The Role of Local Institutions and their Interaction in Disaster Risk Mitigation: a Literature Review

By Norman M. Messer

September 2003

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1. Introduction

The present paper is a non-academic and thus, hopefully, unpretentious, attempt at reviewing the literature on the the role of local institutions and their interaction in disaster risk mitigation (DRM). The motivation for immediately cautioning the reader from the outset about the less than revolutionary character of this review is twofold: first, it is based on the appreciation that, unfortunately, there exist relatively few documented local experiences which are, honestly speaking, innovative and "worth writing home about" – a lot of disaster management is still organised almost exclusively by the military and/or central government; second, a deliberate attempt is made to keep away from the "dev-speak" jargon that has come to beset many recent laudible contributions to the development policy debate (such as the Sustainable Livelihoods framework), so that those (under pressure to keep) looking for new frameworks and methodologies will remain largely disappointed. On the other hand, what will be found on the following pages is a non-exhaustive compendium of strengths and limitations of local institutions involved in DRM and some suggestions for tapping the former and tackling the latter.

As recently as the late 1990s, scholars complained of "the absence of much social science research on disasters in developing countries" (Quarantelli, 1998: 35). There is still a relative dearth of research and (electronically available) information, in particular from from Sub-Saharan Africa, and, while the situation is better in the case of Asia, the present review draws a lot of examples from Central America. Not least, this is because "in the 1990s, Central America has played a pilot role in efforts aimed at reducing natural disasters and has thereby achieved important progress not only in conceptual but also in practical terms. For this to occur, one of the essential features is the acknowledgement of the local-, and, especially, the local government, level in preventing natural disasters and the involvement of local stakeholders that this implies" (Bollin, 2003: 5 [transl. by author])[1]. To this must be added the tremendous impact in 1998 of hurricane Mitch and of the 2001 El Salvador earthquakes which, widely covered by the media, boosted awareness and catalysed changes in attitudes towards more proactive stances.

2. Background and Justification

There is evidence to suggest that in many countries there has been an increase in the risk of natural disasters occurring - natural hazard risk - due to environmental degradation (World Bank 2002). Natural disasters are complex and multifaceted events resulting from mismanaged and unmanaged risks that reflect current conditions and historical factors (Alexander 2000). Disaster risk is collective in its origin and remains mainly a 'public,' shared risk that makes finding individual, and often community solutions, difficult (Comfort 1999). A disaster is said to take place precisely because the losses originated by a given event overwhelm the capacity of a population (local, regional or national) to respond and recover from it. Disaster risk emerges from the interaction between a natural hazard - the external risk factor - and vulnerability - the internal risk factor (Cardona 2001).

International consciousness raising about integrated disaster risk management (of which disaster risk mitigation is a part) was given a boost by the recently concluded United Nations International Decade for Natural Disaster Reduction (IDNDR – 1990-1999). The World Food Summit in 1996 recommended 'support for disaster prevention and preparedness' as a priority area of intervention. The FAO of the UN, through its Rural Institutions and Participation Service (SDAR) "promotes community based approaches and bottom-up capacity building

[1] There, the period from 2000 to 2004 was declared the Half-Decade of Intensified Efforts at Reducing Disasters. The Strengthening of local structures for disaster prevention is one of the explicit action areas of this initiative.

processes through participatory analysis and the dissemination (and facilitating adaptation) of new concepts and training materials that help strengthening local public institutions and civil society organisations such as farmer organisations, pastoral herder associations, cooperatives, and water user associations" (FAO, n.d.: 4). It is within this context that increases in natural hazard risk are addressed, given that there is growing evidence of the urgent need to involve human resources, local population groups and their organisations, in more vertically and horizontally integrated efforts at DRM. The task of exploring avenues for doing so, based on existing experiences and distilling lessons there from, thus lies with the mandate of FAO/SDAR, who commissioned the present literature review, and who are also carrying out a series of complementary field-level case studies in a number of countries in several disaster-prone developing regions.

3. Conceptual Background and Working Definitions

The conceptual and methodological underpinning (see FAO, n.d.) of this report recognises that the effectiveness of any risk mitigation strategy will depend on the nature of the risks, household, population group and institutional characteristics, and the availability and range of risk management alternatives. In reference to local institutions, risk strategies are assessed considering the type of instruments used by the poor and near poor, the degree of formality or informality of these instruments, and the type of actors and institutions that have typically supplied or supported these instruments. The issues (listed in the six bullet points in the next section) below are thus approached with a clear commitment towards improving rural livelihoods by better understanding and supporting people's organisations.

The International Strategy for Disaster Reduction (Geneva 2001) defines a 'disaster' as 'a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources'.

Disaster risk is usually conceptualised as being made up of two elements, hazard and vulnerability, which can be expressed in an equation: disaster risk = hazard x vulnerability. Risk is therefore dependent on the existence of a household's vulnerability to a natural event.

Disaster Risk Mitigation (DRM) strategies refer to a household's or local institution's preparedness to reduce the impact of a risk event, either one that has already occurred or one that may occur in future. Mitigation includes prevention and preparedness (WFP, 1998: 4).

The concept of Disaster risk management implies a notion of household vulnerability, which is often said to contain a 'risk chain': the risk itself, the options for managing risk and the outcome – in terms of welfare loss, in the case of households, and of financial loss and adverse consequences for sustainability in the case of local institutions (Alwang et al. 2001).

A paper by the WFP (1998) claims that:

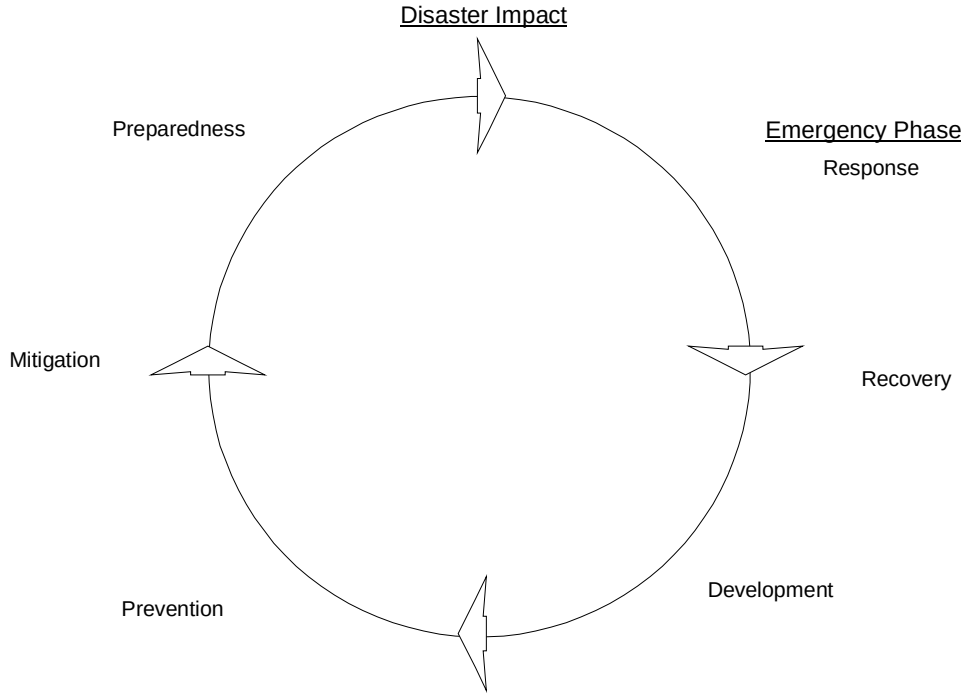
> "A review of donor practices and the literature reveals that there are no universally accepted definitions of the terms […] mitigation, prevention and preparedness. Moreover, the distinction of terms is often blurred. In one situation an activity may be considered to be an act of preparedness, and in another it is prevention. For this reason, many of the definitions found in the literature are vague and all-encompassing" (p3).

For lack of space, readers are referred to the literature (e.g., FAO 2003, IFAD 2002, Uphoff 1997) for a definition of the term 'local institution', as both 'local' and 'institution' are concepts that are difficult to unpack[2].

The usage of the latter conforms, in the broad sense of the term, to the widely accepted definition of 'the rules, organisations and social norms that facilitate the coordination of human action'. The fact that to some large extent they are context-specific helps us fend off the unappealing prospect of getting embroiled in long-winding conceptualisations: for the intents and purposes of this review we may unworriedly hope to get away with employing the term loosely to refer to 'an organisation of local actors'. For lack of space (see the next Section below), the emphasis in this endeavour is on their displaying some degree of "formality" (read as: "visibility", for a proxy) and on their containing some element of collective (i.e., supra-household) action.

The Disaster Management Cycle (FAO n.d.)

The Disaster Management Cycle is illustrated in the below diagram. It consists of a number of phases, each requiring a different range of response activities. The different phases, however, are often grouped together under three main categories: the pre-emergency phase, the emergency phase and the post-emergency phase. In the course of this paper, the activities of UN entities in the disaster management cycle will be examined under these three broad categories.



Pre-Emergency Phase

The emphasis in the pre-emergency phase is on reducing the vulnerability of communities to suffer from the impact of natural phenomena. Measures to achieve this objective include risk-

[2] An often used definition of 'local' – particularly by FAO – is that provided in the 1980s by N. Uphoff, who postulates that the term includes three levels of society: 1) the locality level, which is a set of communities having cooperative/commercial relations; 2) the community level, which is a relatively self-contained, socio-economic-residential unit; and 3) the group level, which is a self-identified set of persons having some common interest; maybe a small residential group like a hamlet, or neighbourhood, an occupational group, or some ethnic, caste, age, sex or other grouping (1986).

mapping, application of building codes, land zoning as well as structural measures such as the construction of dams against flooding. They are grouped under the heading risk reduction, comprising prevention, mitigation and preparedness.

→Prevention

Includes all measures aimed at avoiding that natural phenomena turn into disasters for settlements, economies and the infrastructures of communities.

→Mitigation

Involves measures taken to limit the adverse impact of natural hazards and related environmental and technological disasters. Examples of mitigation are the retrofitting of buildings or the installation of flood-control dams, and specific legislation.

→Preparedness

Involves measures taken to ensure effective response to the impact of disasters. Preparedness measures include, for example, evacuation plans, early warning systems, pre-stocking of relief items – all being part of a national disaster relief plan.

→Emergency Phase

In the emergency phase of a natural disaster, response mechanisms are automated. This phase is normally short-lived and may be over within days or weeks.

→Response

Involves measures taken immediately prior to and following the disaster impact. Response measures are directed towards saving life and protecting property. They deal with the immediate disruption caused by the disaster. They include search and rescue, and the provision of emergency food, shelter, medical assistance. The effectiveness of responding to disasters largely depends on the level of preparedness.

Post-Emergency Phase

The transition from relief to rehabilitation is rarely clear-cut. On the one hand, the foundations of recovery and reconstruction are usually laid in the immediate aftermath of a major disaster, while emergency response activities are still ongoing. On the other hand, there is often, in the aftermath of a natural disaster, a phase when basic needs must still be met as the long-term benefits of rehabilitation and reconstruction projects have not yet been fully realised. As a result, the phasing-out of relief assistance must be managed carefully.

→Recovery

Is the process by which communities are assisted in returning to their proper level of functioning. The recovery process can be very protracted, in some cases up to a decade or more. Typical activities undertaken under this phase include: restoration of essential services and installations, and long-term measures of reconstruction, including the replacement of buildings and infrastructure that have been destroyed by the disaster.

→Development

Its inclusion in the disaster cycle is intended to ensure that following the natural disaster, countries factor hazard and vulnerability considerations into their development policies and plans, in the interest of national progress.

The rationale behind the use of the expression 'disaster management cycle' is that disaster and its management is a continuum of inter-linked activities. Yet, the expression is slightly deceiving in that it suggests that the periodic occurrence of natural disasters is something inevitable, always requiring the same response. On the contrary, if effective prevention and preparedness measures are implemented, natural disasters may be avoided by limiting the adverse impact of inevitable natural phenomena[3].

4. Objective, Methodology and Scope

The objective of this review is to demonstrate whether, on the basis of literature available, local institutions play a role in natural DRM at the household and at several institutional levels, and, if they do, to understand how this occurs, and what are the strengths and weaknesses of the actors and stakeholders involved in increasing DRM capacity at several levels. Achieving this objective implied:

- Investigating how local institutions have dealt with actual disaster events and/or mitigated their impact on their members/constituencies;
- Analysing how population groups in disaster-prone areas have usually dealt with and are dealing with disaster risk, rehabilitation and development through local institutions;
- Assessing the implications of mitigating disaster risk for local institutions and their effectiveness at doing so as well the impact of the wider institutional environment;
- Identifying lessons learnt from local institutions' involvement in DRM, focusing on potential improvements in terms of their role and organisational development needs;
- Providing elements of a pro-poor DRM strategy that highlights and strengthens the role played by local institutions, and that leaves local actors better equipped to deal with the disaster management cycle; and
- Elaborating how policy and operational support at sub-national, national and international level can better sustain local institutions in DRM and longer-term development.

This literature review focuses less on the myriad of "informal" local institutions that are also standard local practices such as those derived from custom (like, e.g., certain context-specific agricultural traditions within a given farming system that have evolved and become adapted over many generations to suit local exposure to potential natural disasters[4]). In looking at existing local institutions, emphasis was placed on those with relatively more potential to bridge the mitigation-development continuum, and microfinance institutions (MFIs) were singled out as promising to that effect.

With respect to natural disasters, the present paper concentrates on rapid onset phenomena such as floods, hurricanes, snowstorms and earthquakes and their associated effects (e.g., landslides, heavy rains, etc.), rather than slow onset phenomena such as droughts, or some other often protracted events such as rodents, predators and pests, or human and animal epidemics – which is another reason for more examples coming from Asia and Latin America rather than from

3 To illustrate progress in reducing a country's vulnerability to the impact of natural phenomena through the implementtation of risk-reduction measures, the series of events applying to disaster management should be represented as a spiral. In a spiral, disaster-related activities are linked as a continuum, but not in a cyclical manner. At the beginning of the spiral, the country's vulnerability to natural disasters is high since inadequate focus is placed on risk-reduction and more efforts are correspondingly required during the emergency phase of a disaster. An upward movement along the spiral indicates that prevention and preparedness measures are gradually put into place, thereby reducing the country's vulnerability to natural disasters and the need for emergency assistance in the event of a disaster.

4 In this way, the huge question of local institutions governing access to and use of land is avoided - although these contribute to tenure (in)security and (dis)incentives for investments in DRM.

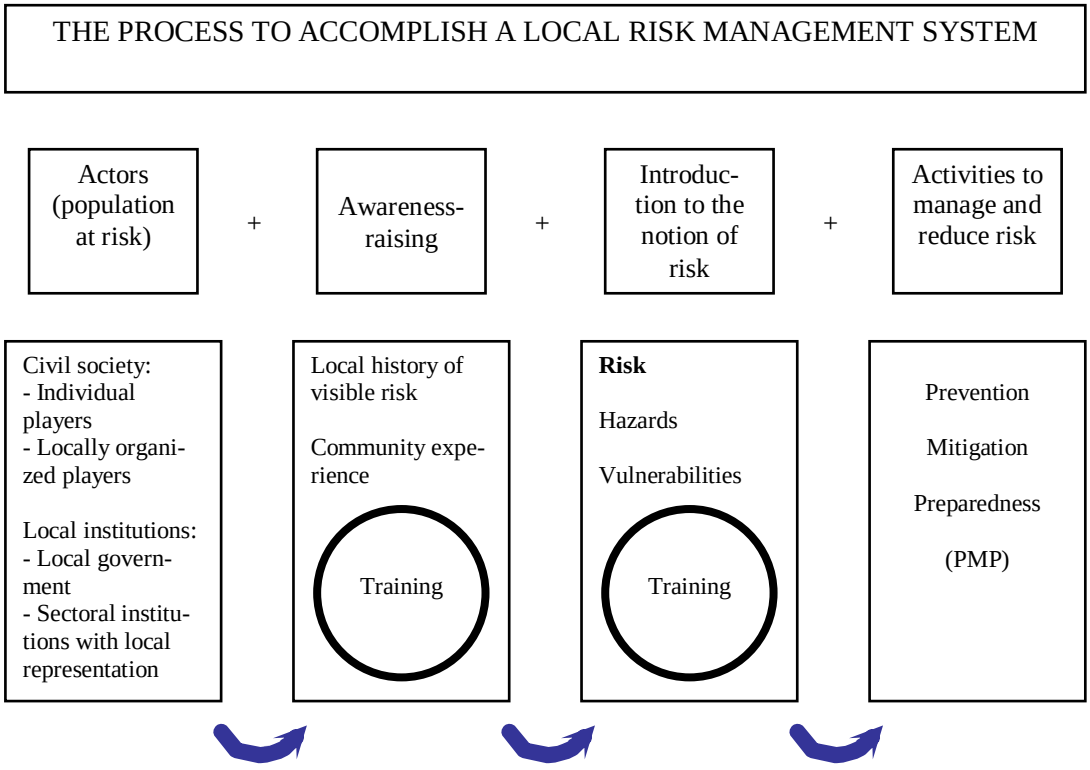
Africa. Neither included are volcanic eruptions, because of their more localised effects, nor bush and grassland fires and other such events, because these are mostly man-made (and thus not 'purely natural'), rather than predominantly meteorological and seismic in origin[5].

The secondary data collected comes from all developing regions and sources; the way to access the material has been mostly through the internet, where a range of studies, project documents, strategy briefs, newsletters, etc. has been downloaded in either English, French, Spanish, Portuguese or German. Other information was provided by colleagues working in or with projects that contain DRM components.

5. Overview of Local Institutional Responses to Natural Disasters

Certain local institutional responses have taken place within project frameworks that sought to coordinate local government and civil society contributions with those of DRM experts. The 'Proyecto Fortalecimiento de Estructuras locales para la MItigación de Desastres' (FEMID), for example, implemented from 1997 to 1999 in Costa Rica, Guatemala, Honduras, Nicaragua, and Panama, was a pilot initiative aimed at responding to communities' interests to participate in jointly analysing the causes of natural hazards, the risks and vulnerability involved, and the actions that can be taken to mitigate negative disaster impacts.

Diagramme 1: A Local Risk Management System in Guatemala (Source: FEMID/GTZ 2002)



To perform the planned joint analyses in an organised and systemic manner, an approach referred to as Local Risk Management (LRM) was developed, using the inter-related

[5] The 'Working Concept' Note of the GTZ (German Bilateral Cooperation) lists the following as a "hazard posed by pure natural phenomena": volcanic eruptions, earthquakes and seaquakes, storms, hurricanes and tornadoes, heat and cold waves, and tsunamis; the following are classified as a "hazard also due to human intervention": floods, droughts, forest fires, landslides, avalanches (2002: p17). Although floods are featured in the list of 'hazards also due to human intervention', they are included in the present review both because of their relative importance in terms of disaster risk and because they often follow 'purely natural' events such as earthquakes and seaquakes.

dimensions of Prevention, Mitigation, and Preparedness (PMP) to group and structure activities to be carried out. Based on lessons drawn from the practical experience gained, Diagramme 1 above shows the process elaborated and applied over the three year period to put in place local DRM capacity in the countries covered by FEMID. Within the project programming framework, training activities too involved central and local government, as well as a range of civil society actors and community groups (as visible on the left side of the Diagramme).

6. The Legal and Regulatory Environment: Implications of Sectoral Approaches

Legal and regulatory environments differ enormously from region to region, country to country, and government to government, as does the degree to which their contents is actually applied and enforced. Very important in this respect are the legislative tradition of a given nation state, the historical trajectory of its institutions and the separation of powers within them, including the magistrates. Steurer and Bollin (2001) find that "in developing countries, the necessary norms that would allow to reduce disaster vulnerability among the population through settlement policy, land use planning, or standards for infrastructure (construction of housing, roads and bridges, electricity, telephone and water provision) are usually absent. Or else, the laws, decrees or plans in question are not applied" (p3; transl. by author). Turkey's earthquake fatalities in 1999 were victims of ineffective building codes, not poverty.

Special bodies are sometimes set up to monitor their enforcement, and, depending on the degree of effective decentralisation, the states that make up some of the large federal republics such as Brazil, Nigeria, or India, may institute their own monitoring arrangements and pass their own separate laws and regulations. As laws and regulations stand or fail the test of facilitating and streamlining responses during the urgency of a catastrophic event, their contribution to the efficiency with which natural disasters are handled by the government and non-government sectors alike becomes an empirical question that only case studies can illustrate. The latter, alas, do not normally examine the role of the legal and regulatory environment explicitly, or else do so in passing.

In India, following the cyclone of 1971 (which cost the lives of 10,000), the government of the state of Orissa prepared a report outlining a series of measures to be taken to prepare for future cyclones, which later led to the Orissa Relief Code. This Code provides the basic framework for the implementation of emergency measures under all types of emergency

Oasis Development in the Mauritanian Sahara

The multi-functional *Associations de Gestion Participative de Développement des Oasis* (Participatory Oases Development Associations) set up under the OASIS II Project in Mauritania differ from many of the village committee-type institutions typically created on donor demand. For these associations to take on certain rural development responsibilities, the legal framework needed to be amended, and eventually a law (Law 016/98) was passed: without it, the associations would have to had to be constituted as cooperatives, and the responsibilities assigned to them in terms of the management of common property natural resources within their oases would not have had any legal backing. Or else, they would have had to be constituted as (development) associations, but then their handling of credit would not have had any legal backing.

The associations have contributed very successfully to building water infrastructure to counteract the effects of drought by recharging groundwater flows. A number of other, direct disaster risk mitigation activities have not figured very prominently until recently - plans are based on local priorities. But as income-generating activities are increasingly successful, this trend is changing, and local reforestation and sand dune fixation initiatives will become more effective at fighting drought and desertification.

Most importantly, though, social commitment to such activities has been "relocated" from a narrow tribal hamlet level to that of the entire oasis watershed. It is only at this level that DRM can become meaningful, and the associations thus hold major potential for sustainable NRM and preventive disaster risk management. According to their members, it is the first time in history that oasis inhabitants have come together to discuss NRM problems in an open, oasis-wide forum such as the associations; the federation of associations represents an even more important innovation in this respect, fostering the exchange of experiences and cross-fertilisation as well as the collaboration with government line agencies in regional-level DRM planning.

Source: Author's mission notes 2002

situations, as it details the specific responsibilities of the state's Special Relief Commissioner and its different line ministries. During the latest cyclone of 1999, planning responses were still hindered by a lack of updated and available vulnerability maps and databases on conditions on the coast.

A study on that catastrophic event (IMM n.d.) postulates that "whilst diversity of approaches may be beneficial, a lack of norms for designing specific interventions (such as Cash- or Food-For-Work (FFW) Programmes, agricultural input distribution, etc.) has led to some difficulties between NGOs and communities (…), (…) [and] the feasibility, viability and sustainability of some inputs is unclear. Perhaps a greater level of sharing of information and experience and the agreement of some standardisation/norms of interventions early in the programme would have assisted. There was consensus between the NGO staff that sharing and harmonisation of approaches (especially in areas such as FFW) would have been useful but would have to have been led by an outside agency such as DfID India if it was to be achieved. [Although the line ministries] had a regular presence in the coastal areas (…), most of them tended to have a narrow sectoral focus and this was to prove an obstacle to them preparing proposals for DFID support under a wider livelihoods umbrella in the aftermath of the (…) cyclone" (p34).

At the same time, the study reveals that "the Revenue Department and the Panchayati Raj institutions were also well represented and both take a much wider perspective. The Revenue Department was to prove crucial in spreading the warnings before the cyclone, and to participating in the planning and coordination of the relief and rehabilitation processes" (p28). Intersectoral ministries, departments and line agencies[6], or large and respected NGOs such as the Self Employed Women's Association (SEWA)[7] in Gujarat, India, are thus better placed and equipped to bring together the different government and non-government actors to deal with DRM challenges than, say, the Ministry of Agriculture or the line agencies in charge of NRM. Even some of the environmental protection agencies, often set up with donor money during the 1990s, are not necessarily adequate partners because of their selective approach, and, especially, their limited (political) 'clout' and outreach given a usually narrowly circumscribed legal remit and mandate.

7. The Promise of Decentralisation

Much has been written about decentralisation and the local civil society institutions-local governments interface, although the political character of the process, particularly in developing countries, has often been underestimated. "Decentralization and participation are both means of bringing a broader section of a given population into public decision-making processes – in a role of informing and/or controlling those processes" (Ribot, 1999: 1). The assumption is that greater participation in public decision making is a positive good in itself, and/or that it can improve efficiency, equity, and, especially important in the context of local institutions involved in DRM, development and resource management. By bringing government decision-making closer to the citizenry, decentralisation is widely believed to

[6] Such as, for example, where it exists, the Ministry of Local Government or Decentralisation, Directorate of Local Collectivities or Community Development, or Ministry of Rural Development.

[7] SEWA's post-disaster assistance (see Section 8 below) was very well received by its members due to several factors: first, it had very good knowledge of the area and its population, as it had been working in the affected areas for over ten years, and under normal circumstances had assisted its members with diverse programmes to enhance their food security, housing, and health and employment security. Second, it had experience in previous disasters and an extensive grass-roots network of women members throughout the most affected areas that made a rapid and effective disaster response highly feasible. Third, thanks to its solid reputation and institutional influence, SEWA rapidly managed to obtain tents, medical aid and supplies from specialised agencies. In fact, some agencies like UNICEF and WFP, and the government of the state of Gujarat, channelled relief aid through SEWA. The state government in particular gave SEWA cash doles, in addition to food packets and medical aid, to be passed on to affected members. Fourth, the decentralised and well coordinated nature of its relief distribution network enabled SEWA to provide adequate and timely assistance.

increase public sector accountability and therefore effectiveness, whilst contributing to the strengthening of a genuinely people-centred type of democratic culture.

Unwittingly, local population groups themselves often do their part to further increase their risk exposure, for example, through unsafe settlements on steep slopes, unsustainable deforestation leading to soil degradation, etc. This has been the unintended outcome of a lot of spontaneous household relocation and formal resettlement programmes promoted by government, in which newcomers lack the necessary local agro-ecological and farming systems knowledge to devise risk coping strategies suited to their novel surroundings. This constitutes all the more reason to inform local population groups about the risks they are exposed to, involving them as responsible actors in disaster prevention activities – usually, everyone has something to contribute to the reduction of disaster risk hazard and should be provided with the opportunity of doing so. It is a way of increasing the self-reliance of the population at risk and the sustainability of disaster prevention measures, all of which is more easily achieved at the decentralised, local government level, and below.

As Crook and Manor (1998) argue, bringing government closer to people increases efficiency by helping to "…tap the creativity and resources of local communities…". Decentralisation is believed to increase coordination, vertical linkages (discussed in the Section 8 below) and flexibility among administrative agencies and effectiveness in development and conservation planning and implementation. Where it is real, local government bureaucrats and technocrats are in a position to invest in DRM as they have been devolved the power and provided with sufficient funds to do so. It is however often difficult to use scarce public funds for environmental conservation - which contains elements useful to natural disaster prevention - given the unattractiveness of such activities in political terms; on the other hand, it is the aftermath of catastrophic events that provides opportunities to accumulate political capital through (donor-funded) infrastructure reconstruction.

In sum, if participatory, decentralisation can increase managerial and economic efficiency by: allowing local population groups who bear the costs of resource use decisions to make those decisions, rather than leaving them in the hands of outsiders or unaccountable locals, increasing efficiency by internalising economic, social and ecological costs and benefits; reducing administrative and management transaction costs via the proximity of local participants, access to local skills and local information; and using local knowledge and aspirations in project design, implementation, management and evaluation for better matching of actions to needs (adapted from Ribot 1999). Given that natural disasters rarely hit whole countries, but, rather hazard risk often varies even from one micro-region to another, it becomes essential to use local knowledge for effective prevention measures and to adapt these to local threats and vulnerabilities. Whereas this tends to happen within the confines of DRM project frameworks, (as we will see further below) this is far from being institutionalised in the public sector.

National disaster plans may mention mitigation and preparedness, but often lack detail and dedicated resources. Social, political and macroeconomic pressures can undermine the capacity of state authorities to reduce risks. Cash-strapped central governments may simply abdicate their responsibilities, leaving disaster management to local governments and NGOs, even though they (know they) lack the skills and resources to do so. In many parts of the world, fiscal and financial decentralisation have in fact not kept up with the pace of politico-administrative decentralisation. Local governments can thus often only count on a narrow tax base and are not usually devolved sufficient central funds to be able to afford "luxurious" expenses such as those committed to NRM, let alone *ex-ante* investments in DRM, which remain difficult to justify vis-à-vis local constituencies often angry at continuing budgetary cuts in the health and education[8] sectors, for example.

[8] Most national Poverty Reduction Strategy Papers (PRSP) call for cuts in government spending; e.g. in Mozambique, the (World Bank-led) prioritisation process has meant that DRM investment and education

Notwithstanding this state of affairs, initiatives have been taken in many regions, although it appears to have happened mostly through externally-financed projects and programmes. Where these keep on occurring repeatedly, contributing to the creation of a "handout syndrome", government post-disaster relief compensation programmes and international assistance may also act as 'incentives' for people to locate to disaster-prone areas (Charveriat, 2000). Certain more recently instituted local government arrangements serve, amongst other objectives, to contribute to alleviate the plight befalling the coffers of the local administration: beyond their role in cross-cultural exchange, twinning programmes between municipalities in the South and the North, for example, seek to also bring together all types of resources and experiences to that effect. They are often among the first channels to be appealed to in order to mobilise supplementary external funds to deal with emergencies such as those caused by natural disasters, and, often more importantly, play an important advocacy role vis-à-vis regional and national governments as well as, sometimes, the international community.

As intermediaries with more affluent urban or industrialised rural environments, often in Europe and in the USA, migrant associations have sometimes also been carrying out comparable functions. The impact of their activities tends to be more localised, at the intra-community level, not least because of the influence of clan-based and other kinship related social networks within them. Although this is yet another area in which research data are scarce, it appears that the commitment of such associations to play a prominent role in DRM depends partly on their degree of politicisation, both vis-à-vis their host countries and those of their origin. With diasporas acting as financiers and fund-raisers for the immediate rehabilitation needs of the households to whom they are connected through familial ties, the bulk of such assistance however tends to take place at the individual level, a phenomenon facilitated by the increasing international outreach of commercial money transfer services and the concomitant diversification of transfer options.

Unsurprisingly, the extent to which DRM measures are institutionalised and streamlined within local government systems depends largely on the regularity and intensity with which their constituencies keep being affected by extreme natural events. In many parts of the world, during periods of heavy rainfall for example, clogged up drains can have a dam effect preventing water from flowing freely, thus creating overflows and ultimately giving rise to flooding. In most of Latin America and the Caribbean, like in Jamaica, drains maintenance is carried out by government and local parish councils, which include the Parish Disaster Committees. These are local government bodies providing residents with evacuation procedures and are responsible for organising and directing local disaster preparedness and emergency relief operations in collaboration with other voluntary

7.1 Local Emergency Committees

In Costa Rica there exist more than 60 Local Emergency Committees, at the local administrative level of the 'canton', composed of the delegates of various institutions, with each member being assigned a role in case of an emergency; these bodies are integrated into Regional Committees.
The local committees aspire to be facilitators of community mobilisation and organisation. Only some few institutions are however represented permanently on the committees, which limits their possibilities of planification and action. In certain instances, activities are carried out such as the laying out the inventory of resources available to face emergencies and the establishing of several brigades (rescue, first aid, food distribution, transport, etc.). These activities lead to the drafting of Local or Regional Emergency Plans. The latter provide the population with information on where to go in case of an evacuation alarm, who will assist and be assisted, and which other activities are to be joined.

have lost out to health investment, making it unlikely that even essential repairs to dykes will be carried out before the next rainy season, if at all. In fact, the Mozambique PRSP has a section on "Reducing vulnerability to natural disaster" – but no money is allocated for this (IFRC 2003).

agencies and the government's emergency services (see also the box in this Section).

In coastal Asia where flood risk is severe, for example in Bangladesh and Cambodia, several projects have been built around the concept of specifically focusing on: people's perception of flood risk; the purpose and tools of community flood risk assessment; the strategies for community organisation; and resource mobilisation and capacity building. In these cases, the rationale for doing so can be traced back to the sequencing of DRM activities, with an emphasis on local scoping studies and capacity building that are to precede community interventions. In North-West China, extension mediation groups were to be used in a similar fashion. With the exception of flood-prone Mozambique, most of the relatively few examples of local government involvement in DRM in Sub-Saharan Africa, on the other hand, are not related to rapid onset phenomena such as floods; rather, they can be found in the Sahel, where the recurrent droughts and a strong associational culture coupled with advanced decentralisation have led to some degree of success in coping with these slow onset disasters.

In Mozambique, clients of the 'Fondo de Crédito Communitário' (FCC), which applies a village or community banking methodology, were facing unprecedented floods when a cyclone hit on February 22, 2000. The flooding, considered the worst in 50 years, caused more destruction to infrastructure than the whole civil war experienced by the country until the early 1990s. Most FCC clients were displaced for about two months and the emergency response phase took two more months after they returned to their homes. As a pilot test during the emergency, cash grants were offered directly to these households by another organisation; FCC clients had the option of using this grant to pay off their outstanding debt or restructure their loan in order to keep the grant. Of a total of 89 community banks targeted, only 3 chose to restructure. The community banks that chose to repay, paid the loans before the anticipated repayment date. Evaluations suggest that the cash grants did not have any negative impact on the credit culture of FCC clients since, first, the grants were offered by a different organisation, and second, most used the grant to repay their loans in order to obtain a new loan.

8. Community-Based Self-Help Approaches and Other Civil Society Initiatives

In collaboration with central and local governments, one of the first things that international project and programme assistance as well as international and local NGOs tend to do as a response to natural disaster is to initiate Food-For-Work (FFW) programmes. These seek to provide people in affected villages with interim food security and to facilitate the rehabilitation or construction of community assets such as water sources, irrigation facilities (canals and earthen check-dams), roads, and other civic infrastructure, economic and social (schools, health centres, etc.).

Community based self-help approaches to DRM are rare where there is widespread poverty, which makes such not immediately tangible investments almost a luxury, and rarely a priority. Investments in disaster mitigation and preparedness in particular tend to be less than optimal due to the public good nature of safety and the differences in levels of risks and risk perception among community members (Charveriat 2000). Whilst the latter is correlated, beyond basic human safety and security, with asset ownership, even where it would be desirable that line agencies support the coping strategies of the rural poor, the absence and fluidity of household typologies for DRM planning entails the risk of the government providing 'club goods'[9].

[9] Cornes and Sandler (1986) define a 'club good' as a good whose benefits are excludable but partially nonrival. Efficiency conditions can be established for charging a toll for such a good, hence the term 'toll' good is sometimes used. Smith (1997) finds that: "Viewed from a national government level the provision, subsidisation, or supervision of cattle dips to control tick-borne diseases may appear justified because of the externalities to other cattle owners. However, within a local community it may only be the wealthy households that own cattle and, they may also control local government. The remainder of the community may resent financing such activities from public funds, especially when these are raised from local taxation. Cattle dips thus assume more of the characteristics of a club good when viewed from the local perspective. In these circumstances one might expect

Drought response programmes, for example, should not distribute feed indiscriminately but target core breeding animals that can be circulated as part of customary solidarity schemes on a community-wide basis. Whereas some more in-depth information is available since the 1990s in particular on the household strategies adopted to face chronic or seasonal poverty, much less research has been done regarding hazard risk exposure and the endogenous responses thereto.

In North-West China, informal herder groups counteract risk and manage disaster situations by jointly preparing emergency plans and organising pasture movements should an emergency situation such as a snow storm occur (Yongong et al. 1999). "According to the herders, village leaders and production team leaders are the most active persons in dealing with the risk management (…). They even fulfil extension tasks, since there are no township and village extension line agencies (…). (…) In those townships which have no concentrated village settlement pattern, there is another non governmental informal organization locally called "zhangquan" situated between the production team and households. A "zhangquan" normally composes about 4-5 herder's households on average. In general, they are comprised of families or of neighboring families settled in the same area. Generally, these individuals collaborate as unofficially formed herders groups. Such groups jointly organize the grazing, they exchange their labor force, share information, protect animals from theft, address risk avoidance, organize meetings and make decisions together" (Yongong et al. 1999: 11).

Yongong et al. (1999) further find that during a disaster situation, the first action of herders is to contact the nearest households, which are normally the family relatives or herder group members for mutual assistance. The next step is to procure assistance from the community leaders, village leaders or production team leaders, who have contact with outside institutions. In cases of severe emergencies and damage, governmental relief actions from the upper levels have to be obtained through township governors, village leaders and production team leaders.

In the African Great Lakes Region, there exists a traditional local institution similar to the "zhangquan", the "nyumbakumi" (originally a Kiswahili word, meaning literally "ten houses"). The household heads of the houses of ten families elect what may be referred to as a "focal point", namely, someone to take up management responsibility over a broad range of issues affecting their everyday lives: first and foremost, the security concerns of humans, animals, and crops. The "nyumbakumi" are, in a way, the civil society equivalent to what at the lowest level of Rwanda's local government system are called the Secretaries in charge of Security, who are members of what is referred to as the Cell Executive Committee. Given the region's sad track record of social conflict and genocidal crime, these customary leaders have had much less to do with DRM than with the threat of armed groups attacking their constituencies. Depending on how the attitude governments take vis-à-vis these local institutions will evolve, however, their role holds much potential for the provision of support to community-driven DRM initiatives.

If we include 'organising practices' under the umbrella term of 'customary local institutions' in the agricultural sector, examples of elements in DRM become countless, having evolved from generation to generation as locality-specific responses to natural hazard risk.

To give but one illustration from what is perhaps the country worst affected anywhere in the world by flash floods, Bangladesh, there, traditional cropping patterns are normally closely adapted to seasonal flooding characteristics. Farmers have selected many rice varieties adapted to local micro-environments, considering flooding depth and duration as well as brackish water conditions. To take advantage of the fish spread over large areas of the flood plains during seasonal flooding, rural households also engage in casual fishing in artificial stock ponds next to their houses (Wood 1999). Floods have thus become part and parcel of rural livelihood strategies, and new ways continue to be found for better coping with their impact on food

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cattle owners to pay for their use although the local government may play some role in organising or monitoring the facility" (p5).

security and human welfare. The investigation of rural livelihood strategies through the Sustainable Livelihoods 'lens' can provide an important means of learning more about how to strengthen household resilience to cope with shocks.

A recent review of IFRC (2003) finds that: "…, the main weakness of community-based initiatives is their limited outreach. Scaling up to achieve greater impact needs the participation of government. Yet the state and its apparatus are often seen as part of the problem".

9. Horizontal and Vertical Institutional Interactions at Local-, Meso-, and Macro Levels

Disaster risk mitigation is a cyclical, dynamic process that requires continuous adjustments, decision making and interaction at different yet interrelated levels and among a variety of institutions and actors, including individuals, households, communities, non-governmental organizations, market institutions, and government (World Bank, 2001; Mileti, 1999). Local institutions may thus appear on the scene at various stages; regrettably, not many case studies exist on the role they play or may play during the different phases or throughout the DRM cycle.

Following the latest earthquake in Gujarat (India), the decentralised and well coordinated nature of its relief distribution network enabled SEWA to provide adequate and timely post-disaster assistance. A three tier mechanism, with teams working from the village through the district to the state level, was adopted by the institution to carry out its earthquake response and assistance programme. At the community and district level, teams ensured that the distribution of relief materials was adequate and timely. At the State level – which in smaller countries could be said to correspond to the national level – mechanisms were established to ensure coordination with concerned actors such as officials from the Government control room and external aid cell, donors, United Nations agencies, NGOs, and the private sector. SEWA, an already much respected and inspiring institution, thus gave further proof of its logistical capacity and technical competence.

Demand-driven (and often project-confined) processes of participation do not always meet the supply-driven (and often top-down) processes of decentralisation, and in some cases both are mostly externally driven. Even in historically relatively more inward-looking countries such as China, Yongong et al. (1999) find for the North-West that "since the establishment of the household responsibility system, herders' groups are even playing important roles in risk management actively mediating between household and production team level. Village leaders and production team leaders play important roles in risk management, poverty alleviation and extension as agents of the administrative line agencies at the community level. They hold both coordinating and management functions during disaster emergencies as well as during disaster prevention and recovering periods. [Yet,] although the Chinese institutional reform was launched in 1998, the community organizations have not yet been reached by the reform taking place at the higher institutional levels" (pp. 7, 18)[10].

Helping to provide better access to information and its flow between different levels of the administrative system, in Orissa (India), some NGOs ran Legal Aid Centres with the aim of sensitising cyclone-affected people about their legal rights to compensation by government.

[10] They continue in pointing out that: "Although village leaders are not officials in the administrative system, they are the contact persons of county animal husbandry bureau at the community level. At the same time, they also serve as contact persons to herders" (p16). "Most of the village leaders and production team leaders […] are socially well accepted persons who enjoy strong reputations in the community. They are important intermediaries since they have numerous institutional links with the township and higher level organizations. Moreover, they also maintain a wide social network of community actors and herders. The special social role played by community leaders and their important communication networks places them in key positions for carrying out horizontal and vertical coordination and management tasks related to risk prevention, disaster mitigation and emergencies" (p15).

The authors of the report "Learning Lessons from the Cyclone" (IMM n.d.) describe constraints experienced by responding to disaster through local government in Orissa, India as follows: "Within most governments there are real difficulties in achieving integration between sectors at the policy making level. In India integrated planning does occur to a certain degree at the district levels where district and block level planning brings the line ministries together in a more coordinated and harmonised way. DfID India did encourage a more geographical basis for planning but this did not emerge. Had this been taken forward with support to develop proposals on a district-by-district basis it may have created the conditions required for the desired level of sectoral integration. This in turn would have been a significant opportunity to build experience and awareness within government of a more integrated and holistic approach which would have provided longer-term benefits in the implementation of the Western Orissa Livelihoods Project" (p32).

10. Mapping Local Institutions in the Disaster Risk Mitigation Cycle

10.1 Preparedness: Insurance

In developing countries, it is difficult to establish the link between insurance and mitigation. The need for mitigation is high as many structures are completely uninsurable since they are not only located in settlements without basic services and/or in flood plains or other places with high probability of disaster occurrence. In addition, many of these structures are not built with solid materials and appropriate building standards, while their occupants often lack legal ownership title (World Bank 1999). The poor, in addition, do not have adequate financial incentives, let alone the means to take mitigation actions. Local governments, at the same time, lack the capacity to develop and enforce land use management plans and building standards to improve the conditions of these settlements.

Insurers wanting to provide insurance services to the poor face the challenge of setting up affordable rates which can also ensure the financial sustainability of the programme. In the end, even if a risk is considered insurable, it may not be profitable or sustainable, since, as Kunreuther (1998) puts it,"…it may be impossible to specify a rate for which there is sufficient demand and incoming revenue to cover the development, marketing, and claim costs of the insurance and still yield a net positive profit" (p27). This was precisely the experience of insurance companies in the USA that led them to declare flood risk as unmarketable. Without a mandatory requirement it is difficult to spread the risk among a large number of people in order to provide affordable insurance rates.

Under certain circumstances, even when risks are technically insurable, there may be alternative risk management products that are more adequate, such as savings and emergency funds. It may be feasible to provide disaster insurance services, but given high risk exposure levels, insurance premiums will most likely have to be set at a rate that only few can afford. In countries like Mexico, for instance, low coverage stems in part from the high premium prices that the insurance industry has to charge in zones that are highly prone to earthquakes (World Bank 1999). In low risk exposure areas, people do not have the incentive to buy insurance coverage, which further reduces the insurer's scope to bring down costs to a viable level through cross-subsidisation.

SEWA (see Section 6 above) provides comprehensive coverage to its members. SEWA started its integrated insurance programme in 1992, as a collaboration between SEWA, SEWA Bank and the nationalised insurance companies. Eventually, SEWA established its own insurance company, VimoSEWA, which according to the most recent figures, has insured about 90,000

Proshika

Proshika in Bangladesh has developed some relatively simple yet effective insurance mechanisms as part of its policies for risk and vulnerability management. These mechanisms include Proshika Savings Scheme (PSS) and Participatory Livestock Compensation Fund (PLCF). The PLCF was introduced in 1990, and it covers the loss caused by sudden death of farm animals and poultry, specifically cattle, goats and chickens. Each group of borrowers contributes 3 to 5 percent of the purchase value of the animals to this fund.

women and men in Gujarat. The current insurance programme offered by this institution consists of a group insurance package linked with other insurance companies. Specifically, the programme has three different insurance packages including life, accidental death, hospitalisation and maternity, and loss of housing and other assets. In terms of asset protection, SEWA provides coverage to members for losses related to natural disasters such as fire and flood, and man made disasters such as riots. Interestingly, the insurance scheme is linked with savings: women who want to become long-term members of the insurance scheme can deposit a certain amount in SEWA Bank and the annual premium is paid from the interest accrued from this deposit. Over the last five years, SEWA members have had to cope with one flood, two cyclones, three droughts, one epidemic and a catastrophic earthquake.

An approach seen as very promising are index and area-based contracts to insure natural disasters. Area-based index insurance is provided through contracts written against specific perils or events such as area yield loss, drought, or flood, defined and recorded at a regional level via, for example, local weather stations. The insurance is sold in standard units, with a standard contract or certificate for each unit sold (known as a Standard Unit Contract). All buyers are free to buy as many units of the insurance as they want, pay the same premium rate for a Standard Unit Contract in a given region, and receive the same indemnity if the insured event takes place. A good example of this type of insurance is area-based crop yield insurance. Usually, for example, in India, insurance is written against the average yield of a region, and a payment is made if the measured yield for the region falls below the pre-defined limit. Area-based yield insurance requires long and reliable series of area-yield data, a kind of data not usually available in many countries. Alternative indices such as rainfall and soil moisture can be used instead of historical area-yield data. The same borrowing groups used for savings and lending services can be used as conduit to sell area-based index insurance.

Disaster insurance, although not a mitigation strategy per se – as it redistributes rather than reduces losses – should promote the adoption of loss reduction measures. Pantoja (2002) finds that for the most part, MFIs have not managed to tap into the potential of insurance as an instrument to assist clients in their risk management efforts.

10.2 Mitigation: Microfinance institutions

Local MFIs can undertake a wide range of complementary activities to mitigate disaster risk, and thereby contribute to ensure that emergency responses become more community-based and sustainable (see Table 1 below). MFIs have an important role to play by promoting disaster risk and vulnerability assessments of their clients. Although further research is required, several factors seem to influence the effectiveness of MFIs during disasters. Those institutions with good leadership, sound financial management and accounting systems, and a certain level of disaster preparedness manage to respond faster and better to the disaster situation. Rapid access to cash, made available in the form of emergency funds or through efficient transfer of external funds, are particularly critical.

Having committed and easy to deploy field staff allows certain MFIs to carry out damage assessments rapidly and to monitor the situation closely. In turn, damage assessments and close monitoring of the situation enables these institutions to respond better to their clients' needs, and the assessments provide them later on with more accurate estimates of the funds needed for the recovery process. Another critical factor influencing the relative success of MFIs' assistance during disasters is the level of engagement with, and relative dependency on donors and international NGOs. Currently, involvement of microfinance in disaster risk management in many countries remains highly vulnerable to the ebbs and flows of donor funding. Given ongoing relationships, donors and governments have typically found it practical to channel emergency and recovery funds through MFIs. In fact, the major source of funds for the products and services offered by MFIs in post-disaster situations has been grants from donors. Setting up new MFIs as a post-disaster response, however, may not be effective

because these institutions would lack experience, and knowledge of the area and of the affected households.

Most MFIs today would not consider debt forgiveness as part of their post-disaster efforts. Past experiences indicate that, even though debt forgiveness brought immediate relief to affected borrowers, it undermined years of work of the microfinance sector aimed at fighting the "handout syndrome" and creating a culture of repayment and financial discipline. At the same time, debt forgiveness may increase the losses suffered by the institutions and exacerbate their liquidity constraints, while making them more dependent on donors or government support. Although context-specific, the long-term negative consequences on the impact and sustainability of the microfinance institution may often probably be higher than the immediate benefits enjoyed by borrowers.

In Nicaragua, the 'Asociación de Consultores para el Desarrollo de la Pequeña, Mediana y Micro-Empresa' (ACODEP), one of the largest MFIs in the country, has been learning from the experience of hurricane Mitch in 1998 and more recent disasters. The association has developed a 'Disaster Prevention Plan' whose objectives are to identify, prepare for and mitigate natural and manmade disasters in order to protect the institution, its clients and staff from possible losses. The Plan is rather comprehensive, including measures to protect the institution's staff, portfolio, facilities, equipment and information systems and records, as well as measures to better respond to the many disasters that affect Nicaragua. The Plan recognises that priority should be given to assisting clients in finding medical aid, contacting relief organisations and joining FFW programmes, but, in keeping with the sector's orthodox 'best practices', it does not consider that the institution should provide relief directly.

ACODEP's plan is interesting in that it further outlines a basic, flexible credit policy for disaster emergency and recovery, and the creation of a disaster loan fund, to help the association prepare for possible cash flow demands and control credit and liquidity risks. Specifically, the plan establishes that the institution will, *inter alia*, stop collecting payments during the emergency period; allow clients to withdraw their deposits (which are normally used as collateral); stop lending (short-term loans of 1 or 2 months, with special interest rates, would be granted in cases of severe emergencies for household needs such as food or medicines); and, on the basis of a field damage assessment, prepare loan restructuring and refinancing plans, considering two types of situations: restructuring loans where clients lose their housing but productive assets are not affected and/or they are severely injured, and refinancing loans when productive assets are lost but clients escaped the disaster unharmed (Pantoja 2002). Most disaster or emergency loan funds have at least two levels of terms and conditions, as money needs to be transferred from them to MFIs and from there to clients.

The *Palli Karma Sahayak Foundation*

Albeit specific to the context of Bangladesh and its characteristics, the 'disaster management fund' provided by the *Palli Karma Sahayak Foundation* (PKSF) is an interesting example of a well regarded apex organisation providing low cost funds to poverty-oriented MFIs, and helping to set norms and standards for the sector. Because of its relatively good performance since it was established by the government in 1990, PKSF has increasingly received donor funds. In 2000, PKSF had about 172 partner organisations (POs), which were providing microfinance services to 1.8 million poor people. After the 1998 floods in Bangladesh, many partner organisations turned to PKSF for badly needed funds since it is the premier refinancing body for most of them. PKSF met the challenge by rapidly disbursing close to 1 billion *taka*, a considerable amount of its regular funds. PKSF also set apart a relatively small amount (10 million *taka* or US $200,000) as a grant contribution to establish a more permanent 'disaster management fund.' The POs are expected to help increase the size of the fund by contributing a portion of their income from service charges. In future, POs will be able to access the fund when they consider it necessary for localised disasters affecting a small number of clients, and not just when a national disaster is officially declared. Simultaneously, PKSF approached the government and donors to promote the involvement of its POs in the flood response and recovery process (Pantoja 2002).

In Bangladesh, the Grameen Bank has set up a comprehensive system to mitigate possible liquidity shortages after a disaster, based on three mechanisms operating at different levels: the group level, the centre level and the institutional level. Each lending group has to create an emergency fund towards which each member pays 5 percent of each loan; in each of the 65,000 centres, borrowers have to contribute approximately 25 percent of the total interest they owe into a centre disaster fund; and the Grameen Bank keeps US $100 m as a disaster fund.

Table 1

Disaster Risk Management strategies of Microfinance Institutions (MFIs) (source: Pantoja 2002)			
	Preparedness	**Reduction / mitigation and risk transfer**	**Response (coping) and recovery**
(1) Systematic identification, reduction and transfer of disaster risks faced by the MFI itself			
	- Identification and assessment of disaster risk and vulnerability of staff, facilities, equipment, and information systems and records - Preparation of Institutional Disaster Response Plan - Train staff on disaster emergency and damage assessment - Agree with donors and government agencies on disaster response role	- Relocation and/or retrofitting of vulnerable facilities, equipment, and information systems - Protection of financial and other historical records - Purchase of own insurance and reinsurance - Help staff retrofit their housing / find safer locations	- Conduct damage and need assessments of staff and affected branches - Assist affected staff
(2) Integration of disaster risk into overall risk management system			
Institutional risks	- Ensure balance between humanitarian assistance and financial health - Develop sound management information systems	- Strengthen financial viability of products and services	- Minimise reputation risk by providing adequate assistance to clients - Ensure balance between humanitarian assistance and financial health
Operational risks	- Prepare Operational Disaster Response Plan - Monitor portfolio quality - Maintain sound internal control systems - Introduce flexibility into lending methodology	- Establish clear refinancing / debt restructuring policies and savings withdrawals limits, if applicable - Diversify portfolio geographically and sectorally	- Maintain flow of credit open and allow debt restructuring under pre-established terms - Monitor security risks
Financial management risks	- Estimate probable cash flow needs - Ensure availability of funds through disaster fund, or rapid access to commercial or donor funds - Mobilise savings	- Ensure availability of funds through disaster fund, or rapid access to commercial or donor funds - Mobilise savings - Avoid over-reliance on savings to fund loans	- Monitor efficiency levels (costs per unit per output) - Avoid subsidised interest rates
(3) Development of products and services to assist clients in disaster risk management			
	- Promote assessment of clients' disaster risk exposure - Promote training of clients on disaster emergency response - Mobilise savings - Raise disaster awareness	- Promote sound land use and natural resource management - Provide products for housing improvements and construction in safer locations - Offer savings and insurance products	- Maintain flow of credit open and allow debt restructuring under pre-established terms - Promote mitigation practices and technologies

In the same country and in a manner similar to ACODEP, although on a smaller scale, the Association for Social Advancement (ASA) has established a permanent disaster loan product to offer to their clients after a disaster: loans range from 500 to 1,000 *taka* each, are interest

free, and must be paid back within two years through 100 equal weekly instalments (Rahman 1999).

Faced by natural disasters, many MFIs have consistently managed to maintain discipline in their existing projects and sometimes even been able to use these events as opportunities to strengthen the sector. In several cases, they have been found to come together in an informal manner to avoid the impact of adverse decisions such as government directives to forgive debts - a relief strategy often resorted to in the past. Thus, "their efforts would be supported greatly if donors and governments agree on disaster response and recovery policies for the microfinance sector before a disaster occurs" (Pantoja, 2002: 31). Vulnerabilities will change over time as MFIs evolve and expand, and their portfolio changes.

Governments and donors have an important role to play in promoting the adoption of DRM strategies in the microfinance sector, and evaluate their results, in order to maintain appropriate policies and procedures. MFIs can carry out important functions in preparedness, reduction or mitigation and risk transfer, and response (coping) and recovery (see Table 1 and the next Section below). Unfortunately, they have been doing this much less than would be desirable, so that these examples are drawn from relatively few practical experiences.

Similar to the rescheduling of compulsory savings, loan rescheduling may help clients and protect the MFI by allowing clients to repay loans in a flexible manner. By giving affected clients the option to delay repayments on their loans for a specified time, MFIs can counteract the probability of defaults and reduce financial losses (Nagarajan and Brown 2000). Empirical evidence indicates that disaster-stricken borrowers do not necessarily insist on debt forgiveness, and are willing to accept assistance to improve their liquidity through, for instance, cash or in-kind relief loans, and access to savings. Emergency loans might be a good mechanism to help affected households, and other demand-based financial services, such as channelling remittances, which can be offered to everybody across the affected area and which would ease cash flow problems of clients and non-clients.

The provision of technical supervision is an unavoidable requirement of a housing programme if one of the objectives is to improve building standards and practices that take disaster risk reduction into consideration. Experienced MFIs do not recommend using the solidarity group lending methodology for home improvement loans.

11. Elements of a Typology of Successful Local Institutions in Disaster Risk Mitigation

At the institutional level, disaster risk exposure – and eventually disaster impact – is related to the size, age and level of financial and operational sustainability of a local organisation. Yet, the picture emerging from the literature is too patchy and thin to allow more conjectures about what a "typical" local institution that is successful at DRM looks like, mostly, because the vast heterogeneity of actors involved defies such extrapolative attempts. Common traits are definitely transparency and flexibility, in technical, administrative and financial terms (see the Box in this Section).

One area where some work has been carried out is in the realm of MFIs. Pantoja (2002) suggests that, at a general level, the potential of microfinance institutions to deal with their own disaster risk exposure and to assist their clients in disaster risk management will depend on sector and institutional level factors. At the level of individual institutions, these factors include the degree of formality or informality, the dependence on donor or government funds, the level of financial and operational sustainability, and the decision to offer subsidised credit for poverty alleviation. Overall, small, locally based MFIs are thus likely to be more vulnerable to natural disasters or fluctuations in agricultural yields than larger, more geographically dispersed institutions (World Bank 2000). Pantoja (2002) concludes that although it is likely that a microfinance institution which is a good micro lender and good in

micro savings will have more alternatives at hand to mainstream disaster risk management strategies to protect its clients, its portfolio and its facilities, convincing evidence has not yet been collected.

Local institutions including very poor members or reaching very poor clients will tend to be more vulnerable to disasters. The client profile, at the same time, is affected by the lending methodology of the organisation, which in turn may affect financial viability of its programmes. Mostly, a trade off exists between reaching poorer groups and financial sustainability. In this respect, some have questioned the financial viability of village banking institutions, while others have found these institutions to be more vulnerable than solidarity group or individual lending institutions due to their focus on rural areas and on delivering small loans to very poor clients. Typically, for instance, the younger and/or smaller institutions have a more difficult time in responding to disasters, in operating during the emergency period, and in implementing effective disaster risk preparedness and mitigation strategies.

Flexibility at work (1): ACK-MDO, Kenya

In the Marsabit Drought Relief Project (implemented by the Anglican Church of Kenya-Marsabit Development Office, funded by DfID), the ability to switch from animal destocking to restocking in response to changing needs was critical. One of the lessons of the intervention was the importance of donor flexibility: without the need for a second proposal, DFID was able to approve the implementing agency's switch from destocking to restocking within two weeks.

Flexibility at work (2): Pro-Mujer, Nicaragua

Pro-Mujer is a medium-sized institution in Nicaragua with direct international links providing financial and non-financial services such as basic health services and technical assistance in business skills to about 5,800 women. After hurricane Mitch devastated the region in October 1998, it assumed a relief agency role as, for about two weeks, the focal centres of Pro-Mujer became relief facilities. Pro-Mujer staff temporarily stopped credit and training operations, postponed disbursements to new associations, and used training centres to counsel clients and distribute food donations. Moreover, it quickly managed to deploy trainers who could teach clients and their families on hygienic strategies and preventive health measures for a post-disaster situation. Pro-Mujer staff also worked directly with clients to determine their needs and reassure them that the programme would continue, and brought in a consultant to conduct workshops on emotional recovery (Pantoja 2002).

In the case of MFIs, the characteristics described above underline another important factor: outreach, which influences external risks related to clients' socio-economic profile, competition environment, and the physical environment where the institution delivers its services and its clients live. The scale or breadth of outreach will also influence risk exposure of the institution depending on whether its clients tend to concentrate in economic sectors and activities that are highly exposed to disaster risk. As experience suggests, geographical diversification through a wide network allows MFIs to cross-subsidise (through risk-pooling) disaster risk management activities. On the other hand, geographical dispersion may increase risk exposure of an institution if most of its network is located in remote, disadvantaged areas that under normal circumstances represent higher operational costs.

When MFIs link credit directly with nonfinancial services such as training in disaster preparedness, to borrowers these costs are very rarely recovered by revenues. Provision of auxiliary services such as disaster preparedness training tends to be negatively correlated with financial sustainability, which is vital for any microfinance institution to face future disasters and to develop a viable disaster risk management strategy. In practice, many NGOs in the process of becoming formal financial institutions have chosen to transfer the majority of their microfinance portfolio to the formal institution they have created, while keeping the original NGO structure to address credit needs of the poorer clients and implement developmental activities.

12. How to Facilitate Institutional Linkages and foster a Collaborative Approach

The recent hurricane Mitch In Latin America (which is said to have set back the development of Honduras by 20 years) and Orissa cyclone in South Asia have had major impacts on the countries' respective institutional environments and organisational set-ups. These regulate the collaboration among civil society and government stakeholders, and, ideally, should seek to exploit the comparative advantages of both. "Experience in Orissa and in other parts of India shows that NGO focus on sector-specific issues such as livelihood, community organisation, community asset creation, women group formation, etc. accelerates social and economic recovery after disasters. Such initiatives meaningfully supplement larger infrastructure reconstruction initiatives of the government" (Behera, 2002: 3). The latter has set up the Orissa State Disaster Mitigation Authority (OSDMA), a registered society that took on a major coordination role from January 2000, drafting a "Community Contingency Plan for Floods and Cyclones, Orissa".

OSDMA and the UNDMT (United Nations Disaster Management Team) initiated NGO coordination meetings at the State level (through the State Level Coordination Committee Meetings) whilst coordination at the District (through monthly District Level Co-ordination Committees), block and Gram Panchayat (local government) levels was achieved through both coordination meetings and by assigning "lead agency" status to a main NGO in each Gram Panchayat. Their function was to avoid duplication of effort and to facilitate co-operation. Following the establishment of a livelihoods database by the UN, 38 areas of duplication of effort were nonetheless identified and 150 cases of unrepresented Gram Panchayats discovered; all inputs into each village in the affected areas have been entered into an extensive database. About 40 local and international NGOs set up an emergency response network called Orissa Disaster Mitigation Mission (ODMM) to coordinate their post-cyclone relief and rehabilitation work, establishing a Volunteers Hub at the state capital and running a volunteers base camp.

It appears that the "tapping" of social (or 'societal') capital and of synergies between communities and local governments is rarely achieved in practice, as institutional configurations and professional mentalities may not necessarily be conducive in this respect. In North-West China, according to Yongong et al. (1999), community leaders such as township, village and production team leaders, and herders' households have played insufficient and passive roles and functions in the different stages of pastoral risk management. Yet, "village/community leaders and production team leaders have (…) the trust of local community members which allow them to play a key role as intermediaries between herders and the extension service. However, the visits of village leaders to households are normally only for collecting animal taxes, arranging the children's school enrolment and forwarding the policy instructions to herders. Their role of assisting the extension service should, therefore, be reconsidered and reworked as part of a risk management strategy in order to gain value added from their comparative strengths and good connections" (Yongong et al., 1999: 17).

The real functions of herder's groups seem to be overlooked by the county-level extension agents, who normally have no direct contact with them, but rather contact village leaders and production team leaders when they visit a community. The "zhangquan" traditional groups (see Section 8.2 above) tend to include "innovative herders or the village veterinarians who have more contact with outside organizations and community leaders. (p11). On the other hand, conversely, governmental organisations, such as Provincial Department of Animal Husbandry, Prefecture Animal Husbandry Bureau and County Animal Husbandry Bureau, Poverty Alleviation Bureau, Civil Affairs Office and the county government continue to play dominant roles in risk avoidance, risk relief and recovery procedures. Thus, whilst emergencies represent good opportunities for overcoming a series of institutional constraints that may be hampering collaboration at the local level, studies may point out the importance of collaborative efforts and coordination, especially where no disaster-specific body such as OSDMA exists.

13. Impact of the Wider Local Institutional Environment

If we take the wider institutional environment to include traditional communities' believe systems and cosmology, it is important to mention that to differing degrees and in various forms, natural disasters are "assimilated" in reference to the supernatural. In Western culture and epistemology, this is commonly called "fatalism" and "fatalistic" interpretations of such events postulate that they are acts of God. Similarly, they may also be punishments for not abiding by the moral code of conduct enshrined in religious norms, and certain sacred scriptures such as, for example, the holy Qu'ran, contain several NRM recommendations and "taboos" (Messer 1993).

On the other hand, a different type of "mystification" or myth-making may occur when traditional communities are confronted, usually by government, with high tech solutions put forward by non-local experts. When the latter are trained in the natural sciences exclusively and do not possess any background in the social sciences, there is the danger of perpetrating a kind of technical assistance that may not prove sustainable; in particular, it may only lead to isolated and temporary results in that local people's sense of helplessness without external resources is reinforced whilst the shock resilience of households' existing coping strategies is further undermined[11]. This type of phenomenon has been documented as far back as in the early 1980s for the case of certain indigenous settlements in Central America such as those of the Indios in Peru's flood-prone Rímac river valley (Medina 1994). A contributing factor there has also been the perceived financial and legal complexity of the DRM project frameworks, typical probably of the sometimes convoluted integrated rural development projects of the time.

At the macro-level, the institutional environment of official development assistance has until recently at best had a mixed impact on the institutionalisation of DRM. Although "pure" natural disasters tend to cause more casualties and damage than man-made or so-called complex emergencies (SIDA 1996), it is the latter that have dominated humanitarian budget priorities and funding, leaving DRM activities in natural disaster-prone countries largely underfunded. WFP (1998) drew as the first out of six lessons emerging from the past two decades of development assistance that "institutional divisions between humanitarian and development programmes result in the neglect of prevention activities" (p6). At the same time, crisis situations are often the (very visible) yardsticks by which government capabilities are judged by the general public as they subsequently become crucial, fiery items on the agenda of political campaigns and election rallies.

Documents outlining agricultural development policies should possibly include sections on emergency food aid distribution to avoid incidents like the one that occurred in Bangladesh, where a large organisation was accused of taking advantage of the 1998 floods to push in hybrids of rice as part of the relief packages (Pantoja 2002).

Within the formal institutional environment, the history of relationships between the polity, the government bureaucracy and the citizenry, and, in particular, organised civil society, is of particular importance for DRM. Prevailing attitudes and informal codes of conduct may or may not be conducive to mutual respect and reciprocal learning, a precondition to the fruitful utilisation of respective comparative advantages. Some NGOs feel that despite the typically greater convergence of views between government and civil society on pressing matters such as disasters, GO-NGO partnership in the true sense is neither feasible nor desirable: it may affect the important watchdog role of NGOs which counterbalances state power and keeps in place a system of "reality checks" and balances as envisaged under the concept of 'good governance'. Luckily, the NGO sector is heterogeneous enough to include a myriad of different types of

[11] This is symptomatic of most DRM projects implemented until the 1990s, which favoured a technocratic top-down approach over a participatory focus on decreasing socio-economic vulnerability at household level.

organisations; even in progressive India, for example, it is often thought that collaboration with government and advocacy vis-à-vis that same government cannot and should not go together.

Fighting drought in Morocco: Livestock and Pasture Development in the Eastern Region

In 1986 Morocco's eastern region was withering from several consecutive years of drought, rangelands had been degraded and areas around water points overgrazed. Like elsewhere in North Africa, efforts to protect pastoralists' livelihoods and environment had not been able to find a suitable delivery structure that took account of the complex social organisation of tribes, lineages and kinship groups. The IFAD-funded 'Livestock and Pasture Development Project in the Eastern Region' responded to this challenge; in order to build the consensus needed for group discipline in the use of available rangelands, the Project organises its activities around the formation of pastoralist cooperatives built on traditional ethnic lineages, a set up which gives modern democratic and legally sanctioned existence to tribal structures and ancestral rights to rangeland use. It promotes an array of hitherto unknown range management practices, and convinces herders, through adequate financial incentives, to sacrifice immediate economic gains for the sake of increasing the long-term productivity of their rangeland by reversing the trends of serious land degradation.

Several years of discussions and negotiations were necessary for the cooperatives to take form and decide on mutually agreed limits for their territories. Herders normally entitled to graze their flocks on lands that were rested for two years received collective compensation in the form of barley or concentrated feed. This had a strong psychological impact on herders: the offer of compensation was proof that the government had acknowledged their right to these rangelands. The cooperatives rather quickly assumed an active role, notably in the management of the "land resting" exercise. With guidance from the Project team, they created reserves — over various two-year periods — covering a total of 450 000 hectares of once degraded rangelands. Herders now willingly pay a grazing fee during the three or four months following the opening of each new reserve. This attitude reflects a sea change from herders' previous stance, since grass had traditionally been considered a "gift from God". Plant cover has been re-established, and fodder production increased fivefold, the value of the latter exceeding the financial costs associated with the two year land resting by over 50%.

The cooperatives formed include virtually all sedentary, semi-nomadic and nomadic herders in a vast region covering over three million hectares. The significance of these achievements must be seen against the background of failed past efforts to establish cooperatives, which tended to be regarded as an unwelcome form of State intervention. But the major achievement lies in behavioural change, as land withdrawal, animal carrying regulations and the levying of user fees constitute nothing less than a revolution of a centuries-old practice inherited from ancestors. These new disciplines were not only unanimously accepted, but are also by and large respected — and this without expensive fencing of the rested land, which would not have been affordable on such a large scale of intervention. While the introduction of the cooperative concept has brought with it a good measure of modern management practices, representation and decision-making processes in the ethnic lineage cooperatives do not follow modern democratic principles, but traditional hierarchical structures, which make for an uncertain long-term outlook for the neediest herders.

Lessons Learned

- The successful introduction of any large-scale grazing rotation system depends on a good understanding of the circumstances influencing access to rangelands and of the complex grazing patterns. In this case, it was assumed that cooperatives formed along ethnic lines would have control over specific areas, thus allowing coordination for systematic grazing. However, it was discovered that pastures in the project area had complex and multiple user rights.
- The power of traditional hierarchies should not be underestimated.
- The role of the state in organization and implementation should be less important than that of the beneficiaries themselves.
- Appropriate land tenure legislation is crucial to range management.
- Targeting the poorest requires careful design of project activities; associations tend to be dominated by richer members and institutions are reluctant to provide credit where they see a greater risk of default.

Source: various IFAD documents

14. Some Differences Related to Types of Disaster

In areas of similar population densities, the number of victims may be expected to be larger for disasters of geological origin, such as earthquakes and volcanic eruptions, than for those of hydro-meteorological origin, such as floods, hurricanes, cyclones and droughts (ECLAC 2002). Yet, the latter tend to affect larger geographical areas, while those of geological origin tend to have more localised effects. Earthquakes tend to cause more destruction of capital stock in physical and social infrastructure than floods and droughts, which tend to cause more production and indirect losses. When an earthquake causes floods and landslides, production and indirect losses can also be significant. Most disaster risk phenomena take place in a sudden manner (earthquakes, floods), although there are cases where occurrence may be slow, like in the case of droughts. Droughts are different because they are intrinsic to the natural variability of almost all climates.

13.1 RELSAT – A participatory early-warning system for floods

In 1999 the European Union introduced flood early-warning systems in several Central American countries. In higher areas or upper river reaches, water levels are continuously measured and monitored, and this information is then transmitted by radio or other means to a local base for evaluation. The latter assesses risk based on the data received, and can predict whether, when and where flooding may take place. In the event, the staff of the local base can then alert the local institutions in charge of carrying out specific tasks as laid out in the local disaster preparedness plan. The system requirements for running RELSAT are appropriate technical equipment, especially measuring instruments and means of communication, trained operators and test runs. Thus, relative intensive maintenance is required, as well as permanent and reliable coordination and funding.

Source: Relsat n.d.

Of all the natural hazards capable of producing a disaster, a flood is by far the most common in causing loss of life, human suffering, inconvenience and widespread damage to buildings, structures, crops and infrastructure. Importantly, natural hazards are often interrelated, and the occurrence of a given phenomenon may give way to other threatening phenomena in a series of events. For example, seismic activity can create landslides; landslides can create floods, etc.; hurricanes can bring about heavy winds and rains, floods and landslides. Important variables to consider are thus predictability and geographical circumference. Of course, close to an active volcano, for instance, it is easier to convince people to invest in disaster prevention (this has been the experience, e.g., near the Tungurahua volcano in Ecuador). While earthquakes cannot be accurately predicted, extreme weather events can. Whereas short-term flood warnings can be given using rainfall and river-level monitoring, long-term weather prediction remains an inexact art.

In the case of floods inland along rivers and watersheds, the predictability of these events has been much increased following the adoption of technological innovations such as early-warning systems. In a number of Central American countries, one such flood-specific system, RELSAT, was set up (see the Box in this Section). In Honduras, the local RELSAT committee has since promoted dyke construction and reforestation in the middle and upper valley of Masica, and widened evacuation concerns to take into account livestock and not just human beings. Although such ‘hardware’ is expensive to install, it acted as an important demonstration of political will and as an incentive for setting up and participating actively in the accompanying ‘software’ (the committee), which achieved much in terms of DRM.

Some other communities had already devised their own early warning system. In Guatemala, towns along the Coyolate River got together in the mid-1990s to map flood-hazard zones, build shelters and monitor river levels. An alarm, triggered by rainfall gauges in the mountains, alerts communities to check river flows and, if necessary, to evacuate. Although 300 people died in floods along other rivers during hurricane Mitch, there was no loss of life along the Coyolate River.

15. Contribution of the Natural Sciences to DRM and Interdisciplinarity in NRM

Because of progress achieved in the natural sciences, the indirect contribution of environmental services to DRM could be proven and is now beyond all reasonable doubt. Carbon dioxide sequestration, biodiversity conservation and water flow regulation, in addition to the sustainable use of forest resources, timber and non-timber products, may provide alternatives to deforestation that make sense in both economic and environmental terms. Natural resources and environmental management can have a significant influence on natural hazard risks. For instance, the degradation of mangroves, reefs and natural beaches affects storm surge and wave risk, and deforestation and unsustainable agricultural practices on mountain slopes lead to increases in flood and landslide risk, locally and downstream. Interactions between geological, atmospheric, biological, and human systems are very complicated, and highly location-dependent. Possibly, not much up-to-date literature exists containing more detailed general discussions of the interactions between the natural environment and hazard risk – a recent World Bank document, for example (World Bank 2002), quotes work from 1991 as a reference (OAS 1991).

Natural resource management (NRM) is important for natural hazard risk reduction, at least in some places and for some hazards, and is more than just another piece of the disaster risk mitigation jigsaw. Improvements in the management of soils, forests, coastal zones, and other natural systems cannot be treated as another distinct domain or area of expertise that can be partitioned off and dealt with separately in the way that this is being done with hazard forecasting and warning, or land use planning and structural (engineering) design. Even more than in those domains, risk reduction must be integrated into day-to-day management (World Bank 2002). The natural sciences have much value to add to the way this may occur by continuing to improve upon best NRM practices, which must above all be cost-effective and lead to improved livelihood outcomes, as well as easy to integrate into the farm and off-farm strategies of rural households and their communities. Of course, the contribution of the natural sciences to increasing the role of local institutions in disaster risk mitigation and management depends on the type of natural disaster we are talking about.

For the past half-century, the state system of NRM has been penetrating the traditional or indigenous environmental cognisance system through projects. "The state system of knowledge is based on a scientific accumulation, organization, and interpretation of data, and management problems are resolved in a technical, ahistorical framework. This system of management is bureaucratic, (…), hierarchically organized and vertically compartmentalized. The environment is reduced to conceptually discreet components which are managed separately. (…) As these separate management units take on a life of their own, management objectives diverge and become focused on specialized objectives" (Usher, 1986: 71). Yet, DRM objectives are not "specialised" but cross-cutting, as hazard risk results from the complex interaction of many different elements within ecosystems.

The outcome of a given DRM project is also the consequence of a negotiation process, visible and, mostly, invisible, engaging the technical-scientific reasoning of development professionals, with an urban-based educational background, and the "holistic" reasoning of the project "beneficiaries". Redclift (1992, in Campbell and Salagrama 2000) reminds us that although sold as being 'people-centred', "sustainable development is usually discussed without reference to epistemological issues. It is assumed that the system of acquiring knowledge in the North, through the application of scientific principles, is a universal epistemology. Anything less than the 'scientific knowledge' hardly deserves our attention. Such a view, rooted as it is in ignorance of the way we ourselves think, as well as of other cultures' epistemology, is less than fruitful" (34).

'Culturally-sensitive' and interdisciplinary initiatives tend to until present have been *ad hoc* and disaster-specific, sometimes remarkably well orchestrated, but, often highly localised and constrained by structural institutional dissonance and a lack of (interest in) coordination. Of course, the mechanisms set up to coordinate inter-disciplinary work, such as inter-organisational networks of disaster prevention and reduction, have only been as good as the actual response they have been able to bring about, and these are best illustrated through concrete examples (see the box in this Section). Possibly because of the need to tackle the much higher physical and human capital losses in urban environments, the 'DRM discipline' appears to be dominated by experts with urban planning backgrounds.

14.1 SEWA (see also Section 6 above)
Some large organisations have been able to tackle the challenge of interdisciplinary reactions to disaster very well. Many members of SEWA were affected when a devastating earthquake hit the Indian state of Gujarat in January 26, 2001. Even before the earthquake relief effort ended, SEWA had already prepared a long-term disaster rehabilitation programme. Since the earthquake-affected districts were experiencing a second consecutive drought year when the earthquake hit, the challenge for SEWA was to ensure that the rehabilitation programme had a multi-hazard perspective covering seismic and cyclone resistant measures as well as drought mitigation measures, while continuing to provide drought relief. Similar to the earthquake relief operation, the rehabilitation programme has been implemented through SEWA's family of network organisations: district associations and federations have been in charge of the livelihood security programme, the *Mahila* Housing Trust has implemented the shelter restoration programme, and the Health and Child Care Cooperatives and the SEWA Academy have provided the necessary social protection services. The disaster rehabilitation programme has managed to take advantage of several opportunities to integrate drought and earthquake mitigation measures into the reconstruction and rural development process. For example, increased availability of water has been provided by adding roof rain water harvesting structures to the new housing constructed through the shelter restoration programme. SEWA architects and engineers designed the 5,000 liter water tanks to ensure that adequate seismic–resistant standards were followed. Simultaneously, to provide drought relief, a fodder security programme including dry fodder and cattle feed has also been established, and a housing shelter restoration programme following a participatory, owner-driven approach, was implemented. Moreover, the programme was developed in close partnership with the State government, and within the framework of the state's housing policy established for the earthquake reconstruction period. Given the magnitude of the task at hand – SEWA estimated that approximately 28,000 families in 161 villages required its assistance in housing restoration – the programme was designed in phases.

16. Household Level Poverty Constraints to DRM

Experience indicates that disaster risk reduction is best attained implementing a diverse series of activities that combines more formal development activities with more traditional risk reduction activities at the household level. Usually when the former are undertaken in disaster-prone areas they are however not specifically linked to preventing disasters or improving the capacity of households to cope with shocks. Many development projects in marginal areas have generic poverty alleviation objectives, which might or might not help households cope with repeated disasters. More often than not, each time a shock or disaster occurs, development gains accrued are wiped out and households or even whole communities find themselves starting all over again. The link and causal interconnectedness between poverty and vulnerability is well recognised; in Central America, for example, Sánchez del Valle (2000) finds that there are a larger number of human casualties caused by natural disasters not where these strike more often, but where there exists more widespread poverty and marginalisation.

Natural disasters constitute a multifaceted shock to livelihoods, characterised by three interrelated categories of direct and indirect losses and damages that households and local institutions may experience, combined or in isolation (adapted from Charveriat, 2000):

- physical integrity: fatalities, injuries, illnesses, psychological distress, etc.;
- asset integrity: productive resources, housing, etc.; and
- income sources: impacts on the productivity of labour due to death of income-earning members, food insecurity, health problems, etc.

Many of the poor and the near poor suffer from both higher disaster risk exposure and lower risk bearing capacity than other population groups. Poor individuals and households attempt to manage risks in several formal and informal ways. Their capacity to do so and the choice of risk management mechanism will depend on the characteristics of the risks – their sources, correlation, frequency, and intensity, as well as the alternatives at hand. Poverty constraints make individuals unable or unwilling to engage in high risk and/or high return activities, which limits their ability to manage risks and to escape poverty (World Bank 2001).

At the same time, the poor cannot usually avoid disaster risk given their limited choices when deciding where to live and how to sustain themselves there. Along with economic crises and civil conflicts, natural disasters are among the main sources of aggregate shocks to society, and often lead to dramatic increases in poverty incidence, further aggravating hazard risk.

Coping with the psychological dimensions of DRM

After the October 1999 cyclone in the Indian state of Orissa, the Voluntary Health Association of India, an apex body of state-level health associations, received funding for rehabilitation work. Their concern for the mental health of cyclone-affected people came early on in the relief work and continued through to rehabilitation. The association focused on providing skills to their staff so they were better aware of local mental health needs. They also provided packets of vegetable seeds with rapid growth rates, which provided both vitamin-rich foods quickly and demonstrated to people that the massive inundation of salt water had not completely destroyed the potential of the soil, and was designed to have the effect of raising spirits in the communities (IMM n.d.). From this and from other experiences, it can be affirmed that concrete support activities such as animal restocking projects are necessary but not sufficient for recovery unless complementary support measures are also put in place to catalyse a local development dynamic by restoring people's hopes.

In Chad, it has been found that due to the high opportunity cost of time and capital, the poorer population groups of a community cannot participate in local organisations as much as other groups, and must assume risk management mostly on their own, whilst at the same time their limited participation at the community level results in diminished risk managing possibilities such as those acquired through participation in reciprocity mechanisms, voluntary transfers, etc. (Weinberger and Jutting, 2000). Under such circumstances, or else in similar situations, it has been tried to introduce programmes containing risk management funds. These are normally in-kind funds dispatched according to ROSCA principles: households participating in this arrangement earmark animals in their own herds to assist other group members in emergency situations that result in loss of livestock, such as snowfall disasters or epidemics; frequently, NGOs support comparable coping strategies in post-conflict situations.

In sum, though, like for rural development in general, activity portfolio and income diversification are the most promising routes toward equipping households with more resilient livelihood sources. Complementary options to pursue along the same lines are the promotion and consolidation of other existing inter-household cooperation mechanisms; in pastoral North-West China, for example, this may involve encouraging the institution of grassland user rights or short term renting and leasing among affected and non-affected households during the risk recovery period, possibly under the coordination of traditional village leaders. "During the recovery following snow disasters, there are also inter-household cooperative actions, especially within the herders group, i.e. sharing the pasture of the less affected households, providing storage fodder or hay and female yaks for reproduction to those households which

were most severely damaged. During such cooperation, herder's group leaders, production team leaders and village leaders can coordinate and accelerate the process of recovery" (Yongong et al., 1999: 16).

17. Participatory Planning and Technology Uptake

One of the salient points of GTZ's experience with supporting local disaster prevention initiatives is that these should be part of a participatory planning process linked to awareness raising or training activities and a preliminary risk analysis (see Diagramme 1 in Section 7 above). The latter, together with a common conceptual and informational basis, is necessary since the causes of disaster risk and the possibilities of mitigating it are for the most part unknown. Writing on North-East China, Yongong et al. (1999) find what is presumably a typical situation in many countries in that "the creation and institutionalization of a coordinated risk management planning mechanism at decentralized level will require substantive efforts in terms of designing and launching comprehensive, demand driven capacity building and training strategies at the county at sub-county levels, addressing township governors and village leaders, production team leaders and herder's group representatives" (p17). Local capacity thus remains one of the Achilles heels of participatory DRM (see also Section 21.3 below).

In Orissa (India), for example, the participatory planning process in post-disaster situations is facilitated by a recently established specialised public sector agency, OSDMA (see Section 17 below). Following the frustration among NGOs due to the absence of any institutional mechanism for regular consultation between the government and civil society organisations in the aftermath of the 1999 cyclone, OSDMA set up a NGO Coordination Cell. It appointed a Secretary in charge of "guiding" NGOs, researchers, and volunteers coming from outside the state, and of acting as a facilitator along the interface between NGOs and government departments. The process proved invaluable, and, other than serving as a vehicle for participatory planning, prepared the ground for institutionalised GO-NGO coordination for disaster preparedness and response through OSDMA. Once the general principles were agreed upon, NGOs were then given considerable leeway to adopt the most suitable participatory methodologies to plan their activities or the activities for which responsibility had been assigned to them.

A positive consequence of the relief and rehabilitation phases after the Orissa cyclone, at least as far as discernible until present, has been a progressive change in technology. New designs and construction methods for housing have evolved to provide more protection, often including roof rainwater harvesting technology. Irrigation of land has expanded and the control of irrigation has started to shift from the state to communities as responsibilities have been devolved. Tractors and power tillers have been used to replace some of the draught animals that were lost; seed banks have been established, cyclone shelters built, forest breaks planted, and new varieties of plants have entered the farming cycles. Clearly, although this natural disaster has led to much distress and suffering, it has also presented development practitioners with an opportunity to "do things differently", and improved technologies could be introduced.

17.1 The Role of Technical Assistance: Community Hazard and Vulnerability Mapping

Jaringan Kerja Pemetaan Partisipatif (JKPP) is a network of 33 non-government and community organisations from all over Indonesia. It was formed with the aim of "accelerating the recognition of customary community rights in managing local natural resources in Indonesia through the development of community mapping concepts, methodologies, and strategies". It is working towards the formation of a 'Traditional Community Mapping Network' with a broad cross-section of stakeholders.

The network has the following working groups: a policy group reviews spatial planning policies and provides technical consultation and assistance to JKPP participants who are

dealing with policy issues. It will develop policy options to support community mapping and a draft regulation on mapping systems to be submitted to the Ministry of Environment. The methodology group focuses on improving mapping and planning techniques, designing and implementing training of trainers for participatory mapping, and producing an improved Participatory Mapping Manual. It also provides trainers and resource people for technical assistance to JKPP participants. The Secretariat serves as a networking hub and service centre for mapping information, collecting and disseminating information on participatory mapping through a quarterly newsletter, 'Kabar', to members of JKPP and other groups, and publishes a number of books.

Under a nation-wide project on "Reforming the Spatial Planning Policy in Indonesia through the Incorporation of Community Maps", training included class sessions, field-, and deskwork, along with an introduction on spatial use, remote sensing and Geographical Information Systems (GIS). Participants were introduced to basic principles of databases, spatial analysis, remote sensing, computer-based cartography and the operation of GIS software programmes. The second training aimed at developing several GIS 'resource pools' in West Kalimantan, East Kalimantan, North Sulawesi, Maluku and Irian Jaya, that would be able to supply on-going support to community mapping groups and village-based information systems. The training also supported the development of communication and information protocols being developed by Pro-BELA and Telapak for Forest Watch Indonesia. Part of the training was to show how to involve senior members from partner NGOs in using GIS for decision-making.

JKPP helped prepare for the first ever nation-wide congress on indigenous *adat* community institutions (*Kongres Masyarakat Adat Nusantara*). The congress was organised by a number of NGO networks and held in March 1999 to develop common positions to win back the rights of traditional communities to land, sea and natural resources. They had numerous discussions in small groups and plenaries, and with the press, which were followed by a series of sessions with government representatives, a delegation to the House of Representatives and to the National Commission on Human Rights. JKPP and other NGO networks are now preparing post-congress workshops in each region. The objective is to promote the existence and importance of the Alliance of Adat Communities (AMAN) to members of *adat* communities throughout Indonesia.

17.2 Communication and Information Dissemination Technology

Since many monitoring systems and emergency relief forecasting systems tend to perform relatively poorly, revolutionary communication and information dissemination technology such as the Grameen Phone and Grameen Phone Sewa (see the box in this Section) services in India can do much to improve the speed and quality of responses to natural disasters.

Communication and information dissemination technology are key for ensuring that households respond adequately to disaster risk by being able to take informed decisions; it is even more crucial for co-ordination. Thus, "the reduction of vulnerability, as well as the capacity to respond to disasters is directly related to the degree of decentralized access to information, communication and decision-making and the control of resources" (Habitat 1996). In addition to being expensive, the distribution of important risk avoidance information to village level by means of official documents is however often hindered by low levels of literacy in rural areas. A EU Livestock Development Project in China broadened the accessibility of written information by developing herders' technical brochures in local (Tibetan) language and distributing these to herder's households. As experience in Mozambique and Peru demonstrates, communities at risk must trust those delivering the warnings – especially if they involve having to move away or the possibility of temporary or even permanent resettlement.

A generally more viable alternative for conveying DRM information may be using the rural radio, which in certain countries is well developed as coverage and ownership of or access to

radio sets have been increasing (including, according to Yongong et al. (1999), in North-West China, where almost 100% of herder households have them). During the 1999 cyclone in Orissa state, India, warnings were given on 'All India Radio' but some of the meteorological terminology used, meant little to the less educated of the poor for whom cyclones were a regular, but generally not a critical, occurrence. The Revenue Department passed the message as widely as possible but many people had nowhere to go to get away from the hazard or were afraid to leave their possessions behind (IMM n.d.).

Following the Orissa cyclone, a website was set up to coordinate the activities of all stakeholders and to recruit volunteer relief workers. The initiative is part of the India Disaster Resource Network (IDRN) of the nationwide Disaster Risk Management Programme, a joint initiative by the Government of India and UNDP that aims to reduce the vulnerability of communities in 169 districts in 17 States most at risk. When cyclones, earthquakes or other calamities next strike, district officials in many of the affected areas can go online and quickly mobilise support for evacuation, search and rescue, medical aid and other relief priorities.

However, given low levels of internet connectivity particularly in the more remote rural areas elsewhere in the world, it is in most cases not yet possible to reach disaster-affected households resident there through this highly cost-effective communication and information dissemination technology. Modern communications may also, unfortunately, play a negative role in that mass media coverage of natural disasters is frequently sensationalist, disinformative and biased by political vested interests seeking to downplay the role of human agency in catalysing such events. As a crucial means for fundraising and mobilising donor support, media coverage is also of strategic significance and susceptible to interference.

17.2.1 Escotel Grameen Phone Sewa…

…aims at providing cellular telephone connectivity to the rural masses in India, and has been inspired by the success of Grameen Phone. It is generating an overwhelming response as over 450 villages in the States of Uttar Pradesh (West) and Haryana are already being covered by this service. Building on its vision of a socially responsible corporate, the service is provided at highly subsidised rates for both handsets and airtime charges. The initial package of handset and connection is subsidised by 30 per cent and the airtime rate by 50 per cent. The operator charges a margin of Rs.3 to Rs.5 per call on the actual cost of the call. Each local entrepreneur owns and operates a cellular phone that typically serves an entire village plus surrounding kesbas. Each village phone caters to the needs of an average of 5,000 people around the village. This means that Grameen Phone Sewa is already providing access to 2.25 million people in the rural areas and is expected to benefit many more in the future.

Key Features:
· Provides mobile telephony in remote villages.
· Availability to rural people who normally cannot afford to have a personal connection.
· Subsidised connection.
· Handset & connection subsidized by Escotel to the tune of 30%.
· Escotel subsidises airtime by 50%.
· Income generating tool for Operators.

Benefits to the Villagers:
· Substitutes a trip to neighbouring towns which is more time consuming and costly.
· Better rates for their produce.
· Be in touch with family members working anywhere in India or elsewhere in the world.
· Can obtain urgent medical help.
· Tremendous economic and social impact.
· Local government administration can stay in instant touch with remote and isolated areas.

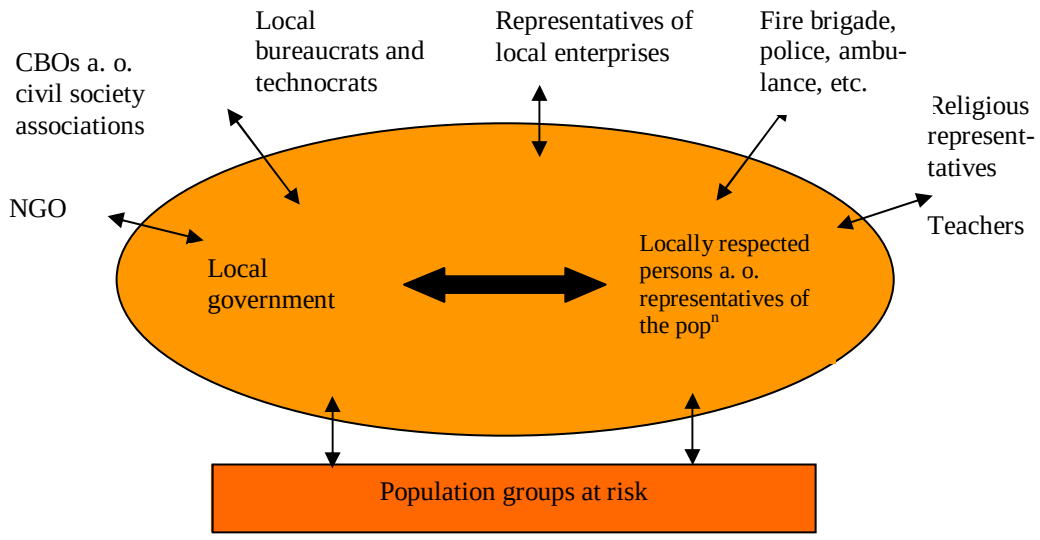
18. Tools that can be used at the Meso and Macro Levels: The Importance of the Organisational Framework for Working with Local Actors

Because of their community mobilisation capacities and participatory outreach, NGOs are often the most appropriate partners to work with in the immediacy of a post-disaster situation. In some developing countries, though, foreign funded NGOs are seen as agents of global players

and any criticism of policies by them may implicitly be considered as threatening to destabilise the government; conversely, local population groups may frown upon DRM projects simply because initiated by government. Being able to identify and "seize" the right entry point therefore remains an element of under-estimated importance if the commitment of local actors, especially towards the implementation of preventive measures in DRM that may not correspond to their own top priorities, is sought.

To convince individuals and groups of the necessity to invest in DRM, it has been found in Latin America that where local governments work with "key resource persons" who hold the respect of communities to pass on the message, significant results can be achieved (see the box in this Section).

18. 1 Local actors in disaster prevention (source: adapted from Bollin 2003)



To "win over" people and convince them of the different initiatives it is advantageous to know about their motivation to participate. GTZ experience with the concept of "community-oriented disaster risk management"[12] has shown that the following are such driving factors: 1) The reduction of hazard risk of oneself and one's family or of others; 2) The strengthening of self-help capacities that can also be transferred to other areas of intervention (e.g., potable water supply, collective marketing) - for many participants, this implies a boost of self-esteem; 3) Access to basic and intermediate education for persons who have almost no other such opportunities; 4) The possibility of actively taking part in organised social life; 5) The lead example of a respected person or opinion leader; 6) Concrete recompenses such as walkie-talkies, or, possibly, additional income sources; 7) Participation can improve the image of a person, institution, enterprise or party; 8) Social pressure (e.g., on local government) or being delegated (by an organisation, an institution, an enterprise, or a village).

Public campaigns, alerting at-risk communities of steps to take to reconstruct their homes and livelihoods, are more successful if a community itself feels it has been consulted about the requirements of the rehabilitation effort. The agreement of low-income families to relocate away from sites at risk from further flooding or earthquake damage is more likely if they have been involved at all stages of risk assessment.

[12] Translated from the original German concept of „Gemeindeorientiertes Katastrophenrisikomanagement".

***Table**: Proposal for an effective Information- and Documentation-System for Community-Oriented Disaster Prevention in Central America*

Who needs	Local Risk Management Group	Local government	National Emergency Commission or other national institutions involved in risk management	Tertiary stakeholders (CEPREDENAC, GTZ, international organisations, other local governments, NGOs, etc.)
What type of infor-mation	• Impact assessment • Systemic structuring of successful experiences			
• Identification and analysis of internal and general problems encountered in the process • Documentation of activities carried out • Lists of participants • Documentation of the process		• Problem identification at municipal level • Support needs of the municipality	• Problem identification at national level • Support needs on the part of the national institution	• Summarised presentation of experiences
What for	• To know the degree of progress achieved in the area in terms of LRM (impact)			
• Improve work carried out • Legitimacy vis-à-vis bodies that are supported or could be supported • Better coordination among involved parties		• Complementarity of measures on the part of the *alcaldía* to reduce risk in the municipality • Presentation of increases in security against disasters to improve local development	• Support local effort • Transfer successful experiences to other areas • Integrate the LRM concept with other sectors	• Support local effort or that of national institutions in LRM • Learn from successful experiences
In what form?	• Studies – internal or external evaluations • Community surveys • Activity reports			
• Meetings • Monitoring meeting reports • Lists of participants giving possibilities of communication		• Meetings • Strategic plan and eventually operational plans • Community reports	• Meetings and visits • Strategic plan and eventually operational plans	• Written presentation • Visits, interviews

(Source: Bollin 2001; adapted and transl. by author)

The Total Disaster Risk Management Approach (TDRM) provides a local, meso and macro level framework (see the Box in the next Section below) that can be used as a tool to facilitate the integration of all necessary steps to achieve improved DRM capacity. Linking the immediate and medium term, "the incorporation of analyses from hazard and vulnerability assessments and contingency planning exercises into regional or country strategy and project identification is the key to linking preparedness and prevention" (WFP, 1998: 6).

Analytical and activity programming methods can be usefully articulated at the meso- and macro levels by complementary tools. The construction of risk scenarios for delimited areas, sectors or populations, considering particular hazard and vulnerability factors, the social processes and actors behind these and the development context in

which risk is manifested, may be a particularly relevant to diagnose hazard risk. Many disaster risk management issues are beyond the capacity of the individual household, requiring community and/or broader social interventions, including public sector action at regional and national levels. Local government associations and Community-Based Organisations (CBOs) such as inter-village development committees, including federations of local DRM groups, can act as focal points for collecting, systematising and providing the necessary technical inputs. Other meso-level tools are all those that can be applied at district, provincial, regional or geo-hydrological levels such as, for example, (risk-conscious) watershed planning and river basin planning.

Remote sensing and Geographic Information Systems (GIS) can add value to socio-economic disaster hazard risk assessments implemented through community-based fieldwork. In India, some of the most vulnerable communities along the coast have recently been identified with the help of the Orissa Remote Sensing Application Centre (ORSAC) so that they could be divided up amongst the NGOs for Community Based Disaster Preparedness (CBDP) training. CBDP has started to emerge as an important issue, and the UN has brought together all NGOs with plans in disaster preparedness to provide a coordinated approach to CBDP. The latter must be updated regularly through information- and documentation systems (such as the one proposed in the table in this Section) by making use of all available channels of primary and secondary data collection, especially at the meso (district, provincial or regional) level.

19. Towards an "Enabling Environment" for Local Institutional Development in DRM

A chief constraint towards a more favourable environment for organisational and local institutional development in DRM is the very short attention spans that natural disaster risks generally command. In the immediate aftermath of a natural disaster strike, with memories of human and material losses vivid, mitigation investment is a very high priority in both the eyes of communities at risk and also local and central governments. As time goes by and memories fade, so too does the priority for mitigation. In extreme cases of volcanoes that have been inactive for up to one hundred years – such as Mount Pinatubo in the Philippines in 1991 – even mounting scientific evidence of the impending catastrophic eruptions was unable to stimulate local communities into taking mitigation measures to protect themselves.

The thematic breadth of necessary mitigation and preventive measures as well as the intimate linkage between natural disasters and development illustrate that DRM needs the collaboration of a wide cross-section of actors from different sectors (among others, agriculture, natural resource management and the environment, infrastructure, civil protection, education and health). Within the responsibilities and areas of activity of these sectors and actors partial strategies and disaster prevention measures can be integrated.

Which is why, increasingly, within countries exposed to hazard risk as well as in the context of development cooperation, a multisectoral, integrated approach is adopted. Such an approach is relevant for efforts undertaken at community level and for emerging national level systems, and should create part of the enabling environment for local institutional development in DRM.

For Total Disaster Risk Management (TDRM – see the box in this Section), the following enabling mechanisms are important in order to attain objectives at the local and national levels (Guzman 2002):

- A clear and comprehensive policy that defines the objectives and commitment of the organisation, community or government to total disaster risk management in relation to development strategies and goals. It should address all aspects disaster management, including preparedness for response, and ensure that mitigation is given proper priority;
- A strategic planning process that enables risk reduction measures to be adopted in both development and disaster management contexts. This will facilitate the development of a

disaster risk management plan, its integration into local development plans, and the establishment of focal points for coordination, among others;

- The establishment of organisational structures and systems that would facilitate the coordination of stakeholders and concerned agencies and of organisations at various levels to ensure efficient and effective response;
- The implementation of TDRM involves the establishment of a focal unit and person for the coordination of disaster risk management activities, and the identification and provision of resource requirements, including funds and trained personnel; and
- Capacity for risk reduction, as an enabling mechanism, allows for the cross-sector integration of risk reduction measures through effective programmes for priority sectors and communities at risk.

The full implications of the relationship between natural disasters, disaster management and economic and social development are rarely fully understood. To incorporate better the relationship to development planning, there are some important steps to take. There is a need for further research into the long-term development impact of natural disasters – especially through the secondary effects mentioned earlier in this report – and appropriate responses to them, based on learning experience already acquired.

A problem in this respect is posed by the fact that DRM initiatives are rarely seen as investments but are rather treated as a mere cost; not least, this is due to the absence of scholarly cost-benefit analyses to make the point. From an emergency reconstruction perspective, many still see disaster management as traditionally being outside the normal business of development, as if it were an exceptional activity brought about by *exceptional* circumstances. It is indeed ironical that in the most disaster-prone countries such exceptional activities are carried on almost regularly year-after-year. Awareness-raising campaigns are thus needed, without which changes in attitudes, and, by implication, in the enabling environment for local institutions in DRM, will remain elusive.

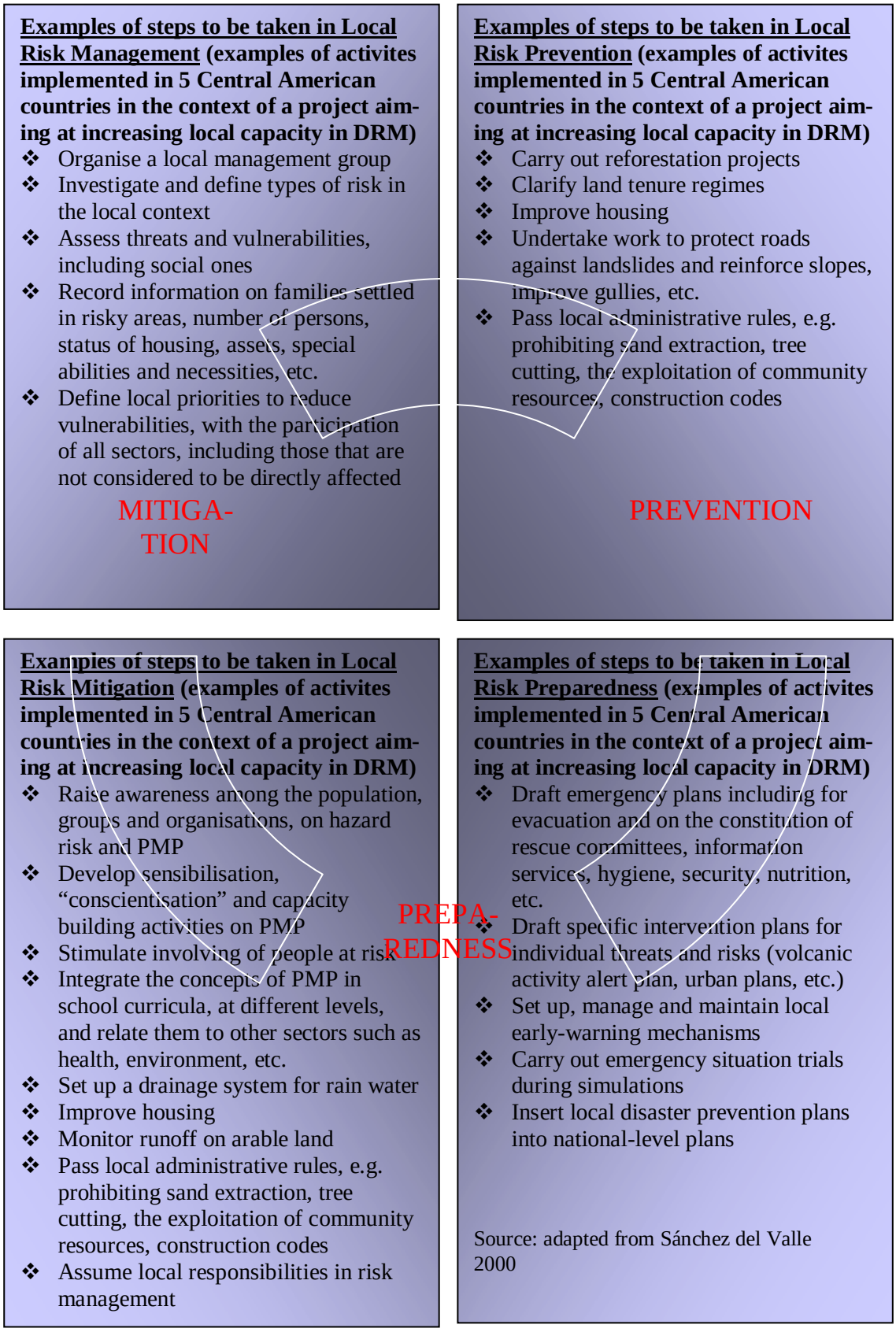
19.1 The Total Disaster Risk Management Approach

The Total Disaster Risk Management Approach (TDRM), which is being developed in collaboration with ADRC, comprises six systematic steps for problem definition, analysis, decision-making, implementation and monitoring and review (Guzman 2002):

- First, establish the disaster risk context. This step establishes the strategic, organisational and risk management context.
- Second, identify the disaster risks. This step identifies what, why, and how hazards or certain events or occurrences could translate into disasters.
- Third, analyse the disaster risks. This step determines the existing controls and analyses disaster risks in terms of likelihood and consequences in the context of those controls. The analysis should consider how likely is an event to happen, and what are the potential consequences and their magnitude.
- Fourth, assess and prioritize the disaster risks. This step compares estimated levels of risk against the pre-established criteria and ranks disaster risks to identify disaster management priorities (acceptable vs. treat risk).
- Fifth, treat the disaster risks. This step involves identifying a range of options for treating the priority risks, such as options for prevention, preparedness, response, and recovery, agreeing on intervention options, planning and implementing intervention strategies.
- Lastly, monitor and review. This is important since few risks remain static and the disaster risk system and plan must remain relevant.

Source: Guzman 2002 (www.adrc.org)

Diagramme 2: Examples of Activities at Different Stages to increase Local DRM Capacity



20. The Role of National Governments and the "International Community"

"It is less expensive in the long run to invest in mitigation activities than in emergency operations" (WFP, 1998: 11).

Although hard data and figures are hard to come by, five years after this assertion was made, it remains unfortunately as relevant as it was then. Not much appears to have changed concerning the funding priorities of national governments and the donor community, with "ex-post rationalities" often being used to justify incoherent, *ad hoc* responses. Yet, a good number of the actions required to deal with disaster risks (as outlined in the preceding Section) can be found in the realm of public goods. While most if not all idiosyncratic risks may be handled better by the specialised service providers of the private sector – where they exist and are interested – the state can be more effective in covering covariant risks. A primary role for the public sector in DRM is thus justified even on the public choice and information theoretic grounds of the new institutional economics. According to the champions of the latter, the government actually has a dual role in this respect: to provide its own instruments, and to ensure the supply and effectiveness of instruments from other sources (World Bank, 2001).

In line with Charveriat (2000), Pantoja (2002) finds that "at the national level, international assistance – regularly given without many conditions – often provides perverse incentives for governments and communities to adopt reactive disaster risk management policies and strategies. And as a result, mitigation and preparedness are not given sufficient priority. Governments and donors supporting microfinance have not encouraged disaster risk management, as they have also tended to be reactive" (p31). Donors should on their part contemplate assisting governments of disaster-affected regions in mobilising the necessary financial and in-kind resources to be able to pay compensation to the next of kin of deceased household members and to those whose houses were lost or damaged.

Hurricane Michelle ripped through Cuba in November 2001, the most powerful storm since 1944. But, in contrast to the 20,000 victims of hurricane Mitch in Honduras, just five people died in Cuba. Successful civil defence and Red Cross planning ensured that 700,000 people were evacuated to emergency shelters in time. Search-and-rescue and emergency health-care plans swung into action. In Havana, electricity and water supplies were turned off to avoid deaths from electrocution and sewage contamination. Cuba's population was advised in advance to store water and clear debris from streets that might cause damage. Later, the UN reported that the government's "high degree of disaster preparedness... was decisive in the prevention of major loss of life". Cuba's success in saving lives gives us a model of effective government-driven disaster preparedness. Geographer Ben Wisner suggests the secret of this success is that "one cannot 'fix' disaster risk with technology alone. It is also a matter of enacting and enforcing laws, building and maintaining institutions that are accountable, and producing an environment of mutual respect and trust between government and the population" (IFRC 2003).

The declaration of a disaster is usually the responsibility of government and serves as prerequisite for the participation of NGOs in disaster response and relief efforts. A dilemma sometimes occurs when the government refuses to declare a disaster because of political considerations (Guzman and Dixit 2002). During a disaster, the rush to provide relief adds to the challenge of coordination as actors with various levels of experience and sets of objectives enter the affected areas (Pantoja 2002). At the same time, the scope, opportunities and potential for malfeasance, embezzlement and corruption is greatly increased, and central government may consider elaborating and enforcing a Code of Conduct[13] for all stakeholders,

[13] See, e.g., the "Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Response" developed by the IFRC.

national or international, government or civil society (including the voluntary sector), intervening in post-disaster rehabilitation.

21. Implications for Investments…

21.1…In Agricultural Development…

If DRM initiatives are to be sustainable, major investment is needed in developing and disseminating productivity-increasing, low-input agricultural technology. The latter is essential on the grounds of poverty alleviation, and to prevent marginal farmers from exploiting ecologically fragile areas such as hillsides, which leads to soil erosion and watershed degradation and thus increased natural hazard risk.

21.1.1 Agricultural Development in Lempira Sur

The Lempira Sur rural development project in the south of Honduras has promoted improved agricultural practices, river basin management, ecological sustainability, increases in on and off farm incomes and economic resilience among poor families. This has been achieved with the introduction and appropriation of improved land use practices, water management schemes, maintenance of biodiversity, local credit schemes, and the strengthening of local government and the abilities to plan urban and rural development. The notion of disaster risk reduction was never considered in the project document. However, the project demonstrates how ecologically sustainable, best practice agriculture, will lead to reductions in disaster risk, although this was not a defining character of the project as such. Hazard reduction associated with flooding and landslides has been achieved, along with increases in the resilience of the local population when faced with extreme conditions. During Hurricane Mitch the area covered by the project suffered little damage due to the types of land use and slope-stabilisation methods that were utilised, and it was able to provide food assistance to other areas severely damaged by the hurricane.

Source: Lavell 2002, at http://www.desenredando.org/public/articulos/2003/index.html

Increasing support must be provided to sustain ecologically sound agricultural development, and more research is needed on hazard resistant crops. Research must focus not only on agronomic issues but also examine constraints to farmer uptake and adoption of new improved varieties. Farmers may simply not be aware of these, or bottlenecks in the extension service may prevent the dissemination of such information or distort its contents. In Brazil's hazard-prone northeast, for instance, education helped local farmers rely less upon drought-prone crops such as corn and beans, and more upon sorghum, which is more drought resistant.

Advances in sustainable pastoral development are also necessary, possibly linking technical assistance in the livestock sector to a wider integrated programme. In North-West China, for example, a strategic anti-risk programme for herder households has been elaborated referred to as the 'four counter measures', which includes the construction of improved houses, cowsheds, fodder plots and fenced pastures. Given that most people, especially the rural poor, tend to be reluctant to leave their belongings behind, the building of community cattle pens and community strong-houses to secure animals and material household goods and possessions could actually save lives. As community-level common property, the strong-houses would best be built and managed by local institutions set up for the purpose within villages.

21.2…In Natural Resource Management…

Major efforts must be made to fight natural resource degradation and improve natural resource management (NRM) practices. Coming from new schools of thought such as New Public Management (NPM) and Total Quality Management (TQM), several instruments or management tools exist to do so (public-private partnerships, challenge (social) funds, etc.). These are essential to "tap" local knowledge and to let the primary stakeholders, the users of natural resources, play a major role in NRM. Especially in disaster-prone areas, all possible

alternatives to deforestation should be encouraged and pursued. They must also be complemented by activities with a more direct impact on DRM, such as the consolidation and amplification of woodlands in coastal "buffer zones" and on river banks, in order to offer natural protection from flooding. In Orissa, India, the severe impact of the recent cyclone has been attributed to the destruction over the last decades of buffer forests between land and sea.

Usually, some trade-offs are inevitable between environmental conservation results and short-term livelihood gains, for example, in the case of "forest-dependent" peoples and poor land-constrained households clearing woodlands to grow food crops. There are however also experiences of "win-win" situations: the protection, consolidation and extension of the Nancunchiname forest on the left bank of the Lempa river in El Salvador, for instance has created a successful natural buffer to flooding. Even more importantly, it has opened up new productive and income-generating activities such as growing flowers, raising butterflies, cultivating medicinal plants, and ecotourism, all of which are necessary if the economic benefits of leaving the forest intact are to continue outweighing those of "selling it off". Also very promising are Ghana's 'social responsebility agreements' within timber utilisation contracts which, as tripartite agreements between the private sector, government and local communities, can be used to source substantive and regular DRM investments.

Pioneering work has begun by environmental economists and others on imputing economic value to new "environmental services" such as carbon dioxide sequestration. Regions that give preference to leaving their forest canopies intact are thus entitled to financial compensation under these programmes; but much more needs to be done, and the worth of "avoided natural disasters" be factored into similar environmental programmes – landslides in 1999 cost Venezuela US$ 10 billion, corresponding to 10 percent of its GDP (Gross Domestic Product). Even where such options remain wishful thinking, minor improvements in NRM must not be costly, and local institutions can do a lot to raise awareness about such measures and provide a good example by putting them into practice. In the Dominican Republic, for example, the National Institute for Hydraulic Resources (INDRHI) builds and manages dams and irrigation systems worth millions of dollars, but pays very little attention to watershed management, even though the cost of planting trees is negligible; the establishment of watershed management associations, which elsewhere play vital advocacy roles, could address this situation.

21.3.1 Training in Pastoral DRM

Concerning pastoral risk management, Yongong et al. (1999) find for North-West China that "there are major training needs of herders' group leaders, especially in the areas of pastoral risk management planning and implementation, and small group formation and management. In addition, the groups have no internal organizational structure and relevant organizational regulations, and no working funds, although membership fees are paid for effective functioning of internal cooperation" (p18). Moreover, the following needs for institutional strengthening were identified by the study: 1) to strengthen pastoral extension and veterinary service functions in risk management, poverty alleviation and sustainable pasture development; 2) to promote inter-household assistance and co-operation during the snow disaster occurring and recovering periods; 3) to strengthen co-ordination functions of community leaders; and 4) to further strengthen governmental financial support, technical services and institutional co-ordination roles.

Risks, disasters and poverty are closely interrelated factors constraining pastoral development and often cause a vicious circle by which a degraded pastoral resource base catalyses natural disasters; these lead to more poverty, which in turn leads to further resource degradation and accentuated hazard risk exposure. In many parts of the world, pasture ecosystem improvement is a necessary prerequisite to implementing DRM programmes. Again, it may not be costly when compared to the annual losses the sector incurs through natural disasters, and livestock development programmes should include components designed to take stock of existing practices that are beneficial, or at least harmless, to the environment, and from there launch participatory research and technology improvement projects with interested herders. Herders associations may establish livestock famine relief camps for weak animals, to be returned for a

fee once they have recovered. An understanding of local incentives to protect pastoral resources is necessary to overcome government line agency personnel and traditional herder communities accusing each other of ineffectiveness in NRM.

21.3…In Training

"Progress in reducing the impacts of recurrent natural disasters depends on site-specific, targeted support to local capacities" (WFP, 1998: 8).

In a variety of post-disaster conditions, it has been found that NGOs require skills development in hazard mapping, risk assessment, as well as disaster damage and needs assessment (Guzman and Dixit 2002). Given their own scarce resources, governments are typically reluctant of funding such activities, and donors should insist upon assessing and addressing the training needs of civil society groups, including NGOs.

Training has often been targeted at male technocrats, whereas DRM at household level is also, if not mainly, a women's affair. This male bias in training activities can in part be offset by focusing more on the household and farming systems level, to which the Sustainable Livelihoods (SL) framework can add important value – training the frontline staff of technical line agencies in SL could do much to further the understanding of household-level constraints and opportunities for improved DRM. To avoid wasting funds on unnecessary training programmes, the objectives of skills upgrading should be situated in the wider institutional environment, based on systems analyses of the functions and roles of the actors that participate in local "DRM arenas".

Training syllabus for the introduction of disaster prevention; examples from Ahuachapán (El Salvador) and Petén (Guatemala)

Training topics	**Results**
Introduction to disaster prevention Planning and evaluation Organisation Management and cooperation Synthesis	Hazard and resource maps of participating villages Project planning for each village Emergency planning for each village Analysis of strengths and weaknesses Plan outlining cooperation at community level Project profiles

Like in other domains, Training-Of-Trainers (TOT) in DRM has the potential of increasing the cost-effectiveness of DRM programmes, but "cascading" systems from the macro or meso to the local level have often been found inefficient. In two new project regions in Latin America, volunteer "multipliers" are engaged in a training course for half a year, whereby they address the issue of horizontal defragmentation and cross-fertilisation within TOT initiatives; the course includes five components that seek to link theory and practice (by addressing the topics and tangible results listed below; see the table in this Section). Course participants are divided into groups to elaborate project proposals which will constitute the basis for DRM measures (forest fires, landslides, floods, etc.) to be carried out in collaboration with local and other actors.

22. Linking Disaster Risk Mitigation with Long-Term Sustainable Rural Development

In the aftermath of the international development agencies' responses to the 1980s African droughts and famines, and as acknowledged later in the mid-1990s, it was recognised that

"relief assistance alone does not strengthen the capacity of poor people to cope with the next emergency" (WFP 1994). Realising the necessity of such a (stronger) linkage between relief and development efforts, the UN sought a system-wide strategic approach to disaster mitigation and transferred this responsibility from the Office for the Coordination of Humanitarian Affairs (OCHA) to the United Nations Development Programme (UNDP). The UNDP has since been engaged in linking disaster risk mitigation with long-term sustainable rural development in their country programmes.

DRM is a process and not a product. It should be regarded as an approach to development planning rather than an outcome of a development project in itself. Where risk management is used to reduce existing risk we may refer to corrective or compensatory risk reduction; where it is used to predict and control future risk we may refer to prospective risk management. Prospective risk management is used in the context of development planning and projects seeking to guarantee adequate levels of security or sustainability for new investments. Disaster risk management is seen as a prospective tool integrated into development objectives, where transformation in production, infrastructure and social (or 'societal') capital are needed to contribute to risk reduction in the short to medium term. New development is considered in the light of its contribution to reducing daily risk and, at the same time, disaster risk, by increasing life style resilience – in this context, DRM is a support mechanism, not an end in itself.

The full implications of the relationships between natural disasters and economic and social development are rarely fully understood, and, unless more research is carried out, assistance strategies for disaster-prone countries will remain "hazard-blind"…they need to address DRM issues explicitly, but a more thorough information base is usually necessary to do so. DRM is also an ongoing operation. As such, natural disaster mitigation can be strengthened in development projects through greater attention given to O&M, as infrastructure is more resistant to natural disasters if maintained properly. In practice, though, O&M is hardly ever adequate, and

22.1 Institutional Development in World Bank Natural DRM Projects

In the rural sector, World Bank (WB) projects have helped disaster mitigation through financing good practices that help reduce the vulnerability of crops and land to flooding and drought. These include the development of terracing and afforestation to help stabilisation and to prevent erosion during storms and floods. Projects have also encouraged better soil management and crop rotation to introduce crops that are more resistant to droughts. In some cases borrowers moved out of plantations altogether in disaster-prone regions, and stimulated local agro-industries and livestock instead. To date, there has been little experience with crop insurance in WB financed projects. Institutional development (ID) components of reconstruction projects deserve special mention, even though current WB guidelines do not call for ID measures as part of emergency recovery. ID activities were nevertheless major components in 3% of all reconstruction and in 11% of all mitigation projects approved since 1980 (including a total of both categories = 198 projects). In spite of the lack of incentives from WB guidelines, some reconstruction projects have successfully built up the capacity to respond to future emergencies through ID. There is clearly a need to review WB procedures to stimulate a budding positive trend. One project in which ID played a major role in the design of natural disaster preparedness was the Brazil Rio Flood Reconstruction Project. ID measures play an extremely important role in natural disaster mitigation and are incorporated into the design of nearly all mitigation projects. ID components are varied. Among the most basic are those that promote disaster awareness among populations at risk. In three countries threatened by different disaster events, Maldives (tsunami); Mauritius (cyclones) and Oman (earthquakes), WB financed projects included disaster awareness programmes as a basic component. Disaster planning should primarily be generic, thus, deal first with problems common to all disasters, such as warnings, search and rescue, evacuation and emergency food, health and shelter. Then it should deal with more specific problems such as fallout from volcanic eruptions or the restoration of burnt out forests.

Source: http://www.worldbank.org/dmf

projects are judged by quantitative indicators.

Local institutions such as neighbourhood-based user committees with clear 'rules of the game' and properly understood incentive structures are absolutely necessary for proper O&M. There is often an unresolved tension between the process- and output-orientation of rural development projects, but the problem with the former has always been to develop satisfactory monitoring and evaluation indicators (along the lines of the standard objectively verifiable ones) to measure qualitative aspects such as beneficiary "ownership" and commitment to infrastructure O&M.

The World Bank has been trying, with various degrees of success, to "retro-fit" a number of their rural sector development projects with DRM components. The approach for doing so, especially in post-disaster reconstruction programmes, has placed much emphasis on institutional development (ID), covering a range of concerns from awareness-raising to disaster planning (see the box in this Section).

A policy governments often adopt with respect to providing relief for indebted disaster victims is the mandating of MFIs to forgive debts. The jury is out on whether or not this contributes to an effective recovery strategy: from a humanitarian perspective, it is certainly desirable; from the perspective of a rigorous micro financier preoccupied with financial discipline, it is more harmful than not. There is no conclusive evidence on whether or not debt forgiveness helps link disaster response to long-term sustainable rural development, as the little data that exists is highly contextual. There are a myriad of variables to take into consideration, including among others household characteristics, repayment history, types of assets lost, and the characteristics of the MFI concerned as well as the sector at large. That debt forgiveness provides the wrong 'signals' to borrowers is undoubtedly true, and, in terms of strengthening MFIs for technical and financial autonomy, this must not be underestimated, as these institutions have often spent years to build up their reputation and the rapport with their clients.

23. Some Policy Recommendations summed up: "Best Practices" and "Lessons Learned"

Although the elements describing the characteristics of a "typical" local institution successful at DRM are too thin to come to conclusions that would allow more profound normative policy recommendations, a number of points can be made. Somewhat counter-intuitively, it has been found that, for a variety of reasons, **larger NGOs fare better** in post-disaster situations than smaller ones, and should be singled out for collaboration. They must meet several conditions, however, as they must be well organised and structured, and yet, defying their size, be able to remain **flexible** at the same time – an attribute that, unsurprisingly, appears to be relatively rare in large organisations. On the other hand, younger and/or smaller institutions have a more difficult time in DRM, not only because they are less experienced but also because they tend to be less able to **"cross-subsidise"** and "absorb shocks". Larger programmes may achieve this by keeping a separate budget for each intervention to ensure against the poor performance of one project impinging on another.

Drought relief operations have consistently demonstrated the need for **accountable** community-based structures to oversee the implementation of emergency interventions, which also ensure that interventions are **culturally acceptable**. Such structures, which usually take on the form of committees, need to be legitimate. As emergency operations need to be swift and tend to involve at least some free distribution of assets of one kind or another, they are also more prone to corruption and bribes. Community-based structures thus need to include a rigorous selection of **credible** and just local individuals, which should be chosen by community members themselves. The direct payment of committee members should be discouraged.

Since during the aftermath of natural disasters that we can often observe a "gap" between the existence of DRM laws and their actual application, investigations must be preoccupied much

more with the latter, in particular with the **reasons of non-application**. A key lesson of a number of institutional and organisational development projects seeking to improve NRM is that however successful these interventions may be, if **legal personality** is not bestowed to the local institutions concerned, for governments to involve them to respond to mitigate natural disaster impact will be impossible or at least much more complicated. They may be used for a broad range of activities in the disaster management cycle, including the dissemination of DRM information, for which a clear **information dissemination policy** should be conceived. In this respect, as well as in planning and coordination, the involvement of **cross-sectoral ministries**, such as Ministries of Finance, and of **federations of local governments**, has proven valuable.

Information dissemination needs effective technology and a communication strategy that encourages simple language for household DRM. It can be argued that interacting with affected population groups, **the term 'natural disaster' should be employed with great caution**, as it may be misleading and smack of "fatalism"; rather, attention should be drawn to the human role in catalysing or causing such events, which would add to awareness-raising efforts. **Codes of Conduct** (including do's and don't's in emergency situations) for all actors, non-government and government, are a good idea to avoid loss of professionalism in the general confusion of urgent disaster responses. Agricultural and rural development strategy and policy documents should include sections on emergency food aid. The design of specific response interventions (such as, typically, FFW programmes) and approaches (such as, for example, PMP), should be regulated by a **Relief Code**, which is something that only a few disaster-prone countries have and apply.

Post-disaster accounts from Asia and Latin America show that the efforts at harmonising national and regional level policies that this involves are best **led by an outside agency** such as a foreign NGO or bilateral cooperation. For the microfinance sector (see also Section 21 above), donors and governments should agree on basic **disaster response principles** and recovery policies before a natural disaster strikes. The World Bank has summed up its DRM experience as showing that effective natural disaster management needs to be **part of the development planning and budgeting process** of countries at risk. To help tap the maximum potential of the organised civil society sector, government should contemplate introducing fiscal measures to act as **incentives** in this respect. For example, these may include the exemption of sales and entry taxes for materials used by NGOs in the relief phase.

The setting up of a central **(NGO) Coordination Cell** and **Internet site** to "guide" NGOs, volunteers, and others from outside the affected area in their disaster response activities, has been found helpful. Because of their **community mobilisation** capacities and **participatory outreach**, NGOs are often the most appropriate partners to work with in DRM and in the immediacy of a post-disaster situation. It is good practice to "pre-select" NGOs by compiling an **inventory** of existing organisations that includes brief institutional profiles, not least to gain precious time in responding. In some countries, foreign funded NGOs are seen as agents of global players and policy criticism on their part may implicitly be considered as threatening to destabilise the government. Conversely, where local population groups frown upon such projects simply because initiated by government, government-led activities may not be the right entry point for community-based DRM, in which case they should be **contracted out** to locally reputable civil society institutions and intermediaries.

'Win-win' **partnerships** between international and local NGOs contribute greater and more informed grass-roots contact to the former and **capacity-building** to the latter. Without **mutual respect** and a predisposition towards **reciprocal learning**, however, such partnerships may not maximise the synergies of respective comparative advantages. Another risk is that local staff abandon their national organisations for international ones, mainly because of better pay. This may make it difficult for local partners to continue performing as before, or reduce them to acquiescent sub-contractors. As there are often concerns about the quality and reliability of national NGO support to disaster-affected households, this not only raises

questions about the sustainability of these organisations after their international colleagues move out, but may also threaten the **longer-term relationships** they have developed with local population groups and the administration. As successful DRM tends to consist of a combination of 'formal' development with more traditional risk reduction activities, this is all the more compelling.

Hazard-sensitive development cooperation needs a **multisectoral, integrated approach**, involving inter-disciplinary DRM experts who start by looking at household coping strategies. They can help to "mainstream" DRM as part of **participatory planning** and awareness-raising programmes, which should also include training and preliminary risk analysis to diagnose hazard risk. DRM should be seen as a process, not a product, an approach to development planning, not just a project. Public **awareness-raising** campaigns on steps to take before, during and after a natural disaster are more successful if communities feel consulted - they should be as interactive as possible. **Hazard risk diagnosis** ideally involves the participatory construction of risk scenarios for delimited areas, sectors or populations, considering particular hazard and vulnerability factors, the social, economic and political processes and actors behind these, and the local development context in which risk is manifested.

Frontline operators should realise, and act upon the realisation, that disasters also present **unique opportunities** to "do things differently", in general, and to introduce improved technologies, in particular. They should be **quick** in their work and in "getting their message across" because usually DRM investment remains a high priority only immediately after a disaster has occurred. For such investment to come about more plentifully, all stakeholders should make an extra effort in **stopping to treat DRM as an exceptional activity** brought about by exceptional circumstances. Desirable attitude and behavioural changes are more easily achieved by working with local governments that associate to their endeavours **key resource persons** holding the respect of local communities. Although certain 'hardware', such as early warning systems, may be expensive, its installation also **demonstrates political will** and provides a signal and incentives to local population groups to "do their part" by setting up and participating in the accompanying 'software', such as local emergency committees.

The setting up of **local institutions for** the **O&M** of physical infrastructure should be part and parcel of construction or rehabilitation programmes; these bodies, where they are successful, can do much to uphold the conditions of these facilities and to thus decrease disaster risk – their establishment should be included in sets of norms to be applied as standard practice during the building of roads, drilling of wells, etc. To control for flood and drought risk, where appropriate, the establishment of **natural forest buffer zones** and **erosion control measures** through the involvement of watershed management and pastoral associations should be encouraged, paying special attention to household-level NRM incentives. Most of these efforts will however be diluted unless a better enabling environment for NRM is created. Economists will need to carry out further cost-benefit analyses on the long-term development impact of disasters to convince policy makers of DRM investments; environmental economists will need to continue work on imputing economic value to new "environmental services".

The microfinance sector too is in need of disaster response and recovery policies, whilst debt forgiveness should be an option of last resort. A lesson learnt concerns the **setting up of new MFIs** as a post-disaster response, which has largely been found **ineffective**. Among existing MFIs those concerned should themselves periodically test the effectiveness of their DRM strategies and need to prepare for worst case scenarios by applying a **comprehensive approach to risk management**, integrating disaster risk management strategies into their operations and organisational culture. They tend to find it easier to succeed at their operations if they can avail themselves of committed and easy to deploy field staff, whilst their geographical diversification through a wide network allows them to cross-subsidise for DRM. Microlending programmes should **not mix loans and grants** - the latter should be provided by a different organisation –

and the solidarity group lending methodology is not suitable for home improvement loans. For poor communities, savings and emergency funds are better than insurance.

Although international assistance provided regularly without conditions may provide 'perverse incentives' to local population groups and governments alike, at a minimum, donors should help mobilise financial and in-kind resources to pay **compensation** to the next of kin of those having lost a household member due to a disaster. A little creativity in relief programmes, such as temporarily paying school fees, can go a long way in helping households cope. To bridge the humanitarian-development aid continuum, activities such as animal restocking are necessary but not sufficient to recover household welfare, and complementary measures are needed to **catalyse a local development dynamic** by restoring the hopes of those affected. Donors should support both governments and civil society organisations, recognising that although the **state can cover covariant risks more effectively** than the private sector, effective **DRM remains unattainable without CSO involvement**. Implemented in the context of larger, coherent strategies targeting hazard risk reduction, even one-off capacity-building exercises for CSOs, paying special attention to gender issues, are very worthwhile pursuing and can contribute to DRM at critical times.

24. Concluding remarks

Government and civil society intervention may be required to deal successfully with disaster risk and other risks affecting households in a given area (Holzmann, 2001). In the long run, the effectiveness of disaster risk management will depend on the mix of available informal, market-based and public mechanisms (Pantoja 2002). Whilst providing clear policy messages and legal provisions through improved regulatory frameworks, the margins of manoeuvre of NGOs and CBOs should be expanded, and not only under the circumstances following a disaster. Successful disaster reduction strategies involve careful efforts to combine knowledge, technology, expertise, institutional capacities, management skills, and practical experience for optimum results, all of which needs the collaboration between government and civil society.

To further our analysis of the interaction between natural disasters, DRM and socio-economic development, more research is necessary, including also on the long-term development impact of natural disasters. More cost-benefit analyses that indicate the "sunk costs" of not responding to hazard risk and the income foregone through natural disasters need to be carried out. Not least, these would contribute to change the predominating view of DRM initiatives, which, like the training of human resources, must be seen investments rather than as mere costs. In disaster-prone regions, country assistance strategies should explicitly address disaster management as an integral part of long-term development planning – but to be backed politically and approved by constituencies, they will need to be better informed by research and analyses, including about the "disasters that did *not* happen". This will of course not be sufficient to make agriculture, the sector on which most disaster-prone countries depend, "disaster-proof", and much more investment in sustainable NRM is needed.

As agricultural development has become largely uninteresting to donors – ODA to the sector has been declining steadily – efforts could be tied to a type of humanitarian assistance that does not undermine household coping strategies but strengthens them. The wider utilisation of approaches that attempt to put communities in the driver's seat while also assigning a prominent role to local government, being pursued for example in Latin America by bilateral cooperation agencies, is dependent upon the processes of decentralisation and democratisation (as one of their main proponents, GTZ, readily admits). It must be borne in mind in this context that 'communal development' does not equate 'community development', as there is, particularly in Francophone countries, often semantic confusion between the two, with the administrative systems of countries benefiting from donor interventions unsurprisingly in favour of the former and suspicious of the latter.

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26. Web sites

Asian Disaster Preparedness Centre
http://www.adpc.ait.ac.th

Asian Disaster Reduction Centre
http://www.adrc.or.jp

Caribbean Disaster Mitigation Project
http://www.oas.org/EN/CDMP

CEPREDENAC (Centro de Coordinación para la Prevención de los Desastres Naturales en América Central)
http://www.cepredenac.org

Centro Régional de Información sobre Desastres (América Latina y el Caribe)
http://www.disaster.info.desastres.net/crid

Directory of Disaster Reduction Institutions
http://www.unige.ch/idndr

Disaster Information Network
http://www.disaster.net

Disaster Preparedness ECHO (DIPECHO)
http://www.disaster.info.desastres.net/dipecho

Disaster Relief – Worldwide Disaster Aid and Information via the Internet
http://www.disasterrelief.org

Earthquake Research Institute
http://www.eri.u-tokyo.ac.jp

European Union Humanitarian Office
http://www.europa.eu.int/comm/echo

FAO Global Information and Early Warning System (GIEWS)
http://www.fao.org/giews/default.html

FAO Geoweb
http://geoweb.fao.org

FAO Food Insecurity and Vulnerability Information Mapping System (FIVIMS)
http://www.fao.org/fivims/default.html

US Federal Emergency Management Agency (FEMA)
http://www.fema.gov

Fortalecer Estructuras Locales para la Mitigación de Desastres (FEMID)
http://www.cepredenac.org/10_femid/10_index.html

HazardNet
http://hoshi.cic.sfu.ca/hazard/index.html

HazNet

http://www.haznet.org

International Committee of Red Cross and Red Crescent Societies
http://www.ifrc.org

International Institute for Disaster Risk Management
http://www.idrmhome.org

International Strategy for Disaster Reduction
http://www.unisdr.org

La Red de Estudios Sociales en Prevención de Desastres en América Latina
http://www.osso.univalle.edu.co/tmp/lared/lared/html

La Red de Estudios Sociales en Prevención de Desastres en América Latina - Publications :
http://www.desenredando.org

Office for the Coordination of Humanitarian Affairs
http://www.reliefweb.int/

Promujer
http://www.promujer.org

ProVention Consortium
http://www.proventionconsortium.org

SEWA
http://www.sewa.org

UNDP Disaster Management
http://www.undp.org/erd/disaster.html

UNDP Disaster Management Programme
http://www.undp.org/erd/dmp.html

UNESCO Unit for Natural Disaster Reduction
http://www.unesco.org/environment

World Bank Disaster Management Facility
http://www.worldbank.org/dmf

World Food Programme
http://www.wfp.org

World Health Organization Division of Emergency and Humanitarian Action
http://www.who.int/eha

World Meteorological Organization
http://www.wmo.ch

Summary

Decentralisation and participation are both means of bringing a broader section of a given population into public decision-making processes, which is especially important in the context of Disaster Risk Mitigation (DRM). Local population groups themselves often contribute to increasing their risk exposure, for example, through unsafe settlements on steep slopes, unsustainable deforestation leading to soil degradation, etc. This constitutes all the more reason to inform local population groups about the risks they are taking, involving them as responsible actors in disaster prevention activities; a lot depends on people's perceptions and interpretations of hazard risk, which should be explored. Natural disasters rarely hit whole countries - hazard risks normally vary even from one micro-region to another, and it is therefore essential to use local knowledge for effective prevention measures and to adapt these to local hazards and vulnerabilities. The latter is much more easily achieved at the decentralised, local government level, and below.

The public administration should thus take on a facilitatory role and responsibility in the process, as government can effectively link up knowledge, technology, skills, resources, and the expertise offered by specialist institutions with grass-roots experience, organisational capacity, and participatory management skills. Successful disaster reduction strategies involve careful efforts to combine knowledge, technology, expertise, institutional capacities, management skills, and practical experience for optimum results, which would not be possible without proper collaboration between the two key players: state and civil society. NGOs can be innovative, rooted to the ground, and participatory in their approach while government can replicate best practices for larger impact. To some extent, however, politics tend to militate against preventive DRM: politicians can and do seize opportunities offered by post-disaster rehabilitation programmes to accumulate political capital and buttress their constituency; on the other hand, they may find it difficult to use scarce public funds for the kind of environmental conservation initiatives useful for natural disaster prevention.

The appropriate allocation of the power to act between levels of authority from individual to global is an essential element in the search for a more comprehensive approach to natural hazard risk reduction. The suboptimal or misallocation of the power and the means to make decisions is often the greatest remaining obstacle to the reduction of natural disasters. How natural resources and environment are managed and mismanaged is a key point of access to the processes that can lead to the eventual removal of this obstacle. In the context of natural resources management, it has been recognised that communities should drive NRM changes, and that, in light of the site-specificity of such problems and the need to consider the incentives of local stakeholders and empower them to take action, community driven development holds substantial promise as an approach to implement DRM programmes.

At the macro-level, official development assistance has until recently had at best a mixed impact on the institutionalisation of DRM. Although "pure" natural disasters tend to cause more casualties and damage than man-made or so-called complex emergencies, it is the latter that have dominated humanitarian budget priorities and funding, leaving DRM activities in natural disaster-prone countries largely underfunded. Institutional divisions between humanitarian and development programmes also result in the neglect of prevention activities.

Government post-disaster relief compensation programmes and international assistance may also act as a "two-edged sword" by providing 'incentives' for poor people to locate to disaster-prone areas. Legal and regulatory environments differ enormously from country to country, as does the degree to which the necessary norms that would allow to reduce disaster vulnerability are actually applied and enforced. The contribution of laws and regulations to natural disaster response procedures is an empirical question that only case studies can illustrate; alas, the latter do not normally examine this aspect explicitly, and mostly do so in passing. Demand-driven (and often project-confined) processes of participation do not always

meet the supply-driven (and often top-down) processes of decentralisation. In China, the establishment of the household responsibility system has contributed to community groups playing important roles in risk management, but these institutions have not yet been reached by the reform launched at higher levels in 1998.

Some of the methodologically most innovative approaches in DRM come from Central America, with projects such as FEMID, which aimed at responding to communities' interests to participate in jointly analysing natural hazards and proposing actions; to do so in an organised and systemic manner, an approach referred to as Local Risk Management (LRM) was developed, using the inter-related dimensions of Prevention, Mitigation, and Preparedness (PMP) to group and structure activities. Some of the logistically most innovative responses to the challenges of DRM come from South Asia, where several Indian States have in recent years been hit by earthquakes, cyclones, and floods. Inter alia, *experience there suggests that technical line agencies and government departments may need the support of intersectoral Ministries with sufficient logistical capacity: amongst the latter, it was the Revenue Department that was to prove crucial in spreading the warnings before the cyclone, and in the planning and coordination of the relief and rehabilitation processes.*

Local institutions may come into the DRM cycle at various stages; Micro-Finance Institutions (MFIs) can carry out important functions in preparedness, reduction or mitigation and risk transfer, as well as response (coping) and recovery. It is in the MFI framework that some "best practices" concerning the use of grant money – mixed with loans – in the aftermath of the onslaught of a natural disaster are emerging. Past experiences indicate that, even though debt forgiveness has brought immediate relief to affected MFI borrowers, it undermined years of sectoral work aimed at creating a culture of repayment and financial discipline. Emergency loans, and other demand-based financial services, such as channelling remittances, may be good mechanisms to help distressed households and can be provided to everybody across affected areas. The provision of auxiliary services such as disaster preparedness training tends to be negatively correlated with financial sustainability, which is vital for any MFI to face future disasters and to develop a viable disaster risk management strategy.

Many claim that progress in reducing the impacts of recurrent natural disasters depends on site-specific, targeted support to local capacities and human resource development. Training has often been targeted at male technocrats, whereas DRM at household level is also, if not mainly, a women's affair. This male bias in training activities can in part be offset by focusing more on the household and farming systems level, to which the Sustainable Livelihoods framework can add important value. An initiative experimented with in the villages of the remote townships in rural China involves setting up demonstration households which can take up an intermediary function by increasing the frequency of communication with poor households, as well as disseminate knowledge, information and jointly improved technologies. Disaster risk reduction is best attained implementing a diverse series of activities that combines more formal development activities and more traditional risk reduction activities.

Even when risks are technically insurable, there might be alternative risk management products that are more adequate, such as savings and emergency funds. It may be feasible to provide disaster insurance services, but given high risk exposure levels, insurance premiums will most likely have to be set at a rate that only few can afford. In countries like Mexico, for instance, low coverage stems in part from the high premium prices that the insurance industry has to charge in zones that are highly prone to earthquakes. In low risk exposure areas, people do not have the incentive to buy insurance coverage, which further reduces the insurer's scope to bring down costs to a viable level through cross-subsidisation. A promising approach could be area-based index insurance provided through contracts written against specific perils or events such as area yield loss, flood, or others, defined and recorded at a regional level via, for example, local weather stations.

While credit can help reduce risk through "income smoothing", savings can help mitigate and cope with risk through "consumption smoothing". Savings groups are important in the aftermath of a disaster, but subject to 'co-variance': informal community-based insurance mechanisms, including traditional rotating credit and savings associations, tend to break down when a disaster hits most of their members. Under heightened disaster risk conditions, the intrinsic contradiction by which the larger a group the more effective it may be as a group-based insurance mechanism, but the more difficult it may also be for it to enforce reciprocity rules, becomes even more marked. Among institutions that mobilise savings, experience suggests that those mobilising voluntary savings might face less acute cash constraints in a post-disaster situation than those collecting compulsory savings.

If we take the wider institutional environment to include traditional communities' believe systems and cosmology, it is important to realise that to differing degrees and in various forms, natural disasters tend to become dissocialised and "assimilated" in reference to the supernatural. In Western culture and epistemology, this is commonly called "fatalism" and "fatalistic" interpretations of such events postulate that they are acts of God. It would thus be useful to even avoid using the term 'natural disaster' as it may be misleading and rather draw attention to the human role in catalysing or causing such events.

Other important elements to consider include predictability and geographical circumference: close to an active volcano, for example, it will always be easier to convince people to invest in disaster prevention than further away. Local disaster prevention initiatives should be part of a participatory planning process linked to awareness raising or training activities and a preliminary risk analysis. The latter, together with a common conceptual and informational basis, is necessary since the causes of disaster risk and the possibilities of mitigating it are for the most part unknown. Where risk management is used to reduce existing risk we may refer to corrective or compensatory risk reduction and where it is used to predict and control future risk we may refer to prospective risk management. Prospective risk management is used in the context of development planning and project processes searching to guarantee adequate levels of security or sustainability for new investments.

A problem in this respect is posed by the fact that DRM initiatives are rarely seen as investment but are rather treated as a mere cost; not least, this is due to the absence of scholarly cost-benefit analyses to make the point. Another important constraint is the very short attention spans that natural disaster risks generally command. In the immediate aftermath of a natural disaster strike, with memories of human and material losses vivid, mitigation investment is a very high priority. Events such as remembrance day festivals on the anniversary of the onset of natural disasters are designed to address this issue and reinforce preparedness in people's minds. More often than not each time a shock or disaster occurs, development gains accrued are wiped out and communities find themselves 'starting from scratch'. As such, natural disaster mitigation can also be strengthened in rural development projects through greater attention to Operations and Maintenance (O&M) of infrastructural facilities.

DRM should be regarded as an approach to development planning rather than an outcome of a development project in itself. Development activities that are undertaken in marginal disaster-prone areas are usually not specifically linked to preventing disasters or improving the capacity of households to cope with shocks; rather, they tend to have generic poverty alleviation objectives which may or may not help households cope with repeated disasters. Major investment is needed in developing and disseminating productivity-increasing technology to prevent marginal farmers from exploiting ecologically fragile areas such as hillsides, which leads to soil erosion, watershed degradation and increased natural hazard risk. Within the realm of NRM, options abound that can make positive contributions to improve hazard risk from natural disasters, such as, for example, alternatives to deforestation as forests may provide natural buffers to the flooding of human settlements and agricultural plots.

In sum, the picture emerging from the literature is too patchy and thin to allow conjectures about what a "typical" local institution that is successful at DRM looks like. The latter is not a product but a cyclical, dynamic process that requires continuous adjustments, decision-making and interaction at different yet interrelated levels and among a variety of institutions and actors, including individuals, households, communities, non-governmental organisations, market institutions, and echelons of government. Interdisciplinary initiatives tend to until present have been ad hoc *and disaster-specific, sometimes remarkably well orchestrated, but, often constrained by formal structural institutional dissonance and a lack of (interest in) coordination. The latter may be diagnosed ahead of time using existing and well-known research tools such as stakeholder analyses, informed by critical assessments of sectoral policies and the legal and regulatory environment.*

Summary Matrix of selected "best practices" by actor and emergency phase

Phase	Pre-emergency phase			Emergency phase	Post-emergency phase	
Actors	Prevention	Mitigation	Preparedness	Response	Recovery	Development
CBOs	Hazard risk diagnosis	Maintain public infrastructure	Construct infrastructure to protect property	Tap customary solidarity networks	Community mobilisation for joint action	Provide moral support and advice
"Local-level" NGOs	Provide skills training to local CBOs	Hh vulnerability assessments	Carry out awareness raising campaigns	Deploy trainers on hygiene & health	Psychological counselling & support	Def. local priorities to red. vulnerability
MFIs	Hazard risk diagnosis	Promote mitigation practices	Spread risk across portfolio	Client damage assessments	Loan rescheduling a.o. special activities	Integrate DRM in development activity
Local emergency committees	Hazard risk diagnosis	Hh vulnerability assessments	Prepare evacuation plans	Set up search & rescue committees	Set up food aid committees	Advise how to reduce local vulnerability
Locally respected persons	Awareness raising campaigns	Solicit external technical assistance on DRM	Carry out awareness raising campaigns	Act as advisory focal points	Promote improved technologies	Fight "fatalistic" attitudes
Local government	Draft a local disaster prevention plan	Watershed/river basin planning	Prepare evacuation and contingency plans	Provide shelter to displaced hhs	Set up rehab. projects for public goods	Rec. info on hhs settled in high risk areas
"Meso-level" NGOs	Provide skills training to local NGOs	Watershed/river basin planning	Skills training to local NGOs	Mediate between national and local level	Set up rehab. projects for private goods	Promotr local institutional development
Provincial government	Set local admin. rules, eg prohibit sand xtraction, tree cutting, etc.	Promote multisectoral, integrated approaches in DRM	Provide agro-ecological and GIS data for national disaster relief plan	Coordinate nat. & internat. government & civil society actors	Implement FFW a.o. rehabilitation programmes	Protect roads against landslides, reinforce slopes, improve gullies...
National government	Invest in early-warning systems	Pass construction code & safety regulations	Prepare nationnal disaster relief plan	Declare a disaster (& state of emergency)	Set up emergency & recovery fund	Prepare Codes of Conduct in relief & dev't.
International "community"	Raise awareness on sustainable NRM	Ensure quality in donorfunded innfrastructure projects	Stop treating DRM as an exceptional activity	Mobilise financial aid as grants & long-term loans	Fund FFW a.o. rehabilitation programmes	Mainstream DRM activities in dev't. planning

Terms of Reference

Authors contract for Norman Messer

Literature review on

"The role of local institutions and their interaction in disaster risk mitigation".

In close consultation with the Task Group of the Rural Institutions and Participation Service co-ordinating the above study the author will prepare a "State-of-the-art"- literature/Internet review on "The role of local institutions and their interaction in disaster risk mitigation". Special attention will be given to identify and analyse community based self-help approaches and local government initiatives and their role in disaster risk mitigation, focussing on disaster prevention and preparedness and the question how disaster mitigation can be sucsessfully integrated into long-term rural development startegies. The paper will present selected success stories, and failures if analysed, from South East Asia, Africa, Latin America and the Near East and will analyse the mechanisms and conditions which made cases sucessful. Some selected case studies will be presented as "case stories" outlining in a contextualized way how local communities and/or local governments organized themselves and acted before, during and after emergency situations (describing what happened? who did what how and why? what went well what went wrong?). The paper will consolidate major *l*essons learned and propose more widely applicable policy recommendations.

The paper will also elaborate a synthesis of case studies and reports available in the literature and the Internet and extract lessons learned about how

- further strengthen the role of community based organizations and local government authorities in the field of disaster management, including capacity building required to fulfil such role
- promote the horizontal interaction of local governments with community based organisations to encourage their active collaboration in the design and implementation of locally adopted disaster preparedness/ prevention strategies,
- promote vertical interaction between different actors in disaster management considering the criteria: subsidiarity and comparative advantage
- improve and link disaster prevention strategies with long-term sustainable rural development programmes

in order to better contribute to reducing the vulnerability of rural communities and households.

Duty station: Singapur
Duration of contract: starting 1 December for 35 days
Reference document: The concept note prepared by SDAR on the above topic