,150
-	-	-	-	-	-	2	8	330,000
-	-	-	-	-	-	2	15	655,950
-	-	-	-	-	-	1	27	297,151
-	-	-	-	-	-	2	33	440,000
-	-	-	-	-	-	1	325	501,000
-	-	-	-	-	-	-	-	-
-	-	-	1	53	-	-	-	-
-	-	-	-	-	-	1	43	64,485
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	4	51	575,000
-	-	-	-	-	-	1	3	1,250,000
-	-	-	-	-	-	2	54	130,000
-	-	-	-	-	-	1	7	20,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	2	10	2,000
-	-	-	1	-	728	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	2	200,000	3	109	1,822,347

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Sri Lanka

(b) Slides; Volcanoes; Wild fires; Wind storms;

Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	-	-	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	1	65	130	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	1	27	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	1	27	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	-
-	-	-	1	5	375,000	-	-	-
-	-	-	-	-	-	1	11	30
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	-	8,000	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	740	1,005,000	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	2	406	630,000	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Bhutan

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Events	Total Killed	Total Affecte	Drought/famines		
				Events	Killed	Affected
2001	-	-	-	-	-	-
2000	1	200	1,000	-	-	-
1999	1	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	1	22	600	-	-	-
1993	-	-	-	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	-	-	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	200	1,000
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	22	600
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Bhutan

(b) Slides; Volcanoes; Wild fires; Wind storms;

Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	-	-	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	-	-	-	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	-	-	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
1	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Maldives

(a) Total; Droughts/famines; Earthquakes; Epidemics; Floods

Year	Total Events	Total Killed	Total Affected	Drought/famines		
				Events	Killed	Affected
2001	-	-	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	-	-	-	-	-	-
1992	-	-	-	-	-	-
1991	1	-	23,849	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	1	-	300	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	1	219	11,258	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	-	-	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Earthquakes			Epidemics			Floods		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	1	-	300
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	219	11,258	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Chronological Table of Natural Disasters in Maldives

(b) Slides; Volcanoes; Wild fires; Wind storms;

Other: Extreme temperatures-Waves/Surges-Insect infestations

Year	Slides			Volcanoes		
	Events	Killed	Affected	Events	Killed	Affected
2001	-	-	-	-	-	-
2000	-	-	-	-	-	-
1999	-	-	-	-	-	-
1998	-	-	-	-	-	-
1997	-	-	-	-	-	-
1996	-	-	-	-	-	-
1995	-	-	-	-	-	-
1994	-	-	-	-	-	-
1993	-	-	-	-	-	-
1992	-	-	-	-	-	-
1991	-	-	-	-	-	-
1990	-	-	-	-	-	-
1989	-	-	-	-	-	-
1988	-	-	-	-	-	-
1987	-	-	-	-	-	-
1986	-	-	-	-	-	-
1985	-	-	-	-	-	-
1984	-	-	-	-	-	-
1983	-	-	-	-	-	-
1982	-	-	-	-	-	-
1981	-	-	-	-	-	-
1980	-	-	-	-	-	-
1979	-	-	-	-	-	-
1978	-	-	-	-	-	-
1977	-	-	-	-	-	-
1976	-	-	-	-	-	-
1975	-	-	-	-	-	-
1900-74*	-	-	-	-	-	-

* Prior to 1974, only relatively few major disasters are recorded. Therefore the data from preceding years has been lumped together for this table.

Wild Fires			Wind Storms			Other		
Events	Killed	Affected	Events	Killed	Affected	Events	Killed	Affected
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	1	-	23,849	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Total number of people reported killed and affected by country between 1981 & 1990, 1991 & 2000, and in 2000

Country	Killed (1981-1990)	Affected (1981-1990)	Killed (1991-2000)	Affected (1991-2000)	Killed (2000)	Affected (2000)
Bangladesh	27,903	228,794,460	147,753	90,473,239	681	2,826,122
Bhutan	-	-	239	66,570	200	1,000
India	29,639	669,359,908	59,132	432,402,751	3,424	131,216,825
Maldives	0	300	10	23,849	-	-
Nepal	2,707	937,193	3,597	911,727	211	50,070
Pakistan	2,224	1,241,030	8,568	26,202,006	348	2,200,174
Sri Lanka	678	9,842,485	614	3,720,964	48	840,000
Total	63,151	910,175,376	219,913	553,801,106	4,912	137,134,191

The most Expensive natural disasters of the 20th century in South Aisa

#	Country	Year	Day	Month	Disaster	Damage.US$
1	India	1990	10	11	Cycl.Hurr.Typh	8,000,000,000
2	India	1998	9	6	Cycl.Hurr.Typh	3,010,000,000
3	India	1990	25	8	Storm	2,200,000,000
4	Bangladesh	1988		8	Flood	2,137,000,000
5	Bangladesh	1998	8	7	Flood	2,000,000,000
6	India	1996	6	11	Cycl.Hurr.Typh	1,500,300,000
7	India	1990	6	5	Storm	1,300,000,000

The most Deadly natural disasters of the 20th century in South Aisa

#	Country	Year	Day	Month	Disaster	Killed
1	India	1920			Epidemic	2,000,000
2	Bangladesh	1943			Famine	1,900,000
3	India	1942			Drought	1,500,000
4	India	1907			Epidemic	1,300,000
5	India	1900			Drought	1,250,000
6	India	1920			Epidemic	500,000
7	India	1965			Drought	500,000
8	India	1966			Drought	500,000
9	India	1967			Drought	500,000
10	India	1926			Epidemic	423,000
11	Bangladesh	1918			Epidemic	393,000
12	Bangladesh	1970	12	November	Cycl.Hurr.Typh	300,000
13	India	1924			Epidemic	300,000
14	Bangladesh	1991	30	April	Cycl.Hurr.Typh	138,866
15	Bangladesh	1942		October	Cycl.Hurr.Typh	61,000
16	India	1935			Cycl.Hurr.Typh	60,000
17	Pakistan	1935	31	May	Earthquake	60,000
18	India	1935	31	May	Earthquake	56,000
19	India	1942	14	October	Cycl.Hurr.Typh	40,000
20	Bangladesh	1965	11	May	Cycl.Hurr.Typh	36,000
21	Bangladesh	1974		July	Flood	28,700
22	India	1905	5	April	Earthquake	20,000
23	India	1977	12	November	Cycl.Hurr.Typh	14,204
24	Bangladesh	1965		June	Cycl.Hurr.Typh	12,047
25	Bangladesh	1963	28	May	Cycl.Hurr.Typh	11,500
26	Bangladesh	1961	9	May	Cycl.Hurr.Typh	11,000

Source: "EM-DAT: The OFDA/CRED International Disaster Database, Universite catholique de louvain, Brussels, Belgium"

Annex C
The Tampere Declaration On Disaster Communications

Conference on Disaster Communications Tampere, Finland, 20 - 22 May 1991

Purpose

1. The group of experts in communications and disaster management participating in the Conference on Disaster Communications held at Tampere, Finland, from 20 - 22 May 1991, declare that there is an urgent need to improve international co-operation in communications and enhance national communications capabilities in order to reduce loss of life, damage to property and livelihoods, and damage to the environment caused by disasters. For the purpose of this Declaration disasters are viewed as extreme occurrences which outstrip the ability of an affected society to cope with them. Behind these events often lie chronic problems stemming from the interaction of natural, environmental and man-made factors. In this regard the Tampere Conference welcomes the proposal for a Pilot UN Centre for Urgent Environmental Programme, Nairobi.

2. The Tampere Conference reiterates the primary responsibility of national authorities for disaster management and communications. The supportive role of international organizations in disaster management is highlighted. The Conference also recognizes the important role played by indigenous and international non-governmental organizations in disaster mitigation and relief.

3. The Tampere Conference recognizes that disasters have killed millions of people over the past twenty years alone and caused massive financial and other damage to people, property and the environment. Such disasters will continue to occur frequently around the globe, with particularly devastating consequences in the developing countries. Further efforts are required to prevent such disasters and alleviate their consequences.

4. The Tampere Conference stresses that improved flows of international information through terrestrial and satellite telecommunication technologies can assist in the prediction, monitoring and early warning necessary to prevent some of the consequences and reduce the impact of such disasters once they have occurred. There is an urgent need to improve the nature, scope and quality of information being transmitted internationally, including its validity, significance, accuracy and timeliness.

5. The critical role of the mass media in providing public information services to communities at risk is recognized, as is their broader role in education and opinion-forming, particularly with regard to slow-onset disaster.

6. Terrestrial and satellite communications, including established international satellite networks, and remote-sensing technologies, have played, and will continue to play, major roles in reducing the devastating effects of disasters by dramatically improving hazard identification and risk assessment, disaster preparedness, monitoring, early warning and onset and post-disaster relief operations. These facilities are in practice not universally accessible, particularly in developing countries where such disasters most frequently occur.

7. Communications links are almost always disabled and disrupted during the first hours of a major disaster. When disaster strikes, there is an urgency to establish effective and comprehensive communication links at the disaster site, between the site and the national systems for dealing with disaster response and with the concerned international community.

8. The Tampere Conference endorses the Preamble and Major Needs identified and the Recommendations adopted at the UNDRO International Conference on Disaster Communications on 21 March 1990 and held in the context of the International Decade for Natural Disaster Reduction (IDNDR).

9. The Tampere Conference calls for the development of a Convention on Disaster Communications as elaborated further below and to be negotiated not later than 1993. This Convention should be viewed in the context of a future comprehensive accord on disaster management.

10. The Tampere Conference recognizes the urgent communications needs generated by emergency disaster relief and the longer-term needs of disaster mitigation.

Communications in Disaster Relief

11. Present limitations to disaster communications include:
    a) Organizational barriers which impede the flow of information among the various elements of the international disaster response network.
    b) Uncertainty over the availability and location of communications equipment which could be made accessible for disaster use.
    c) Regulatory barriers which slow down the importation and operation of communications equipment.
    d) High costs which inhibit the effective use of communications equipment during disasters.

12. In order to overcome these barriers, a Convention on Disaster Communications should, at a minimum:
    a) Establish an effective framework for co-operation between and among State parties, inter-governmental and regional organisations,
    b) Further improve the coordination of international disaster management.
    c) Ensure the utilization to the maximum extent of existing global, regional and national terrestrial and satellite communications networks encourage the immediate availability at national, regional and international centres of communications equipment and encourage the development of the amateur radio services and their application to disaster communications.
    d) Encourage national authorities to establish an inventory and/ or data base of their own communications equipment and resources relevant to disaster relief, national regulations to ensure access to them, and a na appropriate national preparedness plans for their effective use.
    e) Encourage UNDRO, within the framework of the International Decade for Natural Disaster Reduction, to maintain an international inventory of communications equipment and resources and to invite national governments, inter-governmental organizations, non-governmental organizations and other relevant entities to make their own communications equipment and resources information available.
    f) Encourage improved and enhanced national international training programmes to develop the necessary expertise in the rapidly-evolving field of disaster communications, and the further consideration of the communications issue in disaster management training programmes.
    g) Facilitate the rapid dissemination and effective use of communications equipment and resources by limiting, reducing and, where possible, removing regulatory barriers, including:
        - Customs clearance procedures and duties
        - Restrictions on possession and use

- Inappropriate restrictions on the dissemination of existing and new technical information
- The need for type-approval procedures and operating licences, including simplification
- National rules concerning the temporary assignment of appropriate radio frequencies.

h) Establish appropriate further rules relating to matters such as:
- Entry, exit and transit for personnel, equipment and property
- Direction and control of assistance
- Confidentiality of information
- Privileges, immunities and facilities
- Claims and compensation.

i) Establish the basis for an appropriate tariff structure for domestic and international communications carriers, including waiver of charge where appropriate, and the necessary philosophy and approach to payment for communications services required in disaster relief efforts.

Communication in Disaster Mitigation

13. Effective early warning systems and comprehensive data bases are limited by the unequal access to communications technology, soft ware and expertise.

14. The proposed Convention should, at a minimum, establish mechanisms for international cooperation in the use of terrestrial and satellite telecommunications technologies in the prediction, monitoring and early warning of disasters, especially the early dissemination of information to those in the at-risk communities.

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PRACTICAL ANSWERS TO POVERTY

Natural disasters have become a severe global problem. Deaths, displacement and damages resulting from natural disasters are colossal. During the 1990s global economic losses from major natural catastrophes averaged more than US$ 40 billion a year. In a single year, in 2001 disasters claimed the lives of more than 22,000 people in South Asia.

The media has an important role to play in protecting people from disasters, by educating the public about risks and hazards, transmitting forecasts and warnings, and challenging policy makers and disaster managers to improve their performance. There has been a great deal of criticism of the media's treatment of disasters – notably its focus on the consequences of disasters rather than their causes, and its stereotyped and erroneous portrayal of disaster-struck communities as passive victims.

This book aims to improve the South Asian media's coverage of disasters. It attempts to do this in two ways: first, by providing the media with a better understanding of disasters and their causes; second, by showing how to adopt a more progressive approach to gathering and presenting news that could stimulate more effective action by policy makers and the public.

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