Local Level Risk Management. Concepts and Experience in Central America.

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Introduction

Magnum disasters, those that affect large territories and have important impacts on infrastructure, population and production, may be seen in various different dimensions. On the one hand, they are crisis situations that elicit the response of national and even international disaster response organizations and are likely to be given the denomination of national or regional disasters. On the other hand, a large scale disaster can also be looked at as a myriad of small scale, local, community or family level disasters all related to the same physical detonating agent. This may be an earthquake, hurricane, flooding, volcanic eruption, tsunami or one of many other possible disaster hazard agents. The nature of the damage and destruction and its social and territorial distribution may take the physical event as a point of reference, but in the final equation damage and loss is determined by the differential levels of exposure and vulnerability of the population, infrastructure and production. This varies enormously between different spatial and social units and, in consequence, levels of damage and difficulties in recovery will be commensurately differentiated. Even within a single spatial or social unit differential levels of damage will be found that reflect this heterogeneous structuring of social vulnerability. See Hewitt, 1997, Blaikie et al, 1994, Lavell, 2000.

Large scale disasters, those that tend to receive a good part of the attention and to be registered in international disaster statistics, are, however, but one component of the disaster problematic. Alongside these events, a multitude of small and medium scale disasters occur that are restricted in social and spatial terms to small zones, localities and communities. These events tend to be recurrent, have to be dealt with by local authorities or families, are

related to a wide range of hazard types and accumulatively account for very significant losses which according to some may be proximate to the losses associated with large scale disasters- see the DESINVENTAR data base developed by LA RED in Latin America.

Whether we are dealing with large or small scale disaster events, both have a common characteristic. Their occurrence is related to the prior existence of risk, a condition that implies the interaction in time and space of what are known as hazard and vulnerability factors that generate conditions that presage and announce future disaster. That is to say, risk is a latent condition, whilst disaster represents the actualization of existing risk conditions where the physical event serves as a detonator of disaster, but not its final cause. Risk is generated by a series of complex social processes that are instigated by different social actors and at different spatial scales. But, risk is always expressed in concrete terms, and can be measured most adequately, at the micro social and territorial scales. And, the playing out of risk when transformed into disaster always has a concrete and differential expression at the local level.

It is now well accepted that disaster preparedness and response requires the active participation of the local population. Centralized response structures are inadequate and can not respond effectively to disaster when expressed at the same time in multiple different areas and places. The first to respond to disaster and instrument early warning measures are local populations and authorities. Over the last ten to fifteen years more and more attention has been given to the stimulation and strengthening of local disaster preparedness and response capacities, although much has still to be done in these areas.

With the increase in saliency of primary risk reduction and risk management concerns over the last ten years in particular, a good deal of attention has been given to local risk management principles and activities. This has taken up on lessons learnt and practices implemented at the community levels during the 1980s and early 1990s. See Maskrey, 1989. More recent experiences, however, have broadened the conceptual base and action framework for local level initiatives in favor of more development oriented and holistic approaches. The basis of this type of intervention can be found in the recognition that risk is expressed locally and although the processes by which it is constructed are not restricted to this level, the most adequate entrance to the problem and its resolution is with the active participation, collaboration and leadership of local actors. In the Latin American context, and elsewhere, there is also a growing conviction that local level risk management can not be divorced from the local level

development challenge and matrix, and that risk and development management must go hand in hand. Disaster risk reduction will be most effective when it is considered in the light of daily life risk factors such as unemployment, ill health, malnutrition, lack of basic hygiene and social and family violence. These conditions typify or define underdevelopment, social exclusion and poverty. Hazard reduction, vulnerability reduction and increases in social resilience must go hand in hand in order to construct more disaster resistant communities and localities.

The major objective of the present paper is to consider the fundamental conceptual premises of local level risk reduction and management as have been developed in Latin America and analyze a number of examples of the implementation of local management schemes in Central America, the associated challenges and their real or potential results in terms of disaster reduction.

The Increase in Local Risk Reduction and Management Concerns in Central America and Changing Approaches.

Prior to the 1998 impact of Hurricane Mitch in Central America, local level risk management had been promoted on a very limited scale. Initiatives with community or local level preparedness, early warning systems and risk reduction had been promoted by such organizations as the International Red Cross, GTZ Germany, and The Latin American Network for the Social Study of Disaster Prevention-LA RED, but this was not a generalized fact. Some initiatives had also been taken by the national disaster organizations in the framework of recommendations emanating from the International Decade for National Disaster Reduction, whilst a limited number of community-based organizations had also taken up on the problem in disaster prone areas.

Hurricane Mitch and the earthquakes in El Salvador in 2001 stimulated a rapid increase in the saliency of local level risk reduction management and measures. This was not only promoted by the evidence thrown up with the events themselves but also by policy dictates emanating from Central American government resolutions in the framework of the Central American Integration System, and follow up to these by the Central American Coordinating Centre for Natural Disaster Prevention-CEPREDENAC.

Following Mitch, relatively large scale investment has been made in local risk management concerns, financed by a large number of international organizations and institutions. These include OFDA-AID, DIPECHO of the

European Union, the Swiss Collaboration-COSUDE-, UNDP and UNICEF, the World Bank and Inter American Development Banks. Schemes have been implemented by a wide variety of international and national NGOs, including CARE, CHF, Action Aid, Oxfam, CARITAS, Plan International, the Humboldt Centre in Nicaragua and the Centre for Disaster Prevention in El Salvador. Moreover, government based institutions promoting municipal development and decentralization have taken up on the challenge and developed local level risk reduction programmes or concerns.

A recent rapid inventory exercise promoted by a UNDP-CEPREDENAC project in the region has identified over 150 local level initiatives in the seven Central American countries all promoted since 1998. These cover a large array of topics and approaches, where different aspects of local level risk reduction come into play. Undoubtedly, a more thorough inventory process would reveal a considerable number of additional efforts by smaller NGOs and community based groups.

One interesting and relevant aspect that can be discovered as regards the new spate of interest in local risk management concerns relates to the way an important number of the initiatives are promoted by development NGOs involved with the promotion of local development, decentralization and environmental management. This diversification of schemes and approaches, which compliment initiatives developed by risk and disaster institutions, responds to the prevailing belief that risk management is best achieved when linked to development processes, when seen as a parameter of development and a cross cutting theme built into development initiatives, in the same way as many environmental and gender initiatives have been approached over the last years.

This approach recognizes that risk is constructed with the normal processes of social change and development. And, that disaster risk reduction, prevision and control is best approached when considered within the framework of the search for increased overall human security and the reduction of global risk, including daily life style risk associated with poverty. In this way, consideration is not only given to the reduction of existing risk, but also to avoiding the construction of new risk in the future, product of inadequate development processes and projects. Considered in this way, risk management then becomes a strategy for social and economic transformation and development and not simply a conservative mechanism for reducing risk where no improvements occur in the basic living conditions and economic options available to the population. Increasing resilience and going from coping to thriving then assume their due position in the overall risk reduction process.

The Merging of Concept and Practice and the Parameters and Characteristics of Best Practice Local Risk Management.

During the last 15 years in Latin America, considerable advance has been made in the development of conceptual frameworks, first for community level disaster prevention and, during the last six years, with notions regarding local level risk management. An important contribution to this debate has been made by LA RED. See www.desenredando.org for access to the organizations publications. On the other hand, the implementation of local level schemes and projects has allowed a considerable amount of experience and knowledge to be gained as regards good practice and successful risk reduction actions and strategies, whether subject specific or of a more general kind. The recent UNDP-CEPREDENAC project in Central America has also provided valuable information for the development of concepts and the design of interventions. In the present summary section we will briefly provide a definition of local level risk management and identify the major parameters or characteristics that contribute to the successful development of such practice. In the next section we will examine a selected number of cases of local level interventions and schemes in Central America that have successfully contributed to risk reduction and increased resilience of local populations to disaster contexts.

Disaster risk management considered in generic terms can be seen as relatively complex a social process aimed at the reduction of existing disaster risk levels and the prevision and control of future risk in society. This process signifies the implementation of a concatenated series of activities that finally lead to the implementation of risk reduction or control strategies, instruments or actions. These activities include-

- 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.
- Decisions as to acceptable and unacceptable risk levels, taking into account the social, economic, cultural and political context in which risk is manifested.
- The identification of potential risk reduction or control strategies, instruments or activities and the discussion and negotiation of feasible, optimizing solutions.
- The implementation of the selected risk reduction strategy and measures.

The notion of disaster risk management is not a terminological substitute for disaster prevention and mitigation. Rather, risk management applies to the full range of activities considered under the traditional notion of the disaster cycle or continuum. Risk reduction, prevision and control are pertinent in pre impact contexts and also with regards to preparedness, response, rehabilitation and reconstruction. Risk is present in all these stages, and is ever evolving and changing, requiring different approaches and types of intervention. 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.

The principle defining characteristics or parameters of risk management are the following-

- It is a process and not a product. That is to say, the particular instruments, actions or interventions used to reduce or control risk do not define the process itself. Rather, these are the result of an analytical and decision making process by which decisions are taken as regards adequate types of intervention.
- It should be considered in the light of development objectives and contexts and should be considered a strategy or dimension of development and project planning and not as an adjunct to this. Risk management that builds on and is integrated into the debate on development and the strategies for achieving this is likely to be far more successful than the instrumentation of one off practices or activities that search to reduce risk, but without contributing to the transformation of basic social and economic conditions in affected areas.
- Full participation of the subjects of risk is fundamental in the search for and implementation of adequate risk reduction schemes. That is to say, risk management can not be seen as a technical or technocratic pursuit, solely in the hands of professionals or technical staff. Participation of affected groups is an obligatory component of successful risk management.
- Participation is the basis for the appropriation of risk management by affected groups and such appropriation is a defining characteristic of the process and the basis for future sustainability. External professional and technical actors are clearly highly relevant but must work alongside the subjects of risk in searching for adequate interventions that respond to their needs and requirements and which uses their capabilities, resources and opportunities.

The above mentioned characteristics are fundamental to the definition of local level risk management. A key parameter in this definition relates to the participation in, and **appropriation of the process by local organized and institutional actors or individuals**. Local level risk management can not be practiced by external actors. These may play an important part in establishing, fomenting or strengthening local level management and its structures, strategies, practice and instruments, but they can not in themselves be seen to practice local level risk management through the projects they bring to local areas.

Finally, it is necessary to comment that very few examples of local level risk management exist that comply with the characteristics and parameters described above. Rather, these serve to establish a type of utopian, best practice to be sought in the future. To date, most local level interventions or practice are externally driven and controlled and participation and appropriation have only been partially achieved. However, many examples exist where partial and thematic approaches have been implemented with encouraging results, and where several of the parameters used above for defining local level risk management best practice have been respected. This includes the establishment of early warning systems, the design of local level development plans dimensioned with risk reduction considerations, the strengthening of local risk management organizations, the promotion of ecologically sound agricultural development, risk conscious river basin planning, and the instrumentation of diverse hazard control mechanisms, including dykes, terraces, reforestation and slope stabilizing mechanisms etc.

In the remaining part of this paper we will examine a limited number of such local schemes implemented in Central America, attempting to indicate the manner in which they have contributed to the reduction and control of risk in society and the probable positive future impacts they may have under future crisis conditions. In order to do this we have selected three types of scheme or intervention of differing levels of complexity or comprehensibility. The first deals with the establishment of local flood early warning systems. The second deals with the promotion of ecologically sound agricultural practices in lieu of the reduction of landslide and flood hazards in Honduras. And, the third, examines the promotion of an integrated scheme for the promotion of risk reduction in the framework of rural development in the lower basin of the river Lempa in El Salvador. Although the risk reduction and control objectives of these three types of intervention vary, they are all typified by a high level of local

participation, and illustrate the way in which local risk management practices may lead to important reductions in disaster proneness.

Some Examples of Local Level Best Practice Interventions.

Early Warning Systems for Flooding in Central America.

Efficient early warning systems and evacuation plans have saved tens if not hundreds of thousands of lives in different disaster prone countries over the past decade. Options for these vary from highly sophisticated technologies utilizing real time technology, state of the art monitors and satellite and computer systems through to simple community based systems utilizing simple technology and radios. Central America has examples of both types and evidence would suggest that the latter are more efficient and certainly considerably less costly and far more accessible to poorer communities. Moreover, in many ways they seem to be more reliable and secure. A now classic case of wasted high tech solutions can be found in the case of the real time system established in the Sula Valley in Honduras where the floods associated with Mitch washed the flood monitors away. In other cases such devices have been used for rifle target practice by rural dwellers or simply stolen for no apparent reason!

Following the 1991 earthquake in Limon Province in Costa Rica, river forms, regimes and flood patterns were altered due to the impact of the quake in river basins on the Atlantic Coast of the country. Due to this, the National Emergency Commission set forth to stimulate the establishment of an early warning system for Atlantic coast rivers. This consisted of strategically placed, simple technology river flow monitors in the upper and middle basins that are monitored by local population using visual reading or simple electronic methods and the information is regularly transmitted by radio or telephone to an emergency office in the lower basin for processing and the issue of emergency alerts where necessary. The system works with the voluntary participation of the local population and involves indigenous groups particularly in the upper river basin areas. Local participants in the scheme were trained in monitoring and use of radios. The system has worked efficiently to date, although at times suffering from lack of equipment or problems with maintenance. The system in Costa Rica was the first of its kind in the Central American region and served as an example which has since been followed with modifications and improvements in other countries.

In 1996, the Organization for American States promoted the establishment of simple community based early warning systems in small river basins in

all the Central American countries, utilizing river monitors that are home made and cost 8 dollars each. Following on from this initiative and the Mitch experience in the region, the German GTZ promoted a European Union financed experience with local, community based systems in the region called RELSAT. This was introduced in areas where GTZ had already been working since 1998 with a project for the Strengthening of Local Structures for Disaster Mitigation-FEMID. The RELSAT project worked in the Lean-Masica, Acelhuate-Lempa, Reventado and Chepo river valleys in Honduras, El Salvador, Costa Rica and Panama respectively, between 1999and 2001. A similar project had also been promoted by CEPREDENAC and the National Coordinator for Disaster Reduction in Guatemala with Swedish financing, in the valley of the river Coyolate.

As in the previously commented schemes all of these are based on community participation and control of the system, the use of rudimentary river flow monitoring apparatus, radio and telephone communications and central processing of information in the lower valley. The design of emergency and evacuation plans is based on risk mapping exercises and the identification of hazards and vulnerable groups. Local committees exist in all areas and these are now essentially self sufficient, although equipment and maintenance require external support from national emergency organizations. These systems have had considerable success to date. In the case of La Masica which already had a rudimentary system in place prior to the GTZ project and the Coyolate scheme, no deaths were reported during Mitch.

Finally, it is important to reflect on the way in which the early warning systems and the organizations built up around them with community participation have evolved following the establishment of the systems. In various cases, such as Masica, Chepo and Coyolate, the work done with the systems and the active participation of the local population has since served to open up more ambitious local plans in the risk reduction area. Once the systems were working the local committees have broadened their interests and areas of intervention in favor of more primary risk reduction concerns. Thus, in Masica the RELSAT committee has since promoted dyke construction and reforestation in the middle and upper valley and widened evacuation concerns to take into account livestock and not just human beings. In Chepo in Panama, the local committee has established relations with different development agencies to promote development and risk reduction activities. And, in the case of the communities living in the flood zone of the Reventado valley in Costa Rica, the local committee has since been active in urban planning aspects, environmental recovery and local development promotion, establishing relations with government and non

government agencies. These three examples show the importance of participation and appropriation of local processes by local actors and the way in which particular thematic risk reduction projects may give rise to widened concerns and activities.

Agricultural Development in the Lempira South area, Honduras.

The Lempira 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 have been achieved, along with increases in the resilience of the local population when faced with extreme conditions. During Mitch the area covered by the project suffered little damage due to the types of land use and slope-stabilization methods that were utilized, and was able to provide food assistance to other areas damaged severely by the Hurricane.

Integrated Rural Development and Risk Reduction in the Lower Lempa Valley, El Salvador.

The lower reaches of the Lempa River in El Salvador covers an area of some 850 km2 and has a population of approximately 40000 persons distributed in some 90 small towns or villages. Near to 80% of the population live below the poverty line. Nearly half of the population is prone to suffer direct flooding of homes and agricultural lands due to their flood plain location. Earthquake and landslide risks are also present in the zone. Flooding is associated with the normal rainfall regime between May and October, the potential impacts of Caribbean hurricanes, high tide surges and the periodic release of water from the upstream 15th of September hydroelectric facility in order to protect the dam structure during periods of high rainfall and run off.

Disastrous flooding is a recent phenomenon in the zone, resulting from recent land occupancy by poor families under a land distribution

programme promoted by government and civil society following the signing of peace agreements between guerrilla FMLN forces and government in 1992. This led to the assignation of land to immigrant families, much of this in the flood plain area, and the construction of small villages on or proximate to the flood plain. The most important flooding incident to affect the zone since 1992 was associated with Hurricane Mitch and the opening of dam sluice gates to protect the 15th September dam in early November 1998.

At the time of the 1998 flooding, the area had a rudimentary, locally controlled flood warning system in place. This was the result of an Organization of American States promoted project with local organizations and had been put in place in 1997. Based on home made river flow monitors and the use of radio communications between communities, this small scale, rudimentary system permitted the relatively efficient evacuation of population out of the flood prone area. But, although few human tragedies were recorded, the loss of agricultural production, infrastructure and housing caused severe problems for the population given the very low levels of social and economic resilience associated with the prevailing conditions of poverty in the area. The flooding also brought very much to the front the dangers associated with the unannounced opening of the dam sluice gates with its major impacts on flood water levels.

The Mitch flooding, along with the impacts of earlier incidents and later 1999 flooding, served to raise the consciousness of local organizations as to the need for more integral approaches to flood prevention and mitigation and which goes beyond the early warning and emergency response mechanisms developed to date. With this, increased pressure and demands came from the zone for the building of protection dykes and the dragging of the river Lempa in its lower reaches. However, certain organizations in the zone also realized that increased physical protection was only part of the problem and that without increases in human welfare and economic options in the area such measures were only palliatives. Thriving and increases in human resilience were imperative if the flood problem was to be adequately ameliorated. Coping through flood protection mechanisms was seen to be insufficient. Risk reduction required the simultaneous promotion of rural development and risk management schemes in order to increase sustainability and simultaneously reduce daily life and flood risks.

Following these basic premises one of the local organizations that grouped together many communities on the rivers left bank, actively participated in the promotion of an Inter American Development Bank financed project for the area run from the countries Ministry of Environment and Natural

Resources. This project commenced in July 2000 with a group of external consultants working closely with local organizations in the design of a risk reduction and rural development strategy for the zone. The basic premises of this strategy were that risk reduction should be considered from a holistic perspective, searching to increase social resilience through increased economic and social opportunities, whilst also working directly on hazard risk factors related to flooding and landslides in particular. Moreover, the full participation of the population through its legitimate organized representatives, and the appropriation of the project by the local organizations were postulated basic requisites for project success.

At the end of the projects ten month execution period a strategic intervention document had been produced, identifying future intervention parameters and postulating a series of prioritized development and risk reduction projects for future financing. This strategy document had been elaborated with the full participation of the most important local organizations and was the product of consensus amongst these organizations, central and local government and the IADB. Apart from the significance of the document as regards the identification of risk reduction and local development projects to be promoted in the future, the document was also conceived as a point of departure for future negotiations with external funding agencies as regards the implementation of projects that respected the basic strategy framework identified in the document. Agreement was also achieved as to the need for joint local-national government implementation and control of future development projects.

The document in itself and the agreement on joint implementation signified a substantial increase in local empowerment and options for sustainability, based on the achievement of agreements and relative harmony between previously competing and antagonistic local organizations. The project had in fact managed to break down many pre-existing antagonisms between the two major local organizations, bringing these together, along with local and national government representatives, in a single integrated embryonic local development coordinating committee.

The Strategy introduced notions of intra zonal integration and postulated the development of eight priority projects at the local level that combined objectives of increased development options and disaster risk reduction. These included the consolidation and amplification of natural woodlands on river banks in order to offer natural protection from flooding and the opening up of new economic opportunities, the extension and maintenance of the existing dyke system, the strengthening of local early warning and emergency procedures, improvements in potable water supplies, the

strengthening of local and zonal service centres, improved commercial systems and agricultural storage facilities and extension of the secondary rural road system. Continuity would be given to the ongoing commercial and diversified family lot agricultural developments promoted by the two major organizations in the zone. The strategy and the particular projects identified were the product of an intense participatory process that included the elaboration of an integral participatory diagnosis of development options and needs and risk scenarios in the zone, the celebration of local level risk management workshops with the local population, and the elaboration and discussion of intervention scenarios in the search to dimension the most adequate intervention for the near future.

Following the presentation of the strategy document, Ministry of Environment and IADB officials agreed to finance a second stage of the project with British CABILICA and Japanese government funds. This second stage project is now nearly completed and consists in the training and strengthening of local organizations in risk and development project management, the consolidation and functioning of the local development committee and the establishment of local consultative mechanisms, and the undertaking of feasibility studies for the projects identified in the strategy document. The promotion of this second stage very much relied on the appreciation of IADB and government officials that the first stage process had led to the appropriation of the project by local organizations and that the strategy was an adequate form of dealing with the reduction of daily and disaster risk in the zone. As regards continuity of the project, the IADB has agreed in principle to provide around 10 million dollars for the development of priority projects in the zone, beginning next year.

Although the zone has not been affected by any major flooding incident since the beginnings of the project, evidence with the local response to earthquake damage during the 2001 events in El Salvador suggests the important role to be played by consolidated local organizations. In fact, one of the major conclusions to be derived from the experience in the Lower Lempa Valley is that without the development of social capital and organized communities little can be achieved with sustainable development and risk reduction. Organized endeavor is the basis of local empowerment and the sustainability of actions, whilst organizational harmony is a necessary prerequisite for the establishment of local development committees offering an opportunity for full local participation in decision making processes related to the future development of the zone.

Some Final Observations.

The objective of this paper has been to provide a succinct justification for local level risk management initiatives, establish a conceptual base for the understanding and delimitation of local risk management practice and examine a number of selected cases from Central America that illustrate the conceptual premises and show a diversity of approaches to successful local level risk reduction. The three case studies analyzed range from strictly thematic concerns-flood warning systems- through rural development practices in hostile environments, and on to integrated sustainable rural development informed by risk reduction and control parameters.

Despite the differences in approach and extension, the cases analyzed have a number of conceptual and methodological considerations in common. These include the active participation of the local population, the appropriation of the processes by these actors and the sustainability that these two characteristics give to the processes. They demonstrate that with external assistance geared up to create self sufficiency and empower local actors, local populations manage sufficient technical and knowledge resources to assume the challenges associated with development and risk reduction at the local level.

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