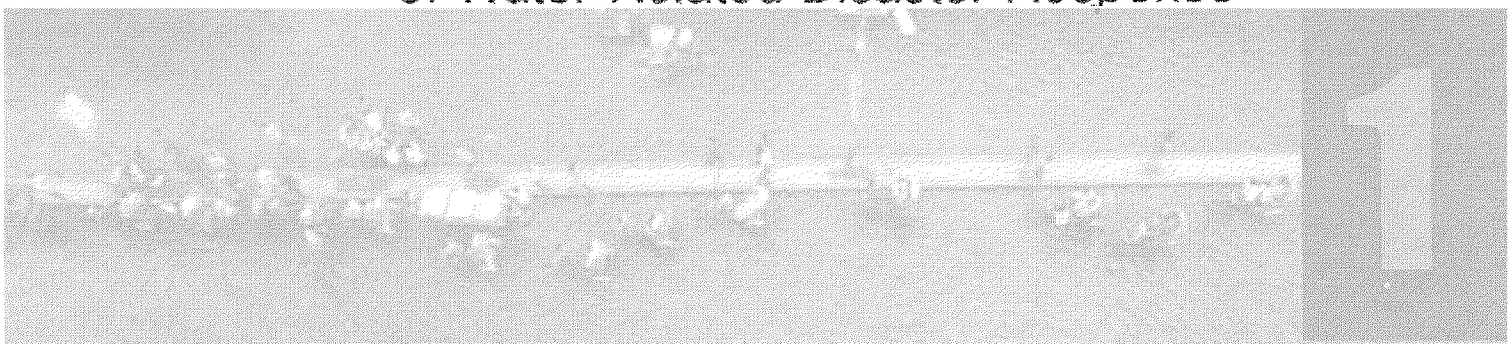
Socio-Economic Aspects of Water-Related Disaster Response



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1.1 Social Aspects of Disaster Reduction and Response

Disaster managers must recognize that different social groups have different needs when a disaster occurs Generally, marginalized groups have less social power and fewer economic resources and physical capacity to anticipate, survive and recover from the affects of massive floods There is an intrinsic relationship between poverty and vulnerability. In addition, the elderly, the disabled and children are particularly vulnerable, and gender is especially important to flood risk reduction.

Poverty

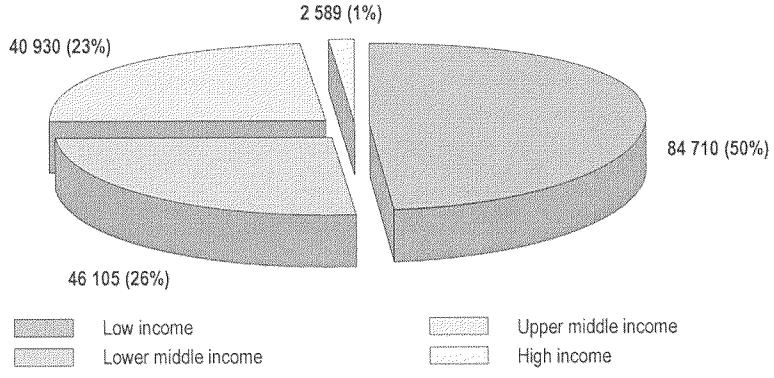
Poverty is a key dimension of any initiative in flood disaster risk management. Poverty affects people's capacity to protect themselves and their assets, as well as their ability to live in areas having less exposure to risk Annually, floods cause great loss of life and severely affect large populations. The poor are the most severely affected by all natural disasters, as shown in Figure 5. From 1975 to 2000, people who belong to the low-income category accounted for about 50% of those killed in floods (see Figure 6), with over 90% of all deaths from natural disasters being attributed to water-related disasters.

Disaster vulnerability and poverty are mutually reinforcing. Factors such as low income, poor housing and public services, lack of social security and insurance coverage force the poor to behave in ways that expose them to greater risk. As the impacts of natural disasters tend to fall disproportionately on the poor, specific policies are required to tackle the link between poverty and disaster vulnerability. It is very important to link disaster management to poverty reduction The failure to properly address livelihood issues hampers advancement on mitigating the impacts that result from natural disasters.

Creating diverse income-generating opportunities is an essential element of successful flood disaster risk management. While simple access to resources such as land is important, ignoring the full dynamics of a successful local economy can be disastrous. According to the World Disaster Report 2001, soft infrastructure, including training and work-and-life support services

Figure 6

Number of people killed in floods by income class, 1975-2001



Source: ADRC and EM-DAT, CRED, University of Louvain, Belgium

(e.g., educational and health services, childcare for working mothers), acquires an equal if not greater importance than its hard equivalent of buildings, roads and bridges (IFRC, 2001).

Gender issues

The gender issue requires special attention in defining the community structures for disaster response. Women and children, being the most vulnerable groups of the society, tend to be most affected by natural disasters. There is a strong link between the well-being of children and that of women. Improving the situation of women is the best way to advance the survival and recovery of children.

Gender inequalities with respect to human rights, political and economic status, land ownership, housing conditions, exposure to violence, education and health, make women more vulnerable before, during and after disasters. Women often die disproportionately in disasters, if they do not receive timely warnings or other information about hazards and risks, or are prevented from acting on them. Their mobility in disasters may be restricted or otherwise affected due to cultural and social constraints. Gender-biased attitudes and stereotypes can complicate and extend the time for women's recovery, for example, if women do not seek or do not receive timely care for physical and mental trauma experienced in disasters (United Nations, 2001).

The need to stimulate community involvement and empowerment of women at all stages of disaster management programmes is an integral part of reducing community vulnerability to natural disasters. However, women's abilities to mitigate hazards, to prevent disasters, and to cope with and recover from their effects have not sufficiently been taken into account nor developed (United Nations, 2001).

It is critical to understand the gender dimension in the development-disaster process in order to address root causes and take risk reduction measures that are equitable and efficient. At the most fundamental level, gender is a central organizing principle in the specific cultures and societies in which risk is constructed and disasters unfold. Gender patterns also manifestly shape development patterns and social vulnerability to natural disasters (United Nations, 2001).

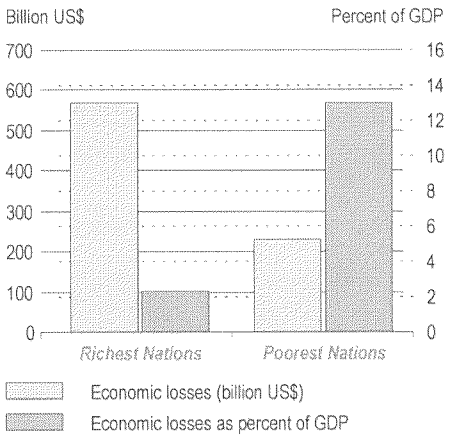
Photo C. Black and D. Revet /IFRC

Mozambique Flood Catastrophe, 2000
With clean water in short supply, many people are forced to resort to using floodwater for cooking, and the risk of disease outbreak is high.

1.2 Economic Aspects of Disaster Reduction and Response

The number of major catastrophes and their total damages has greatly increased over the last decade (see Figures 1 and 2) - a trend that is likely to continue unless concerted action is taken to mitigate the impacts from natural hazards. The costs of weather-related disasters in 1998 reached a record high of more than $US 92 billion (Abramovitz, 1999). Moreover, natural disasters have a disproportionate impact on the GDP of developing as compared with developed countries (see Figure 7).

Figure 7
Disaster losses, total and as share of GDP, in the richest and poorest nations, 1985-1999



Source: Adapted from Munich Re, 1999

Lack of capital or wealth accumulation over the long run tends to undermine sustainable development. Recurrent floods and windstorms, for example, not only destroy national wealth, but also hinder efforts to accumulate physical and human capital.

Valuation of losses

It is important to assess disaster impacts to help governments adjust their financial planning scenarios and economic growth rate projections to offset or reflect the social, economic and environmental impacts of shocks caused by disasters. Such assessments also help to further our understanding of the importance of mitigation measures. It has recently been estimated that for every $US 1 spent for mitigation, there is an $US 8 reduction in losses (Abramovitz, 2001).

However, there seems to be a prevailing lack of support from governments to provide resources to vulnerable communities. There are several potential explanations for this. First, it is possible that economic decisions are sometimes made in a manner that stresses short-term benefits and costs. If, however, a long-term perspective is taken, the benefits of preventing, minimizing or responding to water-related hazards are clear. Second, it is usually difficult to include environmental and social impacts to economic calculations, even if the importance of those impacts is recognized.

There is still a need for standardization of the assessment of economic, social and environmental losses for comparative purposes, and for an approach that reflects the reality on the community level. When assessing the losses, it should be taken into consideration that calculating the losses in US dollars might not accurately reflect the different value and purchasing power of local currencies.

Insurance

Risk sharing and risk transfer at national, community and household levels can also help to reduce overall losses, improve resiliency and contribute to expeditious recovery (UN/ISDR, 2002). Insurance can be one tool to improve the situation of individuals by compensation. It helps spread the risk of disaster across society. For example, in Mozambique insurance companies and banks are active participants in the national disaster management system. Lending institutions can also play a different role by encouraging implementation of mitigation measures. Mitigation efforts are a

form of protecting against future potential losses Lowering risk can help lower the rates for insurance, thereby making it more affordable for the people Rates should reflect the mitigation measures undertaken by the community and individuals (e g., implementation of flood plain development policy and plans, flood proofing, forecasting and warning systems, and real-time monitoring).

The amount of catastrophe insurance purchased in the world insurance markets has increased enormously. For example, in 1997 catastrophic excess of loss coverage (the most common type of catastrophe reinsurance) purchased amounted to $US 52.9 billion. This indicates an increase of 34% in three years. Unfortunately, the benefits of this insurance were reaped almost entirely by the developed world. The United States, United Kingdom and Japan accounted for 55% of the total (MacKellar et al., 1999).

By contrast, developing Asia, which represented half of all the damages caused by natural catastrophes and two-thirds of all the casualties from catastrophic events in 1997, "owned" only 8% of the insurance coverage for catastrophes purchased in the world market. This coverage sufficed to absorb only 13% of the losses incurred. The remainder of these costs fell either to the government or victims, with some limited relief from international aid agencies (MacKellar et al., 1999).

The efficiency of risk-sharing and risk transfer depends upon the size of the risk pool and availability of financial instruments and services In developed countries, governments, corporate entities and individuals engage in risk-sharing, which increases the size of risk pool, thus improving insurability of properties and assets. In developing countries, the size of the risk pool is smaller, resulting in inadequate insurance coverage and pay off. A related requirement is the commercial application of specific instruments and services for risk sharing at different levels (UN/ISDR, 2002).

Insurance schemes need to be complemented by other low-cost risk sharing mechanisms in poorer communities, such as kinship networks, microfinance and public works programmes to increase coping capacities Additional tools and financial incentives are necessary to promote proactive disaster risk reduction investment. It is also important that all development projects include an assessment of vulnerabilities and risks from disasters (i.e., a risk management component) The policies and programmes meant for reducing risks from disasters should be incorporated into poverty reduction programmes (UN/ISDR, 2002).

Insurance can be used at the national, community and household levels, while microfinance services are only provided at the community and household levels. Public works programmes have their own specific context, and they can be undertaken to provide relief to households and communities struck by situations in which there are no income-earning opportunities. There can be a great deal of variation in their forms and applications. It is also likely that in a given situation a combination of these instruments may be required (UN/ISDR, 2002).

At the national level, improvements in the regulatory frameworks for disaster reduction and response, including disaster-related insurance, building codes and land use planning, will help ensure that infrastructure is properly sited and built to minimize damages as well as to reduce the costs of repair. This involves public insurance policy, market and regulatory incentives for risk and vulnerability reduction, protection against fluctuations in insurance/reinsurance prices, augmentation of insurance coverage at reasonable cost, and backstop financial mechanisms (UN/ISDR, 2002).

1.3 Response Strategies

Confronting global warming requires the enhancement of international cooperation, and the linkage between disaster reduction and poverty alleviation necessitates the involvement of all stakeholders at the local, national, regional and interregional levels. The present era of globalization has helped increase awareness that water-related disasters can happen in any society. There is an increasing recognition of a number of opportunities and approaches for building strategic alliances and partnerships among government institutions, private sector organizations, civil societies and other stakeholders to pursue the goal of sustainable economic development and IWRM.

There is a growing realization that various flood mitigation measures must be combined in ways that are appropriate to effectively address local situations. A balance between structural and non-structural measures to manage floods and reduce losses is required, where the emphasis is shifting from large structural solutions to innovative measures in flood proofing and improved building codes to non-structural flood measures such as land use regulation, flood plain management, compensation schemes, insurance schemes and the improved participation of local communities prone to flood hazards. The value of community-based forecasting systems is recognized in reducing loss of life and decreasing economic losses, as they make use of local empirical knowledge as well as increase local capacity for reducing communal vulnerability to floods.

The flood disaster management process should also be coordinated with efforts made in closely related fields. For example, the disaster mitigation process should consider human health impacts during flooding (e.g. cholera, e-coli, malaria), thereby more effectively addressing health issue that arise during flooding.

Community level

Community-based disaster management is essential for numerous reasons. First, communities are the ones who suffer the most. Second, community-based organizations act faster in responding to disaster before the arrival of external help Third, local management leads to securing local support and ownership.

Community involvement is also needed in planning for disaster management, because in many cases there is a missing link between the disaster response actually needed and what is provided. In general, after the disaster has struck, responses are provided and managed at different levels in the form of relocation and zoning strategies, infrastructure rehabilitation, and restructuring of early warning systems. The problem is that most of the flood mitigation strategies are top-down in nature. Communities have no role in either the planning of disaster management, allocation of resources or implementation of the plan.

Community-level organization, management and empowerment are essential to mitigate the affects of disasters. Community structures need to be formalized, and their role and capacities in disaster management strengthened. The government and non-government institutions should work with community structures. In general, community organizations serve as an important bridge and instrument to link the ground-level response to a higher level of decision-making.

It is important to coordinate civil society action with government mitigation programmes. Reduction in future losses will depend on the ability of all levels to work together on preventative measures, to act jointly in the face of disasters, and to be able to draw on contingency plans.

An example of community level involvement is provided in Case Study 1 in the Annex. It describes approaches taken in the Philippines for preparing a community for disasters.

National level

Most countries are now recognizing the importance of dealing with floods in the context of IWRM and the need for a balanced approach to optimize the beneficial effects while minimizing the disastrous effects of floods. Two aspects have been identified as being necessary in flood management at the national level. The first is the need to introduce multi-hazard management systems, including coordination and response mechanisms. The second is the need for end-to-end disaster risk management of water-related disasters.

A major constraint to successfully being able to mitigate the effect of flooding is the fragmented institutional structures and lack of coordination and cooperation that can exist among national institutions. This can result in a general lack of planning and commitment to implement disaster mitigation activities.

Countries need to establish a clear national lead agency responsible for flood disaster management. Countries need to assess the level of additional inputs needed from governmental and non-governmental organizations as well as from organizations representing the civil society. There has been an encouraging trend of government commitments to establish early warning and flood forecasting systems and to expand flood forecasting and management to cover a larger portion of national populations. Countries that currently have little flood management capacity recognize the importance of improving effective systems to protect the lives and property of their populations. It is extremely important to integrate the flood disaster management process into social and economic development plans of the country.

Regional level

A special challenge is posed to flood management and disaster reduction and response in shared river basins. More regional cooperation is needed. Countries are encouraged to take full advantage of regional capacity. The exchange of relevant data and information related to hydrological data, hydrological forecasts, weather forecasts, reservoir operation as well as major changes in land use and water use management are important steps to improving flood disaster reduction and response of riparian countries in shared river basins. Consideration should also be given to regional training programmes and disaster assistance.

Regional collaboration is also a distinct possibility to foster data exchange, to develop common communication and forecast methodologies, and to exchange expertise. In this fashion the resources of a greater geographical area can be brought to bear as backup during extreme storm events.

Smaller countries may give consideration to bilateral arrangements with larger partners, or to develop joint activities with neighbouring countries. The latter is a distinct advantage when transboundary basins are involved or the goal is to increase joint scientific and technical abilities

One good example of regional cooperation in Asia and the Pacific is the Typhoon Committee. It covers East and Southeast Asia and the North Pacific and has existed for 35 years. It was jointly established in 1968 under ESCAP and WMO auspices to coordinate efforts among countries of the

region in predicting and monitoring typhoons and thus reducing losses. The Committee provides advice on improvements to forecasting and community preparedness and prevention activities, promotes research and training, and facilitates identification of funding sources.

Another example of regional cooperation is provided in Case Study 2, which is contained in the Annex, on the South African Development Community (SADC). The Case Study provides information on the recent developments on regional cooperation following the devastating flooding that occurred in the region in 2000 and 2001.

1.4 Public Awareness and Communication

Communities should not be passive recipients of information. There is a need to encourage people to help themselves, and communities must be provided with the mechanisms and tools to do so. Communities need to be active in the information dissemination system. They require technology adapted to local needs and conditions. Local communities should also be encouraged to document disasters and events at their level in any way possible for future research on flood mitigation and to increase local empirical knowledge of flooding.

There is a need to distinguish between information, education, and communication. For example, a forecast of water level by the technocrat may not be meaningful to the target groups. The forecaster and the people must be educated so that the message is understood by the various users, e.g. what to do when water level is classified as dangerous. Next comes the means to communicate to the target groups Besides using the mass media, effective communication may include influential people such as local politicians and traditional leaders, whom the community respects.

Activities may also be targeted at children Case Study 3 in the Annex describes a training project to introduce disaster awareness and preparedness to the elementary school system in Vietnam. This approach also helps to foster a greater awareness of natural disasters within families and their communities.

Flood warning systems and communication methods

The operation of a flood warning and response system is the most effective method for reducing the risk of loss of life and economic losses. This is particularly so where the unplanned occupation of flood-prone areas has taken place or where sectors of the community are vulnerable to flooding under extreme conditions. It is very important to link indigenous knowledge of basin response to forecasted or observed weather conditions In some cases local communities may be unaware of weather events occurring upstream of their location that might well result in their destruction. People in communities need to understand what a prediction means: how exactly the predicted event would affect them personally. These predictions have to be applicable to people having varying economic status and reflect gender differences so that all elements of society can understand what response actions should be taken. Also, the flood warning and response system should be promoted in such a way that an "ownership" sense is created within

the communities that operate the system to foster its sustainability Special consideration should be given to language and cultural barriers to increase the effectiveness of the system.

A number of low-cost solutions could be used at the village level to enable local populations to foresee a coming flood The African Centre of Meteorological Application for Development (ACMAD) takes advantage of the human resource capacity at the village level to reduce risk. Novel communication methods including wind-up radios and translation of forecast products to the village level have helped farmers reduce the impact of climate-related hazards. Local authorities are using a combination of high technology (data display and exchange using the Internet) and basic technology at the local level to inform communities about potential effects of drought or flood. Regional capacity building workshops help participants produce forecasts, enabling them to return to their home countries and update local forecasts. Small resources for small projects rely on large human resources at the community level, thereby effectively magnifying the effectiveness of the investment. Case Study 4 on Access to Information provides additional details on making information available to the community level.

Public education

An effective public awareness programme can contribute a great deal to reducing disaster-related losses. When developing such a programme, it is important that the seriousness of the risk is accurately perceived and that information be communicated with the appropriate level of urgency. Also risk communication should be viewed as a continuous process, where the contents of the message should be continuously reviewed and improved. Finally, the messages should be kept as simple as possible. There should be a designated lead agency for developing and issuing such messages.

Both formal and informal means of education should be used. Public education must be directed towards all levels - political leaders, bureaucrats, and the most vulnerable communities. For example, politicians and bureaucrats should consider shifting funding priorities from emergency aid to preventive measures. Currently, it is difficult to obtain funding for preventive measures.