

# Local Disaster Risk Reduction Lessons from the Andes



ANDEAN COMMUNITY



## LOCAL DISASTER RISK REDUCTION: LESSONS FROM THE ANDES

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This document is the result of a process promoted by the Andean Committee for the Disaster Prevention and Relief - CAPRADE, in the framework of the implementation of the Andean Strategy for Disaster Prevention and Relief - EAPAD to identify initiatives and experiences with risk management of disasters and local sustainable development in Bolivia, Colombia, Ecuador and Peru.

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# Acronyms

AMEC:	The Ecuadorean Municipal Association
CAPRADE:	The Andean Committee for Disaster Prevention and Response
C-DRM:	Community Disaster Risk Management
CEPREDENAC:	The Central American Coordinating Centre for Natural Disaster Prevention
COOPROCONAS:	Cooperative of Associated Work
CIPS:	Comitato Internazionale Per Lo Sviluppo dei Popoli
DPAE:	The Bogota Department for Disaster Prevention and Response
DRR:	Disaster Risk Reduction
EC-DIPECHO:	The European Community Humanitarian Office Disaster Preparedness Programme
FUNDEPCO:	Communitary Participative Development Foundation
HFA:	Hyogo Framework for Action
ISDR:	International Strategy for Disaster Reduction
LA RED:	The Latin American Network for the Social Study of Disaster Prevention
NGO:	Non Governmental Organization
PREDECAN:	The Andean Community Disaster Prevention Project
PP:	Pilot Project Initiative-PREDECAN-CAPRADE
L-DRM:	Local Disaster Risk Management
SE:	Significant Experience Initiative-PREDECAN-CAPRADE
U.N.:	United Nations
PREDES:	Centre for Disaster Prevention, Peru

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# Preface

The Andean Community member countries share a series of common characteristics related to their geographical proximity, common history and cultural affinities that contrast with their inherent diversity and peculiarities.

Unfortunately, all Andean Countries have a long history of disaster occurrence. This relates to the levels of risk of many of their territories and communities, itself the result of unbalanced natural-human dynamics which make them prone to disasters related to phenomena such as earthquakes, volcanic eruptions, floods, landslides and drought. According to a disaster database recently created for Bolivia, Colombia, Ecuador and Peru, more than 50,000 damaging physical events occurred during the last 37 years, an average of almost 1100 events each year. This constitutes a real challenge to development and also puts at risk investments and other efforts to reduce poverty in the framework of the Millennium Development Goals (MDG).

Awareness of this problem sparked the Andean Council of Foreign Affairs, made up of the countries Foreign Ministers, to create the Andean Committee for Disaster Prevention and Relief (CAPRADE) in 2002. The first task conducted by CAPRADE was the preparation of the “Andean Strategy for Disaster Prevention and Relief” (EAPAD), approved in 2004. It became the main guide for the policies, plans, programs and actions that should be assumed and conducted in the Sub-region to fulfill the proposed objectives.

The European Union, through its Disaster Preparedness Program (DIPECHO) and the Project to Support Disaster Prevention and Mitigation in the Andean Community (PREDECAN), has been present in the Andean Sub-region during recent years, supporting the implementation of the Andean Strategy.

In this context, CAPRADE, with the support of the PREDECAN Project promoted the development of the Andean initiative: “Practices and policies of local development in the face of disaster risk: significant experiences in the countries of the Andean sub-region”, as well as the implementation of “Participatory pilot projects for local risk management.”

A total of 229 experiences were presented for consideration in the local development-risk management initiative (Bolivia, 63 experiences; Colombia, 63; 42 from Ecuador and 61 from Peru). This testifies to the diversity of practices and social actors involved in risk management. From this initial number, an exhaustive and participatory evaluation procedure led to four most significant experiences being chosen from each country, that were then subjected to a formal process of systematization .

Parallel to the local development-risk management initiative, a local risk management pilot project was implemented in each of the four countries. These were selected according to criteria defined by

the organizations or institutions that make up CAPRADE, and included their levels of vulnerability and the possibilities for social networking that favor the promotion of risk management actions. The objectives of these pilot projects were the implementation of integral organizational and coordination processes, the generation of increased knowledge about risk, the strengthening of processes supporting the planning and implementation of highly participatory risk mitigation infrastructural projects and demonstration activities, and finally, capacity-building through educational and communication activities.

In order to bring these local risk reduction initiatives from the Andean sub-region together, the development of the present “Series of Significant Experiences of Local Development in the Face of Disaster Risks” was proposed. This series of documents collates the work undertaken in the framework of the 16 most significant experiences promoted with the technical and financial support of different public entities, NGOs and donor organizations. It also presents the lessons learned through the implementation of the four pilot projects and a sub-regional analysis of all 20 systematizations together. The preparation of each of these documents has been coordinated and agreed-upon with those institutions that proposed and promoted the experiences, such that the systematization also responds to the expectations of local actors and contributes to the future strengthening of these same experiences.

The systematized experiences are diverse in character, covering different social and economic realities and including different objectives, strategies, procedures and achievements. Through this diversity they contribute to clarifying the different aspects and phases oriented to the promotion and conduction of what is known as “local risk management”. Moreover, this diversity enriches our understanding and our knowledge of the different options for promoting local risk management. Through this, both theory and practice are enriched and information is provided that may inform the development of improved future project proposals.

These experiences confirm that many development processes and their territorial and environmental consequences, along with the dynamics of nature, shape the conditions of risk. Sustainable development is still a challenge and the inclusion of risk management objectives is clearly needed in order to help achieve this. Awareness of this is growing progressively, accompanied by strategies and mechanisms designed and implemented at the local level. Many of these initiatives are not widely known, despite their usefulness for taking us along the risk management road.

This document provides an opportunity to become familiar with a diversity of local experiences promoted from the community, local, regional or national levels using innovative and replicable elements to solve a diversity of problems, many of which are common to the different countries of the Andean sub-region. However, the aim is not to present a unique recipe for obtaining the sought after link between sustainability, risk management and development, but rather to present a group of relevant options that may be considered in the search to successfully establish this link.







## 1. Introduction

From November 2007 to November 2008, the Intergovernmental Andean Disaster Prevention and Relief Committee (CAPRADE) promoted a sub-regional project on “Practice and Policy for Local Development when Faced with Disaster Risk: Identifying Significant Experiences” (the SE initiative). It received funding and technical support from PREDECAN, the Andean Community Disaster Prevention Project, itself financed by the European Commission and the member countries of the Andean Community, between 2003 and 2009. From early 2007 to late 2008, CAPRADE also promoted and funded a pilot project for a comprehensive local level risk management initiative in one municipality in each of the four member countries of the Andean Community - Colombia, Ecuador, Peru and Bolivia.

The SE initiative aimed to identify and systematize information about risk reduction and control intervention at the “local” levels, promoted by a wide variety of organizations, institutions or individuals. This would help us to understand and communicate better the different conceptual, methodological, instrumental and practical lessons learned in the Andean Sub-region from disaster risk reduction practice. The concept of “significant” was used instead of “best” or “good” practice in order to promote projects that may or may not have turned out “successfully” but which would provide important information about risk reduction management and its requirements, complications, successes and failings.

The Pilot Project’s objective was to strengthen capacities for local comprehensive risk management. It would use methodological and conceptual tools and ideas developed at the national level through other PREDECAN project themes, linking global risk reduction initiatives

to local development, land use and public investment planning.

The documentation produced by these two projects includes:

- An information database on the 229 cases originally presented for consideration from the four countries;
- executive summaries for 166 of the original 229 cases from the four countries;
- a catalogue of Significant Experiences, (the SE Project) including three to four page resumes of the 12 most significant experiences per country;
- a formal and independent analytical systematization of the four most significant experiences per country;
- an internal project systematization of the results of the four local level risk management Pilot Projects.

This paper analyses the information and evidence provided in these documents and the project systematizations. Our purpose is to provide an Andean sub-regional analysis with conclusions and evidence that help us understand the progress made with the conceptual and theoretical bases and the implementation of what are known as Local Disaster Risk Management (L-DRM) and Community Disaster Risk Management (C-DRM).

The themes of L-DRM and C-DRM have come to the fore in the debate and practice of disaster risk management over the last twenty years, and particularly during the last ten. Relating and linking specific disaster risk reduction aims to improvement in local development opportunities, increased livelihood opportunities and poverty reduction has become increasingly important. The debate over concepts and practice, typologies and approaches, definitions and disagreements has increased to the same extent (see, amongst others Maskrey, 1988;

Wilches-Chaux, 1998; Zilberth, 1998; Lavell, 2004; Abarquez and Murshed 2004; Venton and Hansford, 2006; Cannon, 2007; Global Network of NGOs for Disaster Risk Reduction, 2007; Global Network of NGOs for Disaster Risk Reduction, 2008; Lavell, 2009).

The approaches taken in the projects identified in the CAPRADE-PREDECAN SE initiative, and the concepts and evaluations established for selecting significant practices are largely based on the debates and conclusions in such sources. When the current project commenced, these covered or summarized a significant part of the “state of the art” on this topic.

We hope this paper will add to this debate and definition, with evidence from case studies conducted in a part of the world with its own particularities, culture, history and experience, building on existing progress and precisions in local disaster risk management practice.

Our analysis is structured and presented as follows:

- Section two presents details of the process used in the SE initiative and the PP project, with information on case study contentions, basic concepts, evaluation and selection criteria and systematization of results. We will address some preliminary conceptual considerations here, including the origins of the ideas used to substantiate the selection and evaluation procedure. We will focus on the ways the CAPRADE-PREDECAN projects incorporate and contribute to the concepts, methodologies and practices discussed in previous works on the topic. We will also look at the debates over and fine-tuning of concepts and definitions.
- Section three lays out the methodological procedures and criteria to be used in our analysis and comparison of experiences and pilot projects. We will discuss the concept of “local level”, specify its different uses, and consider the main parameters or axes used for comparative analysis.
- Section four briefly describes and explains the varying ways the risk reduction problematic is formulated, implemented and addressed through the projects in the four countries. This covers the questions: who does the promoting; what is promoted; what are the territorial levels at which the projects are usually promoted; what risk reduction approaches are most used; what themes are dealt with and what management objectives are most often pursued; and who funds and monitors the projects. This analysis is based on the 139 cases which complied with PREDECAN project requirements (out of the original 229 applicants and the 166 that presented executive summaries). We compare characteristics of these 139 documented projects and those that were selected as the 48 semi-finalists and 16 finalists through the project evaluation procedure.
- Section five analyses how the case studies help us to understand concepts and practice, the formulation of public policy and the prominent issues of sustainability and replicability. We use the analytical precepts established in our chapter on methodology which were themselves used throughout the PREDECAN evaluation procedures. The main subjects discussed are: development-risk relations, participation and ownership, external and internal relations, process-versus product-based interventions and the various levels or types of “local” intervention identified.
- The last section presents a series of conclusions and recommendations based upon the chief features of the top projects.

Annexes with the English titles of the 48 most significant experiences and summaries for the top 18 projects (two pairs of projects were merged to reach the final 16) are provided (see Annexes 1 and 2). Given that some readers may have little knowledge of Spanish this information is helpful to ascertain project themes and aims. Spanish speaking readers may refer to project documentation available on the PREDECAN web site (<http://www.comunidadandina.org/predecan/concurso/index.html>) in order to gather more data and facts on the top 48 cases.

Because of the nature of this paper and the deadline to be met, it was not possible to attempt an exhaustive analysis. We give details of the procedure used for analysis in Section 2, but here we will clarify briefly that more emphasis has been given to the top four most significant experiences, followed by the remaining 12 finalists, the remaining 32 semi-finalists, and then the remainder of the qualifying 139 cases. Details from the four Pilot Projects will be used to substantiate conclusions and findings where pertinent. We will try to use examples from the cases as they pertain to important aspects of the problematic, its definition and practice.

This document is the product of a contract between its author and PREDECAN and the ideas expressed are solely the author's responsibility and do not necessarily represent the opinion of the sponsoring agency.

This paper could not have been written without the inspirational inputs of case study systematisers and the support and contributions of PREDECAN executive staff. Our most sincere thanks to all of these project members, and to all those that participated in the projects throughout the Andean Sub-region - NGOs, community groups, municipalities, government agencies, international organizations, and others.

## 2. Selecting and Evaluating the Significant Experiences and Pilot Projects: Criteria and Concepts

### 2.1 Determining the Most Significant Experiences: Process and Criteria

In late 2007, an invitation was widely extended to diverse organizations (municipal associations, government risk-management institutions, NGO networks etc), for the presentation of local level disaster risk reduction experiences in Bolivia, Colombia, Ecuador and Peru. The invitation indicated criteria as to the type of social actor who could present an experience and as to the range of themes and areas of intervention considered relevant.

These included NGOs, governmental sector and territorial agencies, municipalities or clusters of municipalities, community organizations, universities and other academic centres, international organizations, and independent professionals and consultants.

The experiences had to deal with risk reduction and control in one of two main ways. Explicitly, with the project described primarily in disaster risk and management terms; or implicitly, describing main-stream development goals and using risk management tools and instruments to strengthen these and their sustainability.

This difference can be clearly seen taking the example of a population group already subjected to disaster risk factors and which has probably already experienced loss and disaster, which explicitly decides to intervene, thus reducing existing risk factors, and, on the other hand, another group which, in contrast, sees the control of risk factors as essential to guaranteeing efficiency, efficacy, productivity



and security. The difference between going from risk to development and from development to risk has been previously elaborated by Lavell (2004). It is an essential distinction and the move from a risk to development approach to a development to risk approach can be seen to mark progress in the ways we see disaster risk reduction and the methods open to us to achieve this. The distinction is also found in the ideas of “corrective” and “prospective” risk management that we will discuss in more detail later (see Lavell, 1998 and 2004).

With regard to the risk-development link, it has been suggested in PREDECAN literature and elsewhere that although many types of activity may lead to risk reduction, we should reserve the term “disaster risk management” for those actions, strategies and activities that explicitly address the theme in a corrective or prospective manner. In other words, although many development projects may in fact “unconsciously” lead to risk control and reduction, unless this is made explicit as a goal they should not be considered part of disaster risk management practice as such. This distinction is necessary to limit our field of inquiry, but it is also a “slippery slope”, since the foremost aim should always be to promote “good” development which in itself leads to a control of risk factors, whether this is made explicit or not.

Besides the adherence to one or another of the two approaches described above, the experiences presented could cover any one or more of the following intervention or management themes: institutional strengthening and increases in political commitment to risk management; the introduction of risk reduction aspects into local culture; knowledge or information management; and the introduction of risk reduction in existing or future local level development practices and instruments. These types of emphasis mirror in good part the primary objectives laid out in the U.N inspired Hyogo Framework for Action and the CAPRADE Andean Strategic Plan (see, [http://www.caprade.org/caprade/index.php?option=com\\_content&view=article&id=26](http://www.caprade.org/caprade/index.php?option=com_content&view=article&id=26)).

Finally, they could address any or all of the disaster risk management goals - prevention, mitigation, preparedness and response, or recovery.

A total of 229 experiences were originally presented in the four countries (Bolivia, 63; Colombia, 63; Ecuador, 42; Peru, 61). Of these, 166 presented an executive summary of the work undertaken that would qualify them for further consideration (Bolivia, 32; Colombia, 50; Ecuador, 40; Peru, 44). Of these, 27 were eliminated for not meeting project requirements. The final tally of qualifying experiences was 139: Bolivia 28; Colombia, 41; Ecuador, 37; and Peru, 33. A national selection committee then evaluated the projects according to established criteria in order to whittle down the original number to what were considered the 12 most significant cases per country.

The criteria included the presentation of a complete set of documentation, the clarity of the experience description, the relevance of the experience according to the SE initiative requirements, and the clarity and applicability of lessons learned. This first level of selection criteria was more routine than substantial, and more formal and practical than conceptual.

Following this first evaluation process, the 12 country experiences were then presented at a national meeting attended by diverse interested parties from civil society, government, financing agencies and local population groups. A committee consisting of national institutions, members of CAPRADE, municipal associations and PREDECAN representatives evaluated the experiences according to eight established criteria:

- the impacts on involved actors, institutions and social groups;
- the application of relevant approaches, strategies, methodologies and innovative practices;

- the links established with cross-cutting issues (gender, cross-cultural, human rights etc.);
- sustainability;
- options for replication, considering adaptations to different local realities;
- the contribution to the theory of local risk management;
- the potential to influence public policy;
- inclusiveness of management emphases (prevention and mitigation of risk, preparedness, recovery, etc.).

This procedure led to the selection of four cases per country which then entered the final round for selecting the “most significant” case in each country during a final sub-regional workshop held in Lima in November 2008. The four most significant country cases were then given the opportunity to meet in Trento, Italy, to study and discuss risk management procedures there. Trento is part of the implementing Consortium that provides International Technical Assistance for the PREDECAN project.

The criteria for evaluating and selecting the “most significant” cases included:

- how far local actors and resources were incorporated and strengthened in the project process;
- how the relationship between risk and development was established and implemented;
- the levels and types of articulation achieved with external actors and economic and social contexts;
- concrete impacts on involved actors, institutions and social groups;
- the expected levels of sustainability; and
- the potential for replicability, considering adaptations to local conditions.

Some criteria used in the previous selection process were maintained and other significant aspects were introduced. The criteria and parameters established throughout the process, and its several different stages, in many ways reflect the existing “state of the art” and knowledge on local and global level risk management practice.

The bases for ideas on participation, appropriation and ownership by local communities and up-scaling to regional and national levels arise mostly from notions originally put forward by Maskrey (1988) and Wilches Chaux (1988) and promoted and developed by The Latin American Network for the Social Study of Disaster Prevention- LA RED- in the region and elsewhere during the 1990s and 2000s.

Later systematization of knowledge and experience with local-level interventions in the Central American region led to the 2004 publication of the treatise by Lavell *et al* on *Local Risk Management: from Concept to Practice*, supported by the United Nations Development Programme and the Central American Coordinating Centre for Natural Disaster Prevention (CEPRENAC). This treatise further substantiated the idea of the relations between risk and development, ownership and participation, extra local linkages, comprehensiveness, process versus product approaches and conditions for sustainability and replicability and placed them in a single conceptual and action framework.

The ideas on risk and development and the need for risk management to be intimately related to development goals and practice, intervention and management were first developed by Cuny in 1980 and subsequently developed into an interpretative framework for understanding risk by Blaikie *et al*, in 1994 and in a second edition in 2004 (see Wisner *et al*). Their model for understanding vulnerability led to greater importance being given to development-linked arguments as to causes and intervention in the problematic.



## 2.2 The Local Risk Management Pilot Projects: Goals and Process

Some preliminary criteria for identifying the municipalities to be invited to participate in the PREDECAN PP project's bidding process were agreed upon by delegates of CAPRADE and technical institutions, such as the national geological and hydro-meteorological services. The criteria for the identification of possible candidates included the population size of the cities, the existence of hazard maps and technical information that would permit an analysis of risk scenarios; the existence of preliminary local development, land use or territorial organization plans; and the manifest interest of municipal authorities in the project and support for it at the local level.

The Pilot Projects would be promoted by external non-profit agencies—NGOs, universities, etc. in coordination with local government authorities. The projects were to be participatory and demonstrative, and include elements for promoting their sustainability and replication in other areas. They should promote PREDECAN project results, findings and methodological and conceptual developments by applying these at the local level. Overall, PREDECAN project results include institutional development and strategy and policy promotion; information and knowledge management; incorporation of risk aspects in territorial development; educational and cultural aspects and emergency planning.

Comprehensive disaster risk management promotion was highlighted as an aim. Projects should cover mitigation (corrective), prevention (prospective) and residual risk and response based aspects (see Section 2.3 for the development of these concepts).

Following the selection procedure, pilot projects were commenced in San Borja, Beni, Bolivia facilitated by OXFAM GB and a national NGO named FUNDEPCO; in Los Patios,

Colombia, by the Colombian National Red Cross, the northern Santander regional office of the Red Cross and COOPROCONAS; in Porto Viejo, Ecuador facilitated by CIPS and in Calca, Peru by Welthungerhilfe and PREDES. Apart from developing an overall **local risk management plan**, the Pilot Projects were also required to have a **community risk management plan**, formulated within the local jurisdiction covered by the project (see section 2.3 for discussion of the local and community nomenclatures).

Although the project components for the local and community plans were established by PREDECAN itself and methodological and content guidelines provided, project implementers were invited to be innovative and creative in the application of methods, concepts and instruments. Guidelines were provided for developing local and community risk management plans and incorporating risk reduction considerations in local development, land use, public budgeting procedures and programming.

For the PP project, “local” is used to depict the municipal level. In contrast, as we have indicated previously, in the SE initiative, experiences from municipalities, clusters of municipalities, communities and other territorial designations could be included under the umbrella term “local level” initiatives. The discussion in the following section attempts to clarify and standardise the diverse criteria used for defining “local”.

## 2.3 Clarification and Debate on Concepts and Definitions

### 2.3.1 Corrective, Prospective and Residual-Response Disaster Risk Management

References to the corrective, prospective and residual management problematic is frequently made in the SE and PP projects. The essential differences between these categories can be expressed in the following way.

Corrective management works in the sphere of **existing risk**, already affecting existing populations, their livelihoods and support infrastructure. Where such risk exists, “corrective”, “**compensatory**” or mitigation management techniques may be used in order to reduce existing risk levels. This type of corrective intervention may be considered what is understood traditionally as “disaster reduction”. That is to say, reducing disasters meant reducing existing disaster risk. According to Lavell et al (2004), this corrective management may be promoted in a “**conservative**” or “**progressive**” manner.

In **conservative corrective** management, intervention is limited almost exclusively to resolving the external manifestations and signs of disaster risk—communities in unsafe locations, unstable slopes due to deforestation, unsafe buildings, lack of knowledge of local environment, etc. The type of solution may include the application of structural engineering techniques, housing relocation, environmental recovery practices, early warning systems and the provision of emergency plans. However, it does not address the root causes of such risk contexts or factors. The final result is decreased disaster risk and impacts, with the corresponding benefits this brings, such as: stabilized incomes, livelihoods and living conditions and lives saved; less infrastructure damage; wage earners saved from death or disability and the need to migrate in search of employment opportunities outside of the affected area. Moreover, lower risk levels encourage investment and improvements by and in families and/or communities. All of these factors can be expected to help stabilize development opportunities and poverty levels, but will not, in most cases, contribute particularly to an effective and significant improvement in these indicators.

The “**progressive**” mode of corrective management combines the reduction of existing visible disaster risk factors and

contexts using “traditional” methods with more development-based actions (including poverty relief goals). Here, the reduction of existing external risk factors or contexts is accompanied by the promotion of livelihood improvement, development-based activities and increased opportunities for reducing disaster risk through individual or collective self-protection mechanisms. Or, it could simply be based on progressive new development opportunities. One way or another, the implications for development and poverty alleviation are proportionately greater than with the conservative mode. Unfortunately, due to the separation that still exists between risk reduction and disaster specialists and their agencies or organizations and mainstream development agencies, at the national and international level, the number of integrated **progressive corrective** risk reduction projects is still limited on a global level.

The use of one or the other of these modes will very much reflect different thinking on the risk reduction theme as developed over time. Work which is “traditional” (but not therefore, irrelevant), typical of the 1980s or 1990s, would be more likely to follow the conservative corrective approach. More “modern” thought, post-2000, based on more complex and comprehensive views of disaster risk and its relations to “chronic” or every-day risk tend to push towards progressive corrective management. These development-based risk reduction strategies increasingly give priority to the role of growing incomes and opportunities, livelihood strengthening, environmental management and service provision, the development of social capital, participation and decentralization, micro credit and risk transfer, etc. as strategies for reducing disaster risk (see ISDR, 2009, for an excellent review of these development-based methods).

Working in the context of existing disaster risk, such mechanisms get closer to the root causes



of the problem than does the conservative mode. In fact, as the development-based component increases and the disaster risk aspect becomes an associated development problem, as opposed to a problem on its own account, we tend to move away from what is commonly known as disaster risk management and get closer to development promotion, planning and management. This also helps to illustrate that in the long run, the only real way of tackling the problem of risk reduction using development and poverty reduction as a stimulus and method, is by merging the themes in a single planning framework, in the search for sustainable, secure development.

Existing risk is not the only risk management concern, however, but it is the prevailing one and may be the image the general public has of risk reduction in general (or disaster prevention and mitigation). There are, however, risks that are not as yet “on the ground” but that will develop in the future. The **anticipation of future risk**, the control of future risk factors, and the incorporation of risk control aspects in future development and project planning, increasingly go by the name of “**prospective**” (or anticipatory) risk management (Lavell, 1998; Lavell *et al.*, 2004). The principle mechanisms for this type of management goal include territorial organization and land use planning, environmental management, risk control considerations in project planning cycles and investment decisions and building codes and requirements.

**Residual risk management** has been used in the PREDECAN project to cover preparedness and response issues where disaster associated with unresolved or unanticipated risk has to be dealt with. This is a complementary category of particular use for highlighting the residual risk problem within overall risk management. From our perspective, the activities and goals sought are in fact covered by the corrective-prospective division, as these categories can be

applied throughout what is known as the risk or disaster “continuum”- pre-impact, immediate pre-impact, in emergency conditions, and during rehabilitation and reconstruction. The advantage of highlighting such practice is in reminding us that improvements to disaster response will inevitably be needed whilst we do not get on top of the risk reduction and prevention problem.

Prior to event impact and ensuing disaster, existing risk levels may be mitigated by retrofitting buildings and infrastructure, by introducing crop pattern changes in the search for increased resilience and resistance, by the recovery of degraded natural environments and the establishment of early warning systems, etc. At the same time, new risk may be prevented by an early introduction of adequate risk analysis and control procedures into project and programme planning processes.

Once disaster occurs, risk reduction and control activities are implemented in order to guarantee that the existing situation does not deteriorate or spiral out of control due to the absence of elements that guarantee human security and livelihood support for the affected surviving populations. Thus, when guaranteeing adequate shelter, potable water, food stuffs and health conditions, one is in fact managing new or potential risk: risk that arises out of the new disaster conditions. And, when pulling down existing unsafe buildings, felling dangerous damaged trees, eliminating sources of possible infection and disease, treating ill or injured persons, one is in fact mitigating or reducing existing risk factors. The overall aim of disaster response can in fact be considered to be a matter of avoiding a second, maybe worse disaster due to inadequate response mechanisms—this was the subject of discussion and concern following the Nagris hurricane in Myanmar in 2008.

Finally, when promoting recovery and reconstruction, any work on infrastructure,

livelihoods, social organization, economic transformation, etc. should adopt a prospective risk attitude in order to guarantee that risk is not reconstructed and society thus returned to its previous disaster risk context or status.

Local and community-based risk management processes or projects have been run in both pre- and post-impact circumstances, following corrective or prospective principles and guidelines and using multiple instruments and approaches. The relations and opportunities for incorporating and achieving development and poverty alleviation goals vary according to emphasis, objectives and timing.

### 2.3.2 Local and Community Disaster Risk Management: Clarifying Levels and Terms

The differences between “local and “community” have constituted a kind of incognito or passed-over topic in management literature and it is wise to delve a little more deeply into this distinction in order to better understand the management levels and needs to be considered. This is important because both of these concepts are widely used in the PREDECAN projects.

Despite the fact that “community” and “local” are often seen to be synonymous (see Bolin, 2003, for example), from our perspective they do in fact refer to different territorial and social levels and should be dealt with in a different but complementary manner. One way or another, L-DRM is partially based on community level processes, interventions and actors whilst C-DRM requires support and input from the more comprehensive local (and regional and national) levels.

Local - as opposed to strictly community - approaches have possibly been more widely developed and discussed in Latin America than in Africa and Asia. Although it is dangerous to generalize, this may possibly be explained by

the more pervasive presence of government decentralization processes and local government structures in the Latin American and Caribbean region and the greater significance of community in the African and Asian social and territorial structures. In Latin America, community is frequently an area of intervention in diverse circumstances, particularly where we are dealing with indigenous populations.

Community-based management has been broadly defined as:

*“ the process of disaster risk management in which communities at risk are actively engaged in the identification, analysis, treatment, monitoring, and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities. This means that people are at the centre of decision making and implementation. The involvement of the most vulnerable is paramount and the support of the least vulnerable necessary. Local and national government are involved and supportive.”*  
(Abarquez and Murshed, ADPC, 2004.)

On the other hand, local disaster risk management involves communities to a considerable degree, but the spatial frame of reference is of a higher scale of resolution and the nature and number of involved and relevant social actors correspondingly greater, including municipal and district level authorities, local private sector interests and civil society community-based groups.

Given the larger social and territorial scale of local municipal jurisdictions, the range of aspects - economic, infrastructural, social, political, cultural etc. - that may be taken directly into account is greater than in the more restricted and tightly-knit communities (the nature of social conflict and resolution also differs at these two levels to a similar extent). As with community projects and processes,

higher level spatial jurisdictions and actors (regional, national) will and should collaborate in achieving goals at local levels, given that neither community nor locality are structurally, politically or functionally autonomous, nor do they control the resources necessary to achieve many objectives established locally or by the community. The fact that risk (and poverty) causes go beyond the limits of the community or local area means that dealing with it inevitably involves dealing with “external” actors. This is also one reason why we cannot expect local, and far less so, community-based projects to reduce completely or in part the factors that cause poverty and risk. Support from regional, national and even international policies and action is inevitably required.

### 2.3.3 How to Define “Local”

In general, the local level tends to be associated with municipalities, districts, parishes or other similar political-administrative denominations. However, such sub-regional political-administrative divisions do not exclusively define what constitutes the local level.

Whilst recognizing the difficulty of arriving at a single, clear-cut definition of “local” for risk-management purposes, one must also recognize that “local” has in fact been used in a somewhat undisciplined fashion to depict very different spatial or territorial areas such as large and small-scale urban areas, tributary river basins, agricultural areas, ethnic zones and inter-municipal groupings. One way or another, ‘local’ always refers to something that is larger than a community and smaller than a region or zone. However, no matter what the final spatial delimitation used, the role of local government in local management is always important and for that reason we can accept it as defining one relevant concept of the “local” level.

As a mediator and arbitrator of different social interests and conflicts and as a key factor in

local development, environmental, territorial and sector planning procedures, the local government’s “policy and planning” role is, in principle, of fundamental importance for risk and poverty reduction. This function is not so easily conceived or implemented at the smaller and less complex community levels. This means that when considering development and poverty relief, an inevitable question arises about the relative pertinence, efficiency and effectiveness of efforts taken at a strictly community (as opposed to a local, regional and national) levels and about the need for support and synergies between the different hierarchical levels of intervention. Moreover, if we push the argument over what really defines the local level even further, we inevitably need to ask about the potential relevance of other definitions of “local” that are not considered under the dominant administrative-political one. Clearly these are all very different and their relevance, effectiveness and efficiency as “areas” for DRR, development incentives and poverty reduction intervention may be very different too.

The problem of defining ‘local’ conclusively goes beyond our options here. So, while accepting that the definition problem exists and must be considered more closely in the future, if we are to define our methodology and analytical perspective we must take a pragmatic and flexible position. For our purposes then, ‘local’ may refer to a sum of differing types or levels of spatial or territorial jurisdiction, all sub-national and sub-regional, but defined from varied perspectives - political and administrative, ecological and physical, functional, etc. While adopting this flexible position we must also accept that analysis must clearly distinguish between the principal definitions of the ‘local’ level if the analytical variables are to be usefully compared across case studies and intervention types (see next Methodology section).



### 2.3.4 Territory and Risk

The PREDECAN project guidelines clearly indicate and address the point that while risk is localized and most evident at the micro spatial levels, the causes and actors may go beyond the territorial areas where that risk is expressed. This means that actions to reduce risk must take into account and work with those contexts and actors outside of the local and community levels which contribute to the existence and persistence of localized risk.

The subject of using objective “risk territories” instead of administrative and political divisions for building a risk management option was introduced by Lavell et al in their 2004 discussion. This built on previous discussions of what were called “causal” and “impact” territories. The distinction here is between the areas where actors and processes construct risk and the areas where this risk is in fact manifested. These do not always coincide and this fact leads to the parameter that risk management must be able to scale up to larger territories and its actors in order to resolve problems at a lower scale—the local and community levels, in our case.

### 2.4 Significant Experiences and Pilot Projects: Complementary Approaches

This paper takes the SE initiative and Pilot Projects as its working material and will attempt to draw general conclusions and learn lessons regarding local level risk management, concepts and practice based on the systematized experiences. However, it should be realised from the beginning that these two projects tackle the problem from very different angles and entrance points.

In the case of the SE initiative we are faced with a series of projects promoted by a wide range of different institutions and organizations under very different social, territorial, cultural

and economic conditions where risk reduction may be explicitly or implicitly present as a central or peripheral objective. Here, different project promoters have constructed a view of and intervened in the problem using differing conceptual and theoretical frameworks, visions of development and risk, methodologies and instruments. Despite this diversity, the 139 experiences have all been implemented on the basis of the project teams’ particular reading of existing concepts and practice, experience and lessons learned, as these appear in the literature or existing systematizations. In some cases current concepts, knowledge and practice have been “pushed” a step further, re-drafted, criticised and modified, thereby advancing our understanding and knowledge. The analysis in this paper aims to identify those aspects that confirm, reject, re-define or push our concepts and practice forward.

In the case of the Pilot Projects, implementers were asked to follow a set methodology and considerations regarding local development instruments, searching at the same time for innovation and imaginative solutions. Basically, the project incorporated the results of processes and experiences related to institutionalization, knowledge management, education, culture and development practices at the local level, promoted by CAPRADE - PREDECAN. These projects were far less flexible and mixed than is the case with the SE initiative. Thus, for the analysis we present here, the pilot project experiences serve to examine the relevance and difficulties associated with current concepts and practices. This also allows us to make progress in rejecting, accepting, amending or innovating methods at the local level.

In sum, the SE initiative provides us with a look at diversity, its origins and relevance, while the Pilot Project shows us how methodological and conceptual diversity is worked out in different practical applications. The two methods are thus complementary, and drive from theory to practice.



### 3. Methodology: Variables, Levels of Analysis and Parametric Concepts

The methodology designed for analysing project results and case studies considers the time limits established for our analysis (28 working days) and the particular goals sought.

There are two central objectives of our methodology: i) to advance our understanding of the varied ways in which the problem of local level risk is addressed with interventions in the form of projects and processes and ii) to contribute to the conceptual precision and practical usefulness and efficacy of local level interventions in the disaster risk problematic, through promoting concepts such as sustainable development and livelihood security.

These goals will be sought in our following two sections through an analysis of the processes, lessons learned, opportunities and limitations found in the application of the significant experiences and pilot projects.

In all, as we have established earlier, 139 projects entered the SE arena to begin with and these were progressively whittled down to 48, then 16 and finally, the four “most significant” cases.

Working from a hypothesis of more to less information and greater to lesser inclusiveness and completeness as the cases proceed from the “winning” 4 to the total 139, we intend to concentrate in increasingly lower intensities on these strata, moving from the 4 to the 16 to the 32 to the 139. We will complement a more intensive consideration of the four most significant cases and the other 12 finalists with evidence from the remaining 32 semi finalists and 139 original cases, where any novel elements can be found. In this way, through

a series of successive approximations we hope to extract all significant information in a single repeated and accumulative manner.

Before presenting the more intensive and exhaustive analysis of the 16 most significant cases and the 4 pilot projects in our last substantive section, we will provide an analysis of more global contextual aspects based on an analysis of all 139 cases. Here we will analyze various parameters that typify the ways in which projects are conceived and promoted by diverse institutions and organizations in the four countries: types of promoting agency; emphasis on rural or urban contexts; explicit risk and development-risk equations; preferred management themes, from institutional strengthening to incorporation of risk aspects in development planning instruments; and funding mechanisms (a Spanish language dataset was constructed using EXCEL to record and analyze many of these variables from the original 229 project records. The dataset is located on the first tab, and summary tables by parameter, theme and country are provided in tabs 2 to 5. This spreadsheet can be downloaded from: [www.comunidadandina.org/predecán/](http://www.comunidadandina.org/predecán/) and [www.caprade.org](http://www.caprade.org)

Here we should make an important methodological observation about the Significant Experiences project and lessons learned, before continuing with further development of the methodological aspects.

The 139 cases that formally entered the evaluation were projects put forward for consideration by their implementers because they complied with the terms of reference used for the “competition”. This was in fact confirmed by the organizers in accepting the project resumes and submitting them to further evaluation. However, when we reach the last 48, 16 and 4 cases, the criteria used to select these were objectively established by PREDECAN and went beyond the original criteria used to accept cases. These have generally



provided us with images of “optimal” or best practice local disaster risk management, as conceived by the project organizers. This process automatically excluded many of the projects originally submitted due to aspects such as their concentration on response and preparedness instead of prevention and mitigation; the limited range of management themes they dealt with; their lack of clearly established relationships between the risk and development problems; the lack of clear participatory processes; and the fact that they were product- and not process-orientation.

Thus, although these projects clearly contribute to risk reduction or control they were deemed to be less significant illustrations of local, development oriented, participatory risk management, promoted as a process. This of course means that in the “left behind” cases there is most possibly a wealth of information and experience with different, albeit narrower strategies, methods and instruments for risk reduction than could fruitfully be used in this analysis should time have permitted. It would be valuable for these to be more thoroughly systematized in the future.

### 3.1 Territorial Delimitation of Intervention Levels

As we have already pointed out, although the two projects promoted by PREDECAN relate and refer to “local” interventions, the very notion of “local” varies and is in many ways unspecified. In the pilot project, it is the municipal level that carries out the intervention, thus an administrative and political definition of “local” is assumed, with a separate category identified in terms of “community” level interventions. This simple, direct and unilateral approach is not seen in the SE project.

In this latter situation a review of the 48 most significant cases reveals a varied selection of territorial areas for intervention, as well as

complexity of the units intervened. Thus, while a mega city like Bogota and medium and smaller cities or towns such as Manizales and Babahoyo are included, so too are groupings of small, rural, highland communities in Peru, Ecuador and Bolivia. At another level of resolution, river basins and ecological zones are the basis for intervention.

While this varied use of the simple term “local” provides richness to analysis it could also be confusing, since for the purposes of comparative analysis we are (or would be) mixing different spatial and social categories and levels, which would make unilateral conclusions impossible unless we distinguished internally the exact level of intervention. Hence, whilst our analysis attempts to arrive at more general conclusions, we also accept that we need specific analysis of the different spatial and social contexts.

Semantically, we tend to define concepts in terms of their opposites. In this case, “*local*” is that which is the opposite, or distinct from, “*global*”. In the case of the PREDECAN projects, “*global*” is the national level and thus “*local*” is found at the other end of the territorial spectrum - typically somewhere below the sub-regional level. Should we decide for example that “*global*” referred to a city or river basin, obviously the notion of “*local*” would vary accordingly.

Given the range of uses employed with regard to the definition of “*local*” we have decided to adopt a diverse spatial or territorial categorization that allows us to classify the majority of the different case studies. This includes:

- large and intermediate size cities;
- small cities and towns;
- community or community groupings;
- municipalities, municipal groupings and other such expressions of local government;
- ecological-physical areas, water basins, rural areas, that may cross municipal,

district or even department borders.

Although not exhaustive, this classification of “local” does seem to account for a good number of the experiences presented and evaluated. We are assuming that the analytical variables used to compare and study lessons and experiences vary in their expression according to these different types of “local” experience. In our next sub-section we will describe the specific analytical variables to be considered.

Finally, it is important to reiterate that although we may use a variety of meanings for “local”, there is, in the end, a clear distinction between ‘local’ and ‘community’, and thus between local disaster risk management (L-DRM) and community disaster risk management (C-DRM), as we have established previously.

### 3.2 The Analytical Variables and Context

The process of evaluating and selecting significant experiences and the methodological input provided for the pilot projects incorporated a number of important variables, concepts and action guides. As we have seen, these were taken from ideas and concepts developed in PREDECAN’s own conceptual framework, based on previous writings and concepts developed over the last 20 years. The origins of these ideas have been briefly discussed in this paper. These same variables, concepts and notions will be taken as potential variables in this analysis. These will be considered globally and also, to the extent this is possible, in the light of the distinctions between the different expressions of “local” that we have described and outlined above.

Our hypothesis is that a particular variable or parameter of good or significant practice will be expressed in different ways depending on the territorial and social level considered. If it is generally established for example that disaster risk management cannot ignore the relations with development and poverty

variables and must establish a strategic and instrumental relationship for meeting development challenges, the ways in which this is expressed and worked through will inevitably vary between interventions in a large city and interventions in a small group of communities. Similarly, this is true with such variables as the incorporation of local actors and resources, the use of process-led interventions, etc.

The basic parameters we will choose to govern our analysis are: the relationship between risk and development; the use of and potential created with the incorporation of local resources and actors and the ways in which ownership is achieved; the types and levels of relationship with external territories and actors; the level of comprehensiveness achieved in the approaches taken; and the role of process as opposed to project-product approaches. We will also look at the amount of consideration given to corrective, prospective and residual risk management approaches.

The data used to support our conclusions was derived from a review of the resumes, systematizations and data analysis prepared by project promoters and PREDECAN personnel. Since a variety of people prepared these documents and requirements for information were not standardised, it was sometimes difficult to specify the variables chosen for our analysis in a standard and fully confidential manner. For this reason although our statements and conclusions are generally acceptable, putting exact numbers to the data is not always wise or really possible. Therefore, our analysis is more indicative and generic than specific and statistically wholly verifiable. We hope this exercise will lead to a more quantitative analysis in the future.

Project promoters should study and review the information in the spreadsheet document housing the dataset and analysis to complement and extend it. The categories used in this spread

sheet and the types of analysis it permits could be improved on where necessary and then used as a common base for the registering of information on new projects as these are developed in the region or elsewhere. In this way a data base of immeasurable importance could be set up allowing future continued analysis and research on the topic of local risk management.

We need to further develop two of the concepts that relate to the identified analytical variables before presenting our detailed analysis: ownership and appropriation and process versus product aspects.

### 3.3 Appropriation and Ownership

When using the terms “local or community based” we mean processes and projects that are basically inspired, controlled, owned, and sustained by local and/or community actors and organizations (with or without external support). That is to say, they are “grass roots” based. On the other hand, the idea of “risk management at the community and local level” is used to refer to strategies, projects and instruments used at the community and local levels, but which are essentially promoted and controlled by external actors, although the local community may participate in one way or another.

In a previous publication, the author has used the notion of “community and local level risk management” to depict the grass roots approach; and “risk management at the local and community levels” to depict externally promoted and supported initiatives, thus attributing the “level” notion with a double standard (see Lavell, et al, 2004, for an exploration of these differences). Here, although we essentially accept that the use of the territorial “level” nomenclature is neutral as regards method, for convenience we suggest it be used to depict externally promoted and sustained projects while using the completely

neutral ideas of Community or Local Disaster Risk Management, where the use of the terms “based” and “level” is avoided. Thus, when referring to Community or Local Disaster Risk Management (C-DRM, L-DRM), we are making no distinction between locally or externally appropriated and owned projects or processes. Likewise, if we use the terms “local level” or “locally based” disaster risk management, it is an explicit reference either to the external promotion or grassroots bases of the project or process.

Although community and locally-enacted processes always require the collaboration of external actors, the relevant local and community actors should optimally “own” the project, and the external actors should play a subordinate role. Genuine local or community participation and ownership are seen to be greater guarantees of sustainability and appropriation of the process than externally-controlled processes. Two decades ago, Maskrey (1988) established that politically-articulated demands from the community and local levels were more likely to have impacts at the regional or national levels where highly participative and locally appropriated projects were present. He also established the efficacy of the local-based approach, since local needs and perceptions were more likely to be taken into account in process and project objectives. Similarly, autonomous commitments of local funds and resources provide a greater guarantee of sustainability than externally-managed projects.

While “local or community based disaster risk management”, seen as a process, can and does exist in areas with a wide range of risk and development levels, “disaster risk management projects at the community or local level”, promoted and sustained by external actors are more likely to be predominantly located in what are termed “high or highest vulnerability” areas. These are areas where high levels

of poverty exist almost without exception, poverty being a major contributing factor in disaster vulnerability. There is thus an implicit understanding that a community or locality, when seen from an external perspective, may be considered “equivalent” to poverty and that a primary objective of intervention is therefore, automatically, poverty alleviation (Lavell, 2009).

### 3.4 Process versus Product

Both C-DRM and L-DRM should refer to a process by means of which policy, strategy, mechanisms and instruments for disaster risk reduction and control are established and maintained rather than referring to single or multiple individual intervention products. The notion of process thus serves to highlight the fact that L-DRM and C-DRM cannot legitimately be used to refer to a single project or programme or even a series of individual projects and programmes, but rather to the superstructure within which projects and programmes are formulated and implemented, including the strategic and policy framework, knowledge management, and evaluation procedures that guide them. Thus, the projects and programmes, initiatives and actions normally analysed in order to gain insights into relations, goals, and methods are, in fact, products of the risk management process, but do not define the process as such.

When risk management (analysed as a specific, independent concern or one linked to development planning) is viewed as a

process, it requires permanent organizational and institutional structures that go beyond the organizations that implement particular projects. However, it must be recognised that in many instances such a permanent structure does not exist and risk management experience is mostly characterized by a series of individual, non-coordinated, non-continuous projects and programmes. Clearly this severely reduces the ability to relate to and influence development or poverty related factors, through risk or disaster reduction, as sustainability in general drops as one-off investments often turn into failed or forgotten projects.

In the search for the relationship between Local and Community enacted DRM and development promotion and poverty reduction, we have to ask as to the importance of projects established at the ongoing management process level, as compared to the individual project level. In the former, links and priorities are established by a permanent and legitimized organizational or institutional structure, while in the second, they are generally established by the project-promoting organization. It is quite possible that development and poverty reduction goals and mechanisms would be far more feasible and consistent if the process were locally or community controlled, with individual projects being promoted by local or external actors but thought out and modelled in a way that dovetails with local norms and capabilities to create a longer lasting, more sustainable process.

## 4. The 139 Experiences: An Overview of Approaches and Emphases

Although the topic of disaster risk management is relatively well discussed and diffused in the countries of the Andean sub-region and in Latin America in general, it is also clear that the state of development and particular views adopted with regard to it vary substantially, country to country. We may assume that the level of development a country has achieved in the understanding and promotion of the topic, the extent to which it has been actively involved in the development of concept and practice, the range of organizations and institutions interested in pursuing risk reduction goals, amongst others, will all have a marked effect on how and what is implemented on the ground.

In this section, we will briefly examine how different defining variables play out in the four participating countries. We will pay particular attention to the territorial scale of operations, the definition of urban or rural location, how the development link is established, what themes and risk management emphases are promoted and who promotes, executes and funds the initiatives. In order to do this we will use information which distinguishes between the 139 cases originally accepted for evaluation and that for the 48 and the final 16 most significant cases. This process of differential analysis will allow the reader to distinguish between the characteristics of the 139 projects originally presented and those for the cases subsequently selected using distinct evaluation criteria. As we have stated earlier, the criteria for selection or filtering of cases reflect how PREDECAN itself construed the notion of significance in relation to local risk management practice.

### 4.1 Territorial Intervention Levels and Rural-Urban Location

Earlier in the section on methodology we pointed out the ways in which the notion of 'local' is used to refer to somewhat different territorial levels and extensions - cities and towns, communities, municipalities, and ecological-physical zones in particular. Consequently, interventions at the "local" level may in fact cover and benefit very different population sizes and land areas.

To understand this classification we must recognise that when talking of community level we are referring to a sub-municipal level, that is spatially contiguous and that is not established or determined by political administrative boundaries. Municipal projects refer to those where the intervention level is a municipality as such even though the topic dealt with may be relatively very well defined (early warning system, land use plan, insurance scheme for poor population, etc). The regional level is used to delimit projects promoted at intermediate political administrative levels such as departments and provinces, although application of the projects may be at lower levels such as municipalities, physical areas etc. And, physical-ecological areas refer to those defined in terms of natural regions or areas such as river basins, sub river basins, ecological zones, etc.

Whereas nearly 60% of all Bolivian experiences and 40% of Peruvian projects were directed at community levels, this was true in only 25% of Ecuadorean and a minimal number of Colombian projects.

This pattern is even more marked in the top 12 and 4 most significant cases for each of the countries.

In Bolivia, 85% of the top 12 and all of the top 4 were community-based. Most of the few projects that were not community-based were operated by the municipality. In Peru however, community level projects were poorly





represented in the last 12 and 4 cases, where the prevailing trend was in favour of municipal or regional level projects.

In Colombia, municipal level projects are the majority by far accounting for 11 of the last 12 and 3 of the last 4 selected projects. After the municipal level projects, which were themselves dominated by projects from Bogota, promoted by the Prevention and Emergency organization-DPAE-, regional level projects take second place, incorporating a sum of municipalities and other lower jurisdictional levels. Ecuador also shows a clear municipal bias, with 45% of all considered cases and half of the last 12 and 4 projects falling into this category.

It is interesting to see the number of the 139 total projects operated in different physical-ecological areas, such as river basins, ecological zones and urban slopes in Peru (6 cases of 33) and Ecuador (6 cases out of 37) and the absence of this type of project in Bolivia and Colombia. In Ecuador, 3 of the last 12 cases and one of the last 4 are of this sort.

Colombia has mainly urban based projects—small, medium and large cities- with only 12 of

the considered 41 cases covering predominantly rural areas. Ecuador shows a more balanced trend with almost equal numbers of rural and urban based projects and an important number that cover both. Bolivia and Peru had a clear preference for rural and rural-small urban centre based projects.

We can only speculate on the reasons for the varying emphases because it is impossible within the framework of the present paper to determine with a high degree of confidence the dominant underlying rationale.

Rural community focuses in Bolivia and Peru, the dominance of urban based projects in Colombia and the balanced urban-rural tendency in Ecuador (within municipal frameworks), can all possibly be explained in good part by the institutional or organizational backgrounds of project promoters and financers (NGOs, foundations, local governments, international agencies etc.), the natural structure of the rural-urban division (here, the more urbanized nature of Colombia and Ecuador is clear as regards overall population structure), the levels and history of decentralization and municipal and intermediate level government structures, and the varying balance and importance of

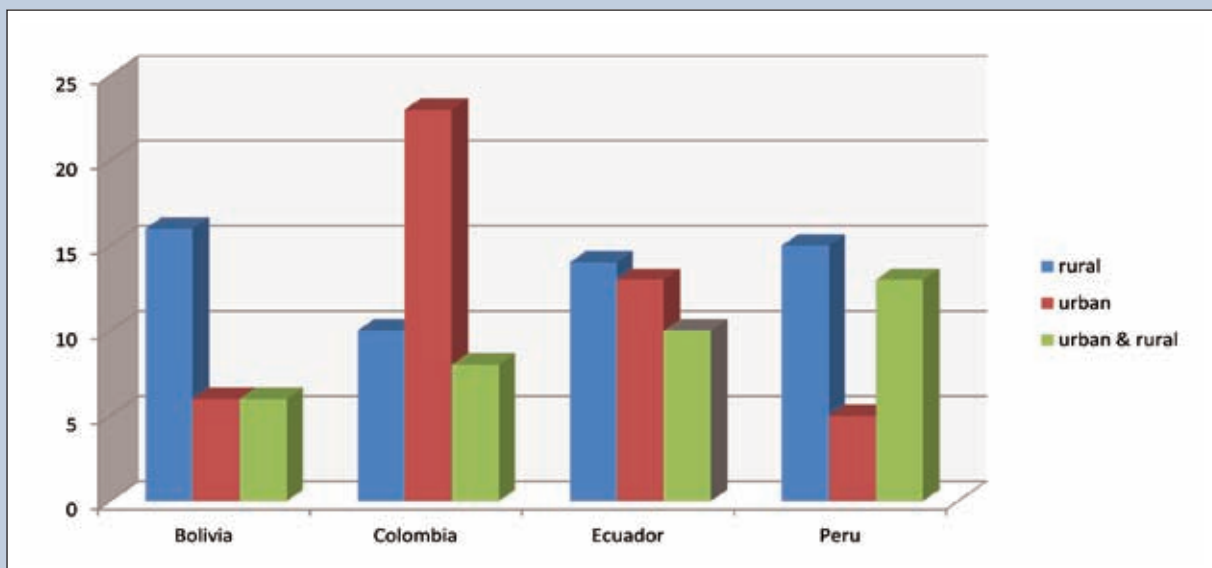


Figure 1: Rural / Urban Project Distribution

community for indigenous cultures as compared with other ethnic or racial groups. The higher number of interventions based on physical or ecological zoning in Ecuador and Peru could be explained by the importance of river basin approaches to ecological management and control in these countries. Understanding overall patterns and trends will, however, require further research and analysis.

Finally, it is clear that where rural and rural-small town biases are seen, the size of areas and population covered is in general small. Thus, the range of problems to be faced and resolved in rural areas will require up-scaling and wide-scale promotion by government of intervention projects. Only through a wide-ranging policy framework and government promotion could we expect to significantly advance with risk reduction in scattered rural areas. Interventions by external actors can never hope to make much progress in resolving the problem. Replication of the significant practices revealed in this study is fundamental.

#### 4.2 Promotion, Execution and Finance

Understanding the role and relevance of the multiple organizational types in differing national contexts is important to understanding the why, where and how of things. Projects are all kick-started, executed and/or financed by any one of several types of organization. However, the range of variations and inter-relationships between the different organizations, institutions and/or individuals limits our capabilities of analysis. As with the previous considerations, it is more realistic at this point to describe patterns and tendencies than to explain them conclusively, that is, without further, more substantial research on such matters.

On the whole, we can say that the differing institutional and organizational mechanisms and preferences in promotion and finance reflect the disparate history and objective conditions in which local risk management has developed in the countries of the Andean region. The extremes are established by Colombia and Bolivia.

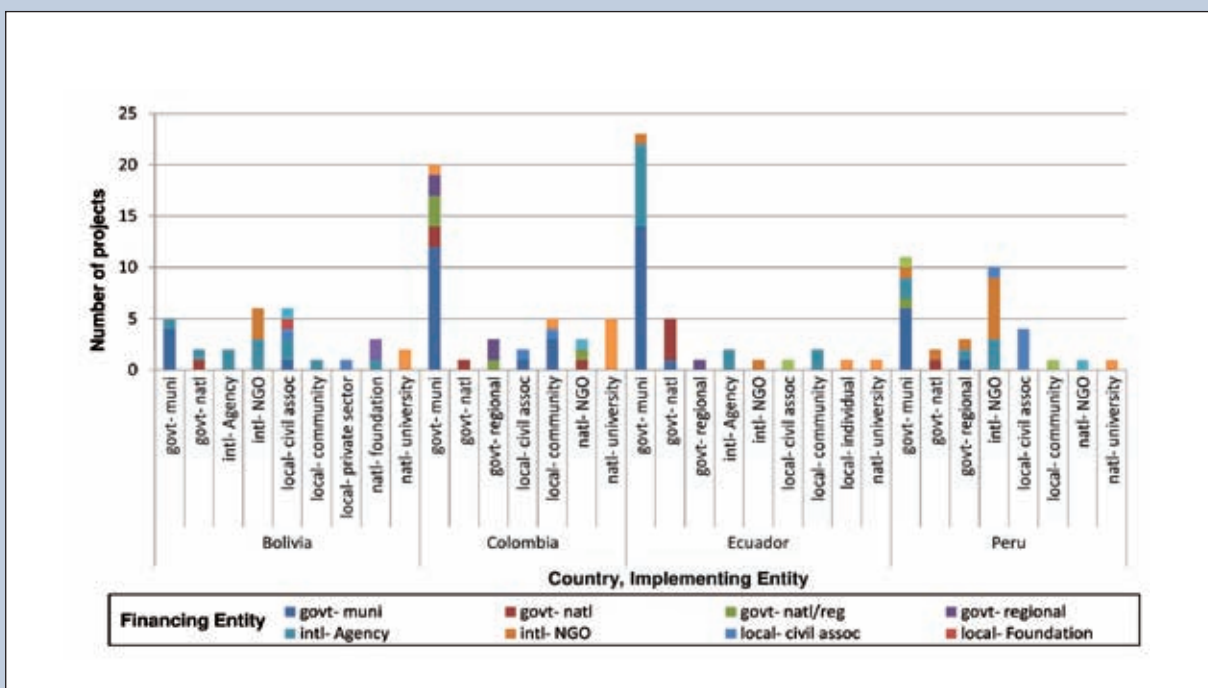


Figure 2: Number of Projects per Implementing, Financing Entity Type

In Colombia, projects are traditionally run by government and academic institutions with municipalities (particularly Bogota) and departments each in charge of nearly a third of all projects, whilst universities started nearly 25% of the projects. Of the four most significant cases, three were executed by a municipality and one promoted by a department. It is also mainly the municipalities, universities and departments which are in charge of implementation. Funding is mainly national with low international agency support and NGO participation. Two possible explanations for this are: i) NGOs see the topic as being highly developed at an institutional level and steer clear, ii). NGOs and international agencies are more likely to be attracted to other dominant problems in the country, such as internal conflict, migration and insecurity.

In the case of Bolivia, projects are more likely to be promoted and implemented by foundations, civil associations, and NGOs rather than by

municipalities, departments or universities. Nearly 60% of projects required and received international finance, with municipalities and foundations also contributing substantial amounts.

In Ecuador, municipality-driven projects are very prevalent and account for around half of all the SE Project applications, over half of executing agencies, and a third of financing. Of the last 12 projects, 8 are municipal -based, as were 3 of the final 4. NGOs accounted for nearly 20% of all applications and international agencies contributed to the financing of 40% of projects, with municipalities also providing substantial financing.

In the case of Peru, two thirds of applications came from municipalities, foundations or NGOs, mainly the latter. This was also the case with implementation, where NGOs and international agencies together accounted for 66% of projects.

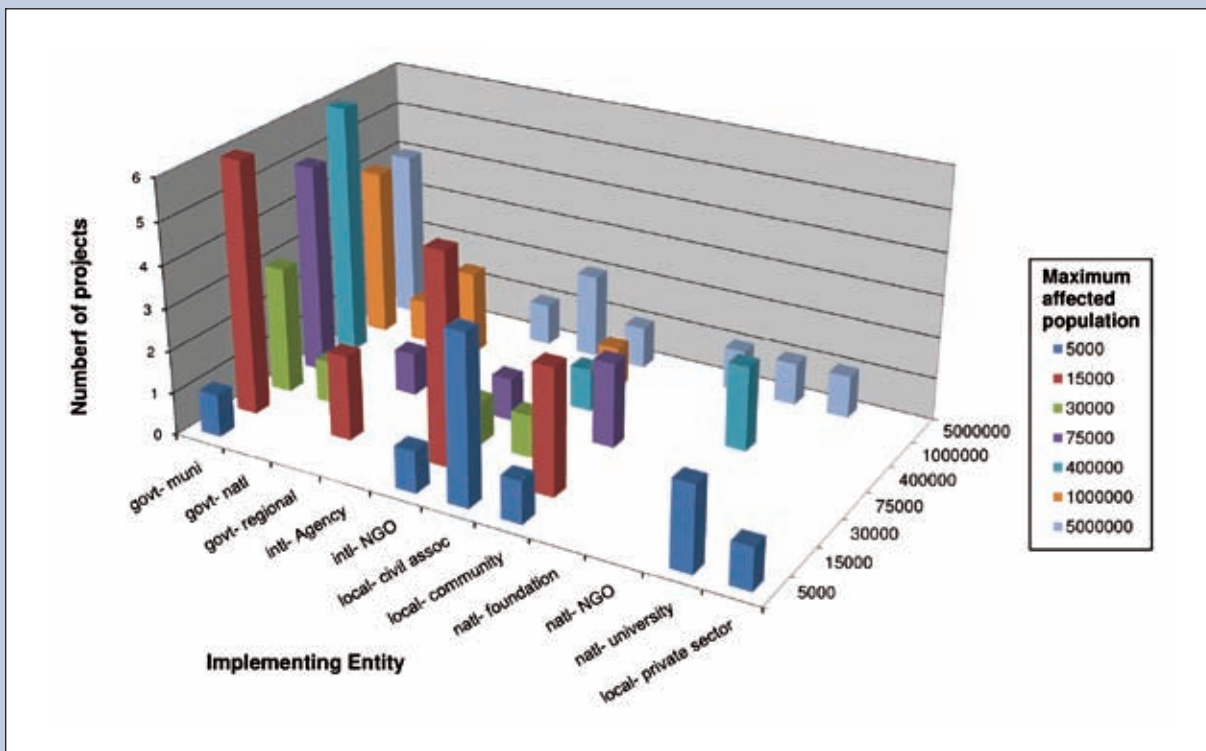


Figure 3: Project Scale by Implementing Entity Type

Overall, the high level of institutionalization of risk management in Colombia evidently stands out, as does the low level in Bolivia, where dependence on external incentives and support at community levels is more evident. The outstanding position of municipalities in Ecuador, including the role of municipal clusters called “mancomunidades”, may be a result of the dynamic role played by the Ecuadorean Municipal Association (AMEC) in the promotion of the PREDECAN project. It may also reflect the increased role given to municipalities in development and land use planning activities and responsibilities.

Despite the high level of development of the national Peruvian disaster management system, it is interesting to note the prevalent role of NGOs and international agencies in all facets and the relatively low level of governmental institutionalization of the theme at the local levels. This may reflect the greater emphasis placed nowadays on risk reduction promoted in development frameworks which as yet are still more likely to be promoted by NGOs and

foundations than government. The following section corroborates that most of the projects promoted in Peru are indeed development based.

### 4.3 From Risk to Development or Development to Risk: The Role of Risk Prevention and Mitigation, and the Differing Development Instruments and Strategies

Of the total of 139 projects in the four countries, approximately 60% address explicit risk management topics and work from risk reduction to development sustainability goals. The remaining 40% commence with development goals or instruments and incorporate risk into the formula in order to improve sustainability and performance. This latter figure is by no means insignificant and marks a substantial movement in favour of development-based risk management approaches when compared, for example, with what was discovered in the 2002 Central American CEPREDENAC-UNDP study (see Lavell, 2004), where very few such projects could be found among the near to 150 inventoried cases.

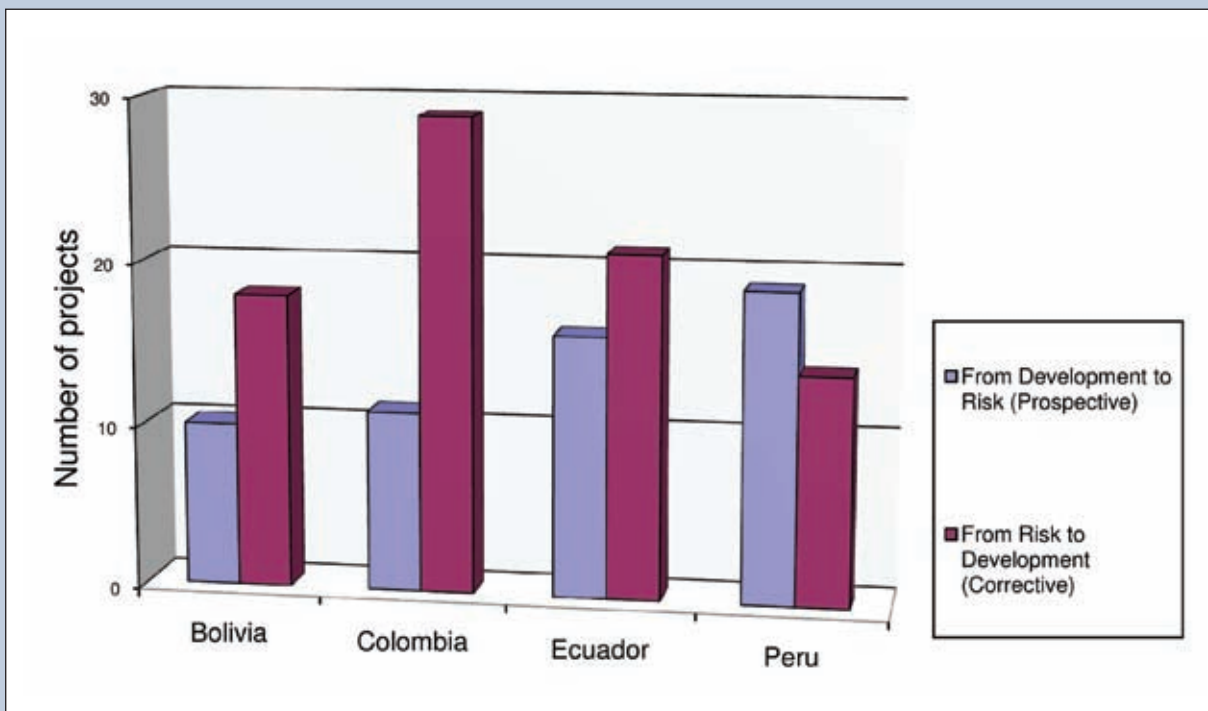


Figure 4: Management Approach per Country



Breaking these statistics down at the national level reveals important differences. Whilst in Peru development-based approaches predominate with nearly 60% of cases, in Colombia this proportion is nearer 30%. Ecuador and Bolivia fall between these two extremes. In both Colombia and Ecuador, development-based projects are more prevalent than risk-based ones in rural areas, whilst the opposite is true for urban areas.

When considering the most significant 12 and last 4 cases in each country, the project selection criteria employed assured to a certain extent that development-based projects or approaches would be favoured. Thus, in the case of Peru, two thirds of the last 12 and 3 of the last 4 cases are approached from a development angle. Even in Colombia while only 3 of the last 12 met this criterion, all three of these made it to the last 4. In Bolivia, 3 of the last 12 met this criterion, all three of these made it to the last 4. In Bolivia, 3 of the last 4 and in Ecuador 2 of the last 4 were directly development-based.

Clearly, all those cases that qualify as development-based promoted what we call preventive approaches, that is, anticipating

risk and controlling its factors (prospective risk management). The remainder of the projects in each country tended to promote and prefer mitigation-based approaches in dealing with existing risk (corrective risk management).

Understandably, given the nature of PREDECAN’s interest in development-based approaches, disaster response and preparedness projects are less prevalent in the data set although still relatively highly represented if one considers PREDECAN’s aims at primarily promoting comprehensive approaches to risk management. Whilst EC-DIPECHO is the primary European Commission means for promoting response and preparedness projects, the PREDECAN SE project did allow for preparedness and response where this was accompanied by other approaches in a more comprehensive fashion. A third of all cases combined preparedness approaches with prevention or mitigation goals. If we consider projects that address either mitigation or prevention goals then of the last 12 cases in each country two thirds followed such an approach in Colombia and in the other countries 80% or more did so.

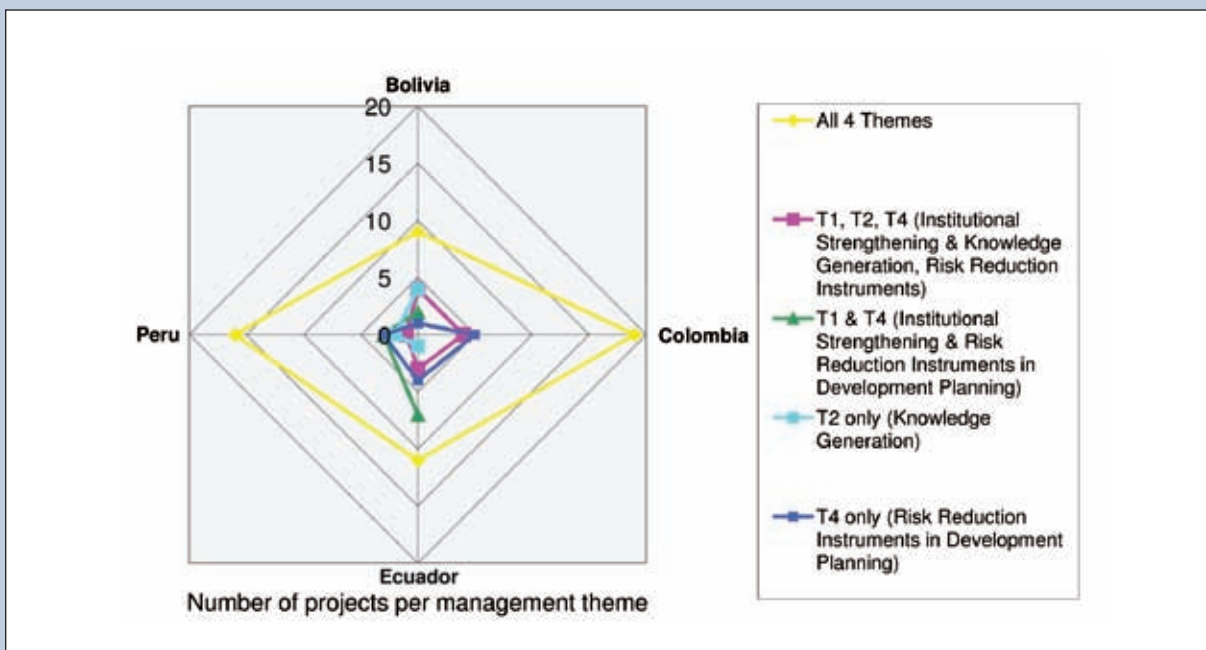


Figure 5: Top Management Themes per Country

Overall, the apparently more development based approaches seen in Peru, Ecuador and Bolivia, in contrast with Colombia, probably reflects the historical nature of intervention and the levels of institutional consolidation in the different countries. In Colombia the existence of such a wide array of national, regional and local disaster risk management institutions has probably guaranteed that it is mainly these which presented projects, while development organizations are not so well represented. In the other countries given the relatively lower institutional level of development of disaster-risk management as such, this factor probably guarantees that development-based projects are more prevalent since many NGOs and associations work on livelihood support projects and some even “find” that they are working in the risk reduction area by pure chance (see examples of this in the next section).

Having noticed that a significant number of projects have a development basis, it is interesting to examine in greater depth the role of the different approaches to the introduction of risk control and reduction factors under development formats.

Here, we can establish a typology of approaches or instruments using the following categories: environmental and natural resource management, including river basin management; livelihood strengthening and promotion; land use planning and territorial organization; governance and social capital development. Others have been established in the literature but are not found in the cases studied. These include approaches such as infrastructure development and micro finance projects.

In the four countries, of those projects based on development approaches we find some 21 cases that use environmental and resource management principles; 23 that work on livelihood improvement; 18 that address land use and territorial organization themes and fewer than 10 that are in the area of governance and social capital. When breaking these categories down by country we find a dominance of livelihood improvement projects in Bolivia, of land use and territorial organization approaches or instruments in Colombia, of environmental and resource management projects in Ecuador with a more balanced set of approaches in Peru. In our next section we will look at these

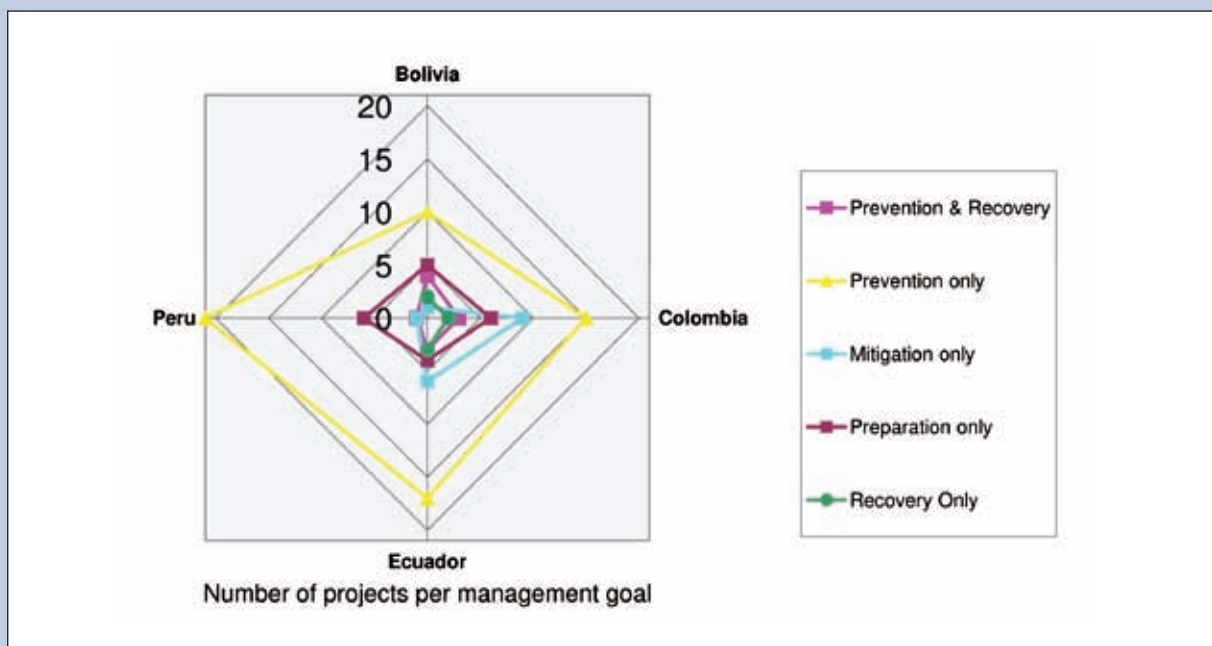


Figure 6: Top Management Goals per Country

differences as pertaining to the last 16 selected cases, in particular.

#### 4.4 Management Themes and Goals

The SE project sought projects which addressed one or more of the following themes:

- institutional strengthening (T1),
- knowledge management (T2),
- risk and culture (T3), and
- risk reduction instruments in development planning (T4).

The projects were also classified in terms of their management goals:

- prevention
- preparation
- mitigation, and
- recovery

Of the 139 participating projects, 25 to 30 of these each addressed one, two or three themes, while those that dealt with all four themes numbered over forty. With regard to the latter category, nearly 50% of projects in Colombia

and Peru included all four categories, whilst in Ecuador this percentage was a little over 25% and in Bolivia near to 30%.

Some 7 of the last 16 cases included four themes, 5 of them three themes, 1 of them two themes, and 3 of them included only one theme, showing a process of selection that favoured more complex and comprehensive approaches. The levels of complexity doubtless tell us something about the level of maturity of the risk reduction topic in each country and the types of organization that promote it. Where lower levels exist as in Bolivia and Ecuador one would expect more emphasis on knowledge management and institutional strengthening as is in fact the case in this data set.

Management themes may be crossed with information on other factors such as management approaches, types of kick-starters and implementing agencies in order to provide more extensive and detailed analysis. Here we will only attempt to consider a few options as to further analysis leaving the reader to proceed further on the basis of information included in the dataset provided on the internet.

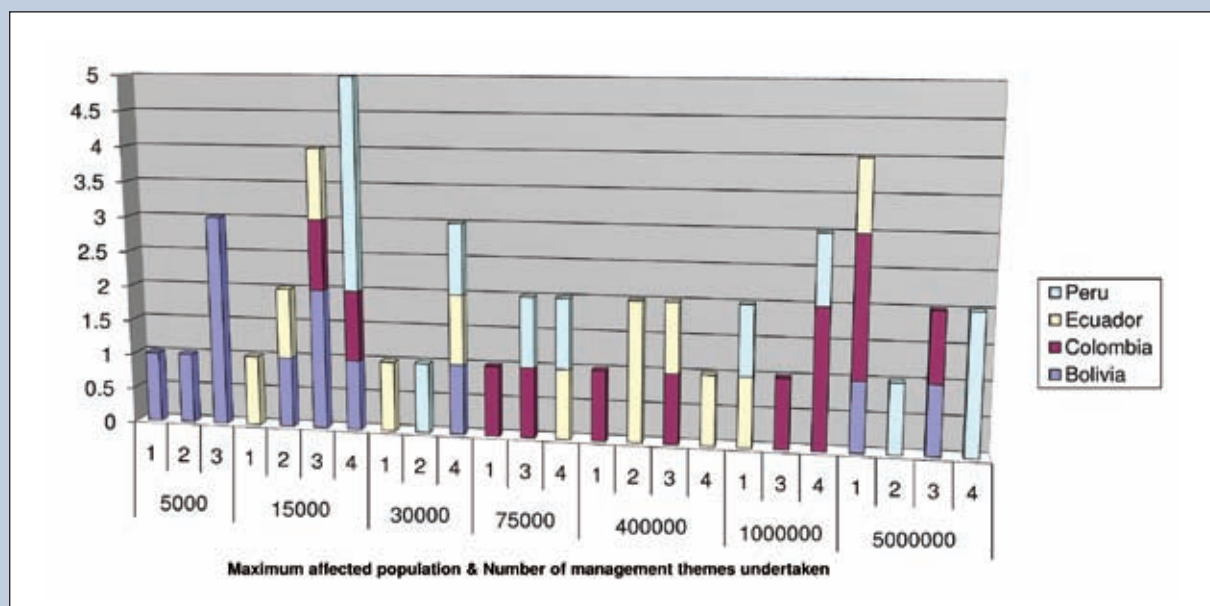


Figure 7: Project Complexity by Affected Population Size, Country



With regard to the overlap between management themes and management approaches, while in Bolivia of the 9 projects working on all four themes an equal number fell into the prospective-corrective division, in Colombia 17 of 18 projects were geared to the corrective approach. Peru showed an equal balance (16 cases in total), whilst Ecuador used mainly the corrective approach (9 of 11 cases). At the other extreme, considering one-theme cases, whilst Ecuador and Peru showed an equal balance between corrective and prospective approaches, Bolivia was highly oriented towards corrective approaches and Peru moderately so. Where two or three themes were addressed only in Peru was there a distinct bias in favour of prospective projects when dealing with the two-theme category. In all other cases there was an even distribution between these variables.

## 5. Analytical Considerations and Lessons Learned: Some Notions and Conclusions Derived from the Sixteen Most Significant Cases

Despite the overall relevance and lessons to be learnt from the sum of the 139 cases selected for evaluation, and from the last 48 in particular, time and space constraints limit us to fine-tune our analysis mainly with regard to the last 16<sup>1</sup> selected projects which were, as a result of the overall evaluation process, considered to be the most significant experiences. In addition to the information provided here, Annex 1 includes a summary of the more salient features of each of these last 16 projects.

### 5.1 The Territorial and Scale Factor

In previous sections we have on various occasions commented on how the concept of “local” is used to depict differing social and territorial scales of intervention. This is reflected in the 139 original projects accepted for consideration and is also characteristic of the last 48, 16 and 4 cases.

In the case of the 30 “semifinal” projects that did not make the top 16, these included 4 cases of large- or medium-scale cities, 6 cases of rural indigenous communities, 10 cases of rural and small town municipalities, 4 cases of river basin and ecological zones and 6 cases of regionally (departmental or provincial level) conceived, locally executed projects.

The territorial coverage of the last 16 selected cases includes large (Bogota, La Paz), medium (Manizales) and small cities (Babahoyo); rural, with primary sector livelihood support, small scale indigenous communities (Chiquitano, Ravelo, Caylloma, La Paz high plateau peasant agriculturalists; Nasa communities and Rikuryana); municipalities or clusters of these mainly addressing primary production and with small- to medium-scale towns (Penipe, Soritor, Ayabaca); projects based on river basins or ecological areas that coincide with or cut across municipalities (Paltas, Ocoña) and projects that are executed at the local level but which are promoted at a wider spatial scale (Department of Risaralda).

Considering the last four cases (one per country), we also find this mixture well represented: Manizales, the case of a medium sized city; the high-plateau indigenous peasant communities in the La Paz Department of Bolivia; the rural and small-town municipality of Penipe; and the river basin-ecological zone based Ocoña project. This

1. Actually, there were 18 projects in the last category. In two of the countries, five projects were admitted into the final “4” systematized cases per country by merging two related projects: in the case of Bolivia, the two Altiplano Norte projects, and in the case of Colombia, the two Manizales projects.

distribution is probably not surprising given that one consideration of the final selection was the idea of a fair representation of the very different contexts in which “local” risk management is promoted at the sub-regional level.

In general, irrespective of the territorial delimitation of the projects, the vast majority are directed at poor to very poor rural and urban population groups. Most projects do in fact point out or emphasize the ways that working with such population groups can help limit the impacts of poverty, help reduce it in determined measures and consequently reduce future disaster risk. So the relations between every-day and disaster risk, though not always explicit, are an important element in the intervention formula. Few of the projects provide substantial metrics in the documentation analyzed for us to understand the extent to which poverty is reduced through the projects.

Clearly this difference in territorial scales and types is reflected in a significant range in the size of affected populations (from under 1000

to several million people) and in the essence and complexity of the different projects. From the comprehensive disaster risk-management structure of Manizales through to the single-element forest and land management project for the Chiquitano communities, there is clearly a very wide range of projects in the SE initiative.

It is important to note cases like the land use and territorial organization project promoted by the Bogota DPAE. This is part of a far more comprehensive and complex intervention system run at the Bogota district level. Furthermore, the DPAE did in fact present nearly 10 cases of partial intervention for consideration in the PREDECAN SE “tourney”, in contrast with Manizales, which presented only one integrated and one specialized project for evaluation.

Recognizing these differences in scale and territorial coverage is important for those instituting future projects. Understanding the differences can only help us advance our knowledge of local disaster risk management in its different dimensions.

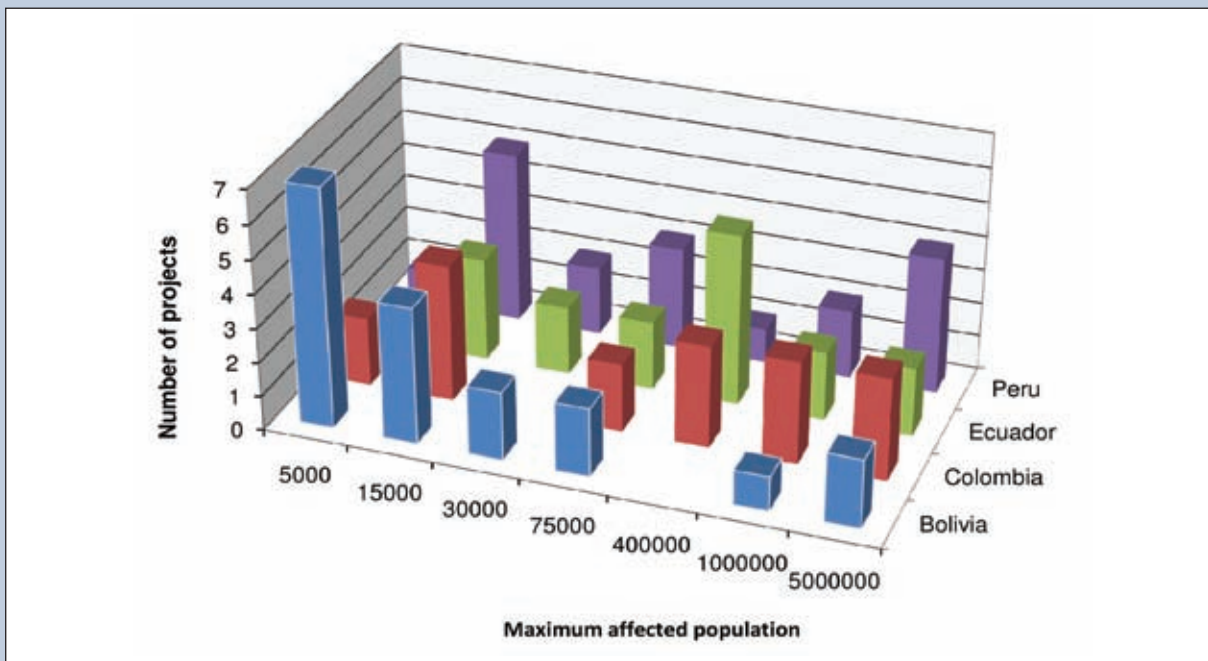


Figure 8: Number of Projects per Maximum Affected Population



In the following sections we will return to these differences where appropriate; we will also attempt to draw some general conclusions with regard to four fundamental dimensions or linked parameters of local risk management: the risk-development linking and the corrective, prospective and residual risk approaches; local participation, use of local resources, and local ownership; the process versus project-product distinction; and relations with external actors. Through our summary analysis we will also identify or infer aspects concerning the instruments used, the policy considerations and the ways the factors influence the sustainability equation.

## 5.2 The Risk-Development Link

Recent paradigmatic statements and conceptual developments have established what is probably the most pervasive local risk management and disaster risk management practice in general. It establishes the need for disaster risk reduction to be closely, if not inextricably, linked to development in such a way that it contributes to livelihood security and reduction of the structural conditions that create and sustain poverty. As we have said, this can be expressed as going ‘from risk to development’ or from ‘development to risk’. In the first case, existing livelihood and development options are protected from loss and damage by add-on or linked risk reduction elements, strategies and instruments, both structural and non structural, typical of what we have called “corrective” and “residual” risk management. In the second case, risk control aspects are incorporated into development promotion instruments and strategies, under “prospective” risk control projects.

As we have seen, the 139 projects of the PREDECAN project had all three types of emphasis, although corrective mitigation projects are still more prevalent. In the case of the last 16 projects, almost all fall in the

‘development to risk’ category, some also with corrective and residual risk management aspects.

In Babahoyo, the flood protection mechanisms and associated public health concerns were clearly corrective, using more traditional structural mitigation techniques. The land-use planning efforts were clearly prospective, even if some failed to take account of population dynamics and needs: the population subsequently occupied flood-prone land. In Rikuryana the educational goals achieved when working with local schools and other social actors (including the transformation of existing fatalistic attitudes) was corrective in nature. They were later complemented with ideas on more comprehensive risk management concerns that included prospective aspects. In Risaralda, original corrective approaches were complemented and increasingly dominated by prospective management goals. In the cases of the Nasa, the Yapuchiris, Paltas, Manizales, Bogota, Ocoña, Penipe, Ayabaca, Caylloma, Soritor, Ravelo, Chiquitanos and La Paz, forward-looking development-based initiatives and interests were the norm.

### 5.2.1 Views of Development, Risk and the Development-Risk Linkage

Before addressing some of the more salient features of the risk-development linkage manifest in these projects, we should highlight the ways in which the concept of development used can affect the way risk management is considered as a strategic element.

There is a prevalent idea that risk management should be “integrated into” or be “cross-cutting” in development planning goals and procedures. This tends to establish a type of independence and separation of one set of practices from the others and is challenged by some of the case examples, especially where dealing with predominantly indigenous groups and zones

in the four countries. If comprehensive and holistic approaches and views of the world are promoted, disaster risk reduction and control are automatically considered a part of development and not tagged on, as is implied by the words “cross-cutting” and “integrated into”. There is no real way of defining “development” unless it “naturally” considers and incorporates the notions of risk reduction and control.

The cases of the Nasa, the La Paz indigenous agricultural communities, Caylloma, and Ocoña all use a definition of development in which it is seen as a life plan, a world vision of advance and sufficiency where territory, environment and livelihood options are considered in a comprehensive and holistic fashion. This is in contrast with the somewhat disassociated views of the world and the separation of related themes associated with “western” scientific specialization and employed in many Western cultures. This holistic perspective also impacts the ways topics such as climate change are considered. For the La Paz high plateau communities for example there is no significant division or divide between what we call disaster risk management and climate change adaptation. As they express it, this separation is a product of dominant ways of professional and technical thought, not reality itself. Power relationships are, and must be considered, an intrinsic feature of risk management and the construction of technical knowledge, expertise and proficiency.

The idea of looking at the problem holistically contrasts in many ways with the introduction from outside of goals that go against the grain of local, community and indigenous beliefs about the relationship of man to nature. One example is the Ravelo irrigation-based project, where a large part of the work of workers foreign to the area was to transform fatalistic attitudes towards progress and environment into a view from which the population considered it man’s role and right to control nature for their own benefit.

The importance of the attitude and approach we assume with regard to the relationship between risk and development per se, and risk and development management (separate but interrelated, or different sides of the same equation) can be seen in the ways we construe the relations between the different instruments and strategies employed for achieving sustainable development goals, by using risk reduction elements.

With an ‘inclusive’ view, risk control is seen to be a key to development itself. Where the two are seen to be separate, different instruments are needed in order for them to be implemented, and later integrated. A further advantage of the ‘integrated’ approach can be seen in attitudes towards institutions and institution building: there is little need to create new risk management institutions, units, committees or whatever. Rather, these are seen to be components of existing local development and promotion organizations.

We can see this separation principle in the methodological guidelines prepared for the municipal pilot projects. Here, the idea of introducing risk management instruments into existing or new land use, territorial organization or development plans and budgeting procedures indicates a vision based on the separation of the parts. We may accept the need for this in the early stages, given the then low level of understanding of the risk management theme which may exist in many areas and amongst many decision makers. However, as time passes and competence and skills grow, we can hope that for future projects risk reduction and control will be fundamental development planning objectives from the beginning, thus avoiding the need for expensive corrective mechanisms in the future.

Another important issue is the link between every-day risk and disaster risk. Views of risk that establish separate categories and identities for

disaster and every day risk lead to conclusions regarding intervention that differ from those that can be identified when these elements are considered part of a continuum. This perspective can be seen in the cases of Ravelo, Chiquitano and the Yapuchiris in Bolivia and also in the cases of Caylloma, Ocoña, Paltas and the Nasa communities. The primary objective of intervention is improvement in every day living conditions and livelihood options. To achieve this, disaster risk must be reduced, directly or indirectly, through the development process. Thus, in the case of Ravelo the significant increase in average family incomes due to the success of the irrigation project is a tangible sign of reduced disaster risk due to decreased every-day risk.

### *5.2.2 Strategies or Approaches to Development-Based Risk Reduction*

A recent report by the ISDR (ISDR, May, 2009) deals with mechanisms and means for controlling or reducing risk and contributing to development and poverty reduction. The authors highlight five different entrance points, four of these sectoral and one integrated.

In the case of sectoral and thematic approaches, the report emphasises improved urban governance, including land use and territorial organization mechanisms and the development and consolidation of social capital; supporting and strengthening livelihoods through natural resource management; infrastructure development and social assistance projects; managing environmental services, including increases in resilience, environmental protection and recovery, environmental technology and payment for environmental services; and risk financing and budgeting mechanisms including innovative projects such as micro insurance and parametric risk insurance (for example, the use of “witness” plots in the Yapuchiri led agriculture improvement schemes in the La Paz high plateaus).

The integrated approach is achieved through local and community-based risk management, strategies or instruments that take up the previously developed sectoral themes and introduce them as part of a “management packet” at the local level, tailored according to the specific context, opportunity and need (see Lavell, 2009).

The 16 most significant cases generally fall into one or more of these categories in linking risk and development. This can also be seen in many of the other 30 most significant cases, unlike many of the entries that were not in the top 48, which tended toward more risk to disaster type projects using corrective principles. In various cases important conceptual and technical developments were achieved which could be very relevant in the development of future cases of intervention. The following is a categorization of the 16 cases (some projects fall into two or more categories):

- a. *Strengthening livelihoods through natural resource management and income and employment generation.* Ocoña, La Paz high plateau communities, Chiquitanos, Paltas, Ravelo, Caylloma and Guardians of the Slopes in Manizales, amongst the first 16; and Sica Sica, Potosi, Mojos, Machangara, Jubones, and San Cristobal amongst the other 30 most significant experiences. In these cases the management of weather, hydrological, ecological, geomorphological and forestry resources enables communities to overcome development obstacles and improve livelihoods in every-day risk contexts. Such approaches link into river basin and environment zone based projects.
- b. *Environmental management services,* including buffer zones (Ocoña), environmental recovery practices (Chiquitano, Paltas, Soritor, Ravelo and Ocoña) and the use of ecological-economic zoning as a basis for planning (Soritor, Ocoña).



- c. *Financial protection mechanisms* as in the case of the La Paz indigenous communities under Yapuchiri guidance and in Manizales. In the La Paz micro-insurance scheme, the use of “witness plots” as a means to gauge loss due to bad practice or to excess hazard is innovative and clearly applicable in other areas. The concept of what can be called excess (or ‘excedent’) risk associated with abnormal weather conditions is also extremely relevant as are the ideas of idiosyncratic and systemic risk developed as part of the insurance and bio-indicator projects. In Manizales, the micro-insurance part of the risk management project in the city involved a subsidy, through which the population as a whole may contribute to the insurance of poorer groups by means of a transfer mechanism that works to the benefit of development in the city. Budgetary procedures guaranteeing incorporation of risk reduction elements in public projects can be seen in the Pojos municipal project in Bolivia, taken from the last 48 evaluated cases.
- d. *Urban and rural governance and the development of social capital.* The ability and opportunity to influence government decisions regarding risk management was a major factor in the La Paz urban community resilience projects, whilst the strengthening of the dynamic and proactive role of municipal government in promoting development options was a major characteristic of the Penipe project and critical to the success of the comprehensive management strategy in Manizales. Elements favouring the development of social capital and cooperation between organizations and institutions in order to foster development and management goals can also be seen in the Ayabaca municipal cluster idea, and in the GRIDE south, Yungay and Piura network projects included in the last 48 selected projects.

- e. *Land use and territorial plans* and the control of exposure through hazard identification. Both in urban and rural areas land use planning and territorial organization projects are growing in importance in the Sub-region. This is a major component in the Bogota, Manizales, Risaralda, Soritor, Ocoña, Babahoyo, Paltas and Penipe interventions from the first 16 projects and also in the Olaya Herrera, Cuenca, Tabaconas and Morropon projects from the group of the top 48 projects. The technical criteria established for mitigable and non mitigable high risk areas in Bogota is a significant instrumental base for other cities whilst the merging of ecological-economic zoning aspects with land use planning in Peru is also of great significance for hazard management.

The municipal Pilot Projects and their methodological approach addressed in detail the needs for development-based approaches which considered land use and territorial planning together with development aspects of prime importance. Livelihood support mechanisms, financial instruments and ecological-physical environmental planning aspects are also present to a certain degree in the projects even though their development is not as apparent and obvious as land use.

### *5.2.3 Levels and Types of Intervention and the Development -Risk Problematic*

Earlier in our methodology section we posed the hypothesis that the different variables for analyzing local risk management would vary in their expression according to the type of territory or area considered for intervention - municipal, physical zone, community or city. When dealing with the risk-development linkage, this relationship can be seen in a number of different ways.



At the city and municipal levels (Manizales, Bogota, Babahoyo, La Paz, Soritor, Cuenca, etc.) the linkage is made between, on the one hand, the social and economic organization of space in order to increase security and efficiency through land use planning, combined with structural norms (building codes and infrastructure controls), and on the other, improved governance procedures and the linking of risk reduction ideas to local development planning mechanisms and institutions. The development of municipal structures and instruments for local risk management in the four pilot projects placed great emphasis on the linking of risk reduction to local planning mechanisms—land use and development plans. Although livelihood strengthening projects are not prevalent in the examples of urban risk management included in the last 48 cases, the Guardians of the Slopes project in Manizales does show how government support for the incorporation of female labour from the affected communities in urban slope maintenance activities can lead to spin-off employment and income effects amongst poorer populations.

At the community level, the relationship is more likely to take the form of livelihood strengthening and every-day risk reduction terms whereby risk reduction is introduced through the development of new livelihood options and natural resource management instruments, and other strategies that reduce hazard and risk. The relationship of risk to unfulfilled development options can be seen in the more prevalent use at these levels of financial schemes such as micro credit and micro insurance.

In river basin and ecological zone interventions, clearly the dominant focus is on the relationship between environmental degradation or change and reduced development options. Thus, strategies for restoring and for increasing productivity and efficiency are based on ecological zoning and natural resource management in which the relations between

risk and development are based on a search to reverse the process of socio-natural risk construction by limiting and reversing environmental degradation.

#### 5.2.4 Sustainability

Projects and processes will be sustainable when various different conditions are in place - organizational, financial, social, contextual and historical. We may also suggest that this is more likely when the central topic that concerns the population and its authorities is in fact part and parcel of their collective visions of pending reality, where these contexts are fundamental for every day life and progress and where there is a clear understanding that local social actors are in fact participants in the complex situations that limit their development and that they can also be active participants in their solution. Entering the risk reduction process and scene from the perspective of development and poverty considerations - prospectively, and not from a corrective add-on basis, can be an important factor in sustainability. We believe the case studies demonstrate important aspects of this relationship.

An important point of entry to the promotion of permanent and sustainable processes relates to the way the development or risk problem is established and perceived by the interested parties. Many of the projects reviewed emphasise the importance of participatory local situational analyses and diagnostics that can reveal the social nature of risk and of the participation of local and other social actors in its construction. This facilitates appropriation and ownership of the problem and generates an interest in more permanent mechanisms for intervention. Observations as to this common characteristic can be found in the documentation associated with the cases of the La Paz highlands bio-indicator, Ravelo, Paltas, Chiquitano, Nasa, Ocoña, Soritor, Caylloma, La Paz, and Penipe projects.



### 5.3 Participation, Ownership and Local Resources

There is a second major variable and conditioning factor deemed to be fundamental in the promotion and consolidation of local level risk management carried out in a development framework. This is the participation and appropriation by local and community actors and the associated process of using and strengthening local resources in the project process. In the conceptual terms which we have developed for participation, this signifies the need for local and community “based” as opposed to “level” management projects and processes. An examination of the projects fostered in the PREDECAN Significant Experiences and Pilot Projects reveal a series of aspects related to the participation and ownership problematic.

- a. Where projects are proposed, promoted and implemented mainly at the local or community level, we find that these reflect real, tangible local problems, and their implementation is supported by higher level organizations, the opportunities for participation and ownership, and consequently sustainability, seem to be greater than for externally promoted projects. Furthermore, in many of these cases, local and community sources of financial support turn out to be more tenable than external ones. The Paltas, Penipe, Yapuchiri, Ocoña and Manizales projects are all good examples of this.
- b. A significant number of projects emphasize the manner in which participatory analysis of local or community development problems, needs, and causal risk processes have increased awareness and sensitivity, and thus greatly encouraged local and community actors to act and support the project. A fundamental aspect of this is the local population’s awareness that they as social actors were in good part responsible for the existing risk conditions and thus could also participate in reducing them. The use of participatory research techniques (La Paz), social mapping exercises (Paez-Nasa) and other participatory analytical procedures and processes are well documented in many of the projects. For example, the Porto Viejo Pilot Project uses geographical information systems to dimension risk factors in the affected area.
- c. It is particularly important for community, indigenous group and agricultural based economies that the notion and practice of real participation create conditions for the recovery of traditional practices which can help lessen risk and increase development opportunities on their own or when combined with elements from “Western” knowledge. This process is quite apparent in several of the projects: in the case of the Yapuchiris and the use of bio-indicators and the ensuing social legitimisation of this knowledge base and the use of raised banks of earth (camellones) in lowland Bolivia and in the Nasa territories in Colombia. Cultural congruence and sensitivity demands such participatory processes based on historical practice and knowledge.
- d. Participation, ownership and thus project sustainability can generally be fostered where a collective social identity and common causes exist. The case of Los Patios in Colombia, one of the municipal strengthening pilot projects, shows very clearly the problems associated with the lack of common identities and appropriation of territory. Another example is that of San Borja where political and social divisions between different social groups (creoles, chimanes, colonizers) made such processes of participation and consultation more difficult. The need to identify social actors and their conflicts and devise strategies for

dealing with these is fundamental to the resolution of risk, especially every-day risk and chronic poverty.

- e. It is clear that people's commitment to risk reduction management principles and processes is more likely to be sustainable where corrective risk projects geared toward particular facets of risk are avoided and more prospective projects implemented where development and livelihood are at the centre, and risk reduction is used as a strategy for assuring increased security. That is to say, where every-day needs and deficits are at the centre of attention, there is greater opportunity for sustainability than when the problem is seen to be temporary and circumstantial.
- f. Where interventions are based on the strengthening or widening of the functions of existing legitimised local institutions and instruments there are greater options for commitment and appropriation, sustainability and support. The Chiquitano, Ravelo, Ocoña, Penipe, Soritor, Babahoyo cases illustrate this point well.
- g. The construction of synergies between different social actors working in complementary and supportive manners is fundamental. In Manizales the relations between the national university and the municipality as a scientific backup mechanism and policy-support think tank play an essential role in the success of the projects. In Ocoña, the "negotiating tables" play a fundamental mutual support role. The Yungay, Piura and southern Peru networks provide further examples of ways of potentiating social capital.

When seen from the perspective of the type of territorial scope covered by the project, then participation and ownership are clearly handled in several different ways.

City level projects that pass through municipal or inter-municipal structures and municipal projects in general, require established organizational representatives to actively participate in discussion, decision-making and local government legislative proceedings. Ownership and appropriation are evident in cases like Manizales where political party success in government elections or processes is in some way dependent on the maintenance of risk management goals and structures. Ideas such as community-based consultation procedures are common in municipal-based projects.

In community projects, participation and ownership are achieved through externally induced processes that promote participatory analyses and scenario building, the use of culturally based knowledge and practice and through social auditing methods. Where risk reduction objectives are filtered or passed through existing organizational structures there are greater options for ownership and sustainability.

Projects based on river basins and other types of physical area where spaces and actors are inter-connected require mechanisms like the "negotiating tables" of the Ocoña project to bring together diverse interests and population groups in decision-making processes.

#### 5.4 Process and Project

A major distinguishing factor between many of the 139 original cases on the one hand and the final 16, on the other, is the difference between initiatives and aims which are geared to projects and processes. Many of the projects that did not make the final 48 were mono-thematic, often with a single emphasis, one-off solutions, designed to resolve a particular problem but with no clear intention or options for sustainability or process guidance and innovation. This is why the evaluation criteria tended to screen them out as part of the

selective SE project process. As we move from the 139, to the 48 to the 16 and finally the last 4 cases, the level of process orientation and sustainability increases.

Regardless of this selection process, even within the final 16 cases the concepts of process and its range of effects vary enormously. However, in the majority of cases the notion of process is valid - that is to say, a method that places emphasis on the permanence of approaches to resolving an identified problem and which involves institutionalisation, social actor support, legitimization, permanence of financing mechanisms and strategic decision making roles, etc.

Among the cases analysed, the urban interventions of Manizales, Bogota and Babahoyo, the Risaralda department-based, locally-operated projects and the rural-urban municipal project of Penipe show how established institutions and links, technical guidelines and parameters, conceptual clarity and clear municipal support and continuity under clear governance characteristics guarantee permanence, process and evolution in approaches looked at from a comprehensive perspective. For example, the Bogota land use project is in fact part of a much wider and comprehensive risk management project in the city.

Another aspect of the process orientation in question is that interventions are rooted in well established and respected local institutions, social actors and ideologies. The community-based cases of the Yapuchiri bio-indicator and insurance projects; the Chiquitano forest management and land security project, the Nasa life style model approach; and the Rikuryana preparedness and risk management initiative clearly demonstrate this. The linking of disaster risk reduction elements to on-going, everyday risk aspects and the need to strengthen livelihoods provides a more permanent basis

for action and promotion, as can be seen in the Paltas, Ocoña, Ravelo, Cayalloma and La Paz interventions.

Project continuity and sustainability as part of a process obviously depends on the permanence of goals, institutions and finance. Here some of the interventions show weaknesses and do in fact face sustainability problems. This is the case in Ravelo, where no clear alternative to the significant external support received to date has been found. Due to the lack of permanent government support for continuity, the La Paz community resilience project suffers from a similar if less acute problem due to the lack of alternatives for promoting this type of governance based approach.

In the case of the pilot projects, although the interventions were guided by process criteria including using local institutions, mobilizing different social actors and rooting actions in consensus agreements where possible, it is not at all clear how these processes will continue in the future. Diverse reactions from local government, from national government with a stake in the processes, from divergent population groups with differing ideologies, could all work for or against the permanence of processes. Where the risk reduction aspects are fully integrated into established legal instruments such as land use plans or where investment decisions and local development plans and participatory budgeting procedures exist, as is the case in Ocoña and Soritor, it is easier to predict process continuity.

## 5.5 External Contacts and Relations

The established principle that risk is generated in extra-local territories, although felt and suffered in situ, often demands that local social actors and spaces be integrated and work in harmony with extra-local actors. As we have stated, this type of relationship must differ in scale of resolution if we are dealing with



large or medium cities rather than sparse rural communities of river basin-based projects. Varying forms of external relations and synergy of actions can be identified in the last 16 SE projects.

The use of municipal clusters in Peru and Ecuador can be seen with the Penipe and Ayabaca processes. Up-scaling to larger territories can be seen with Ocoña and Paltas, whilst the Babahoyo project merits attention for the relations with the upper river basin and processes therein developed. The Risaralda project is geared up at the departmental level and implemented at the local level, and the land use planning in Bogota now covers other nearby districts where causal relations exist and there is a clear need for joint intervention. The Soritor

project depends on the control of degradation processes in the river basin and on slopes, as is the case with the Ravelo intervention.

The lack of coherence between local and larger jurisdictions in terms of norms, processes and instruments can lead to difficulties at the local level. This is the case with the San Borja and Los Patios pilot projects. On another front, the use of exchanges between social actors from different areas in similar circumstances has been described as leading to good results. The bio-indicator project is one example. Apart from these projects we have the example of people going from Pasto in Colombia to Baños in Ecuador, both towns suffering from volcanic hazard.

## 6. Summary and Conclusions

### 6.1 General Considerations

- a. The CAPRADE-PREDECAN inspired Significant Experiences and Pilot projects attempts to push forward our understanding of the concept and practice of local level disaster risk management in the framework of development planning and sustainability.
- b. In the SE project, of 229 projects originally presented for consideration, 139 were accepted for evaluation. The evaluation procedures established served to reduce this number to 12 per country, 48 in total, and finally a final 4 per country, 16 in total. From these experiences one case was selected from each country deemed to be the “most significant experience”.
- c. The Pilot Projects schemes were implemented at a similar municipal and community level in each of the four project countries (Colombia, Ecuador, Peru and Bolivia). This mirrors the large distribution of municipal level experiences in the SE project.
- d. Criteria for evaluation of the Significant Experiences and for the methodological design and implementation of the Pilot projects sought to reflect state of the art considerations as to the definition of sustainable, development-based, local and community disaster risk management (L-DRM and C-DRM). These include the established and necessary relationships between risk reduction and development goals; the community or local appropriation, ownership and control of schemes; the external articulation of project objectives and actors; process as opposed to product orientations; the integral nature of the schemes; and, their relevance for policy formulations and the opportunities for replication.
- e. Conceptual discussion and precision has been offered in our text as to such critical notions as the risk-development relationship and the categories of corrective, prospective and residual risk management; the definition and significance of the “local” and “community” nomenclatures and levels and the differences between local and community risk management, local and community based risk management, and local and community level risk management; the significance and meaning of participation and appropriation; the discussion as to territories of risk and causal and impact territories; and the notions of process versus product orientations.
- f. Analysis has been based on a detailed consideration of information registered in the project’s dataset for the 229 original postulations, the executive resumes for the 139 cases finally accepted for evaluation, the Catalogue of Experiences produced by PREDECAN for the last 48 cases and the systematizations undertaken of the last 16 significant experiences and the four pilot projects. Despite difficulties in standardizing the information produced in these documents, the analytical process led to the production of a single spreadsheet that includes a considerable amount of standardized data and information on all 229 projects, but particularly with regard to the last 48 and 16 significant experiences. The analysis presented in our document takes into account the limitations of the existing information and the need for its fine tuning and absolute validation and, also, the time assigned for this work.



## 6.2 Principle Conclusions

- a. Project promoters, implementers and financiers vary from country to country. Bolivia has a large number of externally financed, community level projects, whereas Colombia, at the other end of the spectrum, has a high level of governmental agency presence at municipal and departmental levels. The differences from country to country may be explained by the varying experiences they have with the risk management problematic, the levels of commitment of governments to the theme, and the overall efficacy of governmental entities to induce change in the field.
- b. Strong rural project focus in Bolivia and Peru are contrasted with a greater presence of urban based projects in Ecuador, and particularly in Colombia. In the rural projects, the size of benefitted areas is in general small as are their populations, and intervened areas tend to be made up of poor to very poor populations.
- c. Whereas corrective mitigation and preparedness projects tend to continue to dominate in general, it is also true that the number of development based, prospective schemes is significant and certainly exceeds that found on the occasion of the CEPREDENAC inspired Central American systematization project undertaken in 2002 and 2003. Development based projects are more prevalent in Bolivia, Ecuador and Peru than in Colombia. This may be explained by the fact that whereas a lot of projects in Colombia were postulated by risk management oriented governmental organizations, in the other countries there tended to be far more involvement by development oriented international agencies and international and national NGOs. The pilot projects started from a vision of risk and disaster informed by development perspectives and channelled through land use planning, investment criteria and development planning principles.
- d. When dealing with the last 16 cases, the presence of development based, prospective risk management initiatives increased notably as is to be expected given the evaluation criteria used in the PREDECAN project process. Entrance to the development-risk reduction and control relationship is achieved in varying dimensions using land use and territorial planning, environmental service and natural resource management, livelihood strengthening and protection and governance and social capital development mechanisms and instruments. The importance of these different entrances to the problem varies from country to country.
- e. The numbers and complexity of management themes that are dealt with increase as the original 139 cases were whittled down to the last 48 and 16. This, along with an increase in mechanisms for participation, use of local resources, more development based actions, building on local institution and ideologies signifies an increase in the process nature of interventions and the sustainability options, as schemes pass from single goal, single theme risk-development, externally promoted projects, to a more complex matrix or structure of social and goal relations.
- f. Appropriation and ownership is clearly favoured by such contexts and mechanisms as: the use of participatory local diagnoses, social mapping exercises and other forms of action research formats that reveal the ways risk is constructed socially and the role local actors play in this process; the building on local knowledge structures, institutional or organizational capabilities

- and the hybrid use of traditional and modern scientific knowledge; the building up of notions and solutions of disaster risk which start with a consideration of every day risk and development problems in general; the synergic and dynamic interrelationships between academic organizations and policy formulators and implementers.
- g. The relations with external actors and territories that are in some way related to risk conditions in situ has been developed through such mechanisms as community and municipal groupings or alliances; synergy between national, regional and local policy and instruments; river basin management and up-scaling of environmental management services to related river basin territories; and the use of "negotiating tables" that bring together potentially conflicting interests at different scales.
  - h. Important conceptual and instrumental advances can be seen in various projects with the development of ideas and notions as regards every-day and disaster risk; normal and excedent risk; integrated as opposed to disaggregated visions of development and risk; and mitigable and non-mitigable risk.
  - i. Finally, it is clear that the experiences developed in different countries with the particular "national" flavour they exhibit can productively be "exported" to other countries where similar realities exist. This includes the use of the bio-indicators and insurance schemes of the La Paz farming communities; the role of governance factors and social capital in Manizales and the city of La Paz; land use planning schemes in Soritor and Bogota; river basin and resource management in Paltas y Ocoña; municipal strengthening and coordination in Penipe and Ayabaca; irrigation and forestry management in Ravelo and Chiquitanos.

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# ANNEXES

## Annex 1: Top 16 - Summaries\*

### BOLIVIA

#### Santa Cruz, Bolivia

#### *Community forest management: Sustainable development of the Chiquitano indigenous community in Monte Verde, Santa Cruz*

Location:	Santa Cruz, Bolivia
Affected population:	17,000 - rural
Social group:	Indigenous group - 7 communities
Primary goal:	Natural resource management - land / forest management

This experience describes a locally-driven effort to regain ownership of community lands, and in particular, promote forest management, for the Chiquitano social group.

“Land of Community Origin” (Tierra Comunitaria de Origen - TCO) Monte Verde was given legal rights to the land in question, and the “Committee of Territorial Indigenous Management” (Comite de Gestion Territorial Indigena - CGTI) was instituted to manage the land. “Support for Bolivian Indigenous Peasant Farmers” (Apoyo para el campesino indigena del Oriente Boliviano - APCOB) helped create a community forest management plan in 2006 to mitigate deforestation, land degradation, fire and other risks faced by local communities. Moreover, the scheme has helped to reduce the emigration of younger members of the community, with its associated negative impacts on local development opportunities, by providing more employment options. The project received financial support from the varied national and local organizations promoting it.

The experience focused on the integration of forest management practices into existing traditional organizational instances. This was accomplished via a transfer of information, planning tools, and education to local organizations to help them manage and control their own land.

Although the experience was not originally conceptualized as a risk reduction plan, it has in practice reduced risks by having focused on the goal of community development, and its ensuing need to improve the welfare of its people, leading to reduced deforestation, forest fires and contamination of water sources, and it is now recognised that the scheme has an essential risk management component. It has also built awareness of the social, economic and political root causes of risk and insecure conditions.

\* 18 summaries are included in this annex as two pairs of projects were merged together in the final selection.

### Altiplano Norte #1, Bolivia (Top 4)

*Local agricultural risk management strategies: Recovery of bio-indicators in the high plateau of north Bolivia (merged with Altiplano Norte #2)*

Location:	Altiplano Norte, La Paz, Bolivia
Affected population:	1,000 - rural
Social group:	1 community
Primary goal:	Livelihood protection, farming education, and climate related bioindicators

This experience stems from technical assistance provided by PROSUKO, a Ministry of Planning project, to local farmers with the goal of helping them mitigate economic loss due to climatic events. It eventually led to the creation of UNAPA, an association of farmers that provides the services of local expert farmers (Yapuchiris) to improve their crop yields and reduce their chances of loss. The project received financial support in its origins from COSUDE, the Swiss Development Agency.

To generate more information over how and when to plant crops, locals were educated on the generation and application of climate forecasting bio-indicators. These bio-indicators are then reviewed by the Yapuchiris to provide prognostics on variables that affect crops.

Due to the high degree of forecasting accuracy of the Yapuchiris, their services are highly valued among local farmers, the municipal government, and NGOs, allowing them to charge market rates for their services. This enables the scheme to be self-sustaining and self-funded, while still maintaining accountability for the work produced.

It is important to trust more in local population's capabilities to innovate solutions in the management of their risk, as these solutions often lead to greater buy-in by local members, leverage existing cultural knowledge and traditions, and can provide significant results, typically for a fraction of the cost of projects that leverage outside intervention. This applies, in many cases, to projects handled at the municipal level that would be better dealt with by the local actors within the affected communities. The scheme and its bases illustrate the ways in which indigenous thought patterns construe an integrated holistic vision of development, environment, and risk as opposed to the disparate visions of some other societies. Moreover, climate change adaptation and the management of climate variability risk are seen to be part of the same, as opposed to disparate, processes.

**Altiplano Norte #2, Bolivia (Top 4)**

*Insurance as a financial tool and integral model for the management of risk in agricultural production in the high plateau of north Bolivia (merged with Altiplano Norte #1)*

Location:	Altiplano Norte, La Paz, Bolivia
Affected population:	3,000 - rural
Social group:	Several small communities
Primary goal:	Livelihood strengthening through financial protection

An alliance was formed between the local farm production association (UNAPA) and the “Foundation for Financial and Productive Development” (Fundacion para el desarrollo Productivo y Financiero - PROFIN), with institutional support from PROSUKO to strengthen agricultural production processes. A key characteristic was to provide a crop insurance scheme to improve farming techniques and reduce hazard-related losses. Initial financial support was offered by DANIDA, the Danish development organization.

The scheme provides insurance against loss using a base-reference “witness plot” that is farmed by a local Yapuchiri expert farmer. By providing a tangible example of proper farming techniques, other farmers learn to improve their own techniques. Furthermore, the “witness plot” provides required guidelines that must be followed for a farmer to be able to indemnify their potential loss via the insurance product.

By basing insurance payouts in the case of loss upon the loss sustained to the “witness plot”, farmers are only compensated for losses out of their control; any losses due to their own negligence in farming techniques go uncompensated. This mechanism drives both higher security for those that raise crops in the socially acceptable manner, while reducing the incentive for farmers to lean on the scheme to compensate them from losses that they themselves could have mitigated. In this way the scheme deals with both existing and excess risk, allowing farmers to prevent loss due to existing risk and to mitigate loss due to excess risk by leveraging a financial product.

The notion of legitimacy of new knowledge is addressed in several ways throughout this experience. By utilizing the existing organizational structure of UNAPA and the Yapuchiris, the insurance scheme was able to gain an earlier and stronger foothold. Likewise, the contractual nature of the insurance product helps to strengthen organizational structures as it enforces the rigorousness of contracts that is necessary in moving from subsistence to commercial farming endeavors.



## Ravelo, Bolivia

*Vulnerability reduction: risk and rehabilitation of soils in the municipality of Ravelo, department of Potosi, Bolivia*

Location:	Ravelo, Bolivia
Affected population:	2,000 - rural
Social group:	Several small communities
Primary goal:	Livelihood protection

The experience was spearheaded by “Foundation Against Hunger” (Fundacion Contra el Hambre - FH), a national organization, and seeks to reduce chronic malnutrition and lack of economic opportunities for four rural communities. To accomplish this, the project developed an irrigation system for almost 700 hectares with international financial support from USAID.

Up to this point the project was primarily a development endeavor, but damage to the system due to a landslide forced the implementers to take a look at the risk management implications of their project, leading to consideration of a more comprehensive and sustainable approach that integrated development and risk management themes.

To articulate the possibility of change, it was first necessary to confront the local worldview that things that happen are natural, recurrent events that are beyond control of the local populations. This is no easy task and requires a dedicated and positive group of technicians implementing the project as this change in world view is fundamental to the success of the project. Attitude changes were stimulated under the notion that nature is there to be dominated by humans. Although a step in the right direction in overcoming fatalistic attitudes, obviously this conception is open to comment, criticism and further evolution from a more integral and holistic view of the world.

The experience used a strategy of “integrated intervention, tying together the productive and health aspects”, and “a management of natural resources through the conservation of land.” The challenge faced was to transform reductionist and disaggregated management schemes in to more complex systems where risk reduction takes place in the framework of poverty, social exclusion and governance fragility, accepting that disaster risk is a continuity of every day risk. The project applied what it terms a “Methodology of non-formal interpersonal education” (Metodologia de Enseñanza Interpersonal No Formal - MEINF).”

## La Paz, Bolivia

*Participatory planning, disaster preparation, water and its purification in the municipalities of Aiquile, Villa Tunari, San Xavier, San Julián, Concepción y Riberalta; and investigation of the resilience in the face of disasters in four zones of the city of La Paz.*

Location:	La Paz, Bolivia
Affected population:	2,500,000 - urban (estimated city population; affected population unknown)
Social group:	7 municipalities in La Paz
Primary goal:	Governance - addressing the social construction of risk

The Project as a whole was chosen as part of the top cases for Bolivia. However, on its selection as one of the top four cases, the evaluation committee members recommended that only the La Paz community component be systematized in detail given the overall complexity and diversity of the initially submitted project.

The La Paz component of the project analyzed the social construction of risk and systematized this in three documents: 1. conceptual focus on risk management, 2. methodological criteria integrated with a focus on risk management, 3. municipal development planning tools with a focus on risk management. The project formed part of the doctoral dissertation of its promoter and was financed in part with international funds.

The primary objective was to strengthen institution capabilities, participatory planning, preparation, and water and sewage provisioning. The project also sought to generate normative technical tools related to planning, geographic data, emergency centers, contingency planning, volunteer group formation and training, etc. Increases in knowledge and understanding of risk generation processes empowered local communities and facilitated governance factors and the negotiation with local government to achieve risk reduction goals.

The experience found that “the dominant structures of disorganized, chaotic urban growth and the application of public politics follow the development-oriented visions that created the city and its vulnerable areas.” They also found that the factors most influencing change were a strong community participation, support from technical teams, and the municipalities involved.

Many people live exposed to hazards, and they do not view this problem as their primary risk as their priority is focused on maintaining a subsistence livelihood. Furthermore, it is the community’s practice of working on escaping poverty that has helped to forge their own resilience in the face of disaster. It is interesting to note that a part of the population occupying the areas subject to intervention migrated from El Alto, a much securer area in disaster risk terms but also considered socially inferior and with lower opportunities for livelihood improvement.

## COLOMBIA

### Manizales #1, Colombia (Top 4)

*Local risk management in an Andean city: Manizales as an integral, illustrative, evaluated case (merged with Manizales #2 in the final selection)*

Location:	Manizales, Caldas, Columbia
Affected population:	500,000 - urban
Social group:	City of Manizales
Primary goal:	Risk management - comprehensive, historic review

The experience describes a joint project between the government and academia aimed at compiling the experiences of Manizales with a focus on development and risk management over the last several decades.

Utilization of holistic risk estimating tools, interdisciplinary evaluations, and risk reduction indexes (IGR) has enabled the compilation of quantifiable results over the long historic period reviewed. The experience has brought to light what areas of the city have best addressed risk reduction so that their techniques and successes can be disseminated to other areas of the city.

In many cases, the most successful risk management projects have been due to synergies and joint action between agencies, demonstrating the need for comprehensive, inter-agency cooperation in achieving risk reduction goals. Furthermore, the continued usage and relevance of the projects between changes in local government demonstrate the need and benefit of strong institutional continuity.

The Manizales experience shows the importance of governance factors in permanently supporting and legitimizing risk management and the ways in which, over a long period of time, the city has incorporated novel and innovative risk techniques that compliment each other in a synergistic way. The experience includes risk reduction strategies linked to land use and development planning, building regulations, slope recovery schemes, risk transfer mechanisms involving the city poor, all integrated under a single city based management framework, and in a good part financed by the municipality itself.

## Páez, Colombia

*Strategic planning for the integral reduction of risks in the municipality of Paéz, Cauca, from the perspective of the worldview of the indigenous community of the Nasa*

Location:	Páez, Cauca, Columbia
Affected population:	40,000 - rural
Social group:	Municipality
Primary goal:	Risk management - local development strategies

The experience is in response to the activation of the Nevado de Huila volcano in February of 2007, and attempts to reduce or control disaster risk as part of local sustainable development, rediscovering the cultural, spiritual, social, political, and environmental values that contribute to a better life quality and sustainability of development in the area. The area had been previously affected by a major earthquake and land-slide in 1994 and a wide scale externally promoted recovery programme that treated with respect the decisions and culture of the local population.

The local population responded to the volcanic activity autonomously and in an organized manner by moving out of the affected areas. Thus, the experience looked to improve upon the local corrective-conservative response to the volcano and develop a more comprehensive risk management plan.

The process has generated a new territorial dynamic by integrating local development, strategic planning and risk reduction into a comprehensive perspective on development. These changes have been assimilated by the locals as part of a “culture of prevention”.

The experience seeks to create/improve a risk prevention culture by the consolidation of processes of information gathering, education and communication with the historical and cultural context of the territory. Action research methodologies, particularly the methodology of social mapping were employed with the support of national universities and international agencies.

## Bogotá #2, Colombia

### *Incorporation of prevention and risk reduction themes into the planning tools of Bogota*

Location:	Bogotá, Cundinamarca, Colombia
Affected Population:	>1m - urban
Social group:	City and surrounding neighborhoods
Primary goal:	Land use and territorial planning

The experience describes how the Bogota Emergency Prevention Directorate (DPAE) worked with and through territorial planning instruments articulated in the Territorial Development Plan (POT) to prevent and mitigate disasters by taking rational decisions as to the location of housing and production facilities. Deriving originally from a concern for marginal housing, its legalization and security, the land use control schemes have been based on wide scale local participation.

The Bogota Emergency and Prevention Directorate (DPAE), as recognized expert in risk management, drives risk reduction-based development practices into the territorial development plan (POT) and coordinates with their implementation on local levels.

The POT, in turn, is considered an innovating leader on risk-management based development, serving as a source of ideas and tools for risk reduction in other cities in Colombia. The development of the categorization of risk as either mitigable or non-mitigable is an original idea of the scheme which is now used in many parts of Colombia, and represents one of the more important technical concepts developed in order to help make decisions.

The project demonstrates the ongoing process involved in moving from strictly development to risk reduction, and finally, to prospective risk management. Although originally self sufficient in terms of working within the district limits, more recently the need to coordinate and collaborate with neighbouring jurisdictions has been recognized.

## Risaralda, Colombia

*Risk management at the urban and rural level in the department of Risaralda via a consolidation of knowledge of hazards and risks*

Location:	Risaralda, Colombia
Affected population:	860,000 - urban and rural
Social group:	14 municipalities
Primary goal:	Knowledge management

The experience describes the founding of the Autonomous Regional Corporation of Risaralda (CARDER) in 1979, and follows its history through projects it has spearheaded, integrated, and implemented over the past 30 years.

The project was initially kick started by the Netherlands government in a specific project, which led in part to the creation of a regional entity, CARDER, with a focus on risk reduction based on local planning, territorial organization and land use planning. The risk management approach is informed and related to the environmental planning theme, moving from the departmental to the municipal level.

The continuity of CARDER, and its initial focus on risk reduction, has allowed many “product” based projects’ findings and information to be assimilated into the ongoing “process” entity, providing a practical vehicle for their implementation and dissemination.

The integrated evolution of risk management processes in Risaralda can be credited to the ongoing nature of CARDER, and it’s maturing of focus from information-gathering projects to corrective management techniques and now to prospective management techniques that disseminate knowledge to local communities and help them create and identify diverse solutions to their problems. Technical sensitivity and consciousness is a major aspect of the process.

## Manizales #2, Colombia (Top 4)

*Guardians of the slopes: a community-based, environmental education project for the prevention and mitigation of landslide risk (Merged with Manizales #1 in the final selection)*

Location:	Manizales, Colombia
Affected population:	150,000 - urban
Social group:	Residents on steep slopes
Primary goal:	Prevention management and education

The experience stems from recurrent problems with landslides on the vulnerable, steep slopes of the city, areas typically housing immigrant and poor populations. The slopes had been previously stabilized with over 450 individual treated areas. However, a combination of lack of maintenance by the government and deterioration caused by residents has caused recurring and ongoing problems. In particular, a strong rainstorm lasting for over six hours in March of 2003 triggered over 90 slides causing extensive damage and loss of life.

As a solution to both the institutional issue of lack of maintenance and the social issue of lack of resident education, the implementers created a program that hired women in affected areas to manage and repair the existing slope stabilization improvements. As such, the program sought to empower locals with knowledge and financial resources so that they may take ownership and responsibility over their own condition of vulnerability.

Beyond these issues, the project also provides ongoing part-time employment, and thus financial resources, to over 450 women. As is the case with microfinance schemes, women often result in a higher rate of return on the invested capital. In this case, by providing monetary and educational resources to women, they are in a unique position to be able to improve not only their lives, but those of their families and friends. Their earnings are redistributed within the affected poor communities helping their local micro-economies, while at the same time providing a grass-root system for disseminating risk management education.

This program demonstrates a unique case of shared responsibility between government institutions and the local affected community. The project, currently in its fourth phase, costs the municipality approximately \$400,000 per year, a substantial savings over typical reconstruction costs. Considering that a good portion of these funds are directly invested in the affected communities, this provides a much more tangible stimulus to the impoverished communities that are affected by the scheme.

## ECUADOR

### Rikuryana, Ecuador

#### *Community answer to emergency and disaster mitigation*

Location:	Rikuryana, Imbabura, Ecuador
Affected population:	7,000 - rural
Social group:	2 indigenous groups, 14 communities
Primary goal:	Preparedness and response

This experience, financed by international funds and run by an international NGO - World Vision, describes the implementation of a “Initial Plan for Disaster Preparation” (Plan Inicial de Preparación de Desastres - PIPD) in a participatory manner between 14 communities from two social groups (Kichwa, Otavalo). Once the project was underway, local actors saw the need to expand the scope of the project to include education and institutional strengthening as foundations for making the PIPD more relevant and useful.

Most of the risks faced by these communities are socio-natural hazards created by their own use of the land. These include landslides, house and field fires, water contamination and vehicle accidents. Their vulnerabilities include lack of access and use of information, a precarious socioeconomic situation, lack of institutional support from local and regional government, and inadequate infrastructure.

The area in which this experience is based has not only a low educational level, but also a worldview that has accepted disasters as inevitable. It was necessary to “demystify the notion of disaster as God’s ire, which has helped to change the local behaviour.” This process has led from an apprehension to talk about disasters to an “open, constructive dialogue on the themes of emergency, hazard, and risk” that was placed within “the context of the indigenous vision of development”.

Local actors realized that the originally envisioned project needed to have a wider scope to enable locals to own and manage the process on their own. Thus, the process was retooled to seek an integral development scheme that stems from local needs, counting on the construction and strengthening of the people’s capabilities to mitigate and reduce their vulnerability to disasters, and to increase their capabilities to identify potential risks and respond adequately to disasters.



## Penipe, Ecuador (Top 4)

### *Territorial development in times of emergency due to activity of the Tungurahua volcano*

Location:	Penipe, Tungurahua, Ecuador
Affected population:	30,000 - rural
Social group:	1 cantón, 20+ communities
Primary goal:	land use and territorial planning, local governance

This experience documents the implementation of a Local Development Plan (Plan de Desarrollo Local - PDL) in 2002 in response to the 1999 eruption of the Tungurahua volcano. The eruption dislocated 50% of the population, severely damaging the area's economy, infrastructure, and health levels. A second eruption in 2006, and its much lower incidence of damage demonstrated the effectiveness of the plan, and also helped to point out areas that could be further improved.

The experience is rather unique in dealing with a relatively developed rural area that suffered very large losses in the face of disaster. The large disruption to human and economic activity demonstrated to them the need for a comprehensive development plan that incorporated risk management themes throughout.

The local communities took advantage of funds from strategic alliances with external actors to modernize their infrastructure by creating and implementing their development plan. 75% of the investment provided by external actors was earmarked toward projects specifically enumerated by the plan. Funds were used for diverse projects such as: food processing plants, disease eradication, risk mitigation projects, improved building supplies, a medical center.

Changes precipitated by the 1999 eruption brought about a new vision of the role of the municipality and its leaders, one that requires a modern municipality that stimulates production and other income-generating alternatives at the local level by leveraging the support of national & international institutions." This vision of the enhanced role of municipality was actualized by a new, proactive municipal mayor and active community involvement that allowed local communities to take ownership of the process. This intra-municipality process was then evolved into a move toward inter-municipality collaboration with neighbouring municipalities as the local grassroots approach was extended toward a more global vision.

## Paltas, Ecuador

*Seeding water: management of micro river basins that provide water to the city of Catacocha and the communities of the upper Playas river basin*

Location:	Paltas, Loja, Ecuador
Affected population:	25,000 - rural
Social group:	Playas river basin - 7 communities
Primary goal:	River basin management

This experience derives from the design and implementation of improvements to the water system to reduce chronic shortages due to a combination of poor water management and drought in the 80's and 90's. The project sought to increase water supplies using micro management, reduce runoff via vegetation replenishment, recovery of ravine ecosystems, use of micro-irrigation, and strengthening of social & technical capabilities. Recovery of traditional water management schemes and techniques was also seen. The instruments were formulated and enacted in the framework of a local development plan and food security was a major guiding principle. Stimulated originally by an Inter Agency Committee, the daily operation of the scheme passed over to a community association. Not originally conceived as a risk reduction project, project leaders later recognized this facet of the scheme upon coming in contact with the CAPRADE-PREDECAN SE Project.

Water shortages in the region had become so dire due to extensive periods of drought that water service was limited to 30 minutes a day. Although the impetus for change was the recurring drought conditions, the project embraced the more structural problem of over use and inadequate management of water to create a more sustainable solution that also addressed increased demands for water as the population continued to grow.

The project involved the construction of reservoirs and “high lakes” to increase the storage capacity of water supplies. This experience was funded primarily by a national agency in response to the emergency condition of water supplies (70%). It was also funded by the local municipality and communities (30%), for a total investment of \$220,000 USD. The project was managed so well that the number of planned reservoirs and “high lakes” was more than doubled (from 60 and 30 to 124 and 70, respectively). The sum of the results was to create a much more sustainable environment with better income potentials in an area that classically has had a poverty rate of over 90%.

The experience went to great efforts to tie the construction projects to community education and empowerment. This demonstrates the “importance of combining the execution of construction projects together with capacity building activities,” as this “learning by doing” can be a very valuable methodological strategy. It seems apparent that by tying these two elements together, more projects can be accomplished for lower costs and with a higher rate of sustainability since in this manner the community as a whole gains the tools for ongoing management of their environment.

## Babahoyo, Ecuador

### *Integrated flood control and urban improvement in the city of Babahoyo*

Location:	Babahoyo, Los Ríos, Ecuador
Affected population:	85,000 - urban
Social group:	City of Babahoyo
Primary goal:	Comprehensive water management project

This experience covers the creation of a comprehensive water management plan for the city of Babahoyo, including water, waste water, storm water management and flood control from the surrounding rivers. It involved the investment of \$30M USD over a construction period of 14 years, originally spearheaded with German government support.

The project integrated several risk reduction elements into their comprehensive water management plan, reducing several of the vulnerabilities associated with water-related problems in an integral manner. Health issues related to poor drinking water were addressed on several fronts: improved water delivery, water purification, waste water system and reduced risk of flood damage to drinking water supplies.

The project has created benefits in other areas, such as strengthening of city government agencies due to enhanced capabilities. It has also allowed increased economic activity and investment of capital due to reduced risk of loss and improved perception of their city by local actors.

The project has also run into some of the conventional detrimental development - risk linkages. For example, the improved water management system has stimulated growth, with new members settling in areas outside of the flood control systems. These new issues have been handled with conventional solutions such as pumping sediment out from river bottoms to create higher, safer land for construction. Furthermore, consideration must be made as to the impact of these city-wide systems on the greater ecological zone, in particular, down-stream communities.



### Rio Ocoña, Peru

#### *Adaptability to climate change through the integrated management of the upper Ocoña river basins in the Arequipa region*

Location:	Rio Ocoña, Arequipa, Peru
Affected population:	40,000 - rural
Social group:	Upper river basins, Rio Ocoña
Primary goal:	Employment and income opportunities through environmental and river basin management

This experience involves the geographic area of the Ocoña river's upper basins, an ecologically fragile area due to its location between two deserts with superficial, fragile soils. The location was selected due to its high levels of extreme poverty and need to develop alternatives to risk creating activities. Subsequent actions are promoting up-scaling of the experience to other sub-basins.

The experience sought to create new opportunities in bio-businesses that utilized natural resources in a sustainable manner: reduce deforestation in fragile areas, increase water supplies by utilizing a network of micro-reservoirs, and by the participatory management of protected natural areas. The loss of water resources due to glacial melting related to climate change was an important conditioning factor. The use of Negotiating Tables ("Mesas de Concertación") ensured active local participation in decision making. Risk reduction actions and goals are achieved using existing development oriented organizations and institutions without the need to create new entities.

The experience involved several educational components to help adapt the local population's worldview. As the authors explain, "In looking to solve extreme poverty, it is common to observe that often poverty covers and justifies unsustainable actions that cause the deterioration of natural resources. The State tends to be, with its permissive attitude, a contributing element to instability... in creating unsustainable management solutions."

## Soritor, Peru

### *The territorial zoning plan: A tool for safe development in the district of Soritor, in the San Martín region*

Location:	Soritor, Moyobamba / San Martín, Peru
Affected population:	23,000 - urban and rural
Social group:	1 district, 57 communities
Primary goal:	Land use and territorial planning

This experience documents the disorganized settling of the Soritor district, and the results of such settlements; the need for a risk-integrated development plan and its creation; and the implementation of the development plan together with specific hurdles encountered and benefits accorded to the local population. Overcoming the weakness of local participation was also a major goal. This project was driven originally by two university students, one of whom took a job in local government as a point of entry to the problem.

This experience clearly illustrates some of the institutional difficulties in implementing progressive development plans due to lack of higher-level support or drive for improvement and/or a systemic weakness in national, regional, and even municipal, government in the face of local environmental degradation. Although a development plan was produced together with other substantial tangible results, the project is still hampered by a lack of institutional and funding continuity.

The social construction of risk is clearly illustrated in this experience, as the disorganized settlement and use of the area led to the creation of most of the hazards that the local population lives under. It took a substantial earthquake in 1990 (in which 90% of homes were lost) to start to change local attitudes toward mitigating risk. And at that, it required young, educated visionaries to help institute change.

The authors state that “the implementation of decentralized activities focused on environmental management and risk prevention empowers local populations to appropriate and own the solution. Given the knowledge, members of communities are willing to take on, and solve in a constructive manner, their own problems due to the disorganized occupation of the area.” As is evidenced by not only the lack of progress but also the deterioration of incomes, under the stewardship of municipal, regional and national government, it is increasingly clear that local populations need to be empowered to handle these matters themselves. The experience showed how improved knowledge of risk creating processes led gradually to a lower tolerance level of these, thus changing attitudes and practices, and facilitating the incorporation of such factors in development plans.

Territorial planning needs took advantage of the existing ecological-economic zoning methodology adding vulnerability elements to it and also by taking advantage of existing environmental planning structures.

## Caylloma, Peru

*Project “Root”: recovery of rural communities affected by cold spells in the province of Caylloma in the Arequipa region*

Location:	Caylloma, Caylloma / Arequipa, Peru
Affected population:	5,300 – rural
Social group:	Communities in 2 high elevation valleys
Primary goal:	River basin management

This experience was driven by emergency response to a cold wave in June & July of 2004 via the rehabilitation and recovery of the agricultural sector. Promoted by an international NGO and national NGO with international funding, the project sought to: 1. improve the quality of animal feed, 2. improve animal health, 3. provide risk management training and organization. The project starts from livelihood and income and integrates risk management into this vision to create more sustainable options.

Although the project focuses on animal health and nutrition, not risk management, this can nonetheless be considered a point of convergence for several risk management themes: introduction of higher-yielding grasses in feed areas has reduced erosion in vulnerable areas; healthier, fatter animals provide more, and higher quality, food.

The project looked to change the local population’s attitude toward risk management by giving them ownership of the project, together with familiarization with a culture of prevention. For example, to provide local control for ongoing risk management, they reactivated the old civil defense committees. They introduced special crops best suited for high altitudes using grass-roots based campaigns such as “Días del Campo” to educate individuals in each community.

The level of extreme poverty within which alpaca producers live makes them vulnerable to permanent every-day risk. Emergency response is most effective when it considers development actions stemming from the needs and expectations of the affected population such that they may possibly remove themselves from a permanent cycle of loss. Disasters also affect the stability of the people that have suffered loss; restoring their feeling of security and self-confidence by providing the ability to generate income and reduce their own risk in a tangible, albeit often overlooked, way. Discussion and reflection as to the impacts of disaster helped the local community to understand risk creation processes and their own participation in these. This then helps in incorporating risk reduction elements in local development plans. On the other hand, lack of permanence and support by local government authorities has had negative impacts on the sustainability and strengthening of the project.

## Ayabaca, Peru

### *Municipal associations as a strategy for the representation and inclusiveness of Ayabaca in the regional development of Piura*

Location:	Ayabaca, Piura, Peru
Affected population:	17,000 - urban and rural
Social group:	Several townships and communities
Primary goal:	Development planning and support using risk management principles

This experience stems from work initiated by several mayors from under-served municipalities to resolve landslide issues along the primary road in and out of their territory. Since this initial alliance, the municipalities have formalized the arrangement by creating a “mancomunidad” (a grouping of municipalities), created strategic planning and risk management plans, obtained co-financing from a variety of sources, and forged relationships with two universities to train and educate others.

This project emblemizes the notion of “think global, act local” on several levels. When confronted with the common dilemma that “The highest-impact decisions many times do not take into account the participation of local actors”, local mayors in the area got together and assembled the necessary components to create a strategic development and risk management plan, leveraging national and international resources for the technical assistance and financial support necessary to implement their objectives.

This project is a prime example of how risk management can stimulate development by reducing vulnerabilities that otherwise made the infusion of capital, and thus growth, a loosing idea. Furthermore, the original risk-driven project led to the creation of a “mancomunidad”, a legal alliance of municipalities, which has filled an important role as interlocutor between the municipalities and NGOs, national government, as well as helping to secure both public and private financing.

Although the experience has led to improvements for the municipalities, there are remaining problems. The creation of the “mancomunidad” has enabled the municipalities to have a stronger, united voice when dealing with regional, national and international interests. However, it has been unable to dislodge the strong support that the mining interests have at the higher governmental levels. On another front, the “mancomunidad” has in ways diminished the local’s voice as there has not yet been any direct dialogue between it and civil society at large. Finally although the risk reduction component was critical in kick starting the scheme, the lack of technical resources and understanding of the wider dynamic of risk-creating processes have severely reduced the development of risk reduction in the framework of the development component.

## Annex 2: The Top 48 Systematization Projects

*The 16 most significant experiences (4 per country) are indicated in parenthesis using the terminology TOP 16; the top experience for each country is indicated using the terminology TOP 4; summaries of the top 16 cases are presented in the former annex. The full text in spanish for the top 48 projects can be found on the internet at <http://www.comunidadandina.org/predecan/catalogovirtual/>*

### Bolivia

- **La Paz, Bolivia**
  - o City Culture: Bringing together education and disaster risk in La Paz, Bolivia.
- **Santa Cruz, Bolivia (TOP 16)**
  - o Community forest management: Sustainable development of the indigenous community Chiquitano in Monte Verde, Santa Cruz.
- **Altiplano Norte #1, Bolivia (TOP 4, merged with Altiplano Norte #2, Bolivia)**
  - o Local agricultural risk management strategies: Recovery of bio-indicators in the high plateau of north Bolivia.
- **Pojo, Bolivia**
  - o Outline and architecture of productive projects that incorporate risk management techniques, municipality of Pojo, Cochabamba.
- **Hoyadas, Bolivia**
  - o Reconstruction of Hoyadas: disaster as opportunity for sustainable development of a rural community.
- **Sica Sica y Pucarani, Bolivia**
  - o Food security and vulnerability reduction, rehabilitation of soil and water resources in the municipalities of Sica Sica and Pucarani, La Paz, Bolivia.



- **Altiplano Norte #2, Bolivia (TOP 4, merged with Altiplano Norte #1)**
  - o Insurance as a financial tool and integral model for the management of risk in agricultural production in the high plateau of north Bolivia.
- **Ravelo, Bolivia (TOP 16)**
  - o Vulnerability reduction: risk and rehabilitation of soils in the municipality of Ravelo, department of Potosi, Bolivia.
- **Oruro, Cochabamba y Norte de Potosi, Bolivia**
  - o Creating risk management habits in children and adolescents in the departments of Oruro, Cochabamba and north of Potosí, Bolivia.
- **Sud de Potosi, Bolivia**
  - o Local capacity building for preparation and prevention in the face of disaster risk in the extreme south of Potosí.
- **La Paz, Bolivia (TOP 16)**
  - o Participatory planning, disaster preparation, water and its purification in the municipalities of Aiquile, Villa Tunari, San Xavier, San Julián, Concepción y Riberalta; and investigation of the resilience in the face of disasters in four zones of the city.
- **Mojos, Bolivia**
  - o The Camellones: recovering local sources of knowledge for the production of food in the floodplains of Mojos.

## Colombia

- **Manizales #1, Colombia (TOP 4, merged with Manizales #2)**
  - o Local risk management in an Andean city: Manizales as an integral, illustrative, evaluated case.
- **Paéz, Colombia (TOP 16)**
  - o Strategic planning for the integral reduction of risks in the municipality of Paéz, Cauca, from the perspective of the worldview of the indigenous community of the Nasa.

- **Galeras, Colombia**
  - o Galeras volcano: an integral experience in risk management associated with eruptions, preparedness and response.
  
- **Tumaco, Colombia**
  - o Process of socialization of the local emergency plan and contingencies for earthquake liquefaction processes and tsunamis in the urban area of Tumaco.
  
- **Bogota #1, Colombia**
  - o Use of volunteer building inspectors to establish the habitability of homes affected by a strong earthquake in the city of Bogotá.
  
- **Bogota #2, Colombia (TOP 16)**
  - o Incorporation of prevention and risk reduction themes into the planning tools of Bogotá.
  
- **Puente Aranda, Colombia**
  - o Technological risk levels and operating conditions for the petrochemical complex in the zone of Puente Aranda, Bogotá.
  
- **Bogota #3, Colombia**
  - o Bogotá with its feet on the ground: A strategy for the incorporation of risk in citizens' culture.
  
- **Olaya Herrera, Colombia**
  - o Prevention and risk reduction in the formulation of a territorial regulatory scheme in the municipality of Olaya Herrera.
  
- **Risaralda, Colombia (TOP 16)**
  - o Risk management at the urban and rural level in the department of Risaralda via a consolidation of knowledge of hazards and risks.
  
- **Manizales #2, Colombia (TOP 4, merged with Manizales #1)**
  - o Guardians of the slopes: a community-based, environmental education project for the prevention and mitigation of landslide risk.

- **Caldas, Colombia**
  - o Risk reduction and recovery construction projects in the 27 municipalities of the department of Caldas.

## Ecuador

- **Rikuryana, Ecuador (TOP 16)**
  - o Community answer to emergency and disaster mitigation.
- **Machangara y Monjas, Ecuador**
  - o Recovery of the Machángara and Monjas rivers.
- **Los Chillos, Ecuador**
  - o Community organization and participation and risk management in the Los Chillos valley.
- **Cotopaxi, Ecuador**
  - o The community organizes to manage volcanic risk associated with Cotopaxi.
- **Penipe, Ecuador (TOP 4)**
  - o Territorial development in times of emergency due to activity of the Tungurahua volcano.
- **Cordillera Occidental Central, Ecuador**
  - o Strengthening of response capabilities for natural hazards in the western central mountain range.
- **Base de educación, Ecuador**
  - o Education, the basis for the management of risk and sustainable development.
- **Canton Cuenca, Ecuador**
  - o Integral territorial planning for the municipality of Cuenca: a tool for local risk management.

- **Paltas, Ecuador (TOP 16)**
  - o Seeding water: Management of micro river basins that provide water to the city of Catacocha and to the communities of the upper Playas river basin.
- **Babahoyo, Ecuador (TOP 16)**
  - o Integrated flood control and urban improvement in the city of Babahoyo.
- **Rio Jubones, Ecuador**
  - o Hydrological resource management and natural risk reduction: the Jubones river basin.
- **San Cristobal, Ecuador**
  - o Managing the sustainability of developments in San Cristóbal: The process of environmental and risk management.

## Peru

- **Rio Ocoña, Peru (TOP 4)**
  - o Adaptability to climate change through the integrated management of the upper Ocoña river basins in the Arequipa region.
- **Cusco, Peru**
  - o Organization and implementation of the system of management, prevention and control of forest fires in the Cusco region.
- **Tabaconas, Peru**
  - o Territorial zoning in the peasant farming communities of San Miguel de Tabaconas, San Ignacio, and Cajamarca in the Peruvian Amazon Region.
- **Soritor, Peru (TOP 16)**
  - o The territorial zoning plan: A tool for safe development in the district of Soritor, in the San Martín region.
- **Caylloma, Peru (TOP 16)**
  - o Project “Root”: Recovery of rural communities affected by cold spells in the province of Caylloma in the Arequipa region.

- **Ayabaca, Peru (TOP 16)**
  - o Municipal associations as a strategy for the representation and inclusion of Ayabaca in the regional development of Piura.
  
- **Arequipa, Peru**
  - o Pilot plan for education and conscience raising when faced with the volcanic risks associated with the Misti volcano in Arequipa.
  
- **Ancash, Peru**
  - o Formation of a support group for the development of the province of Yungay, in the Ancash region.
  
- **Macro Región Sur, Peru**
  - o The “Gríde South” initiative: socialized experiences for the management of disaster risk in the south of Peru.
  
- **Morropón, Peru**
  - o Incorporation of risk analysis in the territorial zoning plan of the district of Morropón in the Piura region.
  
- **Rimac, Peru**
  - o Municipal prevention and preparedness schemes for mud slides and floods in the Rimac river basin.
  
- **Piura, Peru**
  - o Strengthening of social networks for promoting the incorporation of risk reduction in the development process in the Piura region.



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