

Local risk management

Ideas and notions relating to concept and practice

Regional programme for risk management
in Central America - CEPREDENAC - PNUD



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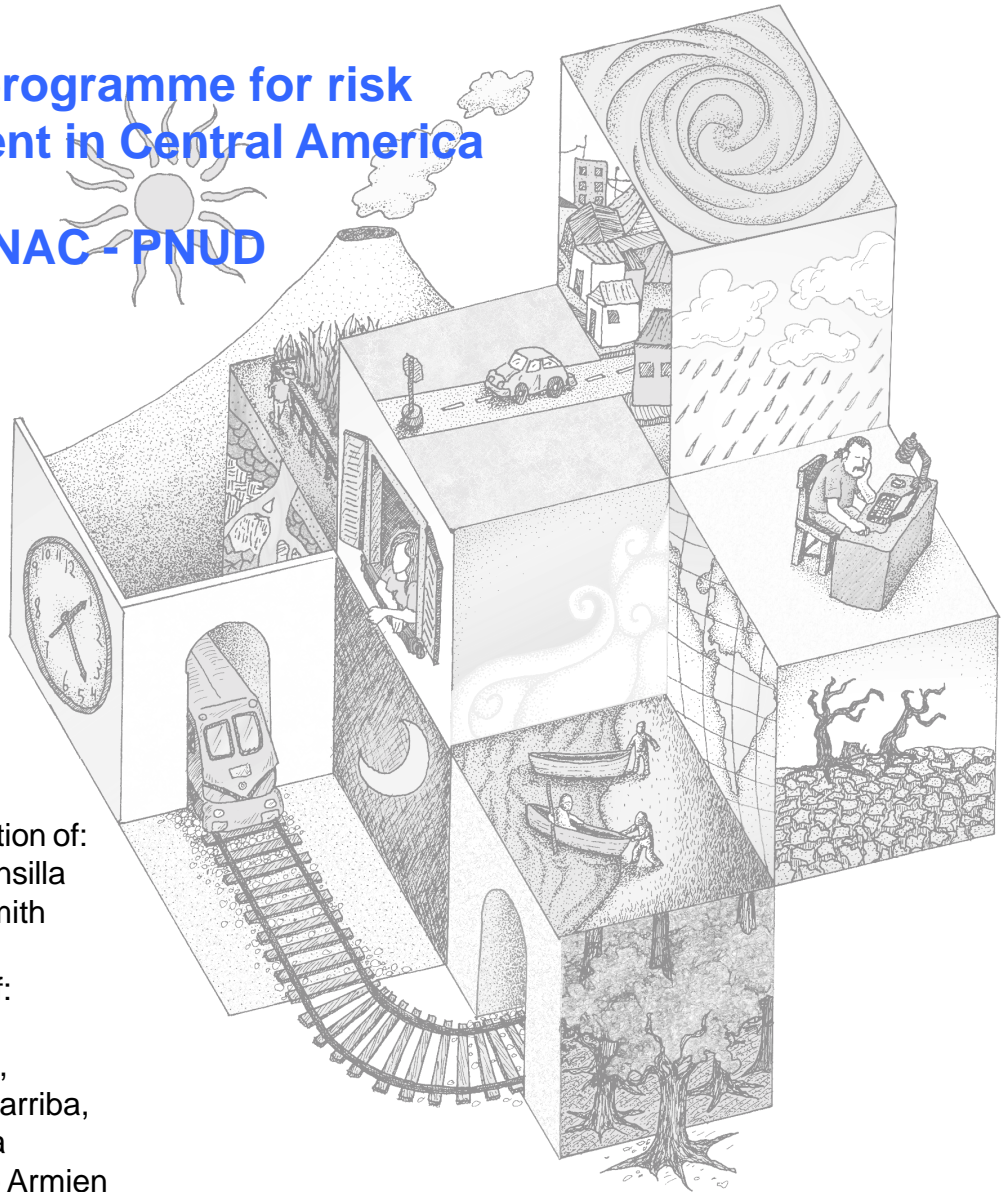
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LOCAL RISK MANAGEMENT

IDEAS AND NOTIONS RELATING TO CONCEPT AND PRACTICE

Regional programme for risk
management in Central America

CEPREDENAC - PNUD



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Preface

Each disaster wipes away in just a few hours the dreams and efforts of countless people and the achievements of many years of development work. In the past two decades, more than 3 million people have died due to disasters of great magnitude linked to natural and social-natural phenomena. Data shows that from 1991 to 2000 an average of 211 million people have been affected on an annual basis – 7 times more than the average of 31 million people affected by conflicts. Loss related to disasters exceeds US\$ 90 billions dollars annually.¹

Unfortunately, this trend is not declining, but rather increasing at a disturbing rate², and the United Nations has made projections in which they estimate that for the year 2050, losses due to disasters will rise to \$300 billion dollars and up to 100 thousand lives annually. To this we must add the fact that between each disaster of great magnitude, around 300 small and medium disasters take place, accumulating damages - that are not registered in the global data base and that can double the amount of losses, so the levels of economic and social losses are much higher. The impact of disasters on development is a permanent process of accumulation of disasters and losses and are not limited only to occasional extreme events.

For over two decades, voices of alertness have articulated that the occurrence of disasters does not only pose an obstacle for the development of the most unfavorable areas of the planet, but that its existence maintains a close link with the dynamics of construction by our societies that favors:

- ♦ The concentration in high risk areas of vulnerable social groups with low economic capacity to absorb the impact of disasters and to recover from its effects.
- ♦ The unsuitable land use and human settlements in areas prone to hazards such as river slopes and low land, combined with fragile and uncertain conditions of life with little social infrastructure and services.
- ♦ The progressive increase of hazard levels due to environmental degradation processes.
- ♦ A weak management and risk reduction capacity as part of the process of development from the public and private institutions and by the national and local governments.

¹ “Strengthening capacities on disaster reduction and recovery, the role of UNDP”, DRU-BCPR, 2002.

² International Strategy for Disaster Reduction, ISDR Bulletin n 3, 2002.

Although societies are moved to take action after the occurrence of a disaster of great magnitude, as soon as the effects of the crisis are overcome, the connections between disasters and development are forgotten, and they return to promoting development models that may obtain undeniable profits in short-term economic growth, but have a tremendous cost in terms of accumulation of risks before disasters.

Conscious of this fact, the United Nations Development Program (UNDP) works closely to strengthen efforts of societies in crisis not only for the necessary tasks of humanitarian assistance after the occurrence of a disaster, but also in development actions, since only by incorporating this subject into policies and programmes for poverty reduction, governance, environmental strategies, and other areas of sustainable development, will we be able to positively influence in those factors that increase our vulnerability to natural phenomena and to build safer societies.

We cannot continue to ignore the increasing problem of risks. To live safely means to have the capacity to manage our territory, acknowledging the existence of risks and taking steps for its control, as well as anticipating the medium- and long-term consequences of our interventions on the surroundings and the new risks that can be generated. Instruments such as risk analyses, land use policies, urban planning, the capacity to make decisions on our immediate surroundings in a governance context, are all necessary for this process.

In Central America, the geophysical characteristics of the isthmus, together with the existing vulnerabilities, cause disaster risk to be very high and this is part of our daily reality. Hurricanes, floods, landslides, earthquakes, tsunamis, volcanic eruptions, droughts and forest fires have unleashed disasters that, in the last thirty years, have produced direct losses estimated at over twenty-five billion dollars; hurricane Mitch itself originated losses over \$6 billion.

During the last two decades risk reduction has been one of the major concerns of governments

and civil society in the region, as well as for the international community. Gradually, the reduction of vulnerabilities has been outlined as a substantial element for sustainable development and has been shifted to a higher importance in the regional development agenda. In this period, the number of political instruments has increased such as presidential summit statements, national and regional strategies and programs, and institutional mechanisms for disaster reduction, and the number of stakeholders has expanded. Likewise CEPREDENAC – the Coordination Center for the Prevention of Natural Disasters in Central America - has been established as a specialized regional agency pertinent to the Central American Integration System CAIS. Specifically after the impact of hurricane Mitch, a number of programs and projects supported by bilateral and multilateral agencies and NGOs, and targeted at several development sector institutions, local governments and civil society, as well as institutions specialized in preparedness and emergency management, have increased considerably.

In this context, the "Regional Program for Risk Management" comes to life, developed by CEPREDENAC with the support of UNDP, complementing a series of regional level projects supported by UNDP and other key actors under the "Strategic Framework for the Reduction of Vulnerabilities and Disasters in Central America". The program has as its objective the strengthening of capacities for disaster risk management in the region and the facilitation of lessons learned from the main local level initiatives at the root of Mitch, as well as the development of methodologies for the incorporation of the risk variable in key planning sectors.

The program is built upon the following criteria:

- ♦ Risk management must not be limited to precise interventions when an event occurs and where the responsibilities are not related to development institutions; rather it must be a permanent process to reduce the existing and future risks, and should be produced under actions of the development framework.

- ◆ It is not possible to approach disaster reduction in a centralized manner. It is necessary to have capacities to manage risks in the local environment: city halls, community meetings, base organizations, associations of neighbors, etc., since events of regional scale, such as Mitch, can be considered the sum of hundreds of small disasters and it is, fundamentally, from the local level where risk management becomes possible. This does not mean that local intervention is the only possible mechanism, since, although the risks are seen at the local level, in many occasions, profound causes of risks often exceed the boundaries of the local environment, making it necessary to develop interventions on a national, regional and even global scale.
- ◆ Understanding the successes and failures of risk management interventions is where we will find those lessons that will allow us to better address future actions.

It is here where the current document is situated, with the objective of providing the actors that intervene in local development with a series of guidelines so that future development actions

contribute to reverting the risk accumulation process to disasters. Carrying out this task has brought together a team of consultants that have classified more than 100 experiences of local risk management in the region and systematized a total of some 22 of them, out of which the lessons that we subsequently offer have been extracted.

We want to express a very special gratitude to all the institutions that provided pertinent information on this theme and that agreed to put their own experiences at the use of the systematization process, as well as to those that participated in the national workshops to validate the results.

We are proud to have been able to place at the reach of people and institutions those lessons from a series of experiences that describe the outcomes and limits of local risk management, and that also provide us with a measurement of the pending challenges. We expect this publication to be useful for the task of continuing to rethink the acquired evidences acquired and to guide risk reduction as a permanent element of territorial management actions under the sustainable development framework.

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Part one

Introduction

Over the past four years, risk management, and local risk management in particular, has been subject to a good deal of conceptual debate and precision, and has increasingly served as a framework or point of reference for numerous social actors working on the risk and development problematic. This has been particularly obvious in Central America, but is also the case in many other Latin American countries. During this time, concept, practice and experience have evolved and provide raw material for the systematization of experiences and subsequent reflection and discussion. The diversity of perspectives, interpretations and practices that have ensued, based on the general notion of risk management, suggest, nonetheless, that clarity and consensus as regards its meaning and structure is still pending.

The demand for local level risk management, the rapid growth in local level interventions over the last few years and the relative inexperience with their implementation suggests, however, the need for a wide-ranging discussion on the notion and practice of local risk management, considering the conceptual developments achieved over the last few years and the types of practice carried out in its name. Essentially, what is required is a pause en route and a

moment of reflection and collective discussion which, based on achievements to date, will hopefully allow for the consolidation of the concept and resulting practices in the future.

This document is offered as input to this ongoing debate. At the same time it attempts to summarize and bring together under one title the results of discussions carried out in Central America within the framework of the Regional Programme for Risk Management in Central America, promoted and coordinated by CEPREDENAC, with the sponsorship of the United Nations Development Programme and the financial support of the United Kingdom's Department for International Development- DFID.

The Local Risk Management component of this regional programme promoted the compilation of an extensive inventory of local level risk reduction initiatives (close to 150 projects) implemented between 1999 and 2002 in the seven countries of the region (Guatemala, Belize, Nicaragua, Honduras, El Salvador, Costa Rica and Panama), a systematization of some 22 of these experiences (selected according to the lessons it was hoped could be learned as regards local management practice), and a series of National Debates between local civil

society and political actors in the seven countries. A preliminary version of the present document was used as a basis for the presentations and discussions at these National Debates and this final version incorporates the lessons, new ideas and notions put forward and discussed at these meetings. The results of the inventory, the systematizations and results of the national debates, as well as the methodological support documents, can all be found on the Regional Programme's web page:

www.cepredenac.org/03_proye/pnud/index.htm

The present document emphasises the conceptual-holistic and methodological underpinnings and aspects of risk management, and local management in particular. However, it is not only based on a consideration of the conceptual debates and progress achieved over the last few years, but also on an analysis of an important number of local level projects carried out in the region by a variety of institutions and organizations and drawn from the inventory and systematizations mentioned above.

In this sense, the present document is a synthesis of concept and practice and reiterates the notion that concept is shaped by practice and practice is guided by concept. Here, Albert Einstein's idea that "nothing is more practical than a good theory" rings true, but we may also add that there is no acceptable theory or concept that has not passed the litmus test of real life. An acceptable development of the concept of risk and risk management will, we believe, permit an easy, complementary and almost spontaneous recognition of the instruments, actions, indicators and intervention measures needed to manage or control risk. Obviously, this also requires thorough knowledge of the risk scenario to be intervened and the design of feasible options for intervention taking into account their adaptation to the existing and differing political, economic and cultural frameworks to be found in different countries and regions and amongst different social groups.

This document first promotes discussion from a global, integral and holistic perspective, with an emphasis on key concepts. This is followed

by an examination of the practical significance of the conceptual framework and of the lessons and experiences gleaned from real life situations. It does not, however, attempt to provide a guide or recipe for risk management with details of concrete instruments and practices for reducing, anticipating or controlling the risk of disaster.

knowledge of the concrete mechanisms available for risk reduction or control. This lack of rigour has perhaps resulted from the "rush" or urgency to introduce activities and achieve goals considered attractive or necessary by distinct governmental and civil society sectors in the region in a problem area that is as yet still in its infancy. One of the consequences of this has been that we have witnessed multiple demands for, and experiences in local risk management training, carried out in two- or three-day workshops which, in the eagerness to achieve concrete and palpable results, may have tended to simplify a complex theme.

The demand for attention to instrumental aspects, (how to do it) has often led to a rapid passing over of fundamental base-line, conceptual and methodological issues and to the inevitable problems that accompany this. An analogy may perhaps be found in the luckily untried idea of training surgeons and doctors to operate and medicate without their having any real and well founded notions of the human body, of the body as a system, of its biology, chemistry, anatomy, or physical structure. In the case of local level risk management something like this may have occurred in a context where previous experience has predominantly been concentrated on disaster response and preparedness, action areas that have perhaps never received sufficient attention in conceptual and methodological terms and been predominantly subject to diverse types of logistical, organizational and instrumental training. In reality, it is precisely the conceptual framework which should provide sense and content to the practice and to the different types of intervention. Thus, we can assert that to the degree the concepts are adequately developed, notional relationships established, the complexity of the situation understood and the integral nature

of the problem grasped, practice may flow easily from this and the instrumental and practical aspects immediately become clearer. This is an almost natural outcome of the development and understanding of the conceptual framework.

Here it is important to emphasize that there is nothing obscure or unintelligible in defining and delimiting the range of concrete alternatives, instruments, methods or interventions which a society or a group within society can use to reduce or prevent risk in general, or disaster risk in particular. The problem is more one of recognizing the source and structure of the problem and creating a medium in which decisions can be taken regarding its resolution, rather than what to do, or how to do it in strictly instrumental terms.

In many ways, types of organised or spontaneous risk management or adaptation have constituted the basis of society's evolution from its origins to the present day. This is clearly apparent in those societies that achieved efficient ways of adapting to the natural environment and societal resilience over long periods of time. What is probably needed today is the recuperation of past experience, adaptation of proven methods, a re-evaluation of what exists and, perhaps, with new post-modern challenges (which imply the weakening of the notion of an all embracing theory and the assignation of greater relevance to concrete conditions of reality and to the role of small-scale and even individual actions)³, the imagination to create new options for new environments. It is not difficult for engineers, architects, agronomists, urban planners, environmental managers, small farmers, workers or craftspeople to be aware of the instruments of risk management, reduction or control. These derive from their accumulated knowledge, experience and practice as professionals, producers or consumers. In other words, an engineer is familiar with seismic-resistant building techniques; an architect with seismic resistant building designs; a farmer or a university trained agronomist knows in general how to guarantee specific levels of protection against environmental or climatic risks; an urban planner has clear ideas on land-use planning in

order to guarantee optimum and secure living, production and service levels; or an environmental manager knows how to manage natural resources in such a way that they are not transformed into socio-natural hazards by society.

Over the past 70 years so-called structural and non-structural prevention and mitigation measures have been widely discussed in the scientific literature and these still offer the basis for many current classifications of types of intervention. In the 1930s, Gilbert White first discussed the futility of controlling floods solely with dykes and the need to combine structural and engineering measures with land-use planning and appropriate agricultural practices. However, it took nearly 60 years for his ideas to be accepted in the United States of America, and it was only as a result of the huge Mississippi floods in 1993 that it was shown and accepted by many that dykes are not a permanent and satisfactory solution and that they can in fact create more problems in the future.

Diverse concrete instruments and methods have been known for some time, and new modifications and achievements have taken place in terms of seismic engineering, the promotion of simple techniques using local materials for hazard protection, wind protection techniques, genetic modifications to provide plants with greater resistance to extremes of climate and pests, adequate forms of social organization and appropriate education, etc. But this really constitutes nothing more than an understanding, assimilation and deepening of existing knowledge and the empirical confirmation of the validity of many pre-existing ideas. In no way do these developments comprise a different invention or a new solution to old problems.

Based on this we may affirm that the simplest side of risk management is in fact the selection of concrete instruments or methods; i.e. the knowledge of what to do in determined situations of risk. This task involves the consciousness, ethical responsibility, knowledge base, inventiveness and application of a wide range of

3 Rosenau, Pauline (1992) 'Post-modernism and Social Sciences' Princeton U.P.-New Jersey- and Jameson, Frederic (1997) 'Postmodernism or, the cultural logic of late capitalism' Duke U.P. - Durham-.

different workers, professionals, practitioners and consumers of knowledge. And, it should be obvious that professional practice and the action of individuals should include the implicit or explicit search for maximum security in their endeavours, although we know that in reality this is not always the case. Ignorance of available options or the prevalence of particular interests in decision making is one thing; but that society is collectively ignorant of what to do is quite another matter. We can thus conclude that risk management as a process and practice cannot start by emphasising what to do in partial or sectoral or even punctual terms with reference to very diverse risk scenarios.

Today we have sufficient experts on the subject to talk about or teach almost everything that is collectively known on instruments and techniques. However, at the same time, the complaint of many of these experts, technicians, engineers, land-use planners, economists, etc. when losses are suffered with each new disaster is precisely, why does it happen if we know how to prevent it? This question inevitably opens up the field of politics and knowledge on the ways in which development strategies are devised, pushes us into the sphere of high-level decision making in the private and public sectors and towards an understanding of the relative power base of those who gain from insecure development and those who face its negative consequences. This then inevitably leads to a critical analysis of how production and rural, urban and residential space or territory is organized and as to the ways that reconstruction processes are organized and support still given for interventions that promote the creation of new risks for society.

Beyond political differences and debates on the different options open to us, there is also an ethical question relating to the interaction between nature and society, with particular emphasis on the rights of future generations to enjoy and derive equal benefits from the environment. Thus, we require a political and ethical positioning as regards the social, natural and historical costs associated with environmental degradation and a more

generalized understanding of alternatives that allow us to correct things, including the recovery of what has been lost, in such a way that principles and procedures are applied that emphasize the reduction and control of risk. This also implies the widest possible participation of the population in the construction of knowledge of risk and in the identification of alternative forms of control and power distribution that allow the processes that create risk to be modified. Risk reduction is thus also a matter of democracy and governance.

We thus insist that the principal problem is not in implementing a solution to a visible problem, but rather how to proceed in reaching and making real that solution. How does one reach the stage at which risk management is assumed as a process, as a notion and as part of daily practice? How do we introduce this notion into the functioning of institutions and organizations charged with ensuring society's safety? How can we promote the incorporation of risk management principles within the multitude of daily chores carried out by professionals? How do we get access to the resources necessary for the implementation of concrete management instruments: an irrigation system, a safe house, credit for the sowing of resistant crops, how to fix a roof, etc.? These are the problems we face and need to resolve and not just the problem of what instruments to use or measures to implement.

To be aware of all the possible instruments, methods or strategies available without being able to use them is the most serious failure we may face. We must thus promote the theme, the notion and ideas on organization, ethics and responsibility, the legal and normative frameworks required etc., to a level where the instruments flow of their own accord, or at least have the option of being put into practice. If not, we will then be in a situation similar to the case of the hundreds of thousands if not millions of human beings who die unnecessarily and unjustly each year as a result of simple stomach or respiratory problems, or of hunger. The problem is not unawareness of the "instruments" that allow us to satisfy food requirements and

guarantee the adequate nutrition or health of the population (access to food, a balanced diet, potable water, exercise etc.). The problem lies in how to make these tools democratically available to society as a whole. And, this is obviously a problem of political decision making and ethics, of social responsibility and the ability to generate options for alternative production systems that are nature and society-friendly and more just income access and distribution mechanisms. In the first case, it is not a matter of destroying forests today, suffering from flooding, avalanches and land slides tomorrow and then seeking to resolve the problem through constructing a retaining dyke. Rather it requires the development of a productive system that does not destroy the forest, one that reduces or restricts the processes that construct risk and not actions that operate on the risk itself once it has become manifest, using punctual engineering solutions. And, in the second case, it is not a matter of generating poverty and then attending the problem through social compensation mechanisms or by attending those seriously affected by disaster once it occurs.

In synthesis we accept that risk management is essentially a process and that a component of this process is the identification and implementation of concrete solutions in different risk environments. However, in order to come up with concrete solutions to a particular problem it is necessary to go through various other phases of the process and, in addition, it is necessary to guarantee that management is effectively a process and not simply a series of particular concrete tools. This document aims to provide an understanding of management as a process and not as a product or a tool. Moreover, this process must be recognized as being a complex political and social one and an issue that implies serious debate in the search for alternative solutions that prevent the conditions which perpetuate disaster.

However, whilst insisting on the conceptual, integral and holistic aspects of the process (the whole is more than the sum of the parts)⁴, we must reiterate that we are not side-stepping a

more detailed consideration of the practice, lessons learned and experience gained which allow a comparison of concept and reality. This document closely considers these aspects and uses examples of cases of good practice throughout in the form of inset boxes, comments within the text, and examples presented in annex 2. In addition, the reader can consult the inventory of materials and systematizations presented on the programme web page as well as the literature cited in this document.

Finally, we should stress that our intention is that this document provide a basis for on-going discussion and not be considered as a definitive final product. We hope it will offer options as regards the problem of risk management and be subjected to comment, criticism and improvement.

Clarification of contents

The concept, notion or practice of Risk Management is relatively recent in Latin America. Nonetheless, over the last five years, and particularly after the notorious impact of phenomena such as El Niño of 1997-98, hurricanes Mitch and George in 1998, the Vargas flooding and landslides in Venezuela in 1999 and the El Salvador earthquakes of 2001, Risk Management has been introduced into the lexicon and the nomenclature of multiple government, international and civil society entities to such a degree that one is led to believe that we are dealing with a practice which is widely agreed upon, tried and tested. However, nothing is further from the truth. It would appear that the notion as such is much more advanced than our understanding as regards its significance for practice. In the same manner as with the generic or global concept, the specific notion of Local Risk Management, which forms the backbone of many initiatives launched under this new nomenclature, suffers from the same problem. The increase in the salience of local risk management now runs parallel to the boom in concerns for local issues and for decentralization

⁴ This does not imply that we subscribe to the principles of the general theory of systems and the theory of consensus it encloses. To the contrary, risk and risk management imply certain levels of conflict and the need for conflict resolution.

within the region when faced with the globalization processes that currently characterize the dominant economic development model. The links between these distinct problematics and the synergy between them has, however, yet to be firmly established.

A quick review of practices promoted under the generic term of Risk Management reveals a series of very different types of actions where, in many cases, the only thing they have in common is the explicit aim of intervening in issues relating to risk and disaster. Henceforth, the concept, method, instruments and practice differ widely. Faced with this situation we must perhaps accept that the attractive appearance of this new paradigm detracts from its essence and substantive content. In other words, appearances seem to be more important than substance. If this is the case, we may sit back with our arms crossed and accept that the concept is a type of bottomless sack into which we can throw anything we choose, or we may recognize that the stated notion and practice are indeed specific and that this specificity should be understood and accepted. Risk management has its own particularities, its own history and it is not simply a modern substitute for what we used to call “disaster prevention and mitigation”. In addition, it is not simply a question of a series of actions aimed at reducing risk, or an undifferentiated “cocktail” or “jumble” of practices that are only related by the idea of reducing risk or preventing disasters.

The brief contextualisation provided above offers a basis for delimiting what we do and do not intend with this document.

We are basically aiming:

- ◆ To provide a succinct analysis of the evolution of the risk management concept, underlining its particular characteristics and thus allowing us to confirm that we are in the presence of a new management approach, albeit complementary to previously accepted notions and practices.

- ◆ To seek to precisely define Local Risk Management and the traits, facets or parameters which characterize it.
- ◆ To take these facets, offering generic ideas on the ways we may incorporate them into the promotion of integral local risk management practice.

And what are we NOT aiming to do with this document?

We do not intend to provide a “guide” or a “manual” on local management which, in simple recipe form, indicates what is to be done and how. This would not be wise or feasible for various reasons. First, because the practice is in an evolutionary state, just like the concept, and rather than pre-established steps we feel that what is needed is imagination and experimentation around clearly defined axes and objectives. Our proposal aims to identify these axes and their significance for the management process. Second, we do not aim to provide a narrow vision of the management process given that, like all practitioners in this field, we are still testing the ground and building a method.

This document aims to support the process of constructing a method and not to create a predetermined and inflexible straightjacket which is impossible to implement. It is, therefore, a proposal; a first step in the recognition of the fact that practice in risk management will proceed more effectively while opportunities to discuss and experiment remain a reality.

The audience for this document

This document is aimed at those we refer to as “external promoters of local risk management”.

This denomination includes a series of institutional and organizational actors who, due to their positions and roles, promote- or should at least do so – the introduction of management practices at the local level offering support to this process. We particularly refer to:

- ◆ Local, national and international non-governmental organizations involved in promoting local development, decentralization or risk and disaster associated activities.
- ◆ Central government sectoral or territorial agencies with regional and local mandates.
- ◆ Groups or confederations of municipalities which provide support and planning services to individual municipalities.
- ◆ Authorities which receive requests to carry out local management tasks.
- ◆ International or national development and financing agencies.
- ◆ Professionals from the academic sector who are able through their teaching to promote attitudes and practices consistent with Risk Management goals.

We hope that the document will also be of immediate relevance for actors directly involved in local management, including municipalities and local stakeholders or civil society representatives such as associations of local populations, private enterprise, neighbourhood associations and community organizations.

The task of transforming the different aspects, lessons, notions, training, and substantive empirical or methodological contents of the document lies with its readers as part of their intervention and promotion and in accordance with their particular audiences. A multitude of other documents, training modules, manuals, etc. could result from the present document all of which should be designed with a particular goal, language, form of expression and differentiated audience in mind.

The working group responsible for the drafting of this document comprises Allan Lavell, Coordinator of the Strengthening of Local Risk Management Capacity Component of the Regional Program for Risk Management in Central America; Elizabeth Mansilla, Regional

Technical Manager for the Programme; and David Smith, regional advisor at CEPREDENAC; and, the Central American consultants who carried out the onerous base-line work drawing up the inventory and carrying out the systematization of experiences in the region. These are Federico Armién in Panamá; Alice Brenes in Costa Rica y Belize; Horacio Somarriba in Nicaragua; Luis Romano in El Salvador and Honduras; and Luis Gamarra in Guatemala. Our thanks to Dr Manuel Arguello for his reading, comments and discussion of a first version of this document. The present document has been translated into English from the original Spanish language version by Noel Payne and Allan Lavell.

The regional initiative for risk reduction comprises one of the activities promoted by CEPREDENAC in the light of the dictates of the Regional Strategy for the Reduction of Vulnerability and Disasters agreed upon by the presidents of the isthmus in 1999 following the impact of hurricane Mitch in the region. This strategy makes specific reference to promoting Local Risk Management. The project represents a continuation of the support provided by UNDP to CEPREDENAC over the last few years and is a component of its regional initiative for risk reduction promoted by the Bureau for Crisis Management and Recuperation in Geneva, represented in this project by Andrew Maskrey and Angeles Arenas. The initiative has also benefited from the support and collaboration of Luca Renda, representing UNDP's New York-based Regional Directorate for Latin America and the Caribbean, the UNDP-Panama office through its Resident Representative, Elizabeth Fong, Geronimo Giusto, Executive Secretary of CEPREDENAC, as well as Alida Spadafora (UNDP-Panama) and Pablo Torrealba (Programme Director, CEPREDENAC), both members of the Coordinating Committee of the Regional Programme.

Part two

Theoretical- conceptual basis of risk and local risk management within a development framework

1. Disasters: the context in which risk management arises as an integral option for intervention

Disasters associated with the occurrence of damaging physical phenomenon and signifying socially significant and disrupting human and material loss and damage have occurred since the origins of human existence.

Nonetheless, it would appear that their occurrence and impacts have tended to increase dramatically over the last decades of the past century. Statistics on large scale disasters registered in the international data base maintained by the Centre for the Epidemiology of Disasters at the University of Louvaine in Belgium indicate a six-fold increase in overall economic losses during the last forty years and a five hundred percent increase in losses associated with hydro-meteorological events during only the last 7 years. These losses are heaviest in so-called poor, developing or middle income countries where a large scale disaster can signify the equivalent of between 15 and 200% of the country's GDP, depending on the

relative size of the affected economy. The smaller the country the greater the likely general impact of the event.

The explanation for the continuing increase in losses and their impact on national, regional or local economies can be found not so much in an increase in the number of extreme natural events that occur, but rather in an increase in the number of persons, population density, infrastructure and production located in hazardous areas and in conditions of such vulnerability that they are more susceptible to excessive damage and loss and face considerable difficulties in recuperating. However, we must also accept that we are ourselves creating new hazards as a result of the socially irrational ways we intervene in the natural environment. These hazards can be referred to as socio-natural hazards so as to clearly distinguish them from the "natural" hazards which are part of nature's normal earth transforming processes. Deforestation, mangrove destruction, the mining of slopes, inappropriate farming practices, extension of the agricultural frontier in sensitive tropical environments and bad waste management, amongst other practices, result in new flood threats, droughts, landslides, erosion and land

deterioration and an increase in the intensity of the impacts of natural phenomena. These hazards are created at the society-nature interface. Natural and socio-natural hazards are then accompanied by a growth in those of technological origin giving rise to an increasingly complex scene with synergies and chains of events which render disaster risk management increasingly difficult.

Vulnerability and hazards work together and give rise to a wide range of risk-inducing conditions which are socially and geographically differentiated. Risk, seen as the objective probability of future damage and loss, precedes and announces disaster. In the end, disasters may be considered un-managed risk or series of risks, an actualization or materialization of specific levels of risk within society where the physical event is the detonator but not the unique cause.

Although the implicit notion that has dominated until relatively recently has been that disasters are the result of extreme natural phenomena which could only be dealt with by improved preparedness and response (or through some modification of hazard incidence using predominantly engineering schemes and land-use planning), this has been drastically reformed recently with the development of ideas on social vulnerability.

Today, there is widespread recognition that disasters may be explained by some combination of inadequate human practices, themselves the result or reflection of development deficiencies. At the same time, it is now recognized that it is not simply a question of disasters impacting negatively upon the development options and potential of different countries, regions or areas and their population, but rather, more importantly, particular skewed types of development with their differentiated impact on society help us explain increasing vulnerability, hazard and, finally, risk. In understanding this we are able to recognise the intimacy of the development-disaster relationship and that advances towards a solution of the risk and disaster problem have to follow a process in which risk reduction and control are

closely considered in development planning processes, parameters and objectives. In recognising this, the manner in which human intervention is considered changes in favour of managing the problem of risk and not disaster as such.

2. Intervention in the issue: evolution in ideas and in action.

Until the 1990s, practice relating to disasters generally focussed on what has come to be known as “preparedness” and “response”. Prevention and mitigation, even when accepted to be necessary and prudent, received little attention from governments and society in general. When such actions were promoted they generally concentrated on the modification of hazards using structural engineering measures such as dykes, retaining walls, etc. and the sporadic use of the relocation of communities located in risk zones. In contrast to preparedness and response, prevention and mitigation had neither the appropriate institutional framework for their promotion, nor the necessary legal or normative base or a social consensus to support and endorse them (Lavell and Franco, 1996).

During the 1990s and under the auspices of various international agencies and non-governmental organizations, among which the International Decade for Natural Disaster Reduction (IDNDR) had an important influence, the theme of risk and its reduction through interventions prior to disaster was accorded higher priority and even privileged in discourse. At the same time, growing emphasis was placed on the need for greater local and community involvement both in disaster management and primary risk reduction.

The debate on risk as a social construct, where hazards play their part but do not define the problem itself, was accompanied by a growing

discussion on the links between disasters and development and between development and disasters. Important considerations arose as part of this debate on the relation between environmental degradation and the creation of conditions of risk. The growing links between types or styles of development, environmental degradation, the construction of risk and the occurrence of disasters, especially in poor or developing countries, strengthened the idea that sustainable development could only be achieved if risk reduction and control be an inherent component of development planning at the international, national and local levels, in sectoral and territorial planning. (Lavell, 1999, International Strategy for Disaster Reduction, 2003, UNDP, 2004, in press).

With time, and the development of the concept of disaster risk, disaster prevention and mitigation passed from being considered exogenous activities – outside the scope of development itself, although supporting its achievement – to being considered endogenous elements, taking into account and incorporating development components and criteria. Risk and its control were elements that should be incorporated in the understanding of the development process and in development planning and not as something to be dealt with tangentially or as a separate theme. (Lavell, 2002)

On the other hand, notions of risk and social intervention in this area evolved, passing from purely objective and technical – or even technocratic – ways of seeing the problem to consider the distinct viewpoints and perceptions of different actors on the risk stage. As a result, what was considered unacceptable risk for some was recognized as an acceptable or accepted risk by others. Things tended to be defined by the social position and the social role played by the different actors. With this experience, growing recognition was given to the fact that primary risk reduction or, to use the previous nomenclature, disaster prevention and mitigation, was not solely a practical technique aimed at providing concrete products, but rather a complex social process played out with the presence of diverse and frequently antagonistic social actors in the risk scenario.

It is within this framework that some first approximations are made in the design of a new intervention paradigm which goes beyond the notions of disaster prevention and mitigation or the disaster cycle, constructing ideas around the central notion of risk and the idea of integral risk management. It was around 1996 that the notion of Risk Management (*Gestión de Riesgo*, in Spanish) first entered the lexica in the region, being related in first instance to the work of the Social Studies Network for the Prevention of Disasters in Latin America (LA RED). (Wilches Chaux, 1998, Zilberth, 1998)

From the time of the first appearance of the notion of risk management up to the impact of hurricane Mitch in Central America, there was little diffusion of this concept throughout the region. Its introduction and development was basically limited to the work of LA RED in communities in different Latin American countries and stimulated through the Local Risk Management programme of this organization, using specially designed training modules.⁵ In addition a very limited number of international and national organizations and NGOs commenced to experiment with the new ideas.

Then, as mentioned previously, with Mitch, the term as well as the concept came to life almost spontaneously and were rapidly adopted by many actors involved in many different types of development and disaster activities throughout the region. The previous dominant terminology – prevention and mitigation, disaster management or administration – rapidly gave way to the new terminologies. Risk management is a stock phrase today and few in Central America resist its use. However, the use to which it is put is diverse and frequently lacks specificity being used to refer to a number of different practices. As a result there is no commonly agreed vision as regards its meaning among the major protagonists in the region. For this reason this document aims to offer a conceptual and practical option as a basis for debate and discussion, subject to change and modification as part of the process.

⁵ See Linda Zilbert. Módulos para la Capacitación. Guía de LA RED para la Gestión Local del Riesgo. LA RED-ITDG Peru, Quito, 1998.

3. Risk: concept and characteristics – bases on which to build risk management practice

The manner in which disaster loss and damage are increasing year by year has been briefly outlined above. The fact that disasters are expressions of unmanaged risk and that the risks faced by society are the result of social processes arising from different development styles has also been established. These styles or models have repercussions in the way hazards and vulnerabilities, the factors of risk, are constructed and distributed socially.

Development and risk and risk and development are inseparably and negatively linked. In other words, the risk of disaster is constructed in the process of capital accumulation as a result of different economic, social and political processes that derive from the dominant models of social and economic transformation (Blaikie et al., 1996, Wisner et al, 2003). Risk and disaster are, thus, the antithesis of development, the dark side of the equation. Risk is synonymous with insecurity and disaster a reflection of unsustainability. These aspects and their significance will be dealt with in more detail later in our arguments on risk and development.

A complete understanding of the notion of risk management, and local risk management in particular, and the possibility of clearly defining its characteristics and types and options for its wide scale introduction as a social practice first requires an understanding of risk as a social condition. From here we require an understanding of the ways in which it is articulated with the problem of disaster and with the development process, seen from the social, sectoral and geographical perspectives. Below, we aim to outline only the most important aspects of risk as discussed in existing literature on the subject without entering into a detailed discussion of these. Each of the notions explored below are important stepping stones in the construction of a notion, concept and adequate

practice of risk management. For this reason we provide the following synthesis of notions. Annex 1 provides a glossary of the principle terms used in the present text. The accompanying basic bibliography will allow follow-up as regards the notions briefly expressed here.

3.1 The notion of disaster risk

In referring to disaster risk we refer to a specific use of the more general notion or concept of risk.

We can generally understand risk, in objective terms, to represent the existence of a latent condition which: i) predicts or announces probable future damage and loss; ii) announces the possibility of a future event which may be considered negative in some form; and/or, iii) a context which implies a reduction in the opportunities for the full or optimal development of some element or component of the social and economic structure. As such, the notion of risk can be applied to a variety of contexts and analytical fields and have different meanings. It always implies a latent condition associated with some level of uncertainty within the probabilities it represents (Cardona, 2002, 2003). Subjectivist or constructivist notions on risk and their significance for risk management will be considered later in this document as a compliment to objective risk interpretations. Finally, despite the negative connotations we attach to the term for our particular purposes with this document, it should be understood that risk also implies the search for gains and profit when used in entrepreneurial, financial and investment circles.

In the particular case of disaster risk, we generally understand this to mean-

The probability of future damage and losses associated with the impact of an external physical event on a vulnerable society, where the magnitude, extension and effect of these are such that they exceed the capacity of the affected society to absorb the shock and to recuperate autonomously.

Even when the theme of disaster has been dominated by what can be referred to as “large” disasters or catastrophes, accompanied by large scale human and material loss and damage, this custom is not convenient, nor does it provide an accurate picture of overall loss and damage (Hewitt, 1983). Today, it is recognized that large disasters represent only a part or a fraction of the damaging events that contribute to loss in society. Thousands of events of lesser magnitude associated with small- or medium-sized impacts take place on a more regular or routine basis. The sum of their effects signify an erosion of development gains and opportunities which, on an accumulative basis, may be as significant as those associated with the chance and sporadic, although dramatic, occurrence of large scale disasters.

These losses and impacts frequently exceed the capacity of those affected to absorb and recuperate from the shocks and comprise small- and medium-sized disasters that affect numerous localities, communities and even families throughout different countries. Disaster risk is not solely defined in terms of catastrophic risk but also by the localized and dispersed risk which will manifest itself at some time in damage and loss affecting numerous places and populations. The resolution of the problems will require the use of the resources of these same localities and populations without any real options, in many cases, for additional external assistance.

In order to demonstrate the importance of these phenomena we can consider the information registered in the DESINVENTAR database of LA RED for some Central American countries (see website www.desenredando.org). This database, in which information is registered at the smallest possible territorial scale (e.g. municipality, canton, and department) registers 4,433 events for Costa Rica for the 1972-2001 period, while EM-DAT registers only 37 disasters. In the case of Panama 2,226 and 25 events are registered respectively; and for Guatemala DESINVENTAR registers 1,650 events between 1990-99, not including the almost 550 associated

with Mitch, compared to the 57 disasters registered in the EM-DAT for the whole 1972-2001 period. Only an average of some 15% of the registers in DESINVENTAR correspond to the large disasters registered in EM-DAT

3.2 Risk factors

Risk derives from the dynamic and dialectic relation between so-called physical hazards and social vulnerabilities.

3.2.1 Hazards

Hazards are latent physical events. In other words, they are representations of the probability of future damaging events. These can be generically classified as “natural”, “socio-natural” or “anthropogenic”, depending on their origins (see Lavell, 1996).

Natural hazards are the result of the dynamics of nature and include future phenomena such as earthquakes, hurricanes, tsunamis and volcanic eruptions. Anthropogenic hazards are the direct result of human activities and include explosions, fires, spills of dangerous substances and technological accidents, among others.

Socio-natural hazards are less palpable and result from the direct interaction of human activities with the natural environment where processes of environmental deterioration or inadaptability lead to the creation of new hazards. An increasing number of localised damaging physical events such as floods, landslides, droughts, soil erosion and subsidence are generated or accentuated by different human practices such as deforestation, mangrove destruction, the mining and destabilization of slopes, monoculture in fragile environments and the building of towns without due attention paid to the needs for rainwater discharge and drainage infrastructure.

The three generic types of hazards have different connotations when referring to what has come

to be known as the “social construction of risk” and, in particular, with the social construction of hazard.

In the case of natural hazards, the transformation of nature into a hazard frequently occurs as the result of the inadequate location of low resilience and high vulnerability settlements, production and population. The environment as a resource or public good is thus transformed into a threat or public threat due to the type of soil use and the types of social and economic development instrumented.

In the case of anthropogenic hazards, these are entirely human constructions and the role played by the natural environment in the construction of the risks associated with them is directly related to their particularities and the way in which natural conditions increase the hazard. Thus, for example, faced with a certain pollutants discharged into water, the level of risk will partly depend on the characteristics of this water, where lakes or other relatively slow flowing water sources or bodies will tend to accumulate higher levels of pollution than those which flow more rapidly dispersing pollutants in seas and oceans. In the same way, the levels of air pollution depend on wind speeds and atmospheric movements. Forest fires will be more dangerous in conditions of drought and high winds.

Socio-natural hazards are a hybrid of natural and anthropogenic processes and only exist in the presence of both types of factors. They are part of the context which typifies the environmental problem in general and the majority are the result of environmental degradation. Differing from natural hazards, they originate in social processes, but in a similar way to the former, they also represent the transformation of resources into hazards and public goods into public menaces. The most pressing future expression of this type of hazard source is that associated with global climate change and the emission of greenhouse gases. Although in this case the scale of concern with respect to the causes changes from a local, zone or regional level to the global, world or international scale, in essence the hazards associated with global

change are generically essentially the same as the hazards generated by local processes of environmental degradation. In addition, and in spite of their causes in global processes, the concrete manifestation of these new hazards will always be at the local and regional level.

3.2.2 Vulnerability

Vulnerability used with reference to risk and disaster, has been developed as a notion particularly during the last 30 years. During this time, ideas as to its significance and the development of methodologies for measuring vulnerability types and levels have advanced significantly. The development of the vulnerability notion has been fundamental in re-dimensioning and restructuring the risk and disaster problematic allowing the development of alternative socially based explicative paradigms as opposed to the dominant hazard based interpretations that dominated up to the last 15 years or so. Moreover, these developments have allowed a clearer vision of the relations of disaster to development and development to risk.

Vulnerability is generally interpreted in the risk and disaster area as referring to a series of socially constructed characteristics that make society susceptible to damage and loss and face difficulties in recovering autonomously.

Originally developed in the structural engineering field to understand the form and constructive characteristics that make buildings and infrastructure prone to damage when faced particularly with earthquakes and hurricanes, multi disciplinary notions on vulnerability have been developed over the last two decades.

In 1988, Gustavo Wilches-Chaux published his brilliant treatise on Global Vulnerability in which he distinguishes ten levels or types of vulnerability which together help us understand the propensity of a social structure to suffer damage and find difficulties in recovery. Wilches-Chaux refers to locational, economic, social, organizational, institutional, ecological, educational, cultural, structural and political

vulnerability components or factors. Each of these have different characteristics and origins but are interrelated in helping to explain the global vulnerability of a community, city, zone, series of buildings etc.

Following on from this, in 1989, Woodrow and Anderson published their seminal study entitled *Rising from the Ashes-Development Strategies in Times of Disaster*. Here they deal with vulnerability distinguishing three generic types or levels- social and economic, physical and structural and cultural and behavioral. At the same time they also called for attention to be placed on what they refer to as capacities, the antithesis of vulnerability. They then proposed a methodology for the analysis of vulnerabilities and capacities in communities affected by disaster with the intention of helping in the design of reconstruction strategies with local participation. Their methodology was widely accepted and has since been used in numerous post and pre disaster interventions.

During the 90s many new contributions were provided by different authors. However, none of these dramatically differ from the schemes put forward by Wilches-Chaux and Woodrow and Anderson. A good deal of effort was also put into the development of methodologies for vulnerability analysis at the family, community, local and sectoral levels in order to provide the authorities and population with tools for predicting future disaster loss and identifying disaster risk reduction options. On the other hand, the notion also suffered temporary setbacks due to oversimplifications as regards levels and types. This happened for example following Mitch in Central America when the topic was concentrated on so called social and ecological vulnerability to the detriment of many other types and levels that may be identified in explaining loss and difficulties in recovery.

One result of the wide acceptance of the notion amongst diverse sectors and organizations has been a gradual loss of specificity as regards the central issues and contexts under analysis. This has occurred to such an extent that some maintain that the term has now lost its usefulness given it is employed to refer to a diverse series

of very different things. Conceptually and practically it has lost its direction and seriousness. The diverse use given the concept perhaps places it in the same position as other buzz concepts such as sustainability, social capital, social exclusion and marginality.

Vulnerability- a concrete proposal

Probably the most serious and successful effort to turn vulnerability once more into a powerful and precise conceptual, heuristic and practical notion has been made by Blaikie et al in their book *At Risk* first published in 1994 and in second edition in 2003 (Wisner, et al, 2003). Their proposal offers the basis for the development of the notion presented in this document. From our perspective their proposal is probably the most adequate, precise and useful one existing and has important implications at the analytical, methodological and practical levels.

Rejecting the ways in which the term vulnerability is used at present to refer to very different things- buildings, infrastructure, environments, organizations, culture, education, persons, families, productive systems, crops etc., Wisner et al argue for its strict use with reference to human beings, human groups and their livelihoods. Extrapolating from their ideas we can then see humans and human groups as being vulnerable firstly in a physical sense-propensity to illness, injury or death- and, secondly, as regards their opportunities for economic and social survival and human or social development- livelihood vulnerability. In restricting the notion of vulnerability to human beings and their livelihoods one immediately accepts the existence of varying circumstances and levels between different groups. At the same time, it is also possible to consider human groups in terms of their territorial circumscription, links or relations.

When considering a single human being, a family or an organized social group in terms of their individual or collective lives and livelihoods, we are considering their health, personal or collective means of subsistence in economic and social terms (their productive land plot,

workshop, business or capital, for example). When we pass from the human or group level to a consideration of these in territorial terms—such as a country, region, city or locality— the notion of vulnerability maintains its relevance but it may now be analyzed in terms of the susceptibility to damage of the economic and social bases which allow humans to maintain their livelihoods in those territories. That is to say, instead of getting to the problem directly from the human or social group angle, we enter via those social and economic structures and situations that allow humans to maintain livelihoods and which have a concrete territorial expression. Obviously, when we consider the problem from a territorial perspective, to the extent we climb the scale from neighbourhood to country levels we need to lower the scale of resolution in our analysis and introduce standards, averages and value-judgments as regards the importance we assign to determined livelihood systems and their overall social function. This only serves to reiterate that risk and vulnerability are best measured at the local, micro social and territorial level.

So, when we consider the vulnerability of a single human being we can analyze in detail and with great precision their conditions of physical security as well as their livelihood security when faced with possible damaging physical events. At the neighbourhood level, analysis is still fairly accessible but does require abstractions, averaging and value judgments. When we get to the country level and we want to measure national vulnerability in terms of the diverse livelihood systems that exist we then face a magnitude, scale and complexity problem which requires more tricky value judgments, abstraction and averaging. That is to say, evaluation gets more complex and precision and detail will necessarily be lost. Here it is necessary to emphasize that the use and value of vulnerability analysis when dealing with micro social or territorial units is very different to that we may require at a national level. And, this then remits us to problems and procedures for constructing indicators or indices of risk and vulnerability for regions and countries as opposed to families, neighbourhoods and communities.

The advantage of restricting the notion to humans and their livelihoods is that we may recover the

essence of what disaster is really all about. That is to say, damage and loss to infrastructure, buildings, ecosystems or other tangibles does not as such necessarily signify disaster. What in fact define disaster are the severe direct and indirect impacts on, and losses of livelihoods. When we get into the problem via tangible things such as buildings, infrastructure, roads, bridges ecosystems etc. we run the risk of dehumanizing the analysis placing the emphasis on the loss of material things, seen in monetary or economic terms and not in terms of their significance for human beings and their livelihoods.

Bridges may fall, roads may be destroyed or damaged, electricity cables may be cut, but society may not enter into a disaster condition if there are alternatives that permit the lost elements to be substituted whilst they are reconstructed and the livelihoods of people are not irremediably affected. As an example we may take the case of a population group that relies on the export of local products and suffers the loss of one of its two access roads due to a flood. If the two roads are lost the area will enter into crisis, not directly due to the loss of the roads but rather due to the impact on production and sales and thus people's means of subsistence or sustenance. This signifies a double entry to the problem of risk reduction. One entry point is guaranteeing the safety of infrastructure and adequate levels of redundancy, whilst the other is via the increase in the resilience of production systems themselves and the extent to which they can satisfy human needs even under conditions of stress.

Tangibles have value whilst they satisfy human needs and permit individual and collective life, not just because they exist. On the other hand, no person or human group that suffers a serious loss in their livelihoods can avoid entering into a condition of disaster or severe stress no matter how short a time this may last (this will depend on the social support and response mechanisms that exist). The problem of concentrating on loss in terms of infrastructure, tangibles and material things has been commented with regard to post disaster reconstruction processes where the tendency

has been to concentrate on rebuilding material things and not livelihoods.

When we consider the problem of vulnerability from the angle of human beings and their livelihoods we need to re-dimension and reclassify other aspects that have been described in terms of their so-called vulnerability-buildings, ecosystems, bridges, educational systems, culture and political conditions etc. Here we also share the ideas of Wisner et al. Thus, they indicate that instead of talking of vulnerability with regard to these elements, it is more accurate to speak of the insecurity or susceptibility of a building, the fragility or lack of resilience of an ecosystem, and, we would add, the bureaucratization or inadequacy of an institutional or organizational system, the inadequacy of an educational system and the dangerousness or hazardous nature of a hill slope or river flood plain.

In re-qualifying the elements or aspects that have been described in terms of vulnerability we are not eliminating them from the analysis nor denying their fundamental importance as regards an understanding of loss to humans and their livelihoods. Rather, movement in terms of the notion means that we see them as factors, components or explicatory variables in understanding human vulnerability. That is to say, they are seen as explicatory variables of vulnerability as opposed to vulnerability as such. A person is physically vulnerable because they live in an insecure building, live in a flood prone area or work on a building site without wearing a crash helmet, for instance. The economic base of a family is vulnerable because their workshop is located in an insecure building or house or because their crops are located on unstable slopes or on flood plains. A child is vulnerable when crossing the road because the education he has received has not provided him with the necessary elements to be able to cross the road securely. Vulnerability and its causes are different but obviously closely related.

From an epistemological perspective a very important problem arises when the same word is used in the same area of scientific enquiry to

depict very different things. So, where vulnerability used with reference to the risk and disaster problematic means that a building may fall, an ecosystem may be transformed, an educational system is not up to date as regards the prevention and response problem etc we have a serious conceptual problem. Of course, this does not signify that the same word may not be legitimately used in different areas of scientific enquiry. Thus, there is no problem in the word being used in structural engineering, in ecosystem studies, as regards institutional systems, regions, countries or zones or in psychology or medicine, when these are considered discrete areas of knowledge.

What is important to recognize is that there is a difference between a dictionary definition and a concept. Here we have to clearly establish the way in which vulnerability will be used in risk and disaster studies and not the ways it may be used in other areas. If we use the notion of vulnerability in the engineering sciences as such this is not the same as using it in the study of disaster, where engineering is one component of the knowledge base we require but not sufficient in itself to explain the problem. This change of position or epistemological base signifies that for structural engineering when dealing with the problem of disaster a building is insecure, fragile or susceptible to damage such that it contributes to the vulnerability of humans and their livelihoods. We are talking of the same thing but in different contexts. If we are unable to accept this logic then we are condemned to heterogeneity and in-definition such that establishing a central point of analysis and understanding is very difficult.

When considering the different vulnerability factors or components, Wisner et al identify five generic types (also, see Cannon, 2003)

- ♦ Initial well-being or base line status, including, amongst others, nutritional status, mental and or physical health, morale, stress levels and sense of security and identity
- ♦ Livelihood and its resilience, including the capital and finance available to families or

other social groups, material possessions, levels of human development, appropriated natural capital, the resilience of relations between people and employment and the resilience between peoples patrimony and income flows.

- ◆ Self protection, including amongst other things, income levels and savings for guaranteeing protection against environmental extremes, insurance, availability of adequate building materials and techniques, the incentives to self protect.
- ◆ Social protection, includes the extent to which governments and other socially responsible organizations are able to promote human security and guarantee this, the existence of legal and normative controls and the availability of means of protection whose cost exceeds finance available to individuals or families
- ◆ Civil society, social and political networks and institutions and security, including the social and political capital of people, the openness of political processes, existing levels of inter-group discrimination, gender rights, networks and institutions and their ability to operate freely, press freedom etc.

An understanding of the types and levels of vulnerability suffered by determined groups, regions or individuals may be gained by analyzing these five components or causal factors of vulnerability and the conditions they imply. To the extent these types of variables take on a positive aspect, less are the probabilities that vulnerability will exist. Consequently, these components individually or in combination are amongst the specific objectives of intervention if a society attempts to reduce or avoid future risk.

From here we can appreciate that risk reduction may be achieved through actions that are specifically directed at the existing risk context and the variables that comprise it. This includes the mechanisms for self and social protection mentioned above which attempt to provide protection against particular hazards. On the

other hand, types of intervention may exist that attempt to increase livelihood resilience and sustainability. These include improvements in the levels of welfare and resilience of life styles such that direct protection against determined hazards is complimented with the provision of social conditions that reduce vulnerability and thus hazard. Finally, there are a group of changes and transformations associated with the development of a participatory and democratic society, human rights etc whose rationale is not determined directly or exclusively in terms of risk reduction but rather with regard to the demands associated with the achievement of integral human development in a society that is economically, socially and politically democratic, just and participative.

The general conclusion derived from this analysis is that disaster risk reduction is subject to interventions that go far beyond what is commonly known as disaster or risk prevention and mitigation measures, reaching out to fundamental development process and practice and increased welfare levels and development of social and political capital.

3.2.3 Some final observations

In addition to a consideration of the basic characteristics of hazards and vulnerabilities as presented above, and in order to introduce greater dynamism into the analysis, it is important to consider three additional aspects:

First, hazards, although clearly distinguishable according to type, rarely occur individually and unilaterally in the definition of risk and disaster. Interrelations, synergies and chain effects exist which allow us to talk of multi-hazard social contexts, regions or zones, on the one hand, and of complex, concatenated or serialized hazards on the other.

In the first case we refer to zones, regions, localities or communities which face different types of hazard. Many zones in Central America are subject to hazards of a seismic or volcanic nature and also to floods, land-slides or drought.

These hazards can materialize in the form of real events at different times, or in the worst case, two or more at the same time.

In the second case we refer to the case of a particular hazard triggering off a series of other damaging physical events. This is the case of an earthquake which causes processes of liquefaction, landslides or rock falls, the rupture of pipelines transporting dangerous materials, the breaking of dams and dykes, flooding, fires, etc. with a variety of consequences for society.

Such chain reactions of events and associated synergies result in the blurring of the line which separates natural from anthropogenic hazards. Or, at least, makes the absolute differentiation between the two types somewhat difficult when considering the complex reality of existing risk conditions. If care is not taken in the interpretation of the direct triggering event in losses and damages it is easy to fall into the trap of saying, for example, that an earthquake is the cause of something, when the event is really the detonator of a complex process which finally ends in disaster. The destruction of the neighbourhood of La Colina in Santa Tecla, in the Greater Metropolitan Area of San Salvador during the January 2001 earthquake was caused by a landslide triggered by the earthquake and not by the earthquake itself, in spite of the fact that international data bases attribute loss directly to the quake. Something similar occurred with the more than 2000 deaths associated with a massive avalanche that originated on the slopes of the Casitas volcano in Nicaragua during hurricane Mitch and which international data bases attributed directly to the hurricane.

This warning is made because causation is frequently complex and involves many intermediate processes and factors which should be considered in risk analysis and reduction formula. Thus, for instance, vulnerability reduction, accepting the specific nature of vulnerability as related to different hazard types, is frequently considered from a mono-hazard perspective when in reality zones and regions live under multi-hazard conditions that demand more complex approaches and solutions.

Second. A correct understanding of the process by which hazards are socially constructed calls, in some cases, for an understanding of the dynamics of daily life. This is particularly the case with the poor or destitute; those excluded from society. Thus, while important problems associated with the location of the population and production and its exposure to hazards are explained by the poverty of families, their vulnerability is also closely related to the level of social exclusion and the weight of the daily or chronic risk they have to overcome as part of their daily existence. More specifically, an important number of socio-natural hazards are the result of the population seeking means to satisfy their basic and daily needs. This is the case, for example, of the cutting of trees and mangroves to satisfy the daily need for heat, cooking or housing and which has repercussions on the stability of ecosystems and slopes and, thus, in the incidence and magnitude of floods, erosion, drought and land slides. Another example can be found in the pollution of land and water as a result of the absence of adequate garbage disposal and sewage or domestic water treatment, which subsequently increases the risk of disease among exposed populations.

Resources are transformed into hazards as a result of numerous processes relating to the satisfaction of minimum living conditions in order to guarantee survival. As affirmed by Girot (UNDP, 2003), while the ecological and cultural heritage of the Central American region represents a public good of immense proportions and offers resources for development, it is this same heritage which guarantees that the levels of poverty are not increased even more rapidly. Nonetheless, this is achieved at the expense of the creation of new hazards and public hardship. We shall return later to the theme of "daily risk" and its relation to disaster risk.

Third. In referring to risk it is necessary to recognize that hazard and vulnerability factors are not discrete and separate elements but rather mutually conditioned and dependent. In order to be able to talk of a hazard and its intensity or magnitude, it is also necessary to consider

existing levels of vulnerability, and vice versa. Thus, for example, a possible quake of 5.2R which affects a highly vulnerable zone can cause more damage and loss than a quake of 7.2R of an identical focal depth and intensity, but affecting a zone with low levels of vulnerability. This means that the definition of an extreme or intense event provided by the natural sciences is quite different from one that might be provided by representatives of the social or applied sciences. For the former, such a definition would be represented by the levels of energy discharged and its relation to the norm, whereas for those who study risk and disaster, the notion of an extreme, damaging or intense event arises from a consideration of the probable damages or losses rather than any unilateral consideration of the magnitude of the detonating event (see Hewitt, 1983).

This means that risk is the central concept and the focal point of attention for intervention in favour of the reduction, prevision and control of the factors which finally trigger disaster, the object itself of Disaster Risk Management. This also suggests that our intervention should be guided by a complete understanding of the way in which human vulnerability interacts dynamically with the physical, natural or humanly constructed environment.

3.3. Disaster risk and the relation with every-day or chronic risk

Disaster risk is one expression or manifestation of risk in general. Nonetheless, this type of risk cannot be seen as something autonomous or isolated from other manifestations or expressions of global risk as if it had its own unique and particular conditioning factors. A particular expression or category of risk which is of great importance in understanding disaster risk is that which can be referred to as “every-day” or chronic risk (Sen, 2000). It is by understanding the notion of every-day risk that the relation between poverty and disaster risk and, more particularly, between poverty and the social construction of hazards and vulnerabilities may be understood. With the notion of every-day risk

we specifically refer to the day-to-day conditions in which the poor exist and which are manifestations of non-development, predisposing the population in a systematic manner to material/physical, psychological and other types of deprivation, damage and loss. Such conditions include unemployment, malnutrition, unhealthy living conditions, family and social violence, alcoholism and substance abuse which impede the fulfilment of humane lifestyles and the satisfaction of basic human needs. The existence of these conditions, some of which are not restricted only to the poor, allows for the transformation of poverty conditions into disaster vulnerability and risk.

An understanding of how disaster affects low-income populations cannot disregard an understanding of the problem of development and poverty in general. For example, it is obvious that a population which suffers from food insecurity, lack of access to quality housing, high death or morbidity rates or lack of access to drinking water under normal living conditions, will be all the more liable to suffer from disaster conditions in exceptional circumstances characterized by the sudden or gradual impact of an external physical event. The disaster related to the impact of an external physical phenomenon will, in many cases, be the simple continuity and deepening of the “permanent disaster” in the daily lives of the population, and particularly the poor.

3.4. Geographic expressions of risk and causal and impact spaces-territories

Disaster risk manifests itself in defined and circumscribed territories, and is suffered by individuals, families and human or social groups located in specific sites. Disasters affect areas or territories which may range from small-scale through to very large extensions of land within a country or covering various countries. In the case of large disasters associated with events such as hurricane Mitch, it is possible to analyze these not only as a single disaster but rather as a large number of small or medium-sized disasters affecting numerous communities, families,

zones or sites in different ways. All relate to the same macro-phenomenon (a hurricane, earthquake, flood, etc.), but show important territorial differences due to the particular way the physical event interacts with vulnerability at the local and micro levels. What may be treated as a single disaster by the governments of the countries or by national and international disaster organizations is seen as multiple distinct disasters by the affected populations, communities and local institutions. Vulnerability is differentiated on the ground according to the distinct human groups affected.

In spite of the fact that a disaster or disasters have a defined territorial circumscription, that may be referred to as the "impact space", and that risk manifests itself in these same areas, the causal factors of risk and disaster are not necessarily limited to this same territory. Very often the "causal space" tends to be substantially different from the impacted territory, even though these two spaces may coincide at times.

In the case of the hazard component of risk we consider processes such as upper valley deforestation which contribute to floods in the lower parts of the same watersheds; the release of excess water from hydro-electricity dams upstream causing flooding in down-stream communities; the creation of artificial dams in mountain areas due to the pile up of logs and other debris, which when they rupture cause sudden flooding downstream; or industrial pollution of rivers with negative impacts many kilometres downstream from the source.

In the case of vulnerability, the incidence of national and international policies drawn up in capital cities or overseas, with reference to public investment, environmental management, stimulus for production and economic re-conversion, commodity prices, decentralization and municipal strengthening, funds for social investment, civil society participation, etc., have impacts at the local and family level, far removed from where the decisions are taken.

Recognition of the differentiated causal and impact spaces is important when dealing with risk management. It requires intervention,

negotiation and political decision making which goes beyond the affected local levels, reaching out to the regional, national and even international spheres. It means that substantial progress in reduction can only be achieved by taking into consideration a broad territorial framework which is adequate for inter-sectoral coordination and intervention. The local level faces severe limitations with regards to the reduction of disaster risk associated with specific physical events.

Seen from another spatial or territorial perspective it is also important to consider the form in which land and resource use decisions can respond to different social and territorial logics and rationale, sometimes satisfying predominantly local necessities and, other times, regional, national or international ones. Using examples from a preliminary analysis of problems faced in the Lower Lempa Valley in El Salvador, it is clear that the use made of water resources in the middle watershed for the generation of hydroelectricity responds to a national rather than a local logic; as a result, the calculation of acceptable risk which influences the decision to open the sluice gates and release water at the 15th September hydroelectric facility is governed by a logic distinct from that of protecting or saving populations from floods and losses in the lower watershed. In the same way, the forest resource of the Bosque de Nancunchiname on the left bank of the Lempa river or the salt forests of the Jiquilisco Bay can be seen in different ways if the rationale applied in their management responds to international, national or local interests. The specific use and function given to the resource depends on the decision maker. Conservation vs. productive use, exploitation vs. sustainable management, etc. are different options chosen according to distinct needs and demands. Negotiating these different "territorial" and social demands in a compatible manner is a major challenge in territorial management and in risk reduction for local populations.

Finally, it is important to note that disasters manifest themselves through damage and loss that affect different social groups and geographical areas. The social and geographical

distribution of damage represents an actualization or materialization of risk. And, the social and geographical distribution of risk reflects differences in the form in which hazards and vulnerabilities are expressed. Considerable differences in risk levels can be found within a small territory or within a particular social group. This means that the most detailed expression and most reliable mapping of risk is to be found at the micro-social and micro-territorial (local, community and family) levels. This can be appreciated through a detailed analysis of the social and territorial distribution of damage after a hurricane, earthquake, flood, etc. where significant damage and loss is suffered by certain social groups or individuals close to others that have suffered little damage.

3.5. Risk as a dynamic and changing process: the notion of a risk continuum

Hazards, vulnerabilities and risk are not static, but rather dynamic and changing. The dynamism and change may be the result of different social, economic or political processes related to different types of development within a society. Risk unfolds on a continuous and daily basis and is also affected by deliberate policies to reduce or control hazards and vulnerabilities. Or, risk may be transformed in a relatively abrupt or accelerated manner. This is the case where a society is affected by an economic crisis, by the sudden withdrawal of investment or productive units from zones and regions (such as in the case of the withdrawal of banana companies from traditional zones of production), with the impact of external physical events such as earthquakes, hurricanes and floods or by social conflict, of which war is the most extreme example.

The recognition of the dynamism and change in disaster risk in social, territorial/geographical and temporal terms, allows us to consider its existence in terms of a “continuum” or ever evolving process. The notion of a risk continuum assumes an important heuristic role in the subsequent understanding of the structure and

facets of so called risk management and its holistic and transverse nature. In order to facilitate an understanding of the notion of a continuum as applied to the problem of disaster risk or the problem of risk in the context of disasters, we can mention three major states of risk which require distinct, if related, responses and actions on the part of society: These are⁶:

- ♦ **Primary or structural risk:** risk existing in society under normal conditions, constructed as a result of on-going development processes and modified by economic crises, investment decisions and the accumulative impact of successive disasters with the differentiated impact this signifies for social groups, territories/geographical areas, infrastructure and production. This includes disaster risk which evolves out of the day-to-day risk suffered by large segments of poor or low-income populations. This is the type of risk which exists prior to the impact of a new disaster triggering physical phenomenon, which preconditions types and distribution of disaster loss and which is the object of intervention through so called primary disaster risk reduction practices-hazard and vulnerability mitigation, including, preparedness activities.
- ♦ **Secondary or derived risk:** in this case we are dealing with new risk scenarios which arise in a relatively abrupt manner when a society suffers the impact of an external physical event. Examples can be found in the threat of death due to lack of attention and timely rescue, the lack of drinking water and sustenance for the population, unhealthy living conditions and the threat of illness or epidemic, the lack of adequate shelter and the exposure of the population to dangerous environmental conditions, the threat of robbery, negative psycho-social impacts, the danger of ill treatment or rape of children and women in shelters. These new risk scenarios or environments are constructed on the existing primary or structural risk conditions. At the same time, unless the societal response deals adequately with the new situational risk conditions these can

⁶ The terminology used to capture the essence of distinct types of disaster risk phases is subject to change. Just one option is used here without it necessarily being the best.

contribute subsequently to aggravating future conditions of structural risk. Such intensification of existing primary risk conditions can be seen when a society is affected by a second disaster shortly after the first one. Increased levels of structural risk left by the first impact may signify that a second event of lower intensity causes greater problems than the first event. The impact of Mitch was clearly increased, for example, due to the prior impact of El Niño in Central America. This event was associated with extensive forest fires that removed trees and bush that are important in establishing an adequate hydrological balance and protection. A similar increase in subsequent effects can be seen in El Salvador where the impact of the 2001 earthquakes hit populations previously affected by Mitch and living under conditions of increased vulnerability.

These discontinuous risk conditions associated with event impact are the objective of disaster response activities and reveal the need to consider response in a development framework and not just as a logistical exercise in distributing goods and supplies to disaster victims.

- ♦ **Anticipated or future risk:** once the most urgent disaster conditions that threaten the survival or basic well-being of the affected population have been controlled, processes of reconstruction and recuperation need to be implemented immediately. These processes unfold in risk situations which are different from those existing prior to impact, although many of the previously existing risks might still be in place. The reconstruction process signifies new investments and projects and is the crisis equivalent of new development initiatives in non disaster conditions. In the same way as with new development and investment initiatives, disaster reconstruction can contribute to the construction of new risk and vulnerability. In the most positive scenario, however, reconstruction must search to reduce and control risk. Much evidence exists however

to show that disaster reconstruction is often a constructor of new risk.

From the foregoing it can be easily deduced that what has been referred to in the past in terms of the “disaster” cycle or continuum and administration or management of disasters may rather be considered as a continuous and sequential continuum of risk and risk management interventions. This simple fact provides us with one of the cornerstones for the development of ideas and notions, practices and interventions informed by the so-called “integrated risk management” paradigm, as we shall examine in more detail below.

3.6. Risk: objective and subjective connotations

According to many different authors, risk assumes both objective as well as subjective characteristics (see, Maskrey, 1998 and Cardona, 2001 and 2003, for an excellent discussion of these two perspectives).

In the first case, risk is subject to valuation and measurement in terms of probable damage and loss under certain hazard and vulnerability conditions. This valuation can be expressed in monetary or quantitative terms – number of elements damaged or lost – or in qualitative terms – impact on culture, history, the psyche or the quality of life, etc. The ability to qualify risk in monetary or numeric terms depends on the level and quality of information available on hazards and vulnerabilities and always implies a certain level of variability and uncertainty within acceptable actuarial limits. The objective calculation of risk can be demonstrated in the case of medical insurance where the insurance company analyses the history of hazard (exposure to disease vectors, smoking, alcohol consumption, etc.) and vulnerability (family medical history, genetic constitution, levels of stress, eating habits, etc.) of the candidates for insurance so as to calculate the level of risk they represent, and thus assign a premium for the insurance or simply refuse the insurance due to

the unacceptable level of risk the individual presents. Risk considered from the objective perspective has been the fodder especially of the engineering, geo-scientific, medical, economic and actuarial sciences.

Seen from the subjective angle, risk is the product of differentiated perspectives, different social representations and diverse imaginaries corresponding to different social groups. In other words, as opposed to being a category which is objectively measurable, risk is a product of mental processes associated with different types of existence, culture and life history of a given population. This means that the probable level of objective damage or loss under specific conditions is processed by distinct individuals and groups in a different way. The risk involved and the decision to intervene is a product of this mental process and different individual, social, cultural, generic or historical rationalizations. The arguments in favour of the subjective or constructivist vision of risk indicate that risk considered in terms of objective measurement imposes a technical vision typical of experts, technicians and professionals. However, in reality, the valuation of risk and, in consequence, its existence and importance, is an individual and social option, conceived according to its significance for different social groups and where history, culture, life-styles, mental constructs, experience, gender and social status, among others, play a fundamental role. The subjective visions of risk have been particularly defended by anthropologists, psychologists, sociologists, historians and social geographers.

As far as the theme of risk management is concerned, there is no doubt that both perspectives are relevant and important. Their contrasting scientific bases do not require us to choose between them, but rather take into consideration the significance and use of both and combine their results in a constructive manner.

It is thus clearly important to be able to ascertain the scope of probable damage and loss that a society could face under different hazard and vulnerability conditions. In the same way,

recognizing that objective risk often implies not only the option of loss but also of gain, this dimension can also be considered. Both calculations offer valuable information for decision making and the planning of future actions. Nobody could deny the value and necessity of information on probable losses in hospitals, schools, agricultural and industrial production, and other infrastructure, for example.

The importance of subjective approaches lies in the influence that perceptions, social representations, imaginaries and valuations have in the decision making processes of different stakeholders. It is already well known that objective valuation frequently clashes with subjective imaginaries or valuations made by the subjects of risk themselves, thus apparently rendering intervention difficult by risk technicians and professionals. Examples of this conflict can be found in the cases of communities in high risk flood or landslide zones who refuse to be relocated to other areas by the government or NGOs. In the case of the external agents, the hazard and risk assume objective connotations, while for the population itself the risk is relative and considered in the light of many other social, economic, cultural and life conditions. In this way a consideration of disaster risk reduction is assuaged or postponed when faced with the imperative need to face more persuasive daily risks which involve their proximity to employment and income generating options, adherence to acquired land and property, closeness to basic services and the maintenance of social and cultural cohesion within the society. In cases such as this, neither of the parties is incorrect; but nor does anyone hold the absolute truth. Conditions are created for what Wilches-Chaux (1998) has described as a dialogue of knowledge and ignorance between technical personnel and the risk subjects themselves.

Subjectivist views of risk are one of the principle pillars on which the insistence on popular participation in risk reduction decisions is based.

4. A definition and basic concept for risk management and local risk management

A basic definition:

Disaster risk management, defined in generic terms, refers to a complex social process the ultimate aim of which is the reduction or anticipation and permanent control of disaster risk within society, integrated and in harmony with the achievement of sustainable human, economic, environmental and territorial/ geographical development goals. In principle, it recognizes distinct levels of coordination and intervention which range from the global, holistic/ integral, sectoral and macro-territorial, down to the local, the community and family levels.

Two fundamental considerations derive from this definition and should be stressed from the outset. These are:

- ◆ Management comprises a process related to the achievement of sustainable development objectives and can not be defined and recognized as a product or group of products, projects or discrete actions.
- ◆ Management must be concerned with two discrete but related risk contexts: existing risk and possible future risk.

4.1 Management as a process

When considering the idea of risk management we are essentially referring to a permanent process that searches for the reduction and control of disaster risk factors.

This process is made up of various components or phases among which the following are of greatest importance and have a generic profile:⁷

- ◆ Ascertaining the scope of existing or future risk, understanding the social processes and stakeholders which contribute to its construction and clearly understanding the relation of risk to the processes of social and economic transformation of determined social or economic groups and geographical areas.
- ◆ A valuation of the risk in the context of existing development or transformation models and in the light of visions, imaginaries, interests and necessities of different stakeholders. Definition of acceptable levels of risk.
- ◆ The postulation of policies and intervention strategies and decision-making with regard to the most appropriate and feasible actions and sequences of actions seen from the economic, social, cultural and political viewpoints. This requires the negotiation of support within the framework of relations between distinct social groups and interests and territories/geographical areas.
- ◆ The implementation of strategies and concrete actions.

Management seen as a process involving multiple stakeholders should be endorsed and directed through the creation of institutionalized organizational structures which provide continuity and consistency. These institutional and organizational forms should be guided by hierarchical concepts and a clear definition of functions, roles and responsibilities for the different organized stakeholders.

The dynamic vision (process) of management implies that whilst we consider a concrete project carried out within the framework of a particular risk issue, a project itself in no way defines the “risk management” process. It may comprise a step in the creation of conditions for the implementation of a permanent management process inasmuch as its design takes this superior objective into consideration.

The project design, method and strategy could and should consider the way in which it can

⁷ Each phase comprises a group of diverse actions, instruments and methods which will not be detailed here.

contribute to more permanent and sustainable processes that support the institutionalization of risk management. However, we must recognize here that in spite of their obvious impact on specific risk factors or environments, many projects implemented to date in this field represent isolated and specific actions which have not necessarily contributed to the creation of conditions for the permanent institutionalization of risk management as an approved social practice. To see risk management as an unarticulated series of targeted interventions would be equivalent, for example, to seeing urban management as a series of unarticulated norms, public works and actions in the urban environment and in the absence of institutions or government agencies that search to guarantee coordination and consistency. We will come back to this coordination problem further on.

4.2 Existing and future risk: two management problems

4.2.1 Corrective management. Corrective management deals with existing risk, the product of diverse social processes evolving in the past. This includes settlements located in a flood zone and built with inadequate construction techniques, a hospital built without adherence to anti-seismic norms, a community located with only one access route and which is subject to recurring landslides, agricultural production which is poorly adapted to the extremes of climate in a particular locality, etc. Much of existing risk will be the result of previous inappropriate practices and decisions whether conscious, unconscious, spontaneous or planned. Nonetheless, risk conditions might also exist as a result of environmental and social changes taking place after the original development of the community, the infrastructure or production. However, in all of these cases intervention in risk will be of a corrective nature.

This corrective intervention can be conservative, proposing intervention in some external and concrete manifestation of risk without aiming at major transformations of the elements under risk

or in the processes that generate risk. This would be the case, for example, when a dyke or retaining wall is built to protect crops or a community from floods or landslides, or the introduction of irrigation in drought-prone areas. On the other hand, the intervention might, at the same time as it searches to reduce or control existing risk factors, seek to transform livelihood conditions and stimulate changes in the environment, production or settlement which are geared towards the reduction or elimination of risk generating processes. This would be the situation, for example, with watershed recuperation through reforestation in order to increase productivity and reduce erosion, reduce sedimentation of rivers, floods and landslides, as opposed to dragging rivers, correcting flows or building retainer walls or terraces to reduce the external manifestations of risk. Or, this could involve changes in production patterns, sowing and cropping timetables and improved social organization and practice which contribute to increased livelihood resilience and the development of social capital. At this stage a basic supposition may be established in the sense that a simple corrective and conservative reduction of risk cannot in itself promote development or hope to eliminate poverty. Risk management is no panacea for development but rather a complement to its achievement under sustainable conditions.

4.2.2 Prospective management. As opposed to corrective management, prospective management takes as its point of reference risk which can be created as a result of new investments and development, whether these are promoted by governments, the private sector, NGOs, development associations, families or individuals. The art of prospection is to foresee risk for the investment itself as well as for third parties and the adaptation of the investment or activity so as to ensure that new risk is not generated or that it is consciously considered and of acceptable levels. The prospective management of risk must be an integral component of development and project planning. This implies practice which avoids the past mistakes which have created existing levels of

risk within the society in question and which provide the conditions for future disasters.

As opposed to conservative corrective management, prospective management establishes an immediate and direct relation with development planning processes by taking risk factors into consideration when stimulating and promoting new development projects. It should of course be mentioned that transforming corrective risk management should also be integrated closely into development planning such as to avoid the stimulation of individual activities that do not necessarily relate to the strategic vision designed for development in a particular zone.

4.3 Local disaster risk management:

Adhering to the logic and characteristics of risk management generically defined above, local management encompasses a particular geographical/territorial level of management in which the specific parameters refer to a highly participatory process appropriated by local stakeholders, with or without external support. Local Management as a process is specific to local stakeholders. That is to say, local risk management is promoted and run by local stakeholders whereas the converse situation, management of risk at the local level, can be undertaken by many different types of actors from different territorial levels but all with incidence at the local level. These two very different contexts should not be confused. In the second case externally induced and controlled processes are essentially being dealt with whilst in the first, the process is stimulated and controlled by local actors.

Local risk management, the particular objective of this document, will be discussed in more detail in the following section.

A necessary clarification as regards the local and municipal levels and their relationship to risk and risk management

When dealing with the territorial levels most appropriate for the introduction of risk management, the local level has been conceded considerable importance. Nevertheless, there has been a tendency to treat the local and municipal

levels as one and the same. Consequently, in discussing local level risk management many are in fact referring to municipal management. This pragmatic equivalency is not convenient from the risk analysis or intervention perspectives. Local and municipal are not the same thing and the social construction of risk that affects local and municipal territories and populations can not be fully understood taking these levels as a singular and privileged point of reference.

Due to the complexity of the problem it is not possible in the confines of this document to discuss exactly how we define the local level and its relations to the municipal and other territorial levels. (see Arguello, 2002 for a consideration of some important aspects of this problem). Here we limit ourselves to establishing that local and municipal are not the same thing. Neither is it possible to widely consider the relationship between risk and disaster and the local levels when seen from the social risk construction and intervention angles. Comments here aim only at opening up a space for reflection as regards risk and territory, thus inciting more work and discussion on analytical and intervention needs as seen from the territorial perspective. This topic has been dealt with earlier in the conceptual section of this document and will be further refined later on.

In referring to this problem there are, however, various important points that must be considered:

First: The starting point we adopt in our reference to risk management is that a sub-national and sub-regional level of management is indispensable.

Second: The most appropriate level of intervention involves what we may refer to as “differentiated risk territories or zones” which may be distinguished by the following characteristics:

- ♦ Certain homogeneity in existing development conditions and types.
- ♦ Stakeholders with a shared sense of territorial ownership and close, antagonistic or collaborative interactive relations.
- ♦ Certain homogeneity in existing risk conditions and causal factors.

Third: These territories or geographical areas may be smaller than a municipal unit or cross municipal boundaries. Rarely if ever will an objective risk territory coincide with municipal or local boundaries. Municipal limits have never been drawn up using risk and hazard as criteria. Rather it is the number of inhabitants, the use of natural boundaries such as rivers, the consolidation of political territories or extensive land holdings that explain municipal frontiers today in the region and not objective economic or social criteria or hazard and risk related factors. This means that despite the political importance of the municipality and the objective existence of localities, towns, districts etc, new forms of intervention must be considered that amalgamate these in relevant units when considering the social construction of risk and intervention in the risk problematic.

Fourth: If the municipality becomes the preponderant expression of the local level for risk management purposes, this can be explained not because it is the only or best representation of this, but rather, because:

- ◆ Management requires permanent, consolidated and sustainable organizational-institutional structures.
- ◆ The municipality presents itself as a real option for integrating efforts given its importance in the promotion of local development, in the consolidation of the decentralization process, the negotiation and articulation of other stakeholders and, finally, due it's normative and control capacities.

Fifth: This does not mean that the municipality is the only possible option, but rather the most dominant, conspicuous, permanent and, in principle, the most legitimate.

Sixth: The municipal and local level should also be articulated and constructed on other territorial and social levels of a lower hierarchy such as villages, communities or even the family level itself, and with regard to territories of a higher hierarchical level, such as water basins and economic regions.

5. From the concept and characteristics of risk to intervention and management

In the development of our argument we have attempted to stress the more important facets or characteristics of risk seen as a social expression. We have also insisted that by providing an adequate conceptualization and characterization of risk ideas regarding possible types of intervention and their characteristics flow or take shape with relative ease. In view of this, we will now take up again on the dominant characteristics of risk, projecting these towards a definition of important facets of intervention aimed at reducing or preventing risk. Our analysis leads us to define or reaffirm a series of parameters which we consider encapsulate the essence of risk management as a social process. These are articulated with the series of steps that define the management process and which range from the generation and construction of knowledge about risk to the decision taken as regards the most appropriate type of intervention. These steps have been outlined on previous pages as components of the global management process.

5.1. Risk as a latent condition which represents potential future damage and loss.

The latent condition which characterizes and defines objective risk implies that it can be anticipated, thus allowing society to foresee an event, take preventative measures to reduce primary risk and prepare for emergencies or disasters. In addition, plans can be drawn up for the eventual need for rehabilitation and recuperation of disaster zones/areas.

The objective calculation of the scope of the likely risk, which comprises a component of the so-called risk scenarios for an area/zone, locality, country, etc., is based on different types of information on hazards and vulnerabilities, including:

- ◆ levels of exposure of the population and its economy to potentially damaging physical events.
- ◆ scientific information on the scope, intensity, recurrence and territorial impact of probable physical threats and on the characteristics of existing vulnerabilities, including databases and historical registers of damaging events.
- ◆ Popular or vernacular knowledge and local experience of hazards and vulnerabilities.
- ◆ reducing the fragility or inadequacy of the society in its different structural, social, economic, organizational/institutional and educational dimensions.
- ◆ foreseeing future risks and controlling development norms (prospective risk management).

5.2. Risk is the result of the interaction and dynamic and complex relation between physical hazards and human vulnerability in defined spaces or territories.

The possibility that a potential physical phenomenon cause socially unmanageable damage and loss is conditioned by the state of the society exposed to its effects and the existing levels of vulnerability.

This means that the risk can be reduced or controlled by diverse means such as:

- ◆ reducing the level of exposure of the society through land-use and territorial planning schemes.
- ◆ avoiding the transformation of natural resources into socio-natural hazards by preventing the deterioration of the natural environment.
- ◆ limiting the exposure of society to physical phenomena by means of protective structures such as dykes, terraces, retaining walls, wind barriers etc.
- ◆ increasing the resilience of the society's productive systems when faced with potentially damaging physical phenomena through mechanisms such as agricultural diversification, changes in the sowing and cropping timetables, the introduction of climate-resistant crop species, etc.

A reduction in the levels of risk through actions which affect the level of hazard associated with diverse physical phenomena automatically means a reduction or readjustment of vulnerability levels. In the same way, a reduction in the levels of vulnerability means an automatic reduction in the levels of hazard associated with possible physical phenomena. And, avoiding exposure means that neither hazard nor vulnerability come into play as relevant concepts, even though prudence is required in that society and environment are dynamic and new exposure might develop in the future.

5.3. Risk is a social construct resulting from social processes deriving from development styles and models

The social characteristic of risk and its construction means that:

- ◆ In principle, society is in a condition to deconstruct and control what society has or may construct. In other words, there are a wide range of possibilities and potentialities for social intervention in the problem of disaster risk.
- ◆ To the extent that risk is a product of social and economic processes related to the development and transformation styles and models that society adopts in terms of production, consumption, income distribution, territorial and regional development, access to economic resources and power, exploitation and use of renewable and non-renewable natural resources, etc., its reduction and control will only be successful if risk management is considered a component of sectoral,

environmental and territorial management processes and the search for sustainability in general.

Risk can be identified with the actions of particular social actors. As a result, there is no possibility of risk management in the absence of these actors and the existence of mechanisms to control their negative impacts. The construction of disaster risk very often signifies gains for certain private stakeholders, while the disasters they may provoke are assumed and paid for collectively or by society in general. This means that Risk Management should operate under the principal that risk-constructors should be subjected to control on the part of society and pay for the consequences of their actions.

From the perspective of organized intervention in risk management, the contribution that different stakeholders make in the construction of risk signifies that management should be based on the articulated, concerted and coordinated participation of different organized and institutionalized development stakeholders, the humanitarian and human security sectors, public and private sectors and civil society in general. The participation and collaboration of individuals, families and human communities is also crucial.

5.4. Risk, hazards and vulnerability are dynamic and changing

The dynamic and changing nature of risk has the following significance for management practice:

- ◆ Risk scenarios and particular risk and vulnerability factors are constantly changing and cannot be captured in a one-off snapshot image. This means that diagnoses should be regularly updated and the environment and society subject to permanent monitoring and analysis. This also means that the task of constructing scenarios and maps or the carrying out of permanent analyses cannot depend exclusively on central or centralized technical organizations, but rather requires decentralization and the participation of the

subjects of risk, their organizations and other regional, local or community structures.

- ◆ Risk management uses the risk continuum and the different stages or conditions of risk as a point of reference, recognizing the relations and dependencies between them. In this way, risk management should be seen as an integral and transverse practice, taking into consideration so called risk and disaster prevention, mitigation and preparedness as well as disaster response, rehabilitation and reconstruction. Each of these types of activity operates on risk in different phases and patterns.
- ◆ the transverse nature of management and the recognition of the relations and dependencies between the distinct phases or conditions of risk, implies that management requires the participation of organizational and institutional structures representing different players/actors and capacities but which always take “development” as the central point of reference, recognizing the variable weight of development and humanitarian response specialists at different moments.

5.5. Risk has objective and subjective dimensions.

In practice this means that:

- ◆ risk management cannot be achieved without the full participation of the subjects of risk in its evaluation and in the decisions on its reduction and control. Success in management very often lies in the capacity of external-technical actors to interact with the subjects of risk, respecting their perceptions, imaginaries and valuations of disaster risk and promoting their active participation in analytical and decision-making processes.
- ◆ the subjects of risk, particularly poor populations, very often consider disaster risk in the light of the prevailing and permanent conditions of their own social existence. They

tend to relegate any consideration and specific action as regards disaster risk to a lower level of priority when compared with more urgent every-day or chronic problems. This means that risk management should be developed as a practice within the framework of development activities and planning at the local level so that it is not relegated, ignored or marginalized.

- ◆ the relationship which exists between every-day and disaster risk means that the objectives of primary risk reduction are more successfully attained and more durable if management takes place within the framework of existing sectoral, territorial and grass roots development organizations and institutions and not by others which are created specifically to promote or implement risk management.

5.6. Disaster risk manifests itself most precisely at the micro-social and micro territorial levels

This means that:

- ◆ the adequate evaluation of the levels and significance of risk requires local involvement and participation
- ◆ consciousness of risk is most obvious and evident at the micro-social and territorial levels where concerns and intentions to reduce or control it are more easily vented
- ◆ local risk management is established as a real, necessary and valid option

5.7. Risk is expressed at the micro-social and territorial levels. However, its causes cannot be reduced to a consideration of these levels. “Local” risk is also the result of extra-local, regional, national and even international social processes and actors.

This means that:

Local management cannot take place in a territorial vacuum and cannot avoid or ignore relations, agreements, coordination and management with social actors in other territorial levels. These may include, amongst others:

- ◆ watersheds
- ◆ economic, natural and development regions
- ◆ groupings of municipalities

Local management requires the promotion of negotiation capacities and agreements between internal and external stakeholders and demands their full participation and collaboration.

5.8. Disaster risk is a component or dimension of “global risk” which has dimensions and conditioning factors that go beyond the disaster risk problematic. At the same time, disaster risk is very often constructed on other manifestations of risk, and particularly on that which may be referred to as “every-day or chronic risk”.

For risk management, this implies that:

- ◆ management must take place within a framework that considers the daily risk conditions and poverty of the population, as well as other situational determining factors.
- ◆ in view of the level of priority assigned by the population to every-day risk, and taking into consideration its own survival and adaptation capacities, risk management must be linked to this risk and assume this as a fundamental point of reference as well as taking into consideration the mechanisms used by the population to face it.
- ◆ risk management is a parameter and component of development and environmental management and the global management of human security and is an indispensable condition for achieving sustainability.

6. Towards a definition of the fundamental parameters of risk management.

A consideration of the conceptual and practical aspects developed in previous pages allows us to define a series of fundamental parameters that characterize the risk management process in general and at the local level in particular.

These serve as a guide for the analysis of management practices and the definition of recommendations as regards intervention presented in the third and conclusive section of this work. Risk management must-

- ◆ be closely related to the development process and development planning
- ◆ be seen as a process and not as a product or series of products
- ◆ foster the active participation of the subjects of risk and promote their appropriation of the risk management process.
- ◆ be promoted through the creation or strengthening of permanent and sustainable institutional and organisational systems or structures that incorporate representations of relevant civil society and political actors at the territorial scales considered.
- ◆ search to integrate, coordinate, negotiate and concert with social actors and their institutional representations at territorial levels of higher and lower hierarchy.
- ◆ assumes a transverse and integral nature considering all different phases, states or contexts of risk – primary risk reduction, preparedness, disaster response and reconstruction – and be integrated into sectoral and territorial planning mechanisms.
- ◆ achieve sustainability and autonomy of action over time

Part three

Risk management parameters and practices: From projects to processes

in the two previous sections of this document we have moved from general considerations of disasters and their impacts and changes in the ways of conceptualizing intervention in the field of risks and disasters, towards more specific considerations as regards the concept itself and the characteristics of disaster risk and disaster management . Finally, we have attempted to define the implications that the different characteristics of risk have from the intervention viewpoint, concluding with a summary of what we consider to be the most important traits or parameters which define this social practice.

During this discussion we have gradually approached a more specific idea of the notion of Local Risk Management, a component or dimension of more general Risk Management practice. In the present section we will deal more specifically with the local dimension, reflect upon its particular characteristics and, according to our criteria, examine the means by which this type of practice could advance more successfully in the future. With this in mind, we will examine the basic parameters identified in the cases of intervention systematized during the development of the component on Strengthening Local Risk Management Capacities of the CEPREDENAC -UNDP Regional Program. A general consideration of some of these practices

is incorporated in the text of the document and detailed examples are presented in Annex 2 of this document.

1 . The levels and scope of risk management: local management

The areas in which risk is expressed or manifest as well as the actors that participate or should participate in its management are wide ranging and diverse. These include different economic and social sectors, territories of varying complexity and magnitude, families and individuals. Over the past few years particular attention has been placed on the “local” levels and today it is common to talk of local risk management as a particularly relevant level of intervention. Nonetheless, local management is just one of the different levels of risk management when seen from an integral/holistic perspective, and this must be implemented in a mutually reinforcing, supportive and harmonious fashion, coordinated with actions and policies taken at other spatial and sectoral levels.

Why does the emphasis on the local level assume such importance in the development of the notion and practice of risk management?

Before analyzing the parameters or traits which distinguish local risk management in practice, we will briefly examine some of the factors which may help explain why the local level has assumed overwhelming predominance in the region in the development of the risk management concept and practice. The following aspects, which have been previously outlined in this document, would seem to be of particular importance:

- ◆ In spite of the large number of factors and processes that play a role in the construction of risk and its diverse territorial and social expressions, in the last instance risk is expressed in a concrete and measurable way and best perceived at the micro-social and micro territorial level. It is at this level that future damage and losses, i.e. the diverse and particular expressions of disaster, will materialize.

The fundamental role played by the local level in preparedness and immediate response to disasters has been accepted for many years. This is justified and substantiated by the proximity of local actors to the scene of disaster itself and to the difficulties national level actors face in rapidly and comprehensively reaching the different regions and zones affected by a large disaster. In the case of primary risk reduction, the diversity and specificity of local risk environments in any one country means that it is only through local participation and management that awareness, knowledge and incentives to act in a permanent manner can be expected. Management is more effectively promoted and sustained at the territorial levels where the problem is materialized and suffered and where the awareness of risk is greatest.

- ◆ In addition to the importance the local level assumes with regard to risk management, this level has recently assumed a renewed position in the debate and search for sustainable development practices

implemented in the framework of decentralization policies. Risk management ties in neatly with the ideas and promotion of local development and local participation in integral environmental management. However, the tendency to search to strengthen the local levels and the general debate on participation and governability, run in many ways contrary to the centralizing notion and trend imposed by globalization. In this sense, the local level and local management can be seen as a possible counterweight to the selective and marginalizing tendencies that seem to typify the globalization process as it develops today.

- ◆ In the current context, the theme of risk management has been more enthusiastically adopted by international agencies, non-governmental and grassroots organizations, than by national governments themselves, although there is a tendency for national organisations to increase their interest and practice in this field. As far as international organisations and NGOs are concerned, (including those dedicated specifically to the issue of risks and disasters and those concentrating on local or municipal development), local risk management is an intervention area which is not only reasonably accessible and clearly relevant but one that also allows a broadening and consolidating of traditional development interventions and which is perceived as being of strategic importance with regard to current visions of sustainability.

2. The parameters or traits which define local risk management

What then are the traits or parameters which define the local risk management process and that are consistent with the conceptual development and the empiric validation achieved to date?

First, it is necessary to reiterate that the current concept of risk management arises in parallel with the recognition that disaster risk is in most cases a direct or indirect product of processes, decisions and actions resulting from the dominant models of economic growth and development that shape the transformation of society. In other words, risk and development (in its conventionally used but deformed meaning) are intimately related. Consequently, risk reduction practice must be considered within a development framework and as a component of development management and planning at the sectoral, social, environmental and territorial levels. Thus, the first premise, parameter or trait of local risk management is that in practice, it cannot be divorced from developmental frameworks, processes, objectives and planning. Risk and its management are not external to, but rather an intimate and intrinsic component of development processes and practices. This means that risk management in its more advanced conception should search to help in transforming existing social and economic realities, latching on to and becoming an integral part of new and more sustainable development processes.

Why should disaster risk reduction, prevision and control be seen within the local development framework?

In referring to the inseparable relationship between risk management and development, various contexts define this relationship:

- ◆ Sustainability of development is impossible in the absence of adequate levels of security for the investments and practices which drive them. In other words, development requires low levels of current or potential risk.
- ◆ The social or human vulnerability which helps define the level of disaster risk of a locality, population or community is frequently built on or derives from prevailing conditions of every-day or chronic risk (unemployment, lack of income, malnutrition, health problems, substance abuse, family and social violence, etc.). These chronic risks are

a result of the lack of integral and socially just development processes. As a result, disaster risk reduction will only be really effective when it is considered within the framework of social and economic transformation achieved through the promotion of local, regional and national level development processes.

- ◆ Disaster conditions and the latent characteristics of the risk which precede these are more easily introduced as a permanent concern among local actors when they are linked into or related to more permanent daily chronic risk conditions and attempts at their common reduction are made through integral development processes. The more the orchestration of activities aimed at the reduction of structural or chronic insecurity is related to attempts to reduce disaster risk, the greater the interest in the issue among organized stakeholders and the local population. The aim to reduce the risk of disaster in a locality will be prioritized by local stakeholders according to the (relative) importance they assign to this in the satisfaction or achievement of their every day needs and existence.

Second, the management process should necessarily be participatory and the subjects of risk and local authorities must achieve the status of actors in analysis, strategic development planning and decision making. Participation is a legitimizing mechanism and one which guarantees ownership and empowerment. It is, therefore, the cornerstone of the appropriation of the process by local actors. Appropriation is itself the principle defining quality of the process.

There is, thus, a clear difference between what may be called risk reduction at the local level and local level risk management. Local level risk management is appropriated by local actors and these are the principal protagonists in the process (which in itself does not exclude the need and possibility of collaboration from external actors), whereas risk reduction at the local level can be promoted under the volition of diverse actors from any of the local, regional, national

or international levels. Thus, the idea of local risk management remits to a process which is promoted, carried out and appropriated by local actors, those who relate to or identify with the local level in regards to every-day productive or family chores and which have a sense of ownership at these levels.

The concept of local actor introduces us to a broad variety of organized groups and individuals within “local” society, who can and must participate in the construction and implementation of management processes. Management requires hierarchical institutional and organizational structures and defined roles for different social actors. A lead role in the establishment of management as a permanent and sustainable practice should be assumed by the municipality, the municipal authority and its technical and policy-making bodies. The municipality, in its role as the promoter and organizer of local policy and administrative matters and arbitrator between local social actors and population is called on to assume this role for a variety of reasons, including:

- ◆ It is the body which has the legal responsibility for promoting local development and land use planning and has prerogatives in developing norms, incentives and controls for sectoral and territorial development projects.
- ◆ It is the democratically elected legal representative of different sectors, stakeholders and social forces in the municipality and is the institution that should naturally assume a conciliatory role in the resolution of differences and conflicts.
- ◆ It is a focal point or fulcrum which mediates between the local, regional and national spheres and thus creates spaces for negotiation and understanding between these different levels, keeping in mind local interests and development priorities. It provides the basis for administrative, political and economic decentralization and provides local political representation at the regional and national levels.

As such the municipality should be the principal leader and supporter of local development and risk management structures. In the case of municipalities that for lack or omission do not assume this role, it is legitimate to consider other organizational structures which would promote and sustain risk management. Documented cases do exist in which this role is taken on by other local social forces, representatives of organizational structures and civil society.

Third, as a result of the endogenous relationship that must be recognized and maintained between sectoral, social, economic, environmental and territorial development planning and risk management and reduction, some fundamental parameters may be established with reference to the organizational types and requirements, pertinent at the local level.

A basic principle emerging from the integration of risk management with development and environmental management at the local level is that there should be no real need to create new institutions or organizations which respond to the particular requirements of risk management. Rather, this should be achieved through the incorporation of risk reduction and control concerns and practice in existing or foreseen organizational structures responsible for development planning and promotion related to the environment, sectors and territory: that is to say, the municipal or district level offices responsible for promoting development in general, land-use and urban planning, environmental management, etc.

In essence what is required is a normative coordinating body whose dictates, policies, programs, projects and suggested actions are implemented by existing bodies responsible for the different dimensions of local development, whether these are governmental, civil society or private sector based. This is important in the sense that one of the obstacles to the promotion of municipal participation in risk management has been that municipalities are reluctant to assume additional tasks which require new investments and resources seen to exceed their limited resource capacities.

Fourth: participation and appropriation are, in themselves, key factors in the sustainability of management processes. Local management is not defined as a project or a concrete product, but rather in terms of the continuous application of management principles and actions and in the sustainability of processes. Sustainability means evolving from concrete projects to a continuous process promoted by local actors through local organizational structures and institutions. This may be supported by regional, national or international bodies, optimally adhering to a common vision and an agreed strategy on risk reduction and control within the local level development framework.

Fifth: seen from the perspective of the phases of the so-called disaster cycle, risk management is a transverse and integral practice which includes activities and orientations not only related to prevention and mitigation, but also in terms of preparedness, response, rehabilitation and reconstruction. The point of reference is the changing conditions of risk that are depicted in the notion of a risk continuum, and not disaster as such. Continuity is accepted as something that typifies risk from the outset and the practices which reduce or anticipate it.

Sixth: it is a practice which is promoted and controlled from the local level but which cannot exist without the establishment of relations at higher territorial levels where differences are reconciled, coordination and negotiation processes generated and other extra local actors come in to play, whether this is at the sub-regional, regional, national or international levels. The local level is a component of a larger territorial reality and cannot disregard this fact when it comes to the management of change. This is of considerable importance in that it recognizes that risk expressed at the local level is in fact the result of multiple, inter-linked and inter-related processes whose social and territorial origins exceeds local limits. The local level is a depository and not a factory of risk as such, although eminently local processes obviously contribute towards its existence. It may thus be affirmed that a local management process will be more efficient if it is linked to and developed within a broader territorial framework.

Some of the approaches which have been used to achieve greater integration of local and other territorial levels include:

- ◆ The development of inter-municipal projects within areas of common ecological, environmental and development characteristics, including efforts to create committees or coordinating bodies made up of local and external stakeholders.
- ◆ Projects developed in the context of watershed areas, economic regions, etc.
- ◆ Projects which are concentrated on a particular area, locality or municipality but which anticipate a ripple effect to other areas where analysis shows that risk generating factors that affect the intervention area are generated outside of the spatial limits of the area (sources of river pollution, deforestation, etc.)

It is clear from this brief outline of the basic characteristics of local management, that external actors who promote concrete risk reduction projects are not responsible as such neither do they define the existence of local management. They should offer support for the promotion, acceptance and follow-up in the management processes incited by the local actors themselves. The projects we promote very often have the final objective of supporting risk reduction at the local level but not necessarily the establishment of risk management as a process. In a significant number of cases of external intervention, project design and goals do not explicitly consider local appropriation of the process or the sustainability of plans and interventions. Many are still oriented to providing concrete and final products and are of relatively short duration.

BOX 1. Local risk management within the framework of local development processes: The case of Barranca and Chacarita, Costa Rica. (ALFORJA project): The comprehensive application of intervention parameters.

The Barranca and Chacarita Community Emergency Committee in the Central Pacific zone of Costa Rica was created to attend disaster situations. Once the crisis was over the Committee would tend to hibernate until the next emergency or preventive activity came along. Nonetheless, motivated by their own understanding of the local development scenario and problematic and with the support of the NGO, Alforja, the Committee realized that it also had a role to play in local risk reduction management and in the promotion of improvements in community quality of life and development. Three defining traits of local risk management can be identified in the development of the organization:

Management as a process not a product

The Committee began its work using the Community Health Network of the zone, thus allowing the joint efforts of many different organizations and institutions. Alforja, the Ministry of Health and the Costa Rican Social Security Service, who support the organization, promoted participatory methodologies being careful not to castrate the “process of the process” which typified the Committees development from the outset, allowing its consolidation and strengthening. In respecting the local Committee’s own rhythm and providing local actors with the space to define their own agendas, it was possible to stimulate the process in a positive way. Dependencies and paternalisms were also avoided. The process of consolidating efforts to correct and avoid future risks resulted in the legal establishment of the Community Health Network, and in the sustainability of its work.

Participation, appropriation and sustainability of the management process by local actors

Appropriation and sustainability were achieved by the Committee through:

- a. The participatory methodology promoted by Alforja which respects the principle that members of the Committee are active subjects of the intervention process.
- b. The role of Alforja as an external agent which promotes an autonomous relation with the Committee which challenges the paternalistic and dependency relations the State has established with community groups.
- c. The Barranca Community Health Network, an organic structure where proposals for improvements in the local quality of life are vented, discussed and supported.

Sustainability of the process has mainly been based on the wide scale representation of different civil society and State organizations working in harmony.

Local management and the regional and national frameworks

At the outset, the Committee restricted its analysis and actions to the area immediately around the communities of Chacarita and Barranca. However, once activities were under way it was realized that the Committees action plan should extend beyond this area given that risk and its different manifestations affected all of the communities along the Barranca River.

In this way, a working strategy evolved based on the articulation of riverbank communities throughout the watershed. These communities were represented by environmental organizations, development associations and health authorities. Recognizing the interrelations between what happens upstream and downstream led them to broaden the geographic scope of their intervention. This includes both situational analyses of the risk scenario (cause-effects) and the development of action plans. In this way integral solutions are conceived where each and everyone acts according to a global vision (of the watershed) but from their own local perspective (the micro-watershed).

3 . Parameters and practice favouring local risk management

Our basic definition of local risk management presented above identifies six premises, traits or basic characteristics which allow us to define local risk management. These parameters will be taken up on below, introducing evidence generated during the systematization of local experiences in order to identify aspects which play a key role in the consolidation of these elements in management practice on a daily basis.

Some preliminary considerations regarding risk management seen as a process and the promotion of concrete intervention projects

In defining the fundamental parameters or traits of local risk management, one is clearly referring to a Utopia to be constructed in the future, and not necessarily to something which already exists or is consolidated and widely promoted. This is not to deny the existence of examples of intervention in risk reduction which bring together several of the traits and tend to evolve towards more integral or comprehensive schemes. However, a large number of the cases recorded in the project inventory compiled as part of the regional project comprise individual projects which intervene in determined risk factors but whose contribution to the consolidation of permanent and sustainable local management processes is highly variable. In our view many of these projects are examples of risk reduction at the local level but not of projects designed and executed within the framework of a local risk management process as previously defined in this document.

In considering the types of project promoted over the last few years and their relationship to the promotion and consolidation of local risk management, we can identify three basic modalities:

- ◆ Projects whose explicit objectives and

methodology point to the promotion of the conditions for the initiation and consolidation of local risk management structures and processes.

- ◆ Projects promoted at the local level by external actors in function of the reduction and control of certain risk factors. The development, methodology and vision incorporated in these projects extends beyond the projects' immediate objectives so as to also consider the way in which the project can, through its intervention strategy, support and promote sustained local management processes in the future, within the framework of local development.
- ◆ Projects drawn up and carried out in function of the reduction of certain risk factors at the local level, but which do not transcend immediate, short term objectives. The methodologies and types of intervention do not establish relationships with local development contexts, goals and needs and do not transcend the immediate project objectives, searching to support or promote longer term risk management processes and structures.

This "classification" of types of projects obviously establishes extremes and does not consider "hybrid" projects which draw together characteristics from the three types of "model" project. Evidence suggests that the last type of project still dominates, with a perceivable tendency towards a growth in the incidence of the first two types indicated.

In recognizing this situation and also recognizing that for different reasons governments themselves have not paid sufficient attention to the creation and consolidation of decentralized local management structures or systems, we are presented with a particular challenge which orientates our focus in the remainder of this document. This orientation is articulated in function of a basic question. Thus, at the same time that we recognise that for some time in the future it is highly likely that the project and not process approach will predominate, how can we

guarantee that individual risk reduction projects do in fact go beyond their own particular risk reduction objectives, supporting and contributing to the introduction and future consolidation of local risk management processes within the development framework?

This, we believe, can be achieved to the extent that we are cognizant of the ways in which new projects could contribute to promoting local management taking into account and incorporating into their design and methodologies some or all of the traits which we believe distinguish local management as a process and which support the creation of conditions favourable to its institutionalization and sustainability.

General considerations on the parameters

Before carrying out a detailed analysis of each trait or parameter it is necessary to clarify that these cannot be limited to and identified with any one particular phase or stage of a project. Rather, they should be expressed or represented in each and all of the different phases, from project design, planning, and strategic development, through to decision-making, implementation, follow-up and evaluation. In other words, they are characteristics which should be widely promoted throughout a project. The greater the success in achieving this goal, the wider will be the possibilities that the project in question contribute to the gradual development of conditions for the establishment of permanent local risk management processes.

Independently of the particular objective of an intervention project and the hoped for results, we can establish the premise that the promotion of permanent local management processes should be part of the intervention methodology and objectives of all risk reduction projects. Achieving the objective of the project and the particular products this implies can always be conceived as the result of a process which incorporates the characteristics of local management as they are described in this document.

4. Parameters and practice: a global approach

4.1 Risk management – Local development

Nowadays, increasing efforts are aimed at improving conditions for local development. Economic and administrative decentralization is included as part of this process, processes which are facing many difficulties but which are established as goals in many countries. Increase in the levels of human security, considering both every day living conditions and security from a variety of environmental threats, is an essential component of development. In this sense, development cannot be contemplated without reference to the issue of disaster risk. Risk management has little sense if it is not seen as a dimension of development planning and as a practice which transforms and supports greater levels of integral human security. The development dimension which should characterize any intervention in risk is perhaps its most essential and defining trait.

4.1.1 Project types and different options

When considering the relationships between local risk management and local development two generic types of projects come to mind which have different objectives and points of departure.

First, sectoral, territorial or integral development projects which include criteria for the anticipation and control of risk within a framework offered by the idea of prospective risk management.

This type of focus does not pose serious problems inasmuch as there is a disposition towards analyzing new projects with an eye for risk and knowledge exists on the options available for risk control in the type of project under development-agricultural, housing, water supply, tourism etc.

Second, projects that have the explicit aim of modifying specific existing disaster risk conditions in localities. To date, the majority of

cases of this type of intervention have involved the introduction of early warning systems, the construction of physical hazard barriers, the dragging of rivers and stabilizing of slopes, relocation of settlements, retrofitting of buildings and the preparation of emergency plans. These are in some ways the most obvious and conservative activities which can be identified. Conservative in the sense that they do not attempt to intervene in risk generating processes, nor do they attempt to change existing social and economic patterns and relations that may relate to existing or new risk conditions.

On the other hand, the reduction of existing risk, as we have insisted earlier, can consider the necessity of transformations in local development guidelines, including a reorganization/re-adaptation of land-use, structural changes (of vocation or organization in the case of the predominant productive activity), changes in consumer patterns and natural resource use, environmental recovery and sanitation, to name just a few. These plans/schemes are more progressive and give the notion of risk reduction in a development framework a much broader focus. Thus, the principle focus is not simply protecting existing development from disaster loss, but rather the parallel modification of risk generating conditions that form part of the existing development process and the creation of more adequate conditions for promoting social and human development and livelihood resilience which in themselves turn out to be disaster risk reducing mechanisms.

The predominance of the first type of project is the result of short-term and product-oriented attitudes with a relatively limited investment in resources. The second type of project requires greater investments and time and is not so easily adjusted to the demands of the agencies which finance projects directly addressing disaster issues. In the first case the approach begins with concerns for risk and disaster and then may consider impacts on development, while in the second case we begin with central development issues and then consider disaster risk, its reduction and control as a way of complimenting development objectives and promoting more integral, secure and sustainable development.

In establishing this basic division we identify one of the most acute challenges and problems faced in the promotion of local risk management. Thus, there is no doubt that options for spreading the practice at the local level are greater when the projects promoted start by dealing with local development issues and integrate considerations of risk, its anticipation or reduction, as opposed to traditional projects which are based on the identification of a particular risk issue at the local level and promote interventions aimed at its reduction. But, this is undertaken without necessarily questioning or modifying the existing development patterns which are probably responsible for the risk in the first place.

Seen from the perspective of external sources of support for local projects, this means that greater advances in local risk management will be achieved to the extent that the sources which support development projects promote and make funds available for projects to consider issues of risk. Currently, this is not generally the case, although increasing emphasis is being made on such aspects.

On the other hand, the agencies which traditionally support projects in the disaster field are generally different from those which promote development. They also have visions which are narrower, more short-term and product-oriented, with more limited availability of finance and shorter time-scales. In addition, demands for obtaining "concrete" and "visible" products runs contrary to the need to emphasize and promote longer term processes. It is difficult to see how these sources will be able to extend or modify their visions in such a way as to take into account the local development dimension in the conceptualization and design of projects.

In view of this there is an explicit call for the issue of disasters and risk management to be considered in a more generalized way by the development agencies and not as a separate problem, subject only to traditional sources of funding which, in the end, are just broader versions of the same agencies or agency departments which finance preparedness and disaster response activities.

BOX 2 Some ecological facets of risk management: the experience of World Neighbours (WN) in south east Honduras

The “Sustainable Agricultural Development in Communities in Jamastrán” project, promoted by WN with finance from the emergency programme of the German Diakonia agency, arose within the framework of post Mitch reconstruction programmes.

WN had promoted sustainable agriculture and health improvements in different rural communities in the north, south and western regions of Honduras since before Mitch. It had also promoted community organizational strengthening as a third component of its work.

Due to the approach followed by WN, this sustainable agriculture project, which incorporated disaster risk reduction aspects, operated from an organizational base which did not coincide with the traditional emergency or risk management committees adopted by organizations that focus directly on risk reduction. The organization introduced risk reduction issues into its ongoing concerns for sustainable agriculture and health and into other sectoral priorities identified by the local community organizations

The emphasis on the preservation and restoration of natural resources as a basis for sustainability arose to a great extent because of the conviction that the issue of reducing the impact of disasters has a strong ecological component. This vision is manifest in the project objectives which promote the reduction of the vulnerability of biophysical resources, without ignoring the final objective of improving the quality of life of the participating population. In addition, the specific objectives of the project incorporate other aspects which – although not explicitly aimed at risk reduction- finally contribute to mitigating vulnerability factors (food security, organizational strengthening and the improvement of health conditions).

Identifiable practices which contributed to an increase in the quality and impact of the project include: the focusing of intervention on sustainable local development and not exclusively on the explicit containment or reduction of risks; focusing interventions on the reduction of technological, economic and environmental vulnerability through sustainable agriculture and environmental health; flexibility in project design permitting the adoption of a watershed management focus; and, finally, not closing out from the start the issues and problems to be dealt with, thus opening them up to analysis and proposals from the target population. The scheme illustrates that risk reduction may be closely integrated into sectoral development processes at the local level.

4.1.2 Fundamental practices in the establishment of the relationship between risk and development in risk reduction projects

Experience shows that at least four mechanisms or basic practices exist which should be considered in any project in order to facilitate or guarantee a common and joint consideration of the issues of development and risk.

Conceptual frameworks of the projects

The link between risk and development can be more easily established to the extent that the

conceptual and methodological frameworks used in projects adequately define this relationship. Financial and donor agencies and demand sectors should require that project designers and implementers make specific reference to this relationship. This means not only establishing how the reduction of the risk factors will enhance development but also how existing development modes lead to risk in the areas. Here we may assert that there is no risk problem or proposed intervention which cannot be related to the issue of development and that this relationship and mutual conditioning should be clearly laid out and expressed in the project’s conceptual framework.

Local diagnoses.

Local projects in the risk or disaster area frequently contemplate the analysis, mapping or systematization of information on hazards and vulnerabilities. However, this type of analysis often assumes static characteristics and these risk factors are seen as already existing products or circumstances in the area or community. Little or no analysis of the historical processes which explain their existence or of the relevant social actors is incorporated such that the analysis is socially neutral. In addition, it is still common to find analyses which treat hazards and vulnerabilities as if they were clearly separable entities. The dynamic and complex interactive relationship between them and the ways in which they are mutually conditioned are rarely laid out. Risk as such and its objective and

subjective dimensions are rarely considered in an integral fashion and only on a few occasions are attempts made to establish the causal links between hazards, vulnerabilities and risk and identify the difficulties these signify for the planned processes of transformation or development to which the community could be subjected. The result of this split is that local actors present in project development are frequently not able to establish the relationship between processes of local transformation and development and the materialization of risk, hazards and vulnerabilities. Risk tends to be divorced from the issue of development as if it were the result of autonomous and exogenous processes.

The use of integral participatory diagnoses, which go under a variety of different names, are fundamental for evaluating different issues within

BOX 3. Synergies between local development and risk reduction: the experience of the Lower Lempa initiative, El Salvador.

Between August 2001 and April 2002, an independent group of consultants contracted by the Ministry of Environment and Natural Resources with Inter American Development Bank finance conducted an integral analysis of development and risk conditions in the Lower Lempa River Valley and proposed a strategic framework for development and risk reduction in the zone. This work was undertaken in response to local demands and designed and carried out in a highly participatory manner. The link between development and risks and disasters was an essential element in the development of the analysis and in the identification of intervention options in the zone. The latter included ideas on changes in production patterns, land-use planning, sustainable management of natural resources, improvement of living conditions and the creation of local capacities as a basis for disaster risk management and reduction. In other words, the analysis and the proposals were based on an integral vision of risk and its relations with development and not on a limited vision based on the endowment of structural or engineering solutions to the flood risk problem in the zone.

The “Programme for the strengthening of local and community organizations in the Lower Lempa” for risk management within the development framework is one of the steps recommended in the proposed strategic plan. This programme was implemented in the zone between 2002 and 2003 with support from British and Japanese funds channelled through the IADB and the Ministry of the Environment. This programme precedes the development of concrete intervention projects in the zone identified in the strategic plan. The programme for organizational strengthening seeks to build a local forum for discussion, planning and decision making, approving development and risk reduction proposals and participating in project implementation and evaluation. A major achievement has been the creation of a local committee drawing members from the main grass roots organizations in the zone, from the municipalities and from central government. The Committee, together with the development of other organizational and managerial aspects, comprises an important step in the consolidation of social capital within the zone which is absolutely necessary for the promotion of local risk management within the development framework.

a zone in an integral manner and in pre-identifying opportunities, priorities and relationships. They provide potent tools and methodologies with which to establish and detail the link between development and risk. Moreover, when undertaken in a fully participatory fashion, they serve to increase consciousness and commitment on the part of a broad range of local actors. A fundamental aspect of these analyses relates to the indicators and processes they consider. These diagnoses should at least be able to answer the following questions:

- ◆ How do current risk factors relate to the types of development within the zone?
- ◆ What are the processes and social actors that help explain the construction of risk in the area?
- ◆ What are the social vulnerability conditions that give the possible physical events their hazardous characteristics?
- ◆ What are the characteristics of the zone's economic and social development which help explain existing vulnerabilities?
- ◆ What is the relationship between the local and other territorial levels in the explanation of the types and levels of risk.
- ◆ What are the new development trends which could give rise to new risk in the future?
- ◆ Who are the organized local actors or individuals who should form part of the risk management process due to their relevance for development planning ?
- ◆ How is risk dimensioned and valorised in the area by different social groups and how is disaster risk prioritised as compared to other more permanent development problems?

With reference to these diagnoses we may assert that it is not the level of specialization of the intervention which counts. It is usually far better to undertake a broad analysis which examines the diverse means by which risk and development interact prior to undertaking very specific analysis of those aspects which seem to have a direct relationship with the particular intervention issue identified for the project. The broader the visions we illicit, greater is the impetus for integral and sustainable risk management in the zone.

BOX 4 Risk management and disaster prevention project 1999–2004 (Humboldt Centre – Nicaragua)

The Humboldt Centre (HC) risk management project in 10 municipalities promotes processes leading to the appropriation of the risk reduction issue at the local level, generating consensus among diverse actors as regards sustainable development at the municipal level.

The principal instrumental axis of the project comprises an integral participatory diagnosis of the municipality, its development context and risk scenario. The importance of this instrument rests not only in the diagnosis seen as a product, but rather in the possibility it renders for involving four types of social actor- community leaders, members of territorial development and prevention committees, municipal authorities and technical staff and members of the municipal committee for development and prevention. With the diagnostic procedure a change of vision is stimulated on the relationship between disaster risk and development. A consensual vision of a desired future is proposed as a fundamental step in the strengthening of strategic development planning at the community and municipal levels. The diagnosis promotes the participation of different Local Risk Management actors using sensitization techniques and means for strengthening the local and municipal risk reduction organization set up, thus promoting improved development practice and emergency response. The municipal technical staffs are trained as facilitators in the sensitization process and in the identification of risk reduction proposals.

BOX 5 Vulnerability analyses: experience in the hamlets around the San Miguel volcano, El Salvador (Geologists of the World)

In defining vulnerability levels, four categories were established: low, medium, moderately high and very high. Different numerical values were assigned to each of these levels: between 0 and 1: low vulnerability; between 1.01 and 2: medium vulnerability; between 2.01 and 2.5: moderately high vulnerability; and, between 2.51 and 3: very high vulnerability.

With regards to the definition of vulnerability parameters/criteria, objectively verifiable, quantitative indicators were adopted.

Physical/technical parameters

- ◆ Materials used in construction of house walls: 70% or more with mixed systems and/or improved adobe: 1 point; between 40% and 69%: 2 points; and less than 40%: 3 points.
- ◆ Presence of basic services such as access to potable water, drainage, telephones and electricity. With four of the mentioned elements: 1 point; with two or three: 2 points; with one or none: 3 points.
- ◆ Presence of agricultural technology, machines, irrigation systems and drainage. With four of the mentioned elements: 1 point; with three or two: 2 points; with one or none: 3 points.

Economic parameters

- ◆ Levels of extreme poverty: 45% or more households living in extreme poverty: 3 points; between 20% and 44%: 2 points; less than 20% of homes: 1 point.
- ◆ Land tenancy. More than 70% own their land: 1 point; between 40% and 69%: 2 points; less than 40%: 3 points.

Environmental parameters

- ◆ Fuel for cooking: 60% or more use firewood: 3 points; between 25% and 59%: 2 points; less than 25% use firewood: 1 point.
- ◆ Land use: more than 70% of agricultural land under temporary crops: 3 points; between 40% and 69%: 2 points; less than 40%: 1 point.

Social parameters

- ◆ Education. Less than 40% with primary education: 3 points; between 40% and 69%: 2 points; 70% or more: 1 point.
- ◆ Organizational: without local organizations: 3 points; with support from ADESCO or other development organization: 2 points; with Risk/Disaster Committees: 1 point.
- ◆ Ideological/cultural. 50% or more believe in punishment of God or natural phenomenon: 3 points; between 20% and 49%: 2 points; less than 20%: 1 point.
- ◆ Political. Lack of development proposals: 3 points; history of mobilizations/negotiation with local/national authorities: 2 points; presence of development proposals: 1 point.
- ◆ Official plans and instruments. Lack of municipal risk management/emergency plans: 3 points; municipal development plans: 2 points; municipal development plans with risk prevention: 1 point.
- ◆ Civil society institutions. Presence of 3 or more development institutions: 1 point; presence of one or two institutions: 2 points; lack of institutions: three points.

The vulnerability analysis contributed in an important way to increasing local actor knowledge of the local scenario and in the generation of increased and higher quality information to support future development processes. As a result of this experience it may be concluded that one of the means to increase the pertinence and efficiency of risk reduction interventions is the development and dissemination of methodological tools which allow a deeper analysis and understanding of local vulnerability, the relations with development styles and of the options for risk reduction.

It is necessary to promote a permanent vision broadening processes and fomenting participation and appropriation of the issue at hand.

Local project participants

The chances of the risk-disaster-development relationship being understood and taken into account increases considerably when the local actors involved in the project are actors in the development process as such. Getting involved in the problem through the participation of traditional and established preparedness and disaster response organisations and structures

is in itself limiting, although it should not be ruled out as part of the equation due to the integral and transversal nature of risk management concerns. Development actors are identified through a previous analysis in the locality, and, in principle, include the municipality, local sectoral, environmental or global development associations and organizations, producer organizations, NGOs and local or regional representatives of central government. One very clear lesson is that without the presence and commitment of the municipality chances of success and sustainability are considerably reduced. The municipality is the most appropriate level to act as a cohesive and consensus seeking

BOX 6 Risk Management and Local Power: the Case of the Municipality of Senahú, Alta Verapaz – CARE.

The scarce resources available to local governments, the centralization of decision making processes at the national level, the economic dependency on external actors and the short-sighted vision of the authorities are just some of the problems which impede organized and planned risk reduction processes and community development. Nonetheless, in spite of these difficulties, interesting experiences can be found at the municipal level although these may be somewhat dispersed and isolated. These have allowed municipalities to stimulate their capacities so as to promote processes which go beyond traditional investments in emergency response. The case of Senahú is one of these. Here, the local government got involved in the risk and disaster issue through preparedness activities but later took up risk reduction initiatives throughout the watershed. The Senahú Municipality is a high risk area for landslides. Increasing deforestation has accelerated the erosion process whilst the inappropriate location of housing and production has increased the probability that they will be affected by rainfall and flooding.

The CARE inspired project was originally oriented towards emergency preparedness. During this process training sessions were organized with the objective of obtaining inputs for the design of Emergency Plans. These activities benefited from the support of specialized institutions (CONRED, CUNOR, and USGS). The CARE team then repeated the schemes at the municipal level and finally municipal technicians adapted it to the community level. However, intervention gradually extended beyond these activities. Aware of the existence of a persistent and increasing risk context, the (municipal) mayor, Francisco Javier Teni Chiquín, involved the department of public works in risk reduction processes. Neighbourhoods and basic infrastructure have been evaluated and the difficult task of relocating families living in high-risk housing has been achieved. A new neighbourhood is being built for affected families with funds from the post 2000 reconstruction process. Slopes have been declared off limits, while reforestation projects are also now under development.

With support from the Central American Mitigation Initiative- CAMI- project (phase 2 of the CARE intervention), they are currently entering a more wide reaching development promotion process, drawing up an integral analysis and plan for risk management and development, and working hard on the integration of the Polochic Watershed Development Committee (see Box 8). With regards to the latter, the Senahú Municipality has become one of the most dynamic players.

The presence of a dynamic, consensus seeking and committed mayor has been a key factor in the successful implementation of the project in this municipality. The leadership given by the mayor has facilitated the participation of other players, public and private institutions, and grassroots organizations.

force in the mobilization of local actors, and its authority over and control of local development and land-use planning provides it with a privileged and unchallenged position in the development-risk formula.

Projecting the specific issue faced by the intervention within the development context.

It is clear that for some time now many local level risk reduction projects have been clearly mapped out and directed at clear cut risk contexts. This is the case, for example, of projects which aim to promote early warning systems, slope recuperation and stabilisation, the re-location of settlements, or the drawing of hazard maps as an input for preparedness or emergency plans. Each of these contexts represents an existing, clear cut risk situation for which intervention is sought. Nonetheless, this type of intervention, where the product is already legitimately established and defined can offer an option for more wide ranging analysis which allows project participants to reflect more profoundly on the overall risk problematic and on why they should turn to risk reduction and control as an option in general.

To take the example of early warning systems, we are here faced with the development of relatively conservative, if highly relevant mechanisms which seek to adapt warning and evacuation procedures to given risk parameters. However, on analyzing the existing risk contexts, the location of the population, livestock, housing, etc, the project could stimulate an analysis that goes well beyond the existing scenario delving not only into the context that has to be faced in case of emergency but also the reasons why such contexts exist and their wider significance for development in the area. The achievement of an integral analysis and consideration of the way in which land-use patterns, the location of housing and production, environmental deterioration, etc. have contributed towards the existing risk context that early warning systems are set up to combat, can be a valuable tool for projecting the community towards interventions aimed at avoiding the creation of new risks in the future. The information which is generally required to substantiate and support a particular intervention has a potential relevance which goes

well beyond its particular use in the design of specific intervention tools. Examples now exist in the region of local organizations originally involved in early warning systems evolving into more comprehensive risk management organizations and now involved in primary risk reduction and development activities (see the cases of La Masica in Honduras and Chepo in Panama, amongst others). This has resulted from an almost spontaneous local process stimulated by local actors as opposed to being considered in original early warning project formats.

4.2 Management as a process and not a product

Constructing the problem and the solution in a participatory and flexible manner.

In a first approximation to the definition of process this refers to the capacity to gradually construct and dimension a problem and its solution, as opposed to beginning with preconceived problems, products and interventions. In other words, the mere construction of a dyke, the relocation of a community, dredging a river or prohibiting construction in certain areas is not local risk management as such, although they may be activities resulting from a management process. Management refers rather to the process through which problems are constructed socially and solutions adequately dimensioned and implemented. It is generally possible to conceive this process taking into account different components or phases, including:

- ◆ The unmasking, understanding and awareness of risk construction processes, their concrete forms and characteristics and their relations with local development models. This requires a broad understanding and a wide ranging participation of local agents (see below).
- ◆ An understanding of the wide range of local level risk issues, their hierarchy and prioritisation as regards the development problems of the zone and information on the levels of social acceptability or unacceptability.

- ◆ Knowledge of the zone’s development objectives, opportunities and options and the relationship between these and present risk environments.
- ◆ An outlining of the risk reduction options taking into account the types and content of development projects and the most typical and traditional risk reduction instruments available. This must take into account the opportunities, capacities, resources, etc. of the zone and necessary alliances among local actors and between these and those from other territories where processes have an impact on the local risk context and possible solutions.
- ◆ The development of intervention strategies and particular instrumental options.
- ◆ The implementation of schemes and projects.

BOX 7 Project for the prevention and mitigation of natural disasters and epidemics in three exclusion zones of Guatemala City – Doctors without Frontiers (MSF)

The main aim of the Doctors without Frontiers project was to “reduce the level of vulnerability of communities faced with emergency situations related to epidemics and natural disasters”. The project has the following goals:

- ◆ Reduce the impact of a disaster through preventive, educational and training activities.
- ◆ Improve the emergency response capacity through institutional coordination and collaboration.

Throughout the project implementation process MSF grew in its conceptual and practical vision from one centred on emergencies to a more integral focus which contributes to a reduction in risk conditions within communities. This focus was centred on:

Reduction of landslide risks: construction, cleaning and rehabilitation of existing drainage systems, stabilization barriers on slopes, strengthening of existing structures, reforestation of critical public areas, cleaning of roads and evacuation routes, management of solid waste in critical sectors and community awareness raising.

Reduction of the risk from epidemics: introduction of potable water, inspection of and repairs to the water distribution network, control in food handling, control and cleaning of public latrines, management of solid waste in public areas and vector control especially through rubbish removal.

MSF’s experience in the slum areas has provided many different lessons, including:

1. The importance of not only strengthening community participation but also of inter-institutional coordination and integral intervention. In the community it is often very difficult to clearly and precisely differentiate intervention themes. Local reality is extremely complex and palpable, so in order to achieve sustainable goals it is necessary to take into consideration other linked community problems. This leads to the establishment of strategic alliances with other institutions operating in the same locality thus attracting players who complement the program and its concrete goals.
2. The move from a vision traditionally focused on attending emergencies to a more integral risk reduction vision.
3. The capacity of the institution to simultaneously manage short and long-term strategies. Very often the urgency of solving highly sensitive issues involves a loss of perspective as regards the processes which have caused the problem in the first place. Thus, although urgent problems must be effectively dealt with, non-intervention in causal processes can result in the situation returning to its previous status or new risk situations being generated.

Such a process cannot take place where schemes and projects are fixed from the outset of the project with predetermined objectives and actions. It is precisely the management process which allows the most adequate dimensioning of the problem and identification of the most appropriate solutions. This does not of course mean that the project's promoter has no idea of the objectives and goals of the intervention and as to its sought achievements.

Process oriented interventions inevitably require more time and resources than schemes designed with concrete and pre-established products in mind, but the benefits are without

doubt commensurable. From the perspective of the financing agencies, this signifies the need to consider projects with a wider time scale, more resources and greater margins of flexibility than those which currently exist. At the same time, a large number of projects analyzed in our research process had been significantly changed while underway precisely due to the fact that the original objectives and procedures were too rigid and in various cases severely questioned by the recipient groups. Overly structured projects negate the principle of participation in implementation and decision making, both of which are important in the definition of management as a local process.

Box 8 The Polochic Watershed Coordination Committee (PWCC), Guatemala.

The Polochic watershed includes parts of eight municipalities in the Alta Verapaz and Izabal departments. Having been obliged to abandon their lands, the Qeqch'ies and Poqomch'ies communities moved on to steeply sloping, higher altitude forest land. Deforestation in the upper and lower watershed has intensified the erosion process and increased the risk of landslides and flooding. The consequences of this process are suffered throughout the watershed as was seen in an especially dramatic manner during hurricane Mitch.

The initiative to create the PWCC began during the post Mitch reconstruction process. It was originally promoted by the Regional Office of CARE in Cobán through its project "Municipal and Community Preparedness in the Case of Disaster". The original idea of this project was to strengthen the different organizational levels of the local Coordinating Committees for Disaster Reduction so as to strengthen efforts in the case of emergency. Nonetheless, considering the number of reconstruction programmes and disaster management projects which had already been developed in the Polochic watershed, CARE incorporated other activities focussed on the strengthening of inter-institutional coordination for improving response in case of future disaster. The PWCC was formed with this objective in mind and participation was initially limited to those institutions which already had reconstruction projects underway, in addition to public institutions and local governments which were called upon to respond in case of emergency.

At the outset, activities were promoted by CARE involving social actors who themselves had requested training. Gradually and almost spontaneously the actors themselves took advantage of the Committee for promoting inter-institutional coordination in the carrying out of their programmes and projects. And, later, the Committee was used in promoting actions aimed at the reduction of risks and intimately linked to development planning. Recognizing the potential of this platform for the negotiation of activities, more actors, including municipalities, gradually joined in. Finally, when the stake holders involved recognized the real form this platform was beginning to take they decided to rename it the Coordination Committee for the Development of the Polochic Watershed and draw up a Development Plan for the river basin. Proposals already being defined in an isolated manner were then coordinated within the framework of the committee, and the hopes, visions and interests of the different institutions working in the watershed were then drawn together. The development plan is currently under preparation (2002).

Initiatives such as this encourage us to think that alternative development modes can indeed be promoted in a more harmonious manner, bringing together different local and external actors, and unifying criteria, interests and efforts in order to achieve common goals.

The idea of process sometimes appears to conflict with the demand or requirement of communities or neighbourhoods to have tangible short term products which have a direct and measurable impact on the risk context and not just training courses, diagnoses, capacity strengthening processes, etc. Nonetheless, the idea of process does not contradict the notion of obtaining tangible products. Rather, the process should define these products and local actors should be at the centre of the analysis of the problem and the selection of concrete intervention options. Much of the problem lies in the art of persuasion and the way in which the projects are presented to local actors. Moreover, more flexible project formats are also required where assignments for concrete activities or products exist but without necessarily having previously defined the final destiny of available funding.

Continuously constructing and strengthening local management structures and organisations

A second use of the notion of process refers to the gradual and continuous establishment of conditions for the permanent implementation of local risk management systems or structures, with the presences of the most important social actors, including the municipality.

This process requires the continuous promotion and strengthening of processes and structures instrumented or utilised in previous projects in the area. This argues for the concatenation or piggy backing of successive projects and respect for already established, legitimate organisational structures or those in process of consolidation. Many times, however, external project promoters have different contacts with local actors and organisations and power struggles arise with clear cut divisions in the area where external actors work with different and competing groups. This establishes the need for legitimate, broad based, consensual and highly participatory local organisations and structures which may filter and debate project options and offer a medium that may guarantee continuity and coordination in the framework of commonly accepted development strategies and needs. Divisions and conflicts within the same local space and the continuous

creation of new organisational structures can only weaken the development process in the short, medium and long terms. This in no way denies the right for alternative organisational structures and only establishes the principle of the need for continuity and coordination.

4.3 Local participation and appropriation.

Participation, understood as being part of, as opposed to taking part in, is indispensable for local management for various reasons, among these the opportunity for appropriation and sustainability of the process.

4.3.1 Participation in what, how and by whom?

The participation of local actors calls for a consideration of what activities and parts of the process should be the subject of participation.

First, participation in the design of project proposals. In general this does not happen due to the autonomous and external manner by which the projects are designed and where participation is limited to a rapid and superficial consultation with local actors as to their acceptance of the project and their availability to collaborate with its implementation. This superficial approach must be overcome as the chances for success of an intervention are directly related to the way in which this is appropriated from the outset by the local actors subject to risk. However, even when there is little participation in the make-up of the baseline project, this can be corrected with the project process. Thus, particular emphasis can be specifically put on:

- ◆ The process by which knowledge and understanding of the local dynamics and the relation between risk and development patterns are achieved, using participatory, integral diagnostic methods and the drawing up of local risk maps with full local participation. The analytical process should include the widest possible local representation not only including technicians and professionals but also community

representatives and private sector stakeholders. The municipality should assume a protagonist role in guaranteeing real participation and demonstrate its willingness to offer concrete support for the process.

- ◆ The fact that participation should be considered not as a mere act of consulting the local population and using them as a source of information but as a fundamental component in the social construction of knowledge and the achievement of consensus through discussion sessions, training options and the exchange of ideas on causes and solutions. This requires what Gustavo Wilches Chaux has called a dialogue of ignorance and wisdom between external technical and local actors in order to adequately dimension local reality and appropriate intervention options.
- ◆ The broader the participation the greater the impact and possibilities for success.

Participation should not be restricted to decision makers or local authorities and professionals, but also include the general population and its representatives and civil society organizations.

With regards to the organized expressions of the local civil and political society, the participation and appropriation of the local management process is easier when the project operates through already existing organisations linked to the issues of local development. Efforts to create new organizations specifically dedicated to a problem such as a disaster have generally been unsuccessful. It is more feasible to work with permanent organizations, focussing on permanent problems or at least relating to permanent and visible problems in the locality, than to create structures around problems which are less palpable and apparently not of permanent concern such as is the case with the problem of disaster and disaster risk. In addition, this helps more permanently link the risk issue to the problem of local development.

BOX 9 Local Support for the Analysis and Management of Natural Hazards (ALARN) of the Swiss Agency for Cooperation and Development (COSUDE) – Nicaragua

ALARN is a process for strengthening the technical-scientific capacities of professionals in the preparation of Hazard Studies. This has been promoted as a means of support for local governments (more than 26 municipalities are involved).

The intervention focussed on two lines of work:

- a. The training of national professionals in the evaluation of natural hazards at the municipal level.
- b. Direct support for the municipalities in the carrying out of hazard analysis, drawing on the national capabilities already created or strengthened by ALARN.

The municipality's hazard maps and plans for disaster prevention and mitigation produced as part of the process are an important contribution in the drawing up of recommendations for risk reduction projects and an inevitable reference points for those organizations preparing to invest in municipal development.

ALARN establishes precedents with regards to styles of inter-institutional collaboration and thus contributes to a form of ALLIANCE for Local Risk Management. Relations between the group of specialists and a variety of actors (NGOs, government, external cooperation and municipalities) establish a demand for qualified services in the field of municipal risk evaluation. This has a positive impact (sustainability) expressed in an increase in the awareness of different social actors with regards to the risk issue and particularly with regards to the utility of a technical-scientific approach. Professionals trained through the ALARN process comprise a social capital with a tremendous multiplier potential among other groups of municipal level professionals and technicians.

Appropriation of the risk management process derives from real participation and the process by which local actors assume the pertinence of the pretended object of intervention and understand their key role in its resolution. Appropriation is palpable with:

- ◆ the existence of permanent local consultation, discussion, consensus building, planning and decision making processes that promote the introduction of risk criteria in development, land use and environmental planning processes.
- ◆ the existence of consensus building and coordination bodies among organized local and regional actors.
- ◆ the capacity of the local actors to negotiate with external actors on the direction of future interventions and their adaptation to the existing development model.
- ◆ the decision to apply methodologies and instruments derived from risk reduction projects in a permanent manner.

4.4 Sustainability of management

Sustainability signifies a process which is constantly renovated and consolidated and which receives continuous feedback from new activities at the local level. This means that:

- ◆ a project carried out in order to achieve specific and well defined objectives should also examine the ways in which its development in the locality can be taken advantage of in order to stimulate the creation of structures and generate knowledge which provide the elements of continuity and sustainability for future management.
- ◆ the creation and consolidation of social capital and dynamic and permanent organizational forms should always be contemplated.
- ◆ sustainability has greater chances of success if projects manage to provide a convincing argument for the pertinence of the

issue in the achievement of sustainable development and if the analytical and decision making instruments and methodologies are acceptable to local actors to the extent that they appropriate and duplicate them in future development initiatives.

4.5. Transversal and integral nature

In the design of intervention projects it has been common to differentiate between the different phases of what has been known as the disaster cycle, or what we would prefer to refer to as the risk continuum. In this way projects have been drawn up in a specialised manner on preparedness, response, prevention and mitigation or reconstruction. However, it has become increasingly clear that it is not possible to divide the reality of intervention in such a rigid and clear cut manner, and that there is a continuum of risk and risk interventions with important relations between the activities carried out in distinct moments. In addition, various analytical tools assume an importance for all risk intervention phases as is the case, for example, with risk scenarios and maps whose use extends beyond any one particular phase or type of intervention. In synthesis, the vision of a risk continuum, as opposed to a disaster cycle, allows us to capture the dynamics of existing scenarios with more clarity.

From the perspective of local risk management and the promotion of projects specializing in a particular trait of the risk and disaster problematic, the convenience of using the projects themselves for initiating dialogue and even decision making which goes beyond the particular problem under discussion must be considered. Thus, for example, as stated earlier, in the case of early warning projects the use of maps and risk scenarios for reference can give rise to discussions on aspects which are more related to risk reduction through land use planning, relocation, watershed recuperation, etc. Here we are arguing particularly for more integral and inclusive intervention schemes that are not necessarily circumscribed to a particular facet of risk reduction but rather to the range of risk continuum issues.

4.6 Relations with social actors from other territories

It is at the local level that risk – and finally disaster – is manifest in the most concrete manner. Nonetheless, it is well known that local risk is also generated in wider territories, with the participation of external actors. In view of this, the success of local management is more probable when collaboration, reflection, agreement and activities extend beyond the local level and are carried out in co-ordination with the regional and national levels. Experience shows that projects are more successful when they are conceived in relation to groups of municipalities, communities or localities and when they are based on objective risk regions

which comprehend the sum of the factors and processes relevant to the issue under analysis and subject to intervention. These can be conceived of as follows:

- ♦ integral productive or ecological zones/areas
- ♦ watersheds
- ♦ development regions
- ♦ groups of municipalities.

Without doubt, the role to be played by different actors and authorities within an integrated risk management system differs at each spatial level, but the option of having actors with different roles and authorities/functions interacting within a single group provide the local levels with more powerful risk reduction options.

BOX 10 From disaster preparedness to vulnerability reduction: the PAHO regional initiative

The Pan-American Health Organization (PAHO) has played an important role in post-disaster recuperation and in preparedness for vulnerability reduction in the health sector over the last 25 years. The institutions Disaster Preparedness Programme gives testimony to this.

The programme slowly evolved in response to demands and lessons learned from large-scale events. With more recent events, such as George and Mitch, new topics and emphases have been incorporated. The preparedness programme thus started to promote activities oriented towards vulnerability reduction in the health sector where preparedness continued to play an important role, but was no longer the overriding or exclusive objective.

It was within this framework that the project “Preparedness for Disasters and Vulnerability Reduction within the Health Sector in Countries Affected by Hurricane Mitch” arose. The goal of the project is to “contribute to a reduction of the impact of disasters on the social wellbeing and health of communities”. This is achieved through the strengthening of health institutions, the introduction of measures which reduce vulnerability associated with the rehabilitation and reconstruction of basic health infrastructure and with the promotion of a disaster prevention culture in the population.

One of the most important aspects of this project is the fact that it has taken its activities to the population at risk, including those who had been directly affected by disasters. The project is designed to improve existing social conditions and welfare levels thus helping to reduce vulnerability when faced with disaster. For this reason the project has had an important impact on the health system, on the basic health conditions in communities and on the strengthening of local organizational capacities. With reference to this last point it is worth noting that the project has very good perspectives for sustainability at the local level given that it deals with everyday, chronic issues such as water quality and health. This is manifest in that fact that the community emergency health committees, working within the framework of the project, have assumed ongoing tasks which have a direct relation to disaster prevention such as the cleaning and maintenance of drains. This lays the way for the establishment of a more permanent basis for community organization and transcends activities centred solely on emergency situations.

Box 11. From famine emergency activities to the integral reduction of risk: the experience of Jocotán, Guatemala - EPSUM

During the second semester of 2001 a serious famine affected the municipalities of Jocotán, Camotán and Olopa in the eastern region of Guatemala. Faced with these conditions the United Nations Volunteer Programme – University of San Carlos- intervened with the project “Risk Prevention and Disaster Management”. This emphasized risk analysis at the community level, emergency preparedness and implementation of environmental risk reduction strategies. During the emergency a series of problems arose: the weak community organization did not facilitate an organized response to the event; there was no adequate municipal structure for management and distribution; there was no census which enabled the adequate localization of families; distribution costs were inordinately high; political rivalry and urban-rural confrontation gave priority to one sector to the detriment of the other, institutional protagonism did not favour the development of a unified attention strategy and the lack of credibility in government and political manipulation of the crisis rendered local negotiations difficult.

It was within this environment that EPSUM's Jocotán project team intervened. Although the main objective of the project was the reduction of social and environmental risk at the local level, it also contemplated support in emergency situations. Project activities involved help with food distribution, situational analysis, strengthening of inter-institutional coordination, and later, the proposal of long-, medium- and short-term strategies which contribute to solving the problem of food insecurity in the Jocotán Municipality.

The emphasis of the team's work changed considerably after this first intervention. From an intervention focused on the community level, prioritization of work at the municipal level started to emerge, and from an emphasis focused on emergency preparedness, steps were then taken to visualize and try to influence development processes. New players started to get involved- NGOs, cooperation agencies and public institutions. The relationship with the Municipality changed and as opposed to being seen as volunteers of the University of San Carlos who should collaborate with local government initiatives, they came to be seen as actors with a capacity to formulate proposals. This led to the inclusion of some important new initiatives in the second year of the project:

- ◆ the organization of a platform for inter-institutional coordination
- ◆ the strengthening of local government on the issue of food security
- ◆ the promotion of a development planning process at the municipal level.

EPSUM's experience provides us with some relevant observations in regard to the promotion of risk management processes. These include- 1) the recognition that risks emerge as the result of unsustainable social, economic and political processes which affect the environmental conditions of a community or a region; 2) faced with this fact, there is a need for integral intervention which promotes structural transformations within each aspect of development, and for which the articulation of political-institutional, economic-productive, educational, organizational and ecological strategies are necessary. These may be accompanied by investments in infrastructure, but without these being seen as an end in themselves; 3) the need to coordinate inter-institutional efforts, both locally and externally, in order to strengthen the limited capacities of the individual stakeholders; and 4) the obligatory involvement of local governments in the leadership of inter-institutional coordination schemes oriented towards commonly agreed development objectives and, thus, a reduction in risk conditions.

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Annex 1

Glossary of terms and notions relating to risk management ⁸

ACCEPTABLE RISK: The possible social and economic consequences a society or sector of society implicitly or explicitly assumes or tolerates, considering intervention to be unnecessary, untimely or impossible given the existing economic, social, political, cultural and technical context. The notion of acceptable risk is of formal and technical relevance in conditions where sufficient and adequate information exists and when a certain level of formal rationalization in the decision-making process can be exercised.

ADAPTABILITY: The capacity or ability of an individual or social group to adjust to changes in their external, natural and constructed environment in order to guarantee survival and sustainability.

ANTHROPIC OR ANTHROPOGENIC: Of human origin or relating to human activities, including those of a technological nature.

ANTHROPOGENIC OR ANTHROPIC HAZARD: A latent threat associated with economic production,

commerce, transport, and consumption of goods and services and the construction and use of infrastructure and buildings. These comprise a wide range of threats including different types of water, air and land pollution, fires, explosions, spills of toxic substances, accidents in transport systems, the rupture of dams, building collapse, etc.

CAPACITIES: A combination of community or organizational attributes and resources that may be positively directed towards risk management.

CHAIN, SERIALIZED, CONCATENATED OR COMPLEX HAZARDS: Two or more dangerous physical phenomena occurring in chain reaction where one triggers off the other, and so on. An example may be seen with the possibility of an earthquake rupturing dams and dykes, leading to flooding, causing fires and the rupture of pipelines carrying volatile substances or pollutants and detonating landslides and severe modifications in the natural environment, all with direct

⁸ This document is based on an original contribution prepared by Omar Darío Cardona. This contribution, dating from the mid nineties, has been subjected to a recent process of intense debate and discussion and important modifications all within the framework of the Regional Programme for Risk Management in Central America CEPREDENAC-UNDP, the COPASA-GTZ project, Peru, and the Risk Indicators Project of the National University of Colombia, Manizales financed with IADB funds. The debates and exchanges which have led to the drawing up of this glossary were carried out between Lavell, Cardona and Elizabeth Mansilla. It is still in preliminary form and discrepancies still remain to be resolved among the participants in the debate concerning some of the ideas and definitions herein. This version is thus, the exclusive responsibility of Lavell and Mansilla, even though it contains many of Cardona's ideas and notions. The process of putting the glossary together is an example of the efficiency and validity of collaboration between different projects and institutions in achieving congruence and homogeneity and making the most of the scarce resources available for the Risk Management problematic.

and indirect negative repercussions on human beings and other species of fauna and flora.

CORRECTIVE RISK MANAGEMENT: A process aimed at reducing existing levels of risk within society. Examples of corrective management activities or instruments include the construction of dykes to protect population located in hazard prone zones, the seismic retrofitting of buildings, changes in cropping patterns to adapt to adverse environmental conditions, reforestation or watershed recuperation to reduce existing processes of erosion, landslides and floods (see RISK MITIGATION -REDUCTION- below).

DANGEROUS PHENOMENON (EVENT): A natural, socio-natural (see definition below) or humanly generated phenomenon which may cause damage to society. It is the materialization in time and space of a hazard. It is important to distinguish between a potential or latent phenomenon represented by the notion of hazard, and the phenomenon itself, once it occurs.

DIRECT (ECONOMIC) EFFECTS OR IMPACTS: Effects or impacts that maintain a direct and immediate causal link with the occurrence of a physical phenomenon and which are usually represented in loss and damage to infrastructure, productive systems, goods, services and the environment. (see DIRECT AND INDIRECT HUMAN IMPACTS below).

DISASTER: A social crisis situation occurring when a physical phenomenon of natural, socionatural or anthropogenic origin negatively impacts vulnerable populations and their livelihoods, production systems infrastructure and historical heritage, causing intense, serious and widespread disruption of the normal functioning of the affected social unit. The impacts and effects can not be overcome with the resources autonomously available to the affected society. Impacts are expressed in different forms such as the loss of life, health problems, the destruction, loss or rendering useless of the totality or part of private or collective goods and severe impacts on the environment. These negative impacts require an immediate response from the authorities and from the population in order to attend the affected and to re-establish acceptable thresholds of wellbeing and life opportunities.

DISASTER RISK: The probability of losses and damage which exceed the autonomous coping and

response capabilities of the affected areas and populations and which lead to a serious disrupting of their routine functioning.

DISASTER RISK MANAGEMENT: A complex social process through which disaster risk is measured and evaluated, understood, reduced or predicted and controlled. It should be considered a dimension of sustainable development plans and actions and recognises different levels of intervention. These range from the global, integral, sectoral and macro-territorial levels through to the local, community and family levels. It also requires the existence of organizational and institutional structures which represent these levels and work as a coordinated and integrated whole.

DISASTER RISK MITIGATION (REDUCTION): Intervention measures aimed at reducing or decreasing existing risk. Mitigation assumes that the total elimination of existing risk is neither possible nor feasible. In other words, it is not possible to totally prevent or avoid all damage and loss. Thus, mitigation must be guided by notions of acceptable risk (see above for definition). Disaster risk mitigation may involve the reduction or elimination of existing primary risks (see definition below) or an acceptance of these and, through preparedness measures, including early warning and evacuation systems, seek to reduce losses and damage resulting with the occurrence of a dangerous phenomenon.

ECOSYSTEM: Spatial unit comprising a group of physical and biotic components and processes which interact in an interdependent manner and which have created characteristic energy flows and cycles or movement of materials.

EMERGENCY: A social crisis context directly related to the imminence or occurrence of a dangerous physical phenomenon and which requires an immediate response by State institutions, the media, civil society and the community in general. When the event is imminent, confusion, disorder, uncertainty and disorientation may exist among the population. The phase immediately after impact is characterized by the intense and serious disturbance of the normal functioning or operation of a community, zone or region and the minimum conditions necessary for the survival and functioning of the affected social unit are not satisfied. It is a phase or a component of disaster but

is not a synonym for disaster, per se. While emergency conditions can exist without a disaster, all disasters experience an emergency phase or stage.

ENVIRONMENTAL DEGRADATION (DETERIORATION): Processes induced by human actions and activities which damage the natural resource base or which adversely affect natural processes and ecosystems, thus reducing their quality and productivity. Potential effects are numerous and include the transformation of resources into socio-natural hazards. Environmental deterioration can be the cause of a loss in the ecosystems' capacity to recuperate following external impacts. This loss of recuperation capacity can in turn generate new hazards of a socio-natural type (see NATURAL ENVIRONMENTAL TRANSFORMATION, below).

EVERY DAY OR CHRONIC RISK: A series of living conditions which characterize (although not exclusively) poverty, under-development and structural human insecurity and which restrict or endanger sustainable human development. Examples of this can be found in poor health conditions, low life expectancy, malnutrition, lack of employment and income, lack of access to potable water, social and family violence, drug addiction/substance abuse, alcoholism and overcrowding of residential areas and individual housing.

EXPOSED ELEMENTS: Persons, resources, production, infrastructure, goods and services which may be directly affected by a physical phenomenon due to their location in its area of influence.

FORECAST: Information regarding the probable future occurrence of a physical phenomenon and based on: the study of the physical generating mechanism, the monitoring of the perturbing system and/or the registering of past events. A forecast can be short term, generally based on the interpretation of precursors of the dangerous phenomenon; medium term, based on statistical parameters indicative of the potential occurrence of the phenomenon; and long term, based on the determination of the maximum probable or credible event likely to occur within a determined period of time.

GOODS AND SERVICES: Tangibles and intangibles that have an economic value and provide benefits to those who possess them. Goods are susceptible to

private or public appropriation, whilst services can only be consumed.

HAZARD: A latent threat associated with the probable occurrence of a physical phenomenon of natural, socio-natural or anthropogenic origin that may be expected to have adverse effects on people, production, infrastructure, goods and services. Hazards are risk factors that are external to the exposed social elements and represent the probability that a phenomenon of determined intensity will occur at a specific location and within a defined period of time.

HAZARD ANALYSIS OR EVALUATION: The process by which the possible occurrence, magnitude, location and temporality of a damaging physical event is ascertained.

HUMAN DISASTER IMPACT: Deceased, missing persons, injured or sick resulting from the direct or indirect impact of a physical phenomenon.

INDIRECT (ECONOMIC) EFFECTS OR IMPACTS: Effects or impacts that maintain a causal relationship with direct effects or impacts (see definition above). Quantified indirect impacts are normally those which have adverse effects in social and economic terms, for example, loss of production opportunities and future income, increases in the levels of poverty, increases in transport costs due to the loss of roads and bridges, etc. However, there will be cases of positive impacts when seen from the perspective of those individuals and private enterprises that are able to benefit from the negative impacts on others.

INTENSITY: A quantitative and qualitative measure of the severity of a phenomenon at a specific location.

LIFE LINES (NETWORKS): Basic or essential infrastructure. Energy: dams, substations, electric grid, fuel storage facilities, oil and gas pipelines. Transport: road networks, bridges, transport terminals, airports, river and coastal ports. Water: Treatment plants, water pipelines, sewage systems, irrigation and drainage canals. Communications: telephone networks and exchanges, radio and television stations, postal and public information offices.

LOCAL DISASTER RISK MANAGEMENT: Respecting the logic and characteristics of Disaster Risk Management in general (see definition above), local

management comprises a particular level of territorial intervention requiring full participation, appropriation and ownership by local stakeholders.

NATURAL ENVIRONMENTAL TRANSFORMATION:

The process by which nature or the natural environment transforms itself, including processes that have existed since the formation of the earth and which have moulded and changed its surface, its flora and fauna in a continuous manner. Reference is basically made to processes where nature interacts with other unmodified or essentially unmodified natural elements (ecosystems, rivers, mountains, slopes, coastal zones, etc). Examples can be found with the impacts of earthquakes on watersheds and slopes, hurricane impacts on forests and mangroves, or spontaneous fires that regenerate ecosystems. To speak of environmental destruction or environmental loss in these cases would be anti-evolutionary or anti-natural. A more correct use of notions would suggest the idea of transformation, change or regeneration and not destruction or damage. These latter terms are the product of subjective and anthropocentric interpretations. Even when transformations affect society, reducing the quantity and quality of potential resources, these processes are in themselves natural and cannot be considered in the same way as direct event impacts on society, its goods, heritage or material structures. Thus, the frequently used notion of ecological or environmental vulnerability refers to a type of vulnerability which is quite different and in no way comparable with social or human vulnerability. In fact, it is probably more convenient to speak of different levels of environmental resilience or fragility instead of vulnerability, and thus avoid confusions and contradictions. This argument also applies to the use of such notions as environmental disaster instead of more objective statements such as wide or large scale environmental change or transformation associated with the occurrence of large scale, natural physical events. In disaster risk and disaster studies confusions and contradiction are introduced when the same word, disaster, is employed to depict both social and natural scenarios.

Natural phenomena which modify or transform other natural scenarios are inevitable and have occurred since the origins of the Earth. With very large scale phenomena society can do nothing to impede or change these. Intervention is thus essentially reduced to prediction adaptation and, eventually, response.

On the other hand, with lower scale natural or environmental processes society frequently intervenes in order to modify them. This is the case, for example, with the control of the natural flooding of rivers, the control of spontaneous- natural fires, the modification of slopes in order to permit agriculture or construction and deforestation permitting expansion of the agricultural frontier. Here, the possibility of future negative impacts always exists as is the case where dykes and dams break, construction on land fill areas is subjected to greater seismic intensities or deforested areas generate increased flooding, landslide and drought patterns. Environmental change and transformation which takes place in highly intervened, modified or weakened ecosystems and environments constitutes a very distinct context and problem to that associated with purely natural transformations of the environment. In the case of direct social losses in modified natural environments, intervention processes have many times generated new socio-natural hazards or rendered the scale of natural physical events more powerful thus generating increasing losses once the event occurs.

NATURAL HAZARD: A latent threat associated with the probable occurrence of a phenomenon of natural origin – for example, an earthquake, a volcanic eruption, a tsunami or a hurricane. The origins of such phenomenon may be found in the natural processes by which the Earth and the environment are transformed and changed. Natural hazards are often classified according to their origins in the biosphere, allowing the identification of geological, geomorphologic, climatologic, hydro-meteorological, oceanic and biotic threats, among others.

PRIMARY OR STRUCTURAL RISK: Risk conditions which exist in society under normal conditions, the product of skewed development processes fuelled and re-shaped to some extent by the accumulative impacts of prior disaster triggering physical phenomena and economic and social crises.

PROSPECTIVE RISK MANAGEMENT: A process by which future risk is foreseen and intervened or controlled. Prospective management should be seen as an integral component of development planning and the planning cycle of new projects, whether these are promoted by the government, the private sector or civil society. The final aim of this type of management is to avoid new risks, guarantee adequate levels of

sustainability of investments, and avoid having to take expensive corrective management measures in the future. (See RISK PREVENTION, below.)

RECUPERATION: Process of re-establishing acceptable and sustainable living conditions through the rehabilitation, repair and reconstruction of destroyed, interrupted or deteriorated infrastructure, goods and services and the reactivation or promotion of economic and social development in affected areas.

RESILIENCE: The capacity of an ecosystem, society or community to assimilate a negative impact or to recuperate once it has been affected by a physical phenomenon.

RISK ANALYSIS: A projection of the probable social, economic and environmental impacts of future physical phenomenon on particular social and economic groups, areas or territories. This is achieved through an analysis of the hazards and vulnerabilities of exposed social and economic units. Changes in one or more of these parameters modify the levels of risk, the total expected losses and the consequences for a given area.

RISK CONTINUUM: An expression of the dynamic and changing nature of risk within defined territorial, social and temporal circumstances (see PRIMARY RISK above and SECONDARY OR DERIVED RISK, below).

RISK MANAGEMENT PLAN: A coherent and organized series of strategies, programmes and plans drawn up to guide risk reduction and control and recuperation in the case of disaster. By guaranteeing appropriate levels of security in the face of a variety of existing risks and by reducing material loss and the social consequences of disasters, the quality of life of the population is maintained and sustainability is increased.

RISK PREVENTION: Anticipatory measures and actions which seek to avoid future risks. This means working with probable future hazards and vulnerabilities. Seen from this perspective, risk prevention is a facet of Prospective Risk Management, while risk mitigation or reduction relates to Corrective Management. Given that total prevention is rarely possible, prevention has a semi-utopian connotation and should be seen in the light of considerations as

regards socially determined acceptable risk levels. (See ACCEPTABLE RISK, above)

RISK REDUCTION: see RISK MITIGATION above.

RISK SCENARIOS: An analysis of the dimensions and types of risk that affect defined territories or social groups and presented in written, mapped or other graphic forms using quantitative and qualitative techniques and based on participatory methods. This implies a detailed analysis of hazards and vulnerabilities. Risk scenarios provide a basis for decision making on risk reduction, preparedness and control. Recent developments of the notion of risk scenarios include a parallel understanding of causal social processes and of the social actors that contribute to existing risk conditions. A risk scenario is the result of an integral risk analysis process.

SECONDARY OR DERIVED RISK: Specific risk conditions that arise more or less abruptly with the impact of a dangerous physical phenomenon on society. Examples are the risk of illness and death, malnutrition and severe food insecurity, the lack of access to drinking water, rape and mistreatment of women and children in shelters. These risks are built on primary risk conditions and vulnerabilities that exist prior to impact, allowing us to refer to a disaster risk process or continuum. If secondary or derived risks are not adequately resolved through disaster response mechanisms they will contribute in accumulative fashion to future primary risks.

SOCIAL APPROPRIATION: The process by which organizations and institutions that represent development and risk stakeholders assume the challenges of management, guaranteeing continuity and sustainability.

SOCIAL PARTICIPATION: The process by which the subjects of development and risk take an active and decisive part in decision making and activities designed to improve their living conditions and reduce or prevent risk. Participation is the basis of empowerment and the development of social capital.

SOCIO-NATURAL HAZARD: Latent threat associated with the probable occurrence of physical phenomena, the existence and intensity of which is related to processes of environmental deterioration or human intervention in natural ecosystems. Examples of these

can be found in floods and landslides related to deforestation and the degradation or deterioration of watersheds; coastal erosion due to mangrove logging; urban flooding due to the lack of adequate fluvial drainage systems. Socio-natural hazards are generated at the interface between nature and human activity and are the product of a process by which natural resources are converted into hazards. The new hazards associated with Global Climate Change represent the most extreme example of socio-natural hazards.

SUSTAINABLE DEVELOPMENT: Natural, economic-social, cultural and institutional processes and changes that lead to an accumulative and durable increase in the quantity and quality of goods, services and resources, accompanied by social changes which tend to improve human security and quality of life. This must occur without excessive deterioration of the natural environment or a reduction in the possibilities for a similar level and type of development accessible to future generations.

VULNERABILITY: The propensity of human beings and their livelihoods to suffer damage and loss when impacted by external physical phenomenon. Distinct levels of human and livelihood vulnerability may be explained by the incidence of diverse processes and conditions relating, amongst others, to the presence of insecure buildings and infrastructure, limited economic resources and incomes, lack of social protection, insecure livelihoods, poverty, inadequate educational, organizational and institutional arrangements and lack of well developed social and political capital.

VULNERABILITY EVALUATION: The process by which the susceptibility and predisposition to damage or loss is determined when faced with the possible occurrence of a dangerous physical phenomenon. This also includes an analysis of the factors and contexts which can substantially impede or render difficult the subsequent recuperation, rehabilitation and reconstruction of the affected social unit using the resources autonomously available to it.

WARNING (EARLY): An announcement or declaration, emitted by previously identified and responsible institutions, organizations and individuals, which allows the provision of adequate, precise and effective information prior to the manifestation of a dangerous

phenomenon. This allows emergency organisations or groups to activate preestablished security procedures and the population to take specific precautions. In addition to informing the population of the hazard, early warnings are declared with the objective of permitting the population and institutions to adopt specific actions when faced with imminent danger.

Annex 2

Examples of methodologies, intervention methods and modes of conducting local level risk reduction projects

The present case studies were elaborated by Luis Romano, Alice Brenes, Luis Gamarra and Horacio Somarriba and are based on the systematizations of intervention experiences undertaken as part of the local risk management project in Central America. These cases have been selected for publication in order to demonstrate certain aspects and experiences with the adherence to one or more of the fundamental parameters that, according to our analysis and criteria, define the practice of local risk management. These parameters are-

- ◆ The relationship of risk reduction to development planning.
- ◆ Risk management seen as a process and not as a product.
- ◆ The need for participation, appropriation and sustainability.
- ◆ The transverse and integral nature of risk management.
- ◆ The need to work with territorial levels that go beyond the local level

Local Risk Management within the framework of Development Processes: the case of Barranca and Chacarita, Costa Rica (Proyecto Alforja)

Initially, the Community Emergency Committees of Barranca and Chacarita operated when disaster conditions existed or when there was a need for specific emergency prevention actions. This was the case, for example, with the dengue and malaria prevention and mitigation campaigns coordinated with the respective public health authorities at the end of the 1990s. Once the crises were over, the Community Emergency Committee ceased to function as such until a new emergency arose or preventive action was required. However, a change in attitude that widened the role of the Barranca Community Emergency Committee led to it filing the first legal complaint made by a group of grass roots organisations in the Barranca basin over the issue of river mining operations in the area. These were creating new risk conditions for the communities.

This case illustrates how an institutional structure, conceived and created by the State primarily to deal with disasters (and to a lesser extent, prevent imminent risks) can evolve into a more ambitious and comprehensive organization. Through training processes and self empowerment, the Committee found that it could continue to handle emergencies and, at the same time, also play a role in the local management of disaster and other more recurrent, every day risks, such as those associated with waste management or river mining. The Barranca Community Emergency Committee evolved from being primarily an emergency-oriented organisation to having an influence on the community's quality of life, attempting to wield greater control over a wide range of risk factors.

From 1999 onwards, the Non-Governmental Organisation, ALFORJA, played an important role in building and strengthening the analytical, action design, conflict management and negotiation capacities of the Barranca and Chacarita Community Emergency Committees. Later, ALFORJA played a similar role with the Community Health Networks of both settlements.

Their analysis of the situation revealed that the river provided an ideal habitat for the reproduction of disease vectors. The puddles left by the tractors that excavate materials provide a suitable niche for the reproduction of dengue and malaria carrying mosquitoes. Therefore, a concern for the preservation and conservation of the river was not only motivated by the role it played as a source of water, flora and fauna, but also because of the need to control improper exploitation practices that could lead to increases in public health problems.

This recognition and dimensioning of the risk construction process has helped to guide the struggle to recover and conserve the river and, also, to promote prospective risk control mechanisms. An example of this can be seen in the recognition that water resources are approaching a high-risk situation and that the Barranca River will some day become the main

source of freshwater for the province of Puntarenas. This demands actions, control and management today.

Management Viewed as a Process, not as a Product:

Based on an initial systematic situational analysis, the Barranca Community Emergency Committee redefined its scope of action and evolved from an emergency committee into one that prioritises risks it is capable of correcting or transforming, using its own capacities. This entailed a transformation process within the organisational structure itself.

The Committee had already begun work through the Community Health Network uniting the efforts of many different entities and basing its work on experience with the prevention and mitigation of dengue fever and malaria. From the outset, a substantial organisational structure had been created which was gradually consolidated. This structure would later lend support to and encompass the collective proposals of many other organisations. Institutional backing provided by the Ministry of Health and the Costa Rican Social Security Administration (Caja Costarricense de Seguro Social - CCSS) was achieved through a separate agenda managed by the Community Health Network.

The support given by Alforja, the Ministry of Health and the CCSS to the Community Emergency Committee and in the consolidation of the Community Health Networks has been achieved by implementing methodologies that carefully avoid debilitating the "process of the process" that they proposed in order to develop, consolidate and strengthen the organization. Letting them work at their own pace and giving them room to set their own agendas was an assertive way of doing this; another way was to discourage dependent, paternalistic relationships.

The analytical and purposive capacity acquired has yielded its first fruits. With the implementation of the strategy, it was realised that analysis and action must be extended to cover a broader geographical unit, i.e., the Barranca River basin.

The struggle to recover and preserve the Barranca River basin was strengthened by incorporating other organisations and communities located in the rivers area of influence. Clearly, capacity exists for the transformation of proposals through a new reading of the context.

Other actors are involved in the strategy. The children of Barranca are seen to be a social actor that should be sensitized from early on in life as to what is happening to the river. The Ministry of Public Education has thus become another actor in the Community Health Network. A specific project was mapped out to continually raise awareness among school children: a permanent festival is promoted throughout the school year by which awareness is raised and people are educated as to how much the river means to the population of Barranca and how to live in a healthier way. This process gave birth to a specific project proposal.

Consolidation of the efforts at correcting and preventing future risks has led to the legalization of the Community Health Network. This process has produced a further initiative: a radio station to provide greater coverage for its educational/awareness-raising campaigns. The maturity of this process has allowed the community to reach a new stage searching to verify the factors that have given sustainability to the process to date.

Participation, Appropriation and Sustainability of the Management process on the part of Local Actors

In the case of the Barranca Community Emergency Committee, appropriation or ownership tends to be defined by several issues:

- ♦ The methodological approach proposed the Committee by Alforja in order for it to appropriate its own local reality and, later on, manage issues and practice required when faced with specific risk circumstances.
- ♦ Clarity as to the role played by Alforja (an external actor) with regard to the Community Emergency Committee.

- ♦ The incorporation of the Community Emergency Committee into the Community Health Network

The above-mentioned aspects are equally essential when it comes to sustaining the process and getting it to where it is today. Let us examine these three aspects in more detail:

- ♦ **Methodological proposal:** Alforja uses a participatory methodology following the principle that it is the members of the Community Emergency Committee who must take on a role as active subjects, identifying and constructing the local risk scenario (causes and effects) using a methodology that is guided and facilitated by Alforja.

The diagnostic process made it possible to delimit the local risk scenario, the relationship between causes and effects and the everyday problems faced by the community. Alforja uses this analytical framework because it believes it facilitates the identification of the causes and effects deriving from the existing political, economic, social, cultural and ecological context. The analytical tool also facilitates decision-making in the short, medium and long term.

This analytical and diagnostic process culminates in an action plan or a proposed solution. This is nothing more or less than the actions and strategies to be implemented in order to transform identified problems and prevent additional risks in the future. Moreover, the role of each civil society actor is analysed and clarified in order to determine the challenges that can and should be assumed by them as members of the Committee. Thus, for example, with the presence of municipal actors at a Committee meeting, they determined that the Municipality of Puntarenas, instead of being an ally in seeking solutions to daily problems, was in fact confrontational and, to a certain extent, behaved in an antagonistic manner with respect to the solutions proposed by the Committee and the Health Networks.

Having understood the risk construction process and its relationship to disaster, both Alforja and the Community Emergency Committee could then redefine their temporal and spatial scope of action vis-à-vis potential future disasters. In this way, they concluded that besides attending disasters, they also wished to prevent disaster risk in their area and wield an influence as regards the quality of life and every day risks, all within a local development framework.

- ♦ **The role played by Alforja:** From the outset, Alforja was clear about its role as an external agent vis-à-vis the Community Emergency Committees. It encouraged an autonomous relationship, whilst at the same time struggling to overcome the dependent relationship established between local community groups and the State.

The relationship developed to the point that the groups became aware that although Alforja was present in their process when they required it, they must not expect more of it than its presence and facilitation of the risk management process. The weight of organising, implementing and conducting the operational plan or proposed solution was placed where it belongs: firmly on the shoulders of the Barranca and Chacarita Community Emergency Committees.

Maintaining and strengthening the autonomy of the group (the Community Emergency Committee) was crucial not only as regards appropriation of the process, but also as regards sustainability.

- ♦ **The Barranca Community Health Network** becomes the most important formal, organic structure associated with the Community Emergency Committee. It is here that proposals for local improvement (and later on in the Barranca River basin as a whole) make an impact and are accepted and supported.

The support given to the Barranca Community Health Network by the Ministry of Health and the CCSS and the legal status it achieves are both important factors in explaining the sustainability

of the process. However, more importance can be assigned to the way in which diverse civil society and public sector organisations made their presence felt and joined forces (Ministry of Public Education and the Water and Sewer Authority). In the absence of such unity, the organisation's official status could have become a mere shell that would have jeopardised the sustainability of the process. Each actor may resort to the umbrella structure (the Community Health Network) to develop actions that improve the quality of life and safety. However, each actor preserves their own autonomy and legal status.

Local Management within a Regional and National framework.

At the outset, the Barranca Community Committee applied a framework of analysis to the problems of the Barranca River in the area immediately around the towns of Barranca and Chacarita. Subsequently, it prepared an operational plan aimed at saving and preserving the river in this area. However, once these actions had been implemented, Committee members realised that the actions they proposed must go beyond the area of Barranca and Chacarita. Riverside communities along the whole of the Barranca River all faced different risk factors, and risk in Barranca and Chacarita was influenced by processes occurring in the upper and middle river basin. Given this awareness, the Committee realised that its proposal had to be broadened as much as possible to include the entire river basin.

Hence, its work strategy currently consists in coordinating riverside communities along the entire length of the river. This is done through environmental organisations, pro-development associations, public health authorities and other organisations interested in saving the Barranca River. This change of strategy allowed the Committee to realize that a garbage dump in San Ramón in the province of Alajuela was polluting the river, adversely impacting their community of Barranca, kilometres downstream. Deforestation is another situation that must be dealt with.

Acknowledging the interrelationships between the upper and lower river basin has led to an extended geographical coverage, not only in the analysis of risk scenarios (causes-effects), but also as regards proposals for action, where various actors along the entire river basin are included and participate. In this way, solutions are proposed with a (comprehensive) basin-wide view, where participants act according to a global vision but within their own local (micro-basin) context. The idea is that impacts should affect the entire river basin and not just a portion of it. From their viewpoint, there is no use making efforts to save and protect the lower or middle basin if causes of degradation and destruction persist in the upper river basin, or in other spots downstream that are likewise endangering other communities, water resources, flora and fauna.

Vulnerability analysis: experiences in settlements near San Miguel Volcano in El Salvador. (Geólogos del Mundo)

Very few attempts have been made to design an index reflecting the state of a society with regards to the satisfaction of its basic needs or the stability of its relationships with the environment. An admirable exception to this is the Human Development Index devised by the United Nations to reflect differences in the per capita distribution of GDP and, hence, in the levels of satisfaction of basic needs. Nevertheless, in the area of the social study of disasters, such elaborate efforts have not been made, although vulnerability indexes have been produced.

Very few efforts to analyse and map vulnerability have been documented. Given the importance of information for diagnostic and decision-making purposes, vulnerability analysis is a valuable tool, implementation of which promotes a higher level of awareness and knowledge as regards risk among exposed populations and amongst those involved in risk reduction activities. Thus, within the context of the project entitled "Comprehensive Risk and Vulnerability

Management in the municipality of San Miguel," implemented by Geologists of the World in El Salvador, a vulnerability analysis exercise was carried out. This is concisely presented below.

General issues affecting the vulnerability analysis.

The following three basic methodological steps must be taken when conducting vulnerability analysis: first, a definition of the levels of vulnerability; second, the definition of a numerical scale to facilitate the quantification of vulnerability levels; and, third, the establishment of a list of parameters/criteria that allow us to define a level and a numerical scale value for vulnerability.

Concerning the first element, the decision was made to define three levels of vulnerability and two sublevels:

- ♦ Low
- ♦ Intermediate
- ♦ High: - moderately high - exceedingly high

The following numerical values were assigned to each of these levels:

- ♦ 0 - 1: low vulnerability
- ♦ 1.01 - 2: intermediate vulnerability
- ♦ 2.01 - 3: high vulnerability
 - ♦ 2.01 - 2.5: moderately high vulnerability
 - ♦ 2.51 - 3: exceedingly high vulnerability

With regard to the third basic element, the definition of vulnerability parameters/criteria, it should be noted that these were chosen in order to guarantee adequate levels of objectivity. Hence, quantitative, objectively verifiable indicators were adopted, such as the availability of basic services, percentage of housing built with hybrid construction methods and/or enhanced adobe, percentage of area sown with staple grains, percentage distribution of different attitudes as regards the causes of disasters, and so on. The following section contains a more detailed list and a justification of the parameters assumed in this vulnerability analysis.

Parameters/criteria used in defining (quantitative and qualitative) vulnerability levels

Indisputably, the most important contribution to this area has been made by Gustavo Wilchez-Chaux, namely his global vulnerability approach.⁹ This was devised in the late 1980s and revised in a more recently published methodological guide¹⁰.

Basically, the concept of vulnerability suggests that human conglomerations (and individuals) have different levels of resistance and resilience vis-à-vis potential external hazard factors and processes. In addition to global vulnerability, different vulnerability factors and sub-factors may be defined that help explain in a much more detailed and clear fashion why some groups, social sectors or countries are more “vulnerable” than others. Basically, for didactic purposes, four major groups of vulnerability factors are considered: physical, economic, environmental and social. Moreover, in the case of social factors, there are various sub-factors that markedly expand the list of vulnerabilities.

The classification of four basic vulnerability factors was developed for the purpose of identifying and grouping criteria to be used in the vulnerability analysis of seven communities located on the slopes of the volcano known as Chaparrastique or San Miguel. The defined parameters, grouped according to vulnerability factors, are listed below.

Physical/technical parameters

- ◆ Materials used in the walls of housing: 70% or more composed of hybrid materials and/or enhanced adobe: 1 point; 40% - 69%: 2 points; and less than 40%: 3 points.
- ◆ Availability of basic services, such as potable water, a sewerage system, telephone system and electricity. Availability of all four elements: 1 point; of two or three elements: 2 points; of one or none: 3 points¹¹
- ◆ Presence of agricultural technology, machinery, irrigation and drainage systems.

Presence of all four elements: 1 point; of two or three: 2 points; of one or none: 3 points¹²

Economic parameters

- ◆ Levels of extreme poverty: 45% or more of households living in extreme poverty: 3 points; 20 - 44%: 2 points, under 20%: 1 point.
- ◆ Ownership of the land: Over 70% are owners of their land: 1 point; 40% – 69%: 2 points; under 40%: 3 points

Environmental parameters

- ◆ Cooking fuel: 60% or more use wood: 3 points; 25 - 59% use wood: 2 points; under 25% use wood; 1 point
- ◆ Land use: Over 70% of the farmland area used to produce seasonal crops: 3 points; 40 - 69%: 2 points; under 40%: 1 point

Social parameters

- ◆ Educational: Under 40% completed primary school: 3 points; 40% - 69%: 2 points; 70%: 1 point
- ◆ Organisational: No organisations: 3 points; Community Development Associations (ADESCO) or other development organisations: 2 points; Risk/Disaster Committees 1 point
- ◆ Ideological/cultural: 50% or more believe in punishment by God or by natural phenomena: 3 points, 20% - 49%: 2 points; under 20%: 1 point
- ◆ Political: No development proposals: 3 points; history of mobilisations/negotiations with local/national authorities: 2 points; presence of development proposals: 1 point
- ◆ Institutional (official): No municipal risk/emergency management plans: 3 points; municipal development plans: 2 points; municipal development plans including risk prevention: 1 point
- ◆ Institutional (civil society): Presence of 3 or more development institutions: 1 point; presence of 1 or 2 development institutions: 2 points; No development institutions: 3 points

9 Wilchez-Chaux, G. 1988. “La Vulnerabilidad Global” (Global Vulnerability) in Desastres, Ecologismo y Desarrollo Profesional. (Disasters, Environmentalism and Professional Development) SENA, Colombia.

10 Wilchez-Chaux, G. 1998. Auge, Caída y Levantada de Felipe Pinillo, Mecánico y Soldador: O, yo voy a correr el riesgo (The rise, fall and recovery of Felipe Pinillo, Mechanic/Welder: Or, I’ll take my chances). Local Risk Management Guide for LA RED. LA RED. Lima, Peru.

11 AS Project. -ECHO-Inundaciones

12 Ibid.

Considerations

One of the principle contributions of vulnerability analysis has been the broadening of knowledge on the local situation and the generation of more and better information which could support future development assistance processes in the study areas. Moreover, it allows the identification of potential thematic areas and sub-areas of intervention.

The study also revealed that the territorial scale of analysis can, at times, minimise differences among the populations studied. This signifies that more detailed and precise information may only be gained at micro territorial and micro analytical levels. Thus, for example, a study made at the canton level (political division immediately below that of the municipality) reveals that differences are not so pronounced at the global vulnerability level, but in the analysis of specific factors and sub-factors significant differentials can be detected. Identification of these facilitates the design of specific intervention measures for different cantons. Based on this experience, it may be argued that the devising and distribution of methodological tools that facilitate a deeper analysis and understanding of local vulnerability and of the options for reducing it, enhances the suitability and effectiveness of risk reduction interventions.

Concerning the synergies between local development and risk reduction: the IADB and Ministry of the Environment and Natural Resources initiative in the Lower Lempa Valley, El Salvador.

The Programme for the Strengthening of the Local and Community Organisations of the Lower Lempa Valley was promoted as a preliminary step in the creation of conditions for the future implementation of a medium size investment programme using funds from the Inter-American Development Bank (IDB) and the

government of El Salvador. The Programme itself was recommended in a prior in-depth study undertaken in the lower Lempa area (Tecoluca and Jiquilisco municipalities), also promoted by the IADB and Ministry of the Environment and undertaken by a group of external consultants. This study included a risk and development diagnosis in the area, identifying its different sub zones, and a phase of surveys and participatory consultation meetings made with local actors to define intervention strategies that promote risk management-based sustainable development. This study resulted in an ambitious plan entitled The Lempa River Vulnerability Programme-Disaster Prevention and Mitigation which, despite its name, is aimed at promoting sustainable development in the area.

Thus, the Programme for the Strengthening of Lower Lempa local and community Organisations emerged from a broader more integrative vision regarding the types of intervention required to minimise losses and damage caused by historically recurrent flooding and promote more permanent sustainable development initiatives. The overall initiative derived in good part from local demands negotiated with external actors, inspired by a constant reflection as regards the losses occurring with each successive flooding incident.

Beyond the formulation of the intervention objectives of the Programme, three aspects of the process may be highlighted: first, the introduction of the notion of "local risk management," second, the connection sought between disaster risk management and the pursuit of sustainable development; and, third, the promotion of the Disaster Prevention and Mitigation Programme in the Lower Lempa. With regard to the introduction of local management notions, this approach is especially relevant in the case of the lower Lempa, where the characteristics of the conceptual approach open up the possibility of conscious, relevant and sustainable intervention. This is so because it promotes a process of awareness raising, risk analysis, prioritisation of alternatives and decision-making that leads to final decisions as regards the optimal intervention strategy.

From the local standpoint, the Programme essentially responds to the most urgent needs. This is not only because it deals with the problems involved with recurrent flooding (a constant concern voiced by settlers) but also because it involves a wide scale consultative process with the local community and institutional actors who have stated their views on the problem and as regards possible solutions. These were then taken well into account in the preparation of the list of suggested investment projects.

The overall programme, and its organisational strengthening component, was conceived from the very beginning as an answer to local demands. It was designed in a way such that all actors involved would learn in the process. An external consultancy team surveyed and made real efforts to understand the imaginaries and views of local actors, whilst at the same time providing technical contributions and scientific data that could facilitate a broader understanding of the problem situation faced by local actors.

Second, the connection between development/risks and disasters is an essential element in the initiative that should be included in any intervention attempting to lower the occurrence or impact of disasters. In this particular case, awareness of the connection was heightened through the introduction of notions regarding the transformation of production systems, territorial organisation, sustainable management of natural resources, improvement of the quality of life and the creation of local capacities. This includes topics that go well beyond those relating to the building of dykes or the establishment of early warning systems, which are in the end conservative approaches that do little to improve local living and life style conditions or in reducing poverty and every day life risk factors.

The fact that the initiative emerged from the framework of a disaster prevention and mitigation effort could have limited the efforts to the formation of emergency committees, disaster response drills or early warning systems. However, the novelty of this intervention is that it transcended its immediate subject area,

influencing other interventions that go way beyond dealing with the apparent causes of disasters, reaching out to wrestle with the relationships that can be found between these and different forms of economic and social organisation.

Third, it must be stressed that the aim of the Strengthening component is to socialise the Prevention and Mitigation Programme and not necessarily seek its unconditional implementation. The idea is to adopt the programme as a springboard for discussion and the pursuit of a consensus on forms of intervention.

As regards the sustainability of the process, this is clearly positive when seen from the standpoint of the creation of organisational capacities for the management of local development and risk. The initiative promotes the empowerment of the local population and intervention in issues that can improve the area's living conditions and levels of development.

It is also important to mention that one of the project's most significant contributions was its involvement in social organisational approaches that go well beyond "structural", material-based types of intervention. The organisational strengthening proposal and the more global proposal for intervention favouring local development have unleashed processes that will surely enhance local development projects which, until recently, were primarily focussed on building physical structures. Furthermore, we should mention that the lower Lempa experience is a clear example of how chronic disaster situations can be transformed into dynamic situations, characterised by the constant pursuit of improvements in local economic, social and environmental conditions.

Disaster Risk and Prevention Management Project 1999 – 2004 (Centro Humboldt – Nicaragua)

The Centro Humboldt (CH) risk management initiative in 10 Nicaraguan municipalities seeks to dimension and appropriate problems involving several types of risk. The project stimulates cooperation and negotiation among different actors in promoting the sustainable development of the municipalities. The intervention process is summarised below:

Preliminary negotiations with the municipality: Presentation of the projects general emphasis. Negotiation of conditions for implementing the project in the municipality.

Presentation of the initiative to promote risk management in the municipalities: Formal presentation to local actors; elements of motivation, concertation of actions among actors, stimulus for reflection on risk situations and risk reduction approaches – strengthening of local agendas, and the like.

Work agreements between the CH and the municipalities: Responsibilities are established for the two parties regarding the execution of project activities.

Participatory diagnoses of vulnerability reduction capacities as a development and disaster response requirement. In addition to processing and analysing information from diverse sources, the roles and interaction of key actors in Local Risk Management are established. The technique of auto-mapping is implemented.

Elaboration of disaster preparedness and response plans and the introduction of risk-reduction projects into municipal investment plans. Local authorities are trained in the use of round table work sessions involving local leaders and aimed at the formulation of local plans.

Emphasis is placed on the stimulation of local risk management processes and appropriation

and sustainability or continuity of the Local Risk Management process by key local actors.

The diagnostic phase of the project is of major relevance. This is important not only because of the specific results it may yield, but also because of the opportunity it presents for involving four basic actors in the process -community leaders, territorial development and prevention committee members, municipal technicians and authorities and municipal development and prevention committee members. The perception of these actors is gradually transformed (using workshop exercises) towards a new and wider view of the interrelationship between disasters and development. An image of a desired future is built up. This is a key element in the strengthening of the development planning strategy at both community and municipal levels.

The diagnosis helps define and promote the roles of the actors involved in the process of Local Risk Management. This is achieved using awareness-raising techniques and by strengthening the local and municipal organisational capacity to reduce development vulnerabilities and promote opportune and efficient responses to disaster situations. Municipal technicians are trained as facilitators in the process of risk sensitisation and elaboration of risk reduction proposals.

With the development of **municipal investment plans**, these technicians join with community leaders in a process that begins with self-mapping exercises. This permits the development of management, negotiation and coordination capabilities. This has facilitated legally established social auditing processes with the municipal government relating to the rights and obligations of municipal residents. In short, the diagnosis not only provides a great amount of important information, but it also strengthens bonds between the community and municipal authorities, State and civil society organisations, establishing a channel of communication between them.

Availability of various sources of information (including the perception of the population exposed to risk, and technical and scientific

studies) is a basic principle of sustainability, given that the data from different sources may be compared and evaluated. In many cases, not only is technical/scientific quality and rigor important, but also the fact that the process of diagnosis and plan preparation involves the dwellers exposed to risk in a process of self-management, cooperation and negotiation.

The role of Centro Humboldt technicians is crucial in that it establishes the criteria for assigning adequate roles to all involved. In other words, the attitude and skills of CH technicians greatly affects the appropriation process and the bases for sustainability in the Local Risk Management process, and in the definition of day-to-day responsibilities. That is to say, it promotes the adequate application of relevant risk-reducing measures.

Communities will appropriate leadership in development to the extent that they define and assess progress over the medium term –this is a general principle in CH intervention work promoting the culture of risk reduction and disaster prevention.

Risk Management Commission (RMC) of the Children’s Rights Coordinating Committee (CODENI) – Nicaragua

The Commission comprises 13 Civil Society organisations, a number of State institutions, such as Civil Defence, and Save the Children. The major interest is the promotion of the rights of children and adolescents in local risk management. Intervention generally favours the municipal level and includes a large number of municipalities in the Pacific, Central and Caribbean regions of Nicaragua.

The actors of the RMC underwent an ongoing two-year process of reflection as regards performance, work content and methodologies. This generated basic conclusions regarding its identification with the issue of Children and

Adolescents in normal and disaster situations. This required engagement in a set of actions that facilitated new approaches to the handling of disaster situations, focussing on the rights of Children and Adolescents and other new partners. A basic outcome of the two-year period of work was an instrument that marked the conclusion of one stage and the beginning of another-The Prevention and Care Manual for Boys, Girls and Adolescents in Disaster Situations.

An important fact driven home by the Manual related experience is that the process of preparing this document helped NGOs involved in CODENI to reaffirm their original identity. That is to say, for each of them, their work with children and adolescents is implicit (ensuring respect for the rights of children and adolescents, particularly in disaster situations), although they had only been carrying this out in a very general fashion previously.

The actors that make up the Commission engaged in a two-year training (self-reflection) process. This activity began with practical-theoretical efforts in areas and regions where the organisations coincide. The sharing of actions and results was an enriching experience throughout the entire process.

The process of reflection resulted from the impact of Hurricane Mitch. This event revealed that children and adolescents are vulnerable groups whose needs go well beyond those related to nutrition, shelter, health, etc. (traditional conception), to also include emotional care (psycho-social care, involving processes of reflection amongst vulnerable groups, etc.). The absence of a comprehensive approach whereby boys and girls are considered subjects and not just objects in disaster situations, particularly with respect to immediate post-emergency recovery measures, was revealed.

In the first year of training, the need for a Manual was quickly perceived. This would primarily become an instrument for facilitating work in the field by technicians from NGOs and

municipalities. The basic notions and topics to be included in the Manual were as follows:

- a. Hazards and vulnerability in the country.
- b. Basic information on the organisation of the population in preparing Community Emergency plans.
- c. How to ensure the rights to protection of boys and girls using an approach in which they are not only objects of protection, but also responsible subjects and actors participating in emergency care work.

The stages followed in the elaboration of the Manual strengthened the partnership among members of the RMC. This included information gathering (consensus among actors), reflections and discussion in workshops and, finally, the drafting of the final document (the manual). The educational elements that could be seen in the elaboration of the Manual should be present wherever one searches to develop partnerships to strengthen Local Risk Management processes. Moreover, it provides elements which promote sustainable interventions by the NGOs, members of the Risk Management Commission.

The aforementioned Manual is the principle basis for the strengthening of current and future capacities. The sustainability of the actions undertaken by the RMC and by the beneficiary groups depends on this Manual once the external NGOs conclude their participation in the current Risk Commission.

A challenge associated with the Manual relates to the fact that the facilitators/multipliers from the NGOs and local actors must first go through a process of assimilation, based on the Manual contents in order to later promote discussion and improvement. Furthermore, it is used to promote a widening of the knowledge base and synergic awareness raising and training of other Municipal actors (teachers, municipal authorities, parents, community leaders, different groups comprised of boys, girls and young people and delegates from governmental and non-governmental entities).

Local Support for Natural Hazard Assessment and Management (ALARN) promoted by the Swiss Agency for Development Cooperation (COSUDE) – Nicaragua

ALARN is a project that searches to strengthen professional capacities for the rigorous technical/scientific preparation of hazard studies in municipalities. It was devised to provide support to local governments (over 26 municipalities) in Risk Management by means of instruments generated during the work process (maps, municipal disaster prevention and mitigation plans, vulnerability reports etc.)

Two major areas of work were promoted:

- a. Scientific training of national level professionals (theory-practise) in the assessment of natural hazards at the municipal level.
- b. Direct support to municipalities in conducting hazard studies, drawing on national capacities previously developed in specialised training courses provided by ALARN.

The process followed by ALARN has created very important levels of risk management expertise in Nicaragua. This will be utilised in education centres (an intrinsic aspect of sustainability over time) and will establish criteria for the future. An example of the positive impact made by ALARN is the development of the Master's Degree Program now offered at the National University.

Tangible results of this process may be seen with the development of municipal hazard maps. These demonstrate the substantial contribution to be made by technically and scientifically thorough studies which are in themselves necessary for analysis and for the postulation of recommendations as regards risk reduction projects. They establish a crucial milestone in

the transition from past to present analyses at the municipal level. In particular, the work has allowed municipalities to take account of hazard phenomena and factors that have traditionally been assigned little importance in terms of their impact on development (flooding and landslides).

Municipal Disaster Prevention and Mitigation Plans using cartographic analysis are one of the Local Risk Management tools that have been produced. These serve as aids to municipal authorities and as essential reference materials for organisations and institutions willing to invest in municipal development where the studies have been carried out.

The zoning proposals resulting from the studies are very helpful for decision-making by municipal authorities. This relates to the implementation of judicial/legal instruments at the municipal level, i.e., the drafting and issuance of municipal ordinances based on studies made by ALARN-trained specialists. Such legal instruments give continuity to the management process.

One of the principle aspects that should be reproduced in other contexts is that the project successfully established a working relationship with the Association of Nicaraguan Municipalities, a key Local Risk Management promoting organisation. This will permit COSUDE, or whoever continues their work, to have a platform for influencing Nicaraguan mayors and for raising their awareness as to the need to conduct scientifically and technically sound hazard studies in the municipalities.

ALARN sets precedents for types/styles of interinstitutional collaboration, which contribute to a form of PARTNERSHIP for Local Risk Management. The relationships developed between groups of specialists and various other actors (NGOs, government entities, external cooperation agencies, and municipalities) create a demand for skilled services in risk assessment at the municipal level. This has a positive impact (sustainability) on the awareness levels of actors with regard to the problems involved with risk and as regards the need for a technical/scientific approach.

The training of municipal technicians is a line of work now being developed. In other words, observation techniques and methods for gathering and analysing information (risk assessment) are being transferred to the municipal Technical Units. This is an essential factor as regards the sustainability and appropriation of ALARN's general proposal for local development. This line of work is currently being promoted in partnership with the Association of Nicaraguan Municipalities. Guidelines and materials developed by the project support the appropriation of the process by which hazard studies are elaborated.

The availability of guides and other materials for the assessment of natural hazards at the municipal level strengthens the training process implemented to date and promotes its constant improvement and dissemination.

Professionals trained in the ALARN process represent a social capital with enormous multiplication potential amongst other municipal professionals and technicians, thus setting new standards for sustainability.

The Polochic Basin Cooperation and Negotiating Committee, Guatemala

Currently, river basins are generally accepted to be an appropriate geographical unit for development analysis, planning and management. This is due to the existence of a natural interdependence among communities, their economic activities, organisations and environment. However, genuine political will does not as yet exist to strengthen this option for collaboration. To the contrary, most of the experiences that have been encouraged to date have failed due to the creation of vertical external technical structures that fail to take into account existing capacities at the river basin level.

The different sectors or segments of a single river basin acquire particular importance as regards

the issue of risk. Here, the impact of land use and occupation models can be clearly observed, as well as the manner in which they not only influence the risk and vulnerability conditions in the community itself, but also that of up and down stream communities. Hence, deforestation in the upper basin accelerates soil erosion and changes in water flows and channels, and pollution caused by industrial and domestic waste from cities affects agricultural production and direct consumption of water in the lower basin. The crops produced in these areas are then used to supply the urban population.

The Polochic Committee is both interesting and innovative in that it first acknowledges the interdependence of the different parts of the basin and the shared responsibility for the construction of risk conditions; and, second, because it came into being through the integration, almost by osmosis, of institutions and organisations that were already intervening in the region with similar or complementary projects. These gradually began to coordinate in order to increase the efficiency of their interventions. Later, they discovered opportunities for negotiating joint projects.

The Polochic river basin:

The Polochic river basin covers part of eight municipalities in the departments of Alta Verapaz and Izabal. Historically, this region has been typified by conditions of exclusion that are characteristic of rural communities throughout the country, especially those of Mayan origin. Divested of their best irrigated lands in the lower river valley, Kekchi and Pokomchi communities of the Alta Verapaz region were forced to occupy steeper and higher altitude lands in the middle and upper Polochic basin, best suited for forestland. Large rice-producing or cattle-raising estates or coffee plantations on moderately steep hillsides, replaced these communities on the better lower lying lands. The ensuing deforestation of the upper Polochic river basin and its main tributaries, and the deforestation of the lower basin riverbanks has intensified the erosion process and increased landslide and flooding hazards.

The entire river basin suffered from this process (though, of course, population vulnerability levels vary among different social sectors). This was made very clear with the rains during Hurricane Mitch, where hillsides suffered a marked process of erosion, lower basin communities and agricultural areas were flooded, transportation lines were cut (highways, roads and bridges) and social and production infrastructure was adversely affected.

The Cooperation and Negotiation Committee.

The creation of the Polochic Basin Committee began during the post-Hurricane Mitch reconstruction process. First promoted by the Regional Office of CARE in Cobán, as part of its project entitled Municipal and Community Strengthening for Disaster Preparation, the Committee has become a relevant experience in inter-institutional coordination. It has also greatly helped the project evolve from its early restricted nature into a more ambitious development oriented project.

The project was designed with two fundamental spatial levels in mind: the community and municipal levels. Twenty-five communities and five municipalities were prioritised in the Polochic river basin¹³ and these were to serve as pilot areas for the validation of the intervention strategy. The original idea was to strengthen the different local, community or municipal organisational levels of the governmental Disaster Reduction Coordinating Committees, thus strengthening coordination efforts in the event of an emergency. In other words, according to the disaster intervention plan, immediate response would be handled by the community itself. If the intensity of the disaster exceeded the local intervention capacity, it would then efficiently coordinate support at the municipal level.

However, considering the number of reconstruction programmes and disaster management projects concentrated in the Polochic river basin, CARE decided to include some activities aimed at strengthening

13 Cahabón, Senahú, Panzós, Tukurú and Tamahú

interinstitutional coordination, with the objective of improving response in the event of future emergencies. With this purpose in mind, the Polochic Basin Emergency Preparation Coordinating Committee was formed. Initially, institutions with reconstruction projects in the

area, and public institutions and local governments called on to respond in the event of emergencies joined the Committee.

At first, training activities were sponsored by CARE in areas demanded by local actors from

POLOCHIC RIVER BASIN AND THE LOWER PART OF THE CAHABÓN RIVER:

RISK ASSESSMENT AND PREVENTION PLAN

In the study, a thorough analysis is made of hazards, vulnerability factors and risk levels associated with flooding, erosion and mass extraction of materials in the Polochic and lower Cahabón river basins. Based on the results, recommendations are made for the preparation of a Prevention Plan. Policy proposals for river basins, sub-regions and prevention strategies are made for the short, medium and long term.

Lithological, edaphic, seismic, rainfall and vegetation characteristics were analysed using the IDRISI- GIS hazard mapping system. By comparing data, hazard indexes for floods and mass material extraction processes were developed. In the study, vulnerability was defined as “the probability that the occurrence of a hazard will substantially affect the social system, leading to a disaster situation. This associates the concept of vulnerability with weaknesses in the community that prevent quick and effective action to address hazard occurrence. Consequently, vulnerability is an inverse function of socio-economic development levels and of the community’s organisational status.”

The socio-economic vulnerability of the community was analysed adhering to the UNDP methodology used to calculate the Human Development Index. This was then compared with the levels of organisational vulnerability, calculated according to the number of grassroots organisations present. Physical vulnerability was calculated by comparing data on types of construction materials used and levels of access to basic services. Finally, an approximation of global vulnerability was calculated by comparing the indexes. Risks due to floods and erosion caused by instances of mass material extraction were derived by combining hazard and vulnerability indexes.

The Prevention Plan has been another crucial outcome for promoting river basin-wide inter-institutional participation. Through it, risk reduction proposals are related to ecological (comprehensive resource management, orderly land use, etc.), economic (diversification of production, introduction of added value, etc.), social (educational, organisational and political issues) and financial policies.

The river basin is then subdivided into six regions, broken down according to their basic biophysical conditions. Permanent, short, medium and long term strategies are then proposed.

As can be appreciated, both the study and the Prevention Plan are an integral part of a comprehensive approach to risk and they attempt to influence hazards and vulnerability in the river basin. The Plan has become an essential document for the Committee and is the basis for the preparation of the current year action plan.

the river basin. These mainly included preparedness and emergency management activities: Early Warning Systems, Hazard Analysis, Disaster Cycle and Emergency Plans (in coordination with CONRED), Hydrometeorological Hazards (Northern University Centre) and Geological Hazards (USGS).

Gradually and under its own volition, this institutional space began to be utilised by the actors themselves for coordinating the implementation of their programmes and projects. Later on, the Committee began to delineate development-oriented actions aimed at a more definitive reduction of risks. Gradually, realising the potential of this platform for negotiating activities, other actors joined in and finally the municipalities also began to take note and participate¹⁴.

Thus, the post-Hurricane Mitch period became an opportunity for negotiation and planning aimed at the transformation of the causes of risk, and the Committee then became more development oriented. The disaster had raised awareness concerning the risk issue at all levels, whilst the process of reconstruction led to the deployment of considerable economic, human and institutional resources in the Polochic river basin. Nevertheless, a venue for dialogue was needed in order to promote the coordination of activities and provide a more general framework than that offered by individual projects. The Polochic Basin Emergency Committee (still basically preparing for emergencies) provided such an opportunity.

Finally, members of the Committee acknowledged the true nature that this platform was taking on and decided: 1) to change the name to The Polochic Basin Pro-Development Cooperation and Negotiating Committee and 2) prepare a Basin Development Plan. This plan sets out to organise ongoing institutional and organisational proposals, providing an overall framework for systematising projects according to views and interests at all levels of the river basin. This plan is currently being prepared.

One of the key instruments in this process has been the preparation of a study entitled "Risk assessment related to the mass extraction of materials and processes of erosion and flooding in the Polochic and lower Cahabón river Basins". This study, which was not originally envisaged, has served as a basis for negotiations among social actors present in the river basin, i.e., public and private institutions, cooperation agencies and NGOs.

In the final part of the study, a series of strategic guidelines are proposed for the reduction of identified risks. General policies on ecological, economic, social and institutional issues are proposed. The river basin is subdivided into six regions, and prevention proposals are defined for each of these in the short and medium term. Permanent actions are also proposed.

A major activity is the preparation of the River Basin Development Plan, including the strategic areas to be promoted in the Prevention Plan. Based on this Plan, various infrastructure projects are in process of design and management. These will be presented to the Office of the President. Environmental projects will be presented to the Environment and Natural Resources Ministry (among them the drafting of a territorial organisation proposal). Drafting of a housing construction code for the municipalities in the river basin is also contemplated.

The German Agency for Technical Cooperation, GTZ, has acknowledged this inter institutional effort. Through its Decentralisation and Municipal Development project of the Alta and Baja Verapaz Programme, it has envisaged the strengthening of this Coordination Committee. This institution has consistently lent its support to the drafting of the Development Plan.

Initiatives of this sort encourage us to believe in the feasibility of promoting alternative concerted development modes that bring together different local and external actors, unifying criteria, interests and efforts in favour of a common objective.

14 The municipalities that had resisted involvement in the forming of their Municipal Coordinating Committees began to participate actively in the Committee. In the Committee, they found greater opportunities for discussion and the running of their projects, through partnerships with other municipalities, with public institutions or directly with International Cooperation Agencies. Conversely, these actors are not present at the municipal level, and the motivation to organise and promote an intermunicipal coordination initiative is still far-off.

Some ecological aspects of risk management: the experience of World Neighbours in southeastern Honduras.

Notes and reflections are presented below on the experience generated by the project entitled "Sustainable Agricultural Development in the Communities of Jamastrán", municipality of Danlí, department of El Paraíso. This project has been promoted by World Neighbours-WN- with funding from Diakonia (Germany) for the period 2000 to 2001.

The project emerged out of post-Hurricane Mitch reconstruction plans and, more specifically, out of the programme funded by Diakonia. In 2000, this agency began to select partners from the four countries most adversely affected by Hurricane Mitch (Honduras, Nicaragua, El Salvador and Guatemala), stressing the most affected population and areas, in the form of disaster prevention initiatives.

WN had been carrying out work in the area of sustainable agriculture and public health in various rural communities in northern, southern and western Honduras for some time now. It also gradually began to join in community strengthening efforts as a third component of its institutional work, though not limiting it strictly to work dealing with risk and disaster.

Because of this, the project involved a type of organisation that did not coincide with the emergency committee scheme or that of the risk management committees traditionally adopted by organisations directly advocating risk reduction. Rather, the issues of sustainable agriculture and recovery/preservation of health were introduced as the most important project objectives and for the participating community organisations as well.

It is also evident that river basin management assumed a very important place in the project. Without denying the great importance of integrated basin management for hydrometeorological risk and disaster impact reduction strategies, this does present

the drawback that other types of risk, particularly those of geological origin (particularly earthquakes), are relegated. Close attention is thus focussed on natural resources themselves and the issue of emergency attention or risk management organisation as such is given a lower level of priority.

Emphasis on the preservation and restoration of natural resources largely arises from the institutional conviction that disaster risk reduction is an issue that has a substantial ecological component. Hence, in WN publications reference is made to the fact that Hurricane Mitch demonstrated that agricultural land under ecologically sound management suffered less than traditionally managed land.

This view is evident in the project where the goal of effecting a reduction in the vulnerability of biophysical resources is included amongst the principle objectives. However, it does not overlook the fact that the ultimate goal is to improve the quality of life of the participating population. Furthermore, other issues are included in the specific project objectives. Although their risk-reduction intentions are not made explicit, they will ultimately contribute to mitigating vulnerability (sustainable agriculture, food security, organisational strengthening and the improvement of health conditions).

Consistently, the project emphasises the creation and strengthening of local capacities and the promotion and development of management capacities in the target population. Training, technical assistance and organisation around the local committee model are an explicit component of the project.

It is important to stress that this project is run by WN during a period of transition from a work ethic focused on the farm property level to a view focused more on the micro-basin/micro-region. This has tended to reinforce the trend towards adopting a basin-wide approach in the selection of geographical areas for projects. For the same reason, it is no wonder that the project was conceived as being closely associated with basin management.

In this way, the project shifted from a broad intervention-based strategy, with no significant criteria as to geographical scope and relatively scattered efforts over an extensive area (the El Águila zone), to a more concentrated type of intervention in which the micro-basin is the basic geographical criterion for intervention. This focus clearly offers advantages since it involves “reducing the vulnerability of the biophysical resources of small farmers”. Here, the basin-wide approach offers the advantage of promoting specific measures in each of the micro-basins and, overall, provides excellent options for promoting the sustainable use of natural resources and reducing the threat of floods, droughts and mass movements.

It also stresses that the project has envisaged an important process of inclusion of local views and expectations through the formulation of participatory diagnoses and, primarily, through the El Águila Micro-basin Development Plan, covering part of the area of influence of the Jamastrán valley. Components of the plan were identified using survey methods. They thus reflect the situation as seen through the eyes of the local actors themselves.

The majority of the project’s results relate to the field of sustainable development and, to a lesser degree, to organisational strengthening. This is consistent with the design of the project outlined above. Hence, practically half of the results deal with the introduction to, or training in the sustainable use of natural resources and the other half deals with organisational strengthening (including the establishment of a federation of agricultural cooperatives) and improvement in conditions for environmental reorganisation.

Some noteworthy practices that helped to raise the quality of the project’s impact are: focusing the intervention on the pursuit of local sustainable development and not exclusively on limiting or reducing risks; focusing interventions on reducing technical, economic and environmental vulnerability through sustainable agriculture and environmental reorganisation; promoting flexible design to allow adoption of a basin management approach; and, finally, not closing out from the

beginning the issues/problems to be dealt with, opening them up for analysis and proposals from the target population.

From disaster preparation to vulnerability reduction: a regional PAHO initiative

PAHO has played an important role in post-disaster recovery and in preparation for vulnerability reduction in the public health sector for many years. An example of this is the Disaster Preparedness Programme developed in the 1980s and 1990s with the intention of raising the capacity of public health systems to resist and respond to the impact and demands of disasters.

PAHO’s association with public health matters, along with the crude impacts of disasters on this sector, have merged in a way such that at different stages they have contributed to the evolution of ideas on disaster impact reduction. DPP programmes were the first of their kind in Central America, and they lent support to the development of disaster units in the Ministries of Health of the Central American countries. Moreover, they actively promoted improvement of disaster management capacities by means of publications, the setting up of a regional disaster documentation centre, specialised courses and support for the reduction of vulnerability in water systems and hospital infrastructure.

Gradually, this programme evolved due to the demands placed on it and lessons learned through tragic events such as those associated with Hurricanes Georges and Mitch, and changing PAHO policies concerning risk and disaster-related matters. Thus, the disaster preparation programme began to be accompanied by an increasing emphasis on vulnerability reduction, where preparedness in the public health area has remained important, but ceases to be a unique objective.

It is within this framework that the project entitled “Preparedness for Disasters and the Reduction of Vulnerability of the Public Health Sector” is promoted in countries affected by Hurricane Mitch, particularly Honduras, Nicaragua, El Salvador and Guatemala. In the case of Honduras, this project has aided communities in the departments of Valle and Choluteca, in addition to the government-run public health sector. The purpose of the project is to “contribute toward the reduction of social and health-related impacts of disasters on communities”. Its objectives denote an interest in strengthening health institutions, introducing measures to reduce vulnerability in rehabilitation and reconstruction projects involving basic sanitation infrastructure and in promoting a pro-disaster prevention culture among the population.

Since the initiative is regional in scope, it also envisages proposals supporting regional actions dealing with disaster protection and advocates a strategy of regional cooperation that pursues three objectives: to maximize the current capacities of countries in the region; to strengthen commissions, reunions and other mechanisms for regional integration; and to disseminate experience acquired from pilot projects in mitigation and reconstruction planning. A final objective relates to the maximising of financing from national funds or from funds obtained through banks and consultancy promoted by the specialised programmes of intergovernmental organisations.

One of the most important aspects of this project (especially considering its past record) is that it has carried out actions with the population at risk, including those directly affected by the disasters. This was made viable by PAHO’s acceptance that the impact of disasters could be significantly reduced. This was demonstrated by the fact that assessment of the impact of the disaster brought on by Hurricane Mitch led to an acknowledgment that the risk could have been reduced by adopting prevention and mitigation strategies in health facilities, establishing early warning strategies, and strengthening regional,

national and community coordination mechanisms.

Though the project preserves its traditional emphasis on health, it is not only centred on strengthening government health-related institutions, but also on reducing impacts on communities. The methodological principles of the project are geared up to both local and nationwide capacity building. This can be seen in its efforts to modernise the organisational structure and legal bases of the Permanent Contingencies Committee, a governmental civil defence entity, as well as in providing technical advice and financial cooperation to the Health Secretariat.

The project is devised to improve social conditions by facilitating reduction in levels of vulnerability to disaster in target areas. Here, it is making a noteworthy impact on the health system, basic sanitation conditions in the communities and with the strengthening of local organisation.

As regards this latter point, the project’s options for sustainability are very good in that it deals with the day-to-day problems of water and sanitation. This is borne out by the fact that community health emergency committees supported by the project have taken on day-to-day emergency prevention tasks such as work involving cleaning, sanitation and drainage maintenance. The latter activity paves the way for greater permanence in organised community action and actions that go far beyond strict emergency attention.

In summary, the PAHO project suggests that the inclusion of risk reduction criteria in the health sector, support for local organisations and the promotion of information and training in risk and disaster control are key elements in creating conditions for preventing the impact of disasters on health conditions (and social conditions overall), and from producing greater deficits in the meeting of the basic needs of more disadvantaged people.

Management and Local Power: The case of the Municipality of Senahú, Alta Verapaz –CARE Project¹⁵

The scarcity of resources available to local governments, centralisation of decision - making, economic dependence on external actors and the short-term views held by many authorities are some of the factors that impede an organised and planned process of risk reduction, and, consequently, community development. However, despite these difficulties, isolated and dispersed experiences can be found in different municipalities that have successfully coordinated their capacities to conduct processes that go beyond specific investments, emergency attention or partisan political priorities. Senahú is one of these cases in which the local government became involved in the risk issue and began to go beyond emergency preparedness, searching to reduce risk conditions to the point that it has participated in initiatives affecting the entire Polochic river basin.

The Municipality of Senahú is a high landslide risk area. Increased deforestation of the calcareous hillsides has accelerated erosion processes and the unsuitable location of housing and production has raised the probability of adverse effects during periods of rainy weather. On several occasions, clusters of housing structures have been damaged. The latest of these, in 2000, left a death toll of 13 individuals, destroyed 30 homes in the Chulac Cooperative and in Barrio El Calvario, and damaged a water storage tank.

The first actions aimed at preparedness for new emergency situations: formation of the Municipal Disaster Reduction Coordinating Committee, drafting of the Municipal Emergency Plan, an inventory of emergency attention resources and the provision of preparedness training. These actions were conducted by the Post-Mitch CARE

Project, which facilitated negotiation with other local actors, and intensified community-level work, strengthening relationships between the communities and the administrative seat of the municipality.

During this process, training seminars were developed to produce inputs for the drafting of Emergency Plans, as listed below:

- ◆ Hazard Analysis
- ◆ Community Organisation and Participatory Planning
- ◆ Meteorological Risks
- ◆ Disaster Cycle and Emergency Plans
- ◆ Hydrometeorological Risks

Support was provided to each of these areas by specialised institutions (CONRED, CUNOR, and USGS) that had helped prepare the CARE team, municipal technicians and regional level institutions. Later, the CARE team reproduced this training at the municipal level and finally the municipal technicians adapted it to the community level. Some of the institutions involved in this emergency preparedness are: municipalities, teachers, the National Civil Police, Health Centres, the Social Investment Fund, The Department of Justice, Public Health, the Catholic, Evangelical and Mormon churches, among others.

Intervention, however, gradually went beyond these emergency preparedness activities. Aware of the fact that the risk situation persisted and continued to deteriorate, Mayor Francisco Javier Teni Chiquín involved the municipal council in the promotion of processes to reduce conditions that cause disasters. They have assessed neighbourhoods and basic infrastructure and have taken on the difficult task of relocating families living in the highest risk homes. With

¹⁵ The intervention carried out by CARE-Guatemala involving the issue of risks began during the Post-Hurricane Mitch reconstruction process, with the Project entitled Municipal and Community Strengthening in Preparation for Disasters (Fortalecimiento Municipal y Comunitario para la Preparación en caso de Desastres). It gradually acquired an approach that was more closely associated with development and comprehensive risk reduction and which has already culminated in the Project entitled Risk Management for Sustainable Development (Gestión del Riesgo para el Desarrollo Sostenible). Senahú is one of seven municipalities that benefit from the intervention of CARE in the Polochic river basin.

funds from the reconstruction process following the disaster in 2000, they have been building a new neighbourhood in which to settle these families, while the hillsides have been declared uninhabitable and reforestation projects are now being developed.

Currently, with support from the CAMI project (the second phase of the CARE intervention) a process of development promotion has begun, along with the elaboration of a comprehensive diagnosis for the risk and development management plan. The creation of the Polochic Basin Coordination Committee is another achievement and the Municipality of Senahú has become one of its enthusiastic members. This Committee has been identified as the ideal venue for the joint drafting of inter-municipal proposals, negotiation with actors from the regional and national spheres and for implementing development strategies that would be impossible to execute separately.

The journey has only just begun and a long process of concertation will be required by all local, regional and national actors. However, the presence of this dynamic, conciliatory mayor who is fully committed to his community has been a key factor in the successful implementation of the project in this municipality. Likewise, the leadership of the mayor's office has facilitated the participation of other social actors, public and private institutions, and grassroots organisations.

The experience of CARE, the Municipality of Senahú and the Polochic Basin Coordination Committee reinforces the idea that inter-territorial coordination is necessary for reducing risk. This process encourages three levels of inter-institutional coordination, i.e., the basin, the municipality and the community. The first two generate the policies, programmes and projects to be implemented locally, but organisational processes promoting the implementation of risk reduction measures and facilitating the intervention of regional and municipal actors are also generated locally.

Natural/Epidemic-related Disaster Prevention and Mitigation Project – Doctors without Borders¹⁶

The experience of DWB has been one of the most successful of its kind in the field of disaster risk reduction in a socially complex area such as urban Guatemala. It has successfully involved participant communities, harmonising emergency preparation actions with risk reduction strategies. In this intervention, the population, the DWB and other participant institutions have understood the complexity and comprehensiveness of the factors involved in the make-up of risk and the need to promote coordinated work in the transformation of these processes.

The overall objective of the Doctors without Borders project was to “reduce the level of vulnerability of the community vis-à-vis emergency situations caused by epidemic-related/natural disasters.” Specifically, the purposes of the project are as follows:

- ♦ To reduce the extent of a disaster's impact by implementing preventive, educational and training activities.
- ♦ To improve the quality of emergency attention through inter-institutional coordination and collaboration.

As the executors of the project point out, “the idea is to directly involve members of each community and proper authorities in the process of preparing and implementing the contingency plan.” Nonetheless, this plan “must not concentrate strictly on response to an emergency situation, but also... on preventive and mitigation actions limiting the extent of a disaster's impact.”

Throughout the project's implementation process, the institution grew in conceptual and practical terms, from a view focused on emergency attention, to a more comprehensive approach that would contribute towards reducing

16 Excerpt from the document Comparative studies on Local Risk Management in Central America: The case of Guatemala (Gisela Gellert and Luis Gamarra, FLACSO, 2003).

risk conditions in the communities. In fact, the executors of the project designed the activities of the project so that a comprehensive analysis would be made of risk conditions and strategies for their reduction promoted.

Consequently, without neglecting the specific donor goals -elaboration of a contingency plan, shelter identification, logistical preparation and community training and organisation- which clearly exhibit an emergency preparedness orientation, they stated in conversations with the executors of the project that the greatest budgetary and temporal emphasis was to be made on activities termed "preventive". These focused on:

Reducing the risk of landslides: Construction, cleaning and rehabilitation of existing drainage systems, slope stabilisation works, reinforcement of existing structures, reforestation of critical public areas, cleaning of roads and evacuation routes, solid waste management in critical sectors and raising community awareness.

Reducing the risk of epidemics: Introducing potable water, inspection and repair of the water distribution network, control over the handling of food, control and cleanliness in public latrines, handling of solid waste in public areas and control of disease vectors (especially through scrap metal removal programmes).

In order to understand the needed long-term coordination of medium and shorter-term strategies (possibly including emergency attention capacity-strengthening) we must understand the processes by which the risk conditions of marginal urban neighbourhoods have developed in Guatemala City. These communities have evolved under conditions of exclusion. Without the economic capacity to acquire a safe place to live, the dwellers of these communities had no option other than to settle in ravine areas. The difficult living conditions (inexistent or inefficient water supply or sewerage systems, the high cost of construction, poor access to good quality education and health services, etc.) have

progressively led to the development of risk conditions that affect health and infrastructure. These add to the difficult every day risk situations experienced by these communities (family support, lack of law and order, child care, and the like).

The DWB project, based on the comprehensive understanding of the risks faced by these communities, became directly involved in this problem situation, attempting to harmonise short-term proposals that help resolve specific problems in the face of urgent needs, with strategies designed for the longer term (strengthening community organisation, leadership training, development planning, etc.). They concentrated their intervention on seven communities in Zones 3 and 18 of Guatemala City. This covers a population upwards of 11,000 living in conditions of risk from epidemics and landslides due to their precarious socio-environmental situation, overcrowding, lack of piped water systems and inadequate services for environmental clean-up. The following process was implemented with these communities:

Phase one:

- ◆ Identification of the sectors most vulnerable to landslides.
- ◆ A pessimistic estimate of the potential number of victims per community.
- ◆ Identification and assessment of potential shelters in terms of water, latrines, access, size and drainage.
- ◆ Identification of the entities or support groups present locally and their activities.
- ◆ Identification of the preventive measures that can be taken in each community.

Phase two:

- ◆ Implementation of an education and information campaign.
- ◆ Monitoring and follow-up.

- ◆ Implementation of preventive actions.
- ◆ Preparation of shelters.
- ◆ Drafting and signing of agreements.
- ◆ Logistic preparation.

One of the essential aspects of the process was the direct involvement of public and private institutions in all of the activities: CONRED, Ministry of Health and Social Assistance (through the health centres), the municipalities (through EMPAGUA, the Secretariat of Social Matters, Department of Sanitation and Municipal Firemen), The Guatemalan Red Cross, Pastoral Social Ministry of the Archbishopric of Guatemala, local NGOs and Community Committee Associations.

To strengthen the participation of the population, a series of participatory methodologies were devised for risk analysis that would allow the postulation of solutions and the raising of community awareness. Through workshops, risk scenarios (Guatemalan Red Cross, CONRED) and situational diagnoses (Pastoral Social Ministry) were elaborated; a series of educational talks were given on basic sanitation (Ministry of Health), disaster prevention and mitigation (Pastoral Social Ministry, Guatemalan Red Cross), and on emergency preparedness (Pastoral Social Ministry, Guatemalan Red Cross); community awareness-raising campaigns were conducted on the issue of disaster risks, which included games, contests and sports events associated with the problem situation. Another important theme was the organizational strengthening, carried out with the support of community committees and associations and local NGOs.

Considerations:

We can highlight the following important aspects from the DWB experience in marginal urban zones:

- 1) It is not only a good example of the strengthening of community participation in

the reduction of risk conditions, but also of interinstitutional coordination and of comprehensive intervention. It demonstrates that contact with the community makes it difficult to establish a thematic differentiation in terms of intervention. The local situation is exceedingly complex and palpable, thus, in order to gain sustainable achievements in the project itself, it is necessary to take into account the other more permanent and pervasive problems of the community. This requires the forming of strategic partnerships with other institutions working in the same area, or attracting other actors that complement the programme and specific goals.

- 2) The evolution of the institutional approach traditionally focused on emergency attention, toward a more comprehensive view of intervention looking at more global risk reduction. Thus, although the project presented specific objectives and goals aimed at strengthening disaster preparedness capacities, it included specific strategies for reducing vulnerability conditions in infrastructure when faced with landslides, and for the population, when faced with possible epidemics. The channelling of storm waters, protection for the foundations of homes, community cleanliness campaigns, permanent health care and particularly awareness raising and organisation of the population, are clear examples of this.
- 3) In this sense, it is also important to highlight the capacity of the institution to harmonise short and long-term strategies. Many times with the urgency to solve highly sensitive short term problems we lose perspective of the processes that have been shaping the situation at hand. Thus, although urgent problems may be effectively solved, non-intervention in causal processes may lead to a reiteration of the problem once the project draws to a close. Or, new risk situations may arise. It is important, therefore, through short-term strategies, to widen active participation, to develop organisational foundations and to build local

capacities in order to provide a sustainable solution to risk construction processes. This may make the project more drawn out and tedious. But support to processes must be a major component of projects, and this must accompany the search for concrete solutions such as the building of infrastructure.

From famine emergency measures, to comprehensive risk reduction: the experience of Jocotán - EPSUM

In the second half of 2001, high-risk conditions in communities located in the eastern region of the country led to an acute famine emergency in the municipalities of Jocotán, Camotán and Olopa. The United Nations Volunteer Programme – University of San Carlos, through the project “Risk Prevention and Disaster Management¹⁷” was involved in the first of these municipalities with an emphasis on community-level work in risk diagnosis, emergency preparedness actions and implementation of environmental risk reduction strategies. The emergency modified the approach of the work team and directed it towards promoting development processes at the municipal level, contributing to a transformation in the structural conditions that led to the famine.

According to World Food Programme (WFP) data, 2,310 families were directly affected in the department of Chiquimula, 542 of which were in Jocotán, 542 in Camotán and 805 in Olopa. These families were unable to meet their basic nutritional needs. Among the immediate causes cited were the loss of over 5,000 temporary jobs due to a drop in coffee prices and the loss of at least 50% of the staple grain crop harvest, due to the impact of the drought. Structural causes are the result of a long process however. The diagnosis of risk conditions prepared by the EPSUM project and the United Nations Volunteers points to the following factors:

- ◆ Social, political, economic and environmental exclusion of the Chorti population, which has historically been displaced from more fertile land toward the mountains due to discriminatory land use policies (coffee arbitrarily assigned to the mestizo population or acquired by individuals wielding economic power)
- ◆ Settlement and agricultural use of land suited for forests, leading to constant erosion and loss of fertile topsoil, lowering the capacity of the soil to recover, and increasing river sedimentation.
- ◆ A lowered capacity to cultivate and accumulate wealth creates economic dependence on seasonal crops, particularly coffee.
- ◆ Poverty, especially in rural communities, which comprises 85% of the population
- ◆ The unplanned location of communities leaves them without basic services such as education, health care, water, electricity, roads, etc. This leads to high rates of illiteracy, low vaccination coverage, chronic malnutrition, improper handling of refuse and excrement, pollution of the environment, etc.
- ◆ Residual effects of Hurricane Mitch: a highly vulnerable population that has yet to recover from the impact of this event which caused losses to harvested but poorly stored crops, serious deterioration of the soil and soil erosion, landslides and loss of infrastructure.
- ◆ The lack of programmes to deal with the rural ethnic problem (involving access to technology and credit, low productivity and few employment alternatives), creates conditions of vulnerability that are compounded by the drought.

A series of problems arose while emergency attention was being dispensed: weak community organisation impeded organised social response to the event; inadequate municipal management

17 A project conducted from 2000 to 2002, under an agreement between the United Nations Volunteer Programme and the EPSUM Programme (Supervised Multidisciplinary Professional Practise) of the University of San Carlos-Guatemala. The intervention was implemented in four municipalities in the eastern region: Los Amates, Morales, Jocotán and Camotán (recently included after suffering food insecurity problems).

or distribution structures; no census was taken to properly locate families; distribution costs were exceedingly high; political divisiveness and urban - rural confrontation assigned priority to one sector to the detriment of the other; institutional leadership was not conducive to achieving a unified emergency attention strategy; the low credibility of the government and political manipulation of the crisis impeded local negotiations.

At this point, the EPSUM Project team in Jocotán¹⁸ intervened. Despite the main objective of the project being the reduction of social and environmental risks at the local level, the project also provided support during emergencies. Hence, the team members organised aid in the distribution of food, analysed the problem situation, helped strengthen inter-institutional coordination and, later on, proposed long, medium and short-term strategies to help the Municipality of Jocotán solve its food insecurity problem.

Beginning with this intervention, the emphasis of the team's work changed considerably. The focus of the intervention, originally aimed at the community level, began to prioritise work at the municipal level. Moreover, the emergency preparedness approach shifted toward visualising and attempting to influence processes of development. New actors became involved, among them NGOs, cooperation agencies, and public institutions. Very importantly, the type of relationship established with the Municipality changed. Instead of being considered volunteers from the University of San Carlos who had to collaborate with local government initiatives, the students were now seen to be an actor with the capacity to make proposals. This led them to introduce the following important proposals into the second year of project:

- ◆ Organisation of a platform for inter-institutional coordination
- ◆ Strengthening of local government regarding the issue of food security
- ◆ Promotion of a municipal level development planning process

The EPSUM experience leads to a number of relevant conclusions as regards risk management processes. First, university training of professionals is extremely important in stimulating a comprehensive view of disaster risk. In this sense, the participation of higher education centres is exceedingly important for research and professional training in the different disciplines (social sciences, engineering, education, architecture, the physical sciences, etc.). This latter encourage the inclusion of the risk theme in subsequent professional work. This requires preparation and validation of risk analysis methodologies and the elaboration of intervention proposals that facilitate coordinated multidisciplinary work. Although this is a long-term goal, it is important to start as soon as possible with the preparation of human resources.

Secondly, experience with the project allows us to arrive at the following aspects that are relevant to the local risk management process:

- 1) the acknowledgement that risks develop in processes involving unsustainable social, economic and political relationships that affect the environmental conditions of a community or region;
- 2) faced with this situation, comprehensive intervention to promote structural transformations in development are required. Coordination of political/institutional, economic/ production-related, educational, organisational and ecological strategies is required in order to accompany investment in infrastructure. Construction of infrastructure must not become an end in itself;
- 3) the need to coordinate both local and external efforts in order to compensate and strengthen the potentially limited capacities of independent social actors; and,
- 4) the mandatory involvement and leadership of local governments in the promotion of inter-institutional coordination at the municipal levels, aimed at concerted development and, therefore, reduction in existing and future risk conditions.

¹⁸ The team was comprised of seven volunteers from the faculties of agronomy, psychology, nutrition, social work, education and geology, all graduates of the University of San Carlos, Guatemala.