



DEFINING THE COMMUNITY'S ROLE IN DISASTER MITIGATION

The apparent increase in the number and severity of 'natural' disasters in the South is anything but natural. Andrew Maskrey shows how addressing the increased vulnerability of people in the South is the only solution.

Natural disasters have become central and critical problems in the development of the regional economies and their urban centres in Latin America. Apart from loss of life, disasters also have an important economic impact in the region. It is estimated that the 1987 earthquake in Ecuador caused losses which exceeded \$US890 million in the energy sector alone.

What is less well-known and documented is the impact of the growing number of small localised disasters, which individually do not show up in national statistics but which are collectively perhaps a more serious problem than the catastrophes which reach the press.

While it is vital to monitor and analyse the impact of disasters on development, it is even more important to understand how and why current patterns of development generate highly propitious conditions for the occurrence of natural disasters. It should now be obvious to all but the ill-informed that natural hazards are not synonymous with disasters. Disasters only occur when a hazard arises in vulnerable conditions. Hazards occurring in uninhabited areas or in areas where economic activities and settlement patterns are not vulnerable do not cause disasters. It is above all the growth of vulnerability in the regional economies and their urban centres in Latin America that is responsible for the increasing impact of disasters on development, which in turn further increases vulnerability. Understanding what vulnerability is and how it arises is as key therefore to the disaster paradigm as is the study and analysis of natural hazards.

Vulnerability

Why then are people in Latin America increasingly vulnerable to the impact of natural hazards? First, more and more people are living and working in hazard-prone areas, and thus are more likely to be affected by a hazard. The population of Lima-Callao, for example, grew from 645 172 in 1940, representing 9.7 per cent of the national population, to 4 608 010 in 1981, representing 27 per cent of the national population. In 1972 73 per cent of the country's total industrial establishments were in Lima-Callao. The number of people who would be affected by a major earthquake in the 1990s in Lima would be far greater than in 1940. The impact on the national economy would also be considerably greater because of the predominant economic role that had come to be played by Lima-Callao.

Secondly, an increasing number of people's livelihoods are vulnerable to the effects of hazards. Although people may not be directly affected by the hazard, when productive infrastructure, including land and crops, is damaged or destroyed, the loss of income can have a serious effect on health and well-being. Many livelihoods in themselves constitute vulnerability, livelihoods which by their nature or low income do not protect health and may even increase liability to illness or injury. And the social or economic inability to bear losses (relating to asset holding as well as income potential) is as important a facet of vulnerability as the level of exposure to the hazard itself.

Vulnerability is also caused by people's inability to protect their living environments. This refers for example to the location of settlements in floodplains or in areas of high geodynamic risk, and in insecure or overcrowded housing with poor or non-existent sanitation.

Another facet of vulnerability is the lack of protection afforded by society itself. Obviously the situation varies extensively from country to country but inadequate health care facilities and social security mechanisms clearly reinforce people's vulnerability to hazards.

Finally, a lack of knowledge and information about risks can have a considerable effect; particularly in the case of long return (rare but inevitable) hazards such as earthquakes, tsunamis, or volcanic eruptions.

All these vulnerable conditions are generated and reproduced under the influence of different social, economic, and political factors. Inequalities resulting from regional, ethnic, class, and gender divisions force certain social groups into highly vulnerable living conditions. Income distribution is extremely uneven in most of the countries of the region.

The process of industrialisation based on import substitution adopted in most Latin American countries since the Second World War has effectively resulted in the isolation and deterioration of traditional rural economies without offering viable alternatives. The resulting urbanisation process, with rapid demographic changes and environmental degradation, is a dominant characteristic of the Latin American political economy. Situations of extreme civil insecurity in some Andean and Central American countries make matters worse still. The relationship of the region as a whole to the international political economy, which over the past decade has been marked by conflict over debt payments, forms a framework in which all the other more specific processes evolve programmes.

Mitigation programmes

The actions and decisions of people and communities show that they always try to minimise their vulnerability when faced with a range of hazards. The poorer people become, the more their vulnerability to a variety of hazards increases and the more difficult it becomes to play one off against another to achieve security. People have to balance extremely limited resources to deal with threats like homelessness, landlessness, illness, and unemployment. In general, people are unlikely to change or adapt their living patterns and activities to reduce their vulnerability to natural hazard, if it increases their vulnerability to other more pressing threats.

Disaster mitigation refers to measures which can be taken to minimise the destructive and disruptive effects of hazards, and thus lessen the magnitude of a disaster. Mitigation measures can range from physical measures such as flood defences or safe building design to legislation, training, and public awareness. Mitigation is an activity that can take place at any time: before, during, or after a disaster.

Since the 1970s there has been a growing interest in disaster mitigation programmes from governments, bilateral and multilateral agencies, and NGOs (Non-Governmental Organisations). There is now a growing body of literature which argues for agencies as well as governments to reallocate at least part of their budgets from relief to mitigation. It is generally recognised nonetheless that mitigation still has a very low priority on aid agendas.

In Latin America, mitigation programmes have been implemented through different government agencies, usually in the context of reconstruction after a major disaster.

Bilateral and multilateral agencies have also implemented programmes in conjunction with different governments. Since 1983, the Organisation of American States has implemented a Natural Hazard Risk Assessment and Disaster Mitigation Pilot Project which has carried out activities in 20 member states in Latin America and the Caribbean.

According to the World Bank, Latin America is far ahead of other areas in adopting an integrated approach to disaster prevention and management, particularly in terms of co-operatively examining risks and adopting preventive measures.

The least visible actors in disaster mitigation in the region are the NGOs, both national and international. There are well-documented case studies of NGOs playing a lead role in mitigation, however, particularly in the context of reconstruction programmes, in countries such as Peru, Bolivia, Ecuador, Guatemala, and El Salvador. When we compare these contexts to others, such as Colombia, it is interesting to note that the role of NGOs is more prominent in contexts where the institutional presence of the state is weak or lacks articulation.

Integrating objectives

A recent book² has attempted a comparative analysis of disaster mitigation programmes in Latin America by examining twelve documented case studies from different countries. In general, the analysis showed that despite the apparent advances in the region in terms of adopting an integrated approach to disaster mitigation, the results of most projects or programmes were disappointing and even negative.

Most mitigation programmes, whether managed by governments, bilateral or multilateral agencies, or NGOs, are unisectoral, responding to one particular hazard type in a specific and limited time period. As such they cannot address vulnerability, which is, as we have seen, a complex relationship between people and their social, economic, physical, and political environment. Because they tend to ignore the enormous range and variety of local needs and priorities, even well-intentioned programmes are often counter-productive for low-income people. Despite the collation of objective data on people's social and economic conditions and the behavioural response to hazards, many mitigation programmes fail to take into account the complex range of factors which go to make up people's own decisions. While a programme might relocate people from a floodplain, for example, in order to reduce flood risk, it might be exposing them to other more serious risks by isolating them from their livelihoods or from basic services.

Because of their reliance on specialised technologies and professional skills, many mitigation programmes are carried out without the involvement of the local people and their organisations in the planning and decision-making. People's participation is reduced to providing labour in organised self-help schemes.

Programmes are therefore inherently uneconomic; because they fail to take into account the real needs and demands of those affected by disaster. General models which are supposed to be replicable come up against locally specific situations in which they are inapplicable. It is because they are unable to make use of local knowledge, skills, and resources that many programmes fail to achieve their objectives, and waste scarce external resources.

A further problem encountered in some programmes is that because their power and knowledge is concentrated in their centralised management, they are particularly susceptible to political manipulation especially in the case of government programmes. Mitigation in these contexts may become an instrument for maintaining the status quo, or even for making vulnerable conditions worse. In fact, it is evident that in some countries in certain periods mitigation has been motivated more by political and economic self-interest than by humanitarian motives.

One of the key issues identified within the International Decade for Natural Disaster Reduction (IDNDR) is the problem of applying scientific and technological knowledge on natural hazards and disaster mitigation to social and economic development in disaster-prone regions. The evidence so far shows that despite considerable scientific and technological advances in the field of disaster recovery in Latin America, the vulnerability of the majority of the region's

populations to different hazards continues to broaden and grow. Has the methodology adopted for disaster mitigation planning been the correct one, or is it time to look at a completely new approach?

The case studies show that the failure of most mitigation programmes so far is not a result of a lack of scientific technological knowledge, but rather of a fundamental methodological flaw. Designing specific mitigation measures on the basis of a global analysis of hazards and their effects does not and cannot take into account all the factors surrounding vulnerability and within which people, communities, governments and other social actors take decisions. However much more scientific and technological research is carried out, if it is applied in this way it is doomed to be ineffective in the best of cases and counter-productive in the worst.

Working with local people

A possible alternative mitigation methodology, which takes as its starting point the analysis of local vulnerability rather than of particular hazards, is suggested by the analysis of other case studies presented in the same book. These are mainly cases of NGOs intervening at the local level to advise communities and their organizations on mitigation measures, usually after a disaster.

The cases show that faced with a multi-faceted daily disaster, local people and their organisations develop their own strategies for improving living conditions, obtaining greater access to resources and changing the character of social relations with other groups, particularly with the state.

Only local people know their own needs and only they can define the priorities for mitigation within a given context. Most communities do not act for abstract ideological reasons; specific local problems are nearly always the reason for their actions. For many, mitigation is a permanent activity and an integral part of their survival strategies.

The form mitigation takes and the way it evolves depends on the context. In some traditional societies where communities still retain control over their economy and resources there may be space for adjustment or adaptation to hazard. With increasing urbanisation and the breakdown of rural economies and the social relations that go with it, the space for adaptation or adjustment becomes increasingly reduced as vulnerability becomes more extreme and develops new facets. Communities' mitigation strategies in most contexts inevitably involve negotiation or confrontation with the state or with market forces.

The case studies show that community-based disaster mitigation should not be confused with unaided self-help, though many communities without access to resources are forced to rely on small makeshift mitigation measures at the local level which often prove to be totally inadequate against the magnitude of the hazards faced. It is all too easy to romanticise the virtues of traditional techniques and methods which in themselves may only reflect severe technological and economic constraints and an acute lack of resources. The most important cases show communities planning mitigation actions and obtaining participation from the state. While some mitigation measures, such as house rebuilding or reinforcement, may be best managed at the community level, large infrastructure works or major policy changes require a level of centralised authority which only the state possesses. The cases show that the new approach is about involving the government in communities' own mitigation programmes.

In this approach to mitigation it is possible to avoid many of the diseconomies and mismatches which characterise conventional programmes. Because of the use of local knowledge and decision-making, the use of available local resources is often maximised and thus programmes achieve a lot more with a lot less.

If this is true then it is necessary to adopt a new approach and a different set of skills for disaster mitigation planning. Instead of starting off from a global analysis of hazards and their effects, within which specific mitigation measures are designed, the new methodology would

begin with an analysis of local conditions of vulnerability, within the context of different hazards and risks. This means that mitigation must become an enabling activity, and that disaster planning must build incrementally from a series of small-scale interventions incorporating these gradually into a wider synthesis. The key to this approach is to work with and through communities and their organisations, involving some or all of the following tasks:

- Research and planning to articulate people's explicit and implicit demands in terms of viable projects and programmes. Communities often have clear goals but little clarity about the technical, legal, and financial alternatives available to attain them.
- Provide technical and legal advice to communities to help them to implement their own mitigation projects and programmes, and to negotiate effectively with governments and agencies.
- Create opportunities for reflection and learning from disasters, building up awareness and making organisation more effective.

This new approach to disaster mitigation planning means integrating these tasks into a long-term programme covering all phases of disaster and incorporating hazard mitigation into wider development planning. The methodology of working is necessarily slow, small scale, long term, multidisciplinary, and multisectoral. Because of its complexity, its incremental planning, and its dependence on political negotiation, this approach must seem like a recipe for chaos to many experts accustomed to working in conventional programmes. However, within it, scientific knowledge of hazards and their effects and technological alternatives for mitigation take on a completely new meaning, transforming themselves into vital instruments at the service of development.

It is in this context of social vacuum that the institutions with greatest proximity to people and their organisations and with a relative independence from both state and market are more often than not the NGOs. NGOs have to act as mediators, communicators and technical advisers searching out a new consensus and relationships between all the actors, and patching and reweaving a new political and institutional framework. In this sense, communication is perhaps the critical variable which determines the legitimacy and success of disaster mitigation in the kind of context mentioned.

Most NGOs are communicators and are able to transfer the lessons and methods learned in their projects to other groups, helping to build up and disseminate knowledge. With a foot in both worlds, they also have the potential, when they act together, to press governments, and bilateral and multilateral agencies to bring about changes, and can formulate alternative policies and legislation.

In the context of IDNDR, it is important that funders provide funds not just for increased scientific and technological research but also to enable this new community-based approach to disaster mitigation: not only pilot projects in disaster-prone areas but also programme evaluation and network building. These latter tasks are normally given a very low priority by funders, but they are the single most important task which agencies should put on their agendas for IDNDR if the community-based approach to mitigation is to receive the support it needs and deserves.

Although the international level is important, the key levels of action in the coming decade will be national and regional. The building up of national and regional networks for community-based mitigation should be at the top of the agenda in the 1990s for all those with actual or potential responsibilities to act or influence in the field.

References

1. Bender, Stephen, 'El Sector Energetico y los Riesgos Naturales: Reduccion de Vulnerabilidad', paper presented at Seminario-Taller Intemacional sobre Terremotos y Tsunamis, Esmeraldas Ecuador, 18-22 February, 1991.
2. Maskrey, Andrew, Disaster Mitigation: A community-based approach, Oxfam, Oxford, 1989, and El Manejo Popular de 10.1' De.l'a.l'tre.1' Naturale.l': E.l'tudio.1' de Vulnerabilidad y Mitigacion, ITDG Peru, Lima, 1989.

Further Reading

- [The Sphere Handbook](#) Sphere Project, Practical Action Publishing 2011
- [Emergency Market Mapping and Analysis Toolkit](#) M Albu Practical Action Publishing 2010
- [Disaster Mitigation, Preparedness and Response](#) D Sanderson Practical Action Publishing 1995
- [Disaster Risk Management and Reconstruction in Latin America](#) Montoro & Ferradas Practical Action Publishing 2012

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