Bolivia

Participatory Disaster Risk Management and Food Security in the Río San Pedro Watershed

Lessons Learned

gtz Sector Project Disaster Risk Management in Development Cooperation

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Foreword

In recent years, natural disasters worldwide have increased significantly in both scale and number. It is to be assumed that climate change will further exacerbate this trend. The destructive impacts of disasters unfold not only at the moment they strike, but also as they continue to constrain long-term development in the affected regions. They lead to poverty, because they damage buildings, infrastructure and the base of production. Poor people have neither the necessary resources nor the expertise to protect themselves adequately against extreme natural events, or recover from disasters. This leaves them particularly vulnerable. There is a direct link between disasters and poverty, at both the local and national levels. They are mutually reinforcing. In many countries natural disasters are jeopardising the achievement of the Millennium Development Goals (MDGs), and thus pose a challenge for international development cooperation.

Yet disasters are not inevitable! Targeted disaster risk management can help break the vicious circle of poverty and disaster risk. By planning and implementing disaster prevention and mitigation measures on the basis of risk analyses, risks are reduced and – if natural event does strike – the damage is mitigated. Disaster risk management thus helps build sustainable development. Having said that, it is not sufficient to implement one-off measures. Rather, disaster risk management must be integrated into national development strategies (e.g. for poverty reduction, regional planning), and as a cross-cutting theme into other sectors (e.g. agriculture, environment, education). Only then can risks be effectively reduced. Disaster risk management measures therefore need to be mainstreamed in development cooperation projects.

On behalf of the German Government, the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH implements projects and programmes that mainstream disaster risk management in partner countries. Yet each project means not only a further step toward mainstreaming disaster risk management in development cooperation, but also the accumulation of further experience. It is therefore important not only to integrate disaster risk management into development projects, but also to document, publish and exchange the experiences gained.

Within the scope of its knowledge management, GTZ systematically analyses its experiences and makes them available to the public and to national authorities. It thus contributes to the international exchange of experience. The ongoing conceptual development and effective implementation of disaster risk management both profit from this.

The present publication is one of a series in which project experiences are systematically analysed. It describes and analyses disaster risk management and food security measures that GTZ successfully and sustainably implemented - on behalf of the German Government - in cooperation with its national partners and the local population concerned in North Potosí, one of the poorest regions in Bolivia. It also identifies the difficulties that a project can encounter.

Our thanks go to all those involved in the preparation of the study, and we hope that readers will find the information it contains useful.

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Summary

The Río San Pedro watershed is one of the poorest regions in Bolivia. Agriculture forms the population's main source of income, although farming can only be practiced on a limited scale due to the altitude. Every year, extreme natural events inflict significant damage on agriculture, and thus on the population's livelihoods. Through the project "Disaster Risk Management and Food Security in the Río San Pedro Watershed, Bolivia (PGRSAP)", GTZ and two municipal associations supported people in the region in developing an appropriate strategy for disaster risk management, and thus in protecting their livelihoods.
As a first step in strategic development the project, the population and the municipal administrations jointly analysed hazards, vulnerabilities and risks in the Río San Pedro watershed. The actors identified the risk of disaster induced by drought, erosion or landslide as being especially high. These events provoke food crises, cropland is lost and infrastructure is destroyed. To reduce these disaster risks, PGRSAP combined disaster risk management with food security measures.

It pursued this approach on three levels. First of all PGRSAP created an enabling framework for a functioning disaster risk management system. It trained local actors in disaster risk management and mainstreamed disaster risk management in the municipal administrations and local planning processes. Secondly it implemented measures for drought prevention, erosion control, river training and slope stabilisation. Finally it established a participatory monitoring system.

Certain implementation strategies were conducive to the success of the project. For instance, the population were involved in the planning and implementation of the measures right from the outset, which aroused their interest and led them to identify strongly with the project. The prospect of a reliable water supply during the dry season motivated people to become actively involved. Throughout the implementation process, local risk reduction practices, traditional forms of mutual assistance and traditional prevention methods were combined with innovative technologies. This meant that the activities were adapted to the local context and accepted by the population.

A further key success factor was the availability of corresponding financial resources to be able to implement rapidly visible risk reduction measures (e.g. micro-irrigation schemes, gabion barriers etc.). This enabled the population to see a direct and visible benefit emerging from disaster risk management.
As a result of the project farmers were able to stabilise and increase the area of land under cultivation, and to increase their production. The municipal associations and the municipal administrations have been sensitised to the importance of disaster risk management in their region, and now actively support preventive measures. The village population too now actively call for disaster risk management measures to be included in municipal budget plans.

PGRSAP thus made a key contribution toward easing the food security situation, and helped build sustainable development in the region, especially by mainstreaming disaster risk management at the local level.




1 Introduction: Natural Disasters – a Development Challenge for Bolivia

Bolivia is one of the poorest countries in Latin America. 60 percent of the population live below the poverty line.[1] Extreme natural events such as droughts, torrential rainfall or landslides, which hit the country every year and often turn into disasters, exacerbate the situation. This has fatal consequences, particularly for the small farmer population in rural areas. The mostly poor subsistence farmers are unable to compensate crop losses. Erosion makes their cropland useless. So for the Bolivian population disasters mean not only an interruption in agricultural production and damage to infrastructure, but also in many cases the loss of those vital resources on which their livelihoods depend.

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH supported the population in the particularly hard-hit region of the Río San Pedro watershed in sustainably protecting their livelihoods. In the "Disaster Risk Management and Food Security in San Pedro Watershed, Bolivia" (PGRSAP) project, GTZ combined food security measures[2] with disaster risk management components. The project was launched in October 2002 and ended in December 2006. It was financed through funds set aside by the German Federal Ministry for Economic Cooperation and Development (BMZ) for development-oriented emergency and transitional aid. Projects for development-oriented emergency and transitional aid are designed to build a 'bridge' between the acute situation of emergency and more long-term development processes.

The present publication describes how and to what extent the project succeeded in achieving its objectives. It addresses the following questions: What planning instruments, methods and measures did the PGRSAP project employ in response to the disaster risks? How were the local population involved in the process? To what extent could food security be stabilised by disaster prevention measures?

First of all the context in the Río San Pedro watershed is described and explained (Section 2). The risk posed to food security in the project region made it imperative to implement measures for disaster risk management and food security. Project planning was based on a risk analysis (Section 3.1). This analysis identified the existing risks as well as local knowledge on disaster risk management. On the basis of the risk analysis, three areas of intervention were identified (Section 3.2): the creation of an enabling framework for a local disaster risk management system, the implementation of measures to prevent and mitigate the impacts of drought, erosion and landslides, and the introduction of participatory monitoring. Section 4 describes the results achieved through these measures. During project implementation, as well as retrospectively, it emerged clearly which internal and external factors were positively influencing the achievement of objectives, and what the corresponding challenges were (Section 5). Building on these lessons learned, Section 6 concludes with recommendations for future projects.




1 UNDP: Bolivia Human Development Report 2005. La Economía más allá del Gas. La Paz 2005.

2 In this project, the term 'food security' was used in a wider sense that went far beyond merely securing the food supply, and also included protecting the production base and preserving people's livelihoods. This is the holistic sense in which the term is used in the present brochure.

2 The Context: Food Insecurity in the Río San Pedro Watershed

The Río San Pedro watershed is located in the extreme north of the North Potosí region, in south-western Bolivia. It covers an area of 2,145 km², where some 28,500 people inhabit 238 villages. The region is divided into 13 municipalities that have joined forces to form the association Mancomunidad de Municipios del Norte de Potosí (MMNP). Five of these municipalities participated in the project: San Pedro de Buena Vista, Toro Toro, Acasio, Sacaca and Arampampa[3] (see Figure 1).

The region is part of the eastern Andean slope, as a result of which the terrain is characterised by uneven relief. The region can be classified into three altitude zones: valleys (2,300 m to 3,100 m above sea level), mountain slopes (3,100 m to 3,900 m above sea level) and puna (over 3,900 m above sea level). All three zones are characterised by extremely low vegetation cover that is further reduced by inappropriate forms of management. Loose soils are susceptible to erosion, which further reduces the already low soil fertility. Agriculture is further constrained by irregular precipitation that often comes as torrential rain (annual mean: 700 mm p.a.).

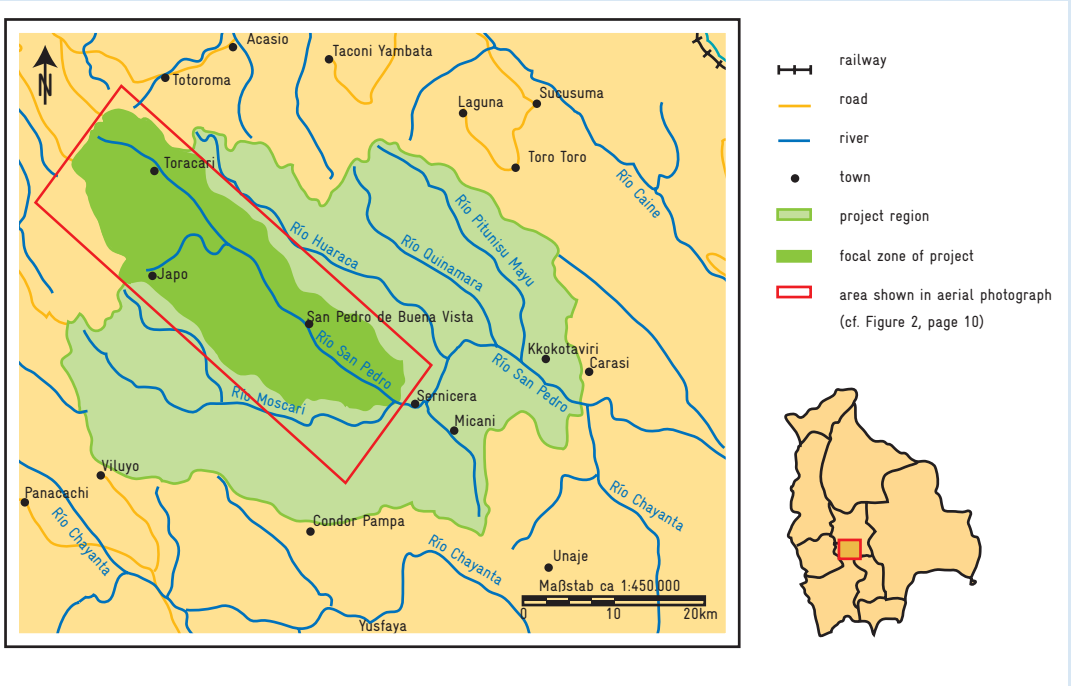

Figure 1:
The pilot region of the PGRSAP project

3 During the course of the project the five municipalities also joined the Mancomunidad de Municipios de la Cuenca del Río Caine (MMCC) association, as they believed this was in their best interests. In the long term they plan to withdraw from both the MMNP and the MMCC, and form their own municipal association.

The limited potential for agriculture is a key factor behind the poverty experienced by families in the region, most of whom are small farmers. 72 percent of the population live in absolute poverty, North Potosí being one of the poorest regions in Bolivia. Food scarcity is a chronic problem. Almost three-quarters of the children are malnourished, and 23 percent are undernourished. Nearly all households lack electricity, water and sanitation. Health services, educational institutions and communications facilities in the region are sparse, and inaccessible for broad sections of the population due to the poorly developed road network and inadequate means of transport. Most of the population are forced, at least temporarily, to migrate to larger towns such as Cochabamba or Chapare province[4] and try to make a living as casual labourers.

In recent decades the already fragile social situation of many rural families has worsened even further. The increase in extreme climatic events such as droughts, heavy rain or sudden onset of cold weather has caused acute food crises and loss of income. At the same time – also as a result of at least temporary migration by the younger generation – traditional forms of mutual assistance are falling into oblivion.

This loss of risk reduction strategies combined with the further impoverishment of a large proportion of the population increases their vulnerability to natural disasters.

To break this downward spiral of development, the PGRSAP project began promoting disaster risk management. Only by reducing disaster risk could the population's livelihoods be sustainably protected.

The lead executing agency of PGRSAP at the national level was the Ministerio de Desarrollo Sostenible y Planificación (MDSP – Ministry for Sustainable Development and Planning). The municipal associations Mancomunidad de Municipios del Norte de Potosí (MMNP) and Mancomunidad de Municipios de la Cuenca del Río Caine (MMCC) were the project partners at regional level. They coordinated the international cooperation of the region. MMNP and MMCC were also responsible for transferring the measures implemented by PGRSAP to other municipalities.

4 Especially since the 1980s Chapare, located in the north of the Cochabamba region, has emerged as one of the major coca cultivation areas.

Definitions

The term **disaster risk** refers to the scale of the anticipated damage and losses that a natural event can cause in a region. It is calculated as the product of the factors hazard and vulnerability.

A **hazard** is created by an anticipated extreme natural event (e.g. flooding). The degree of hazard is determined by the nature, scope and intensity of the extreme natural event, as well as the probability of its occurrence, its frequency and its duration.

Vulnerability refers to the inability of a section of the population hit by an extreme natural event to resist or avoid its impacts, or recover swiftly from them. Vulnerability may be due to politico-institutional, economic and/or socio-cultural factors.

Disaster risk management in Technical Cooperation comprises programmes, projects, measures and/or instruments that aim to reduce the risk and scale of possible disasters in regions at risk. The activity areas of disaster risk management are "risk analysis", "disaster prevention and mitigation" and "disaster preparedness".

The **risk analysis** identifies the existing natural hazards, as well as the vulnerability of the respective local population and the resources on which they vitally depend. On this basis potential losses can be estimated and corresponding measures identified.

Disaster prevention and mitigation involves activities designed to prevent and protect against the occurrence of disasters in the medium and long term. These include political, legal, administrative and infrastructural measures designed in response to the hazards, as well as measures to influence the lifestyles and behaviours of the population at risk with a view to reducing their vulnerability to disasters.

Disaster preparedness comprises all measures that can be implemented in case of disaster in order to swiftly and effectively carry out evacuations, save human lives, reduce losses and damage, and deliver emergency aid. Comprehensive disaster preparedness includes inter alia early warning systems, contingency and emergency plans, coordination structures, stockpiling of emergency supplies, and training.

The key project partners at the local level were the municipal administrations of San Pedro de Buena Vista, Toro Toro, Acasio, Sacaca and Arampampa. Together with the GTZ-supported project they planned and implemented all the activities. They are also responsible for continuing the initiated processes after the completion of the project. Within the municipal administrations the Consejos de Desarrollo Municipal (Municipal Development Councils) played an important role in the planning of the disaster risk management measures, as did the technical units in implementing them. Furthermore, another key actor in the project was the local population, who were also intensively involved in planning and implementing the measures.

In this brochure the term "PGRSAP" is used to refer to all the institutions and partners involved in the process.

3 The PGRSAP Project: Preserving Livelihoods and Protecting Them Against Disaster Risks

The region of intervention selected by the PGRSAP project was the Río San Pedro watershed, because the hazards identified are closely linked to the water balance in the region: water scarcity during periods of drought, and erosion and landslides during the rainy season.

Given its high population density and relatively easy accessibility, the upper course of the Río San Pedro was chosen as the pilot region. The region is congruent with the boundaries of the municipality of San Pedro de Buena Vista. The municipality comprises 51 villages located across an area of 440 km². Building on the results of a risk analysis, PGRSAP carried out the first activities there jointly with the village inhabitants. Only in the subsequent phase (from 2004 onward) did the project transfer the proven instruments to four further municipalities – Toro Toro, Acasio, Sacaca and Arampampa –, where it implemented further measures.

3.1 Identifying the risks

The starting point for the following project activities was the risk analysis, which provided information on the hazards and vulnerabilities faced by the population. A risk analysis is an absolutely essential basis on which to identify, plan and implement appropriate and effective disaster prevention measures.

3.1.1 Risk analysis methodology

Only limited data were available on the peripherally located project region, however. PGRSAP therefore gathered most of the data itself, on the basis of which it produced maps. In order to manage this major task more swiftly, the cartographic materials were prepared jointly with other institutions operating in the region. For instance PGRSAP entered into cooperation with the Swiss-Belgian Integrated Watershed Management (PROMIC) programme, which digitised topographic map sheets for the entire intervention zone and used these to produce an elevation model for the region. Together with the GTZ Food Security in Arque, Bolivar and Tapacari Provinces (PROSANA) programme, the project produced a database on past extreme natural events from the perspective of the local population. This information provided a broad orientation with respect to existing hazards in the project region. The basis for the Geographic Information System (GIS) was provided by a photo-mosaic of aerial images of the pilot region (see Figure 2). This includes data on current land use, soil degradation, infrastructure, settlement and the

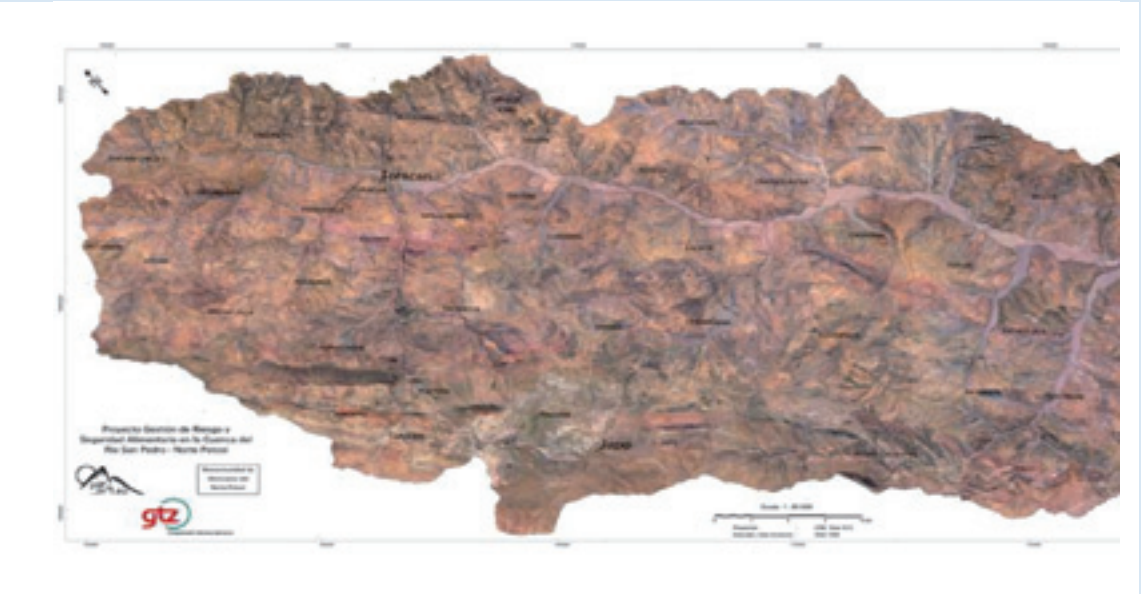

Figure 2: Aerial photograph of the project region

hydrology of the region. Parallel to the collection of technical data, together with the population PGRSAP conducted participatory risk analyses at village level. By preparing so-called mapas parlantes (maps hand-drawn by the population; see Figure 3), results chains (see Figure 4), agricultural calendars and precipitation cycles, the population's knowledge was recorded and made available for utilisation.

On the one hand the participatory risk analyses were used to assess the population's risk perception and identify their strategies for minimising those risks. On the other hand they stimulated the population's interest in disaster risk management, thus helping ensure that the population would identify with the future measures (see Figure 5).

Figure 3:
Risk map drawn by village inhabitants themselves

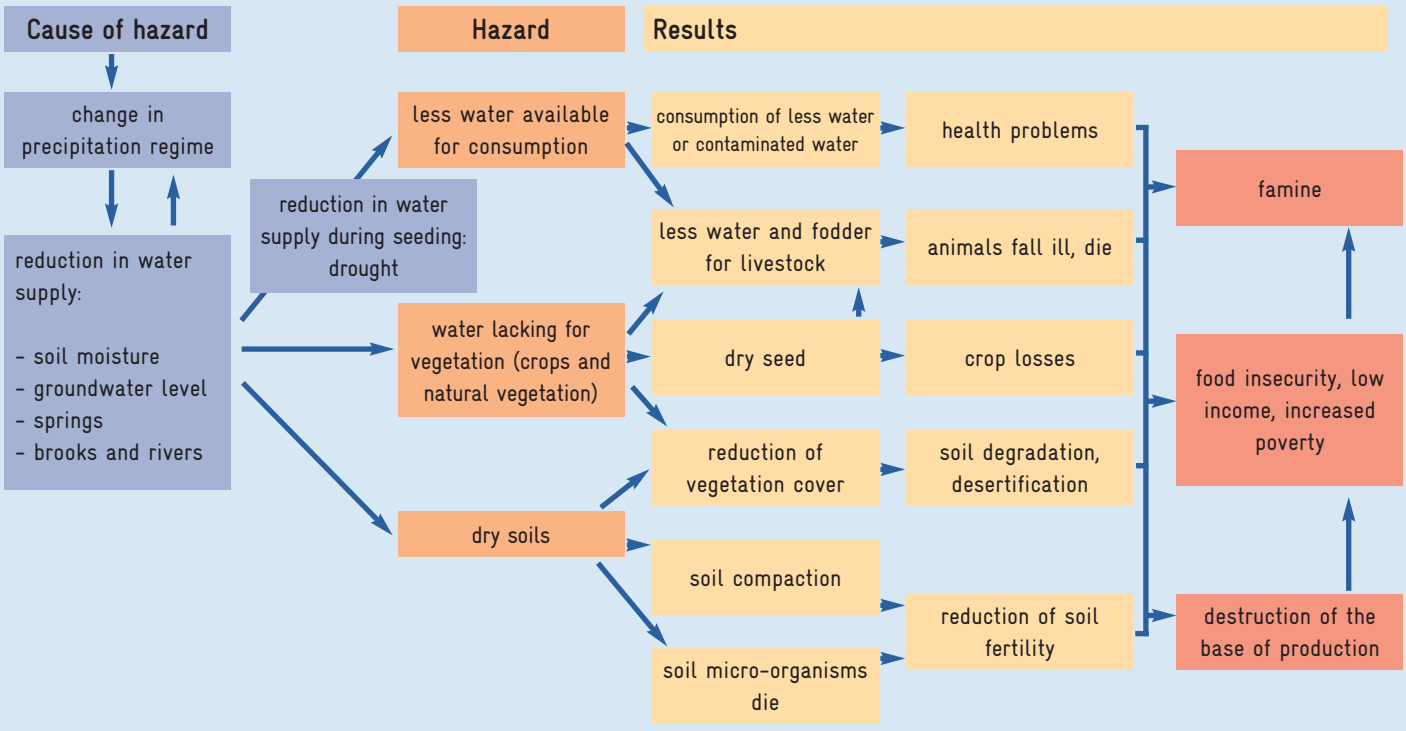

Figure 4: Results chain for the hazard 'drought'

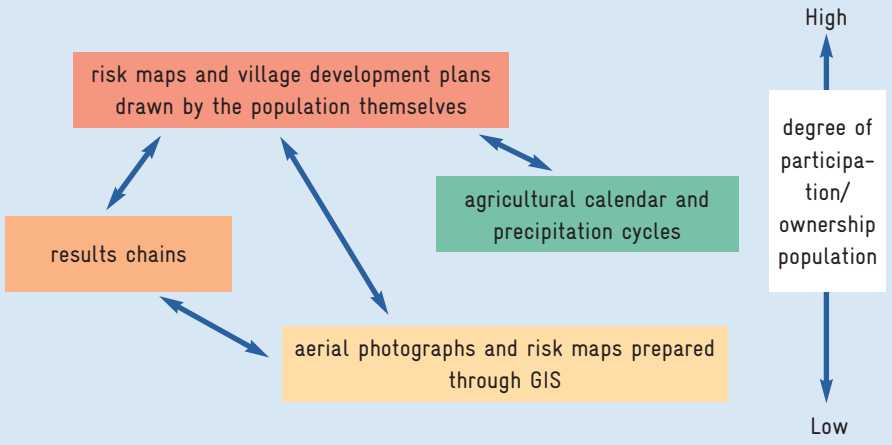

Figure 5:
Risk analysis instruments and degree of participation by the population

3.1.2 Risks and their impacts

Within the scope of the risk analysis the village inhabitants identified drought, erosion, landslides, hail and the sudden onset of cold weather as placing their livelihoods at risk. The extreme poverty, strong population growth, permanent food insecurity, one-sided dependency on agriculture, limited access to basic services and the fragile ecological conditions exacerbate the population's vulnerability to extreme natural events.

When a period of drought strikes, the food insecurity that already exists is transformed into an acute food crisis. The probability of disease and epidemic rises, and the population is threatened to be plunged deeper into poverty by crop and livestock losses. The continuous advance of erosion exacerbates the loss of vegetation cover, causing further poverty. The destruction of infrastructure (e.g. roads, irrigation schemes, houses etc.) by landslides not only causes major economic losses, but also isolates the region from the outside world (see Table 1).

Natural hazard	Factors causing vulnerability	Impacts observed
Drought	– extreme dependency on agriculture – dryland farming/dependency on precipitation water – lack of financial reserves – chronic malnutrition and undernourishment – loss of cultural values and practices (e.g. systems of mutual assistance) – lack of access to basic services (health services, road network etc.)	– food crisis caused by crop losses – increased susceptibility to disease caused by lack of drinking water – loss of livestock due to lack of fodder and water – poverty
Erosion	– extreme dependency on agriculture – crop farming and grazing of steep slopes – vegetation cover destroyed by overutilisation and logging	– loss of cropland and thus of the base of production – poverty
Landslides	– hazardous location of infrastructure and cropland – vegetation cover destroyed by overutilisation and logging	– economic losses of buildings and infrastructure – supply bottlenecks due to isolation – loss of cropland

Table 1: Natural hazards, factors causing vulnerability and impacts identified by the risk analysis

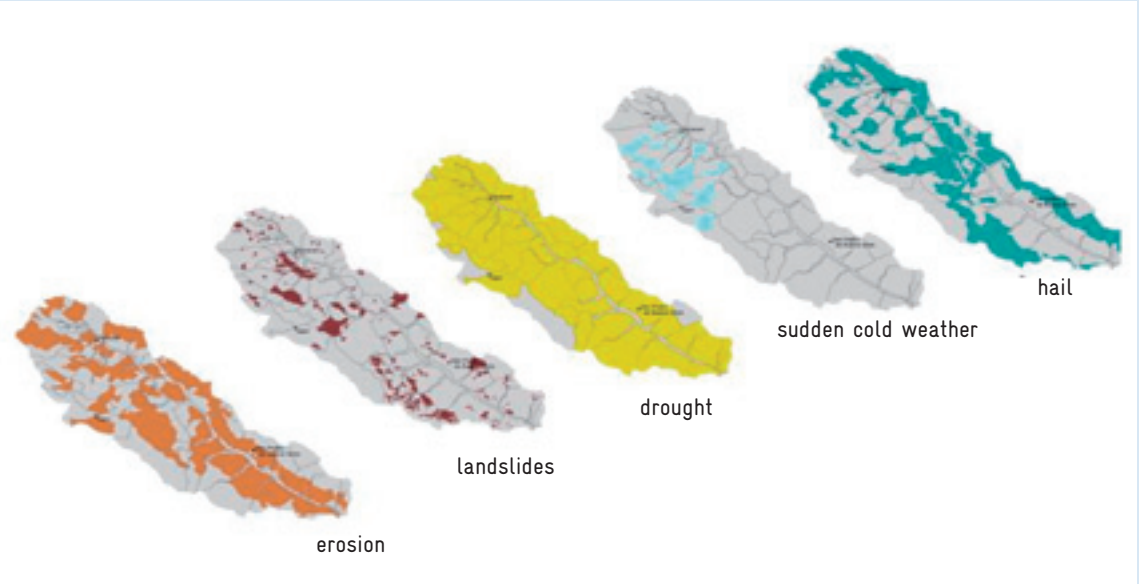

Figure 6: Spatial distribution of hazards in the project region

Drought and erosion are most widespread in the region (see Figure 6). Yet landslides often also occur, and can cause considerable damage. By contrast, the sudden onset of cold weather is encountered mainly in the uplands (the puna).

The risk analysis revealed that the population of the uplands were already applying risk management strategies that would enable them to respond to the sudden onset of cold weather, and thus prevent crop losses.

3.1.3 Local risk reduction strategies

Traditionally, various risk reduction strategies have existed in the project region. The population possess good bioclimatic knowledge that enables them to interpret meteorological signs and predict the probability of a hazard. To prevent crop losses, farmers for instance use different seed varieties for a given crop (e.g. maize and potato). This ensures that at least some of the seed survives, even if extreme climatic events do occur. They also stockpile supplies by preserving foods (dried meat etc.). Another method traditionally practiced in the Río San Pedro watershed is the digging of seepage ditches for storing moisture in the soil. Over the course of time, however, the migration of the younger population to urban areas (among other factors) has meant that this method has increasingly fallen into obscurity.

Since society in the Río San Pedro watershed has lived from agriculture for generations, its whole life rhythm is geared to the agronomic calendar. As a result, a broad body of knowledge has accumulated on how to interpret wind directions, cloud formations, animal behaviour etc., so that it becomes easier to forecast looming extreme meteorological events (e.g. hail or heavy rains). (See GTZ/PGRSAP: "Percepciones culturales sobre riesgo natural y relaciones de género en comunidades del extremo Norte de Potosí". Cochabamba 2003)

3.2 Planning and implementing risk-reducing measures

On the basis of the risk analysis, PGRSAP identified the measures to be taken in order to protect people's base of production through appropriate disaster risk management. The activities identified can be classified

into three activity areas: creating an enabling framework for a local disaster risk management system, measures to prevent and mitigate drought, erosion and landslides, and the introduction of participatory monitoring.

3.2.1 Creating an enabling framework for a local disaster risk management system

Disaster risk management can only make a sustainable contribution toward food security if and when it is locally integrated. This creates a need for awareness-raising and training measures, and also means that disaster risk management must be institutionalised and mainstreamed in the relevant procedures.

Training local actors

A key precondition for the joint planning process was the sensitisation of the municipal administrations, the technical personnel employed there and the members of the Consejo de Desarrollo Municipal (CDM – Municipal Development Council) to the need for disaster risk management. A next step involved the sensitisation of the population by representatives of the municipalities, as well as project staff. In plenary assemblies the individual villages elected representatives for disaster risk management. PGRSAP trained the village and municipal representatives, technical personnel and some members of the CDM in the conduct of risk analyses, disaster risk management measures and the participatory preparation of village plans.

Institutionalising disaster risk management in the municipal administrations

In the course of the project the municipal administrations established within the Municipal Development Council a specially-created Commission for Environmental Protection and Disaster Risk Management (Comisión de Medio Ambiente y Gestión de Riesgos). At the same time they made available technical staff for the planning and implementation of disaster prevention measures within the technical units of the municipality. Interaction between the individual (operative, normative and organisational) levels within the municipality was formalised, and a cohereht

Example:

Planning and implementing afforestation measures

In its village development plan, a village decides to afforest two degraded sites of three hectares each. Since the funds available are only enough for one site, the village representatives and the Commission for Environmental Protection and Disaster Risk Management jointly discuss which of the two sites should be afforested. The Commission also considers whether the afforestation measures fit into the village's overall disaster risk management strategy. In order that the heavily overgrazed areas located close to the afforestation site are not further degraded and the slope not destabilised, the Municipal Council passes a regulation declaring those areas out of bounds for grazing for the next two years. Implementation of the measure (e.g. selection of tree species, fencing off etc.) is being planned by the technical unit together with the village population, who will be carrying out the afforestation under the guidance of the technical staff.

Level	Body	Roles
OPERATIVE	technical unit for disaster risk management	planning, implementation and follow-up
NORMATIVE	municipal council sub-prefecture	issue of municipal regulations, provisions at the level of the sub-prefecture
ORGANISATIONAL	municipal development council: commission for environment and disaster risk management	promotion and participation, management of coherence, prioritisation and administration of projects

Figure 7: Institutionalising disaster risk management at the local level

disaster risk management strategy was thus developed (see Figure 7). Under this strategy the Commission for Environmental Protection and Disaster Risk Management is responsible in particular for the prioritisation and administration of disaster risk management projects. The Municipal Council performs the task of preparing municipal regulations. The technical unit is responsible for the planning, implementation and monitoring of the measures.

Integrating disaster risk management into planning processes

Together with the population, the village representatives trained as trainers for disaster risk management held workshops to analyse hazards and vulnerabilities. The results were integrated by village inhabitants into village development plans prepared on a participatory basis. Building on this the villagers identified disaster prevention measures, which they then prioritised and incorporated into the development plans. To create incentives the municipal administration organised the preparation of the village development plans as a competition, and awarded prizes of implements to the villages with the best plans. The infrastructural disaster risk management measures identified as necessary by the villages (see Table 2) were then discussed with the municipal administrations and incorporated into the respective annual budgets.

Hazard	Disaster risk management measure identified
Drought	– complementary irrigation using rainwater harvesting basins and micro-irrigation schemes
Erosion	– terracing – construction of seepage ditches – soil amelioration – pasture management
Landslides	– erection of gabion barriers – pasture management – afforestation of degraded sites

Table 2: Infrastructural disaster risk management measures identified by the risk analysis

Since the project was launched, this process has been repeated by villages and municipal administrations on an annual basis (see Figure 8). One key result of the process of negotiation between villages and municipalities is that disaster risk management measures are being and will be integrated into the new municipal development plans that are prepared every five years. All five municipalities have reserved a fixed amount for disaster risk management measures in their budgets that is equivalent in each case to around five percent of the total budget.

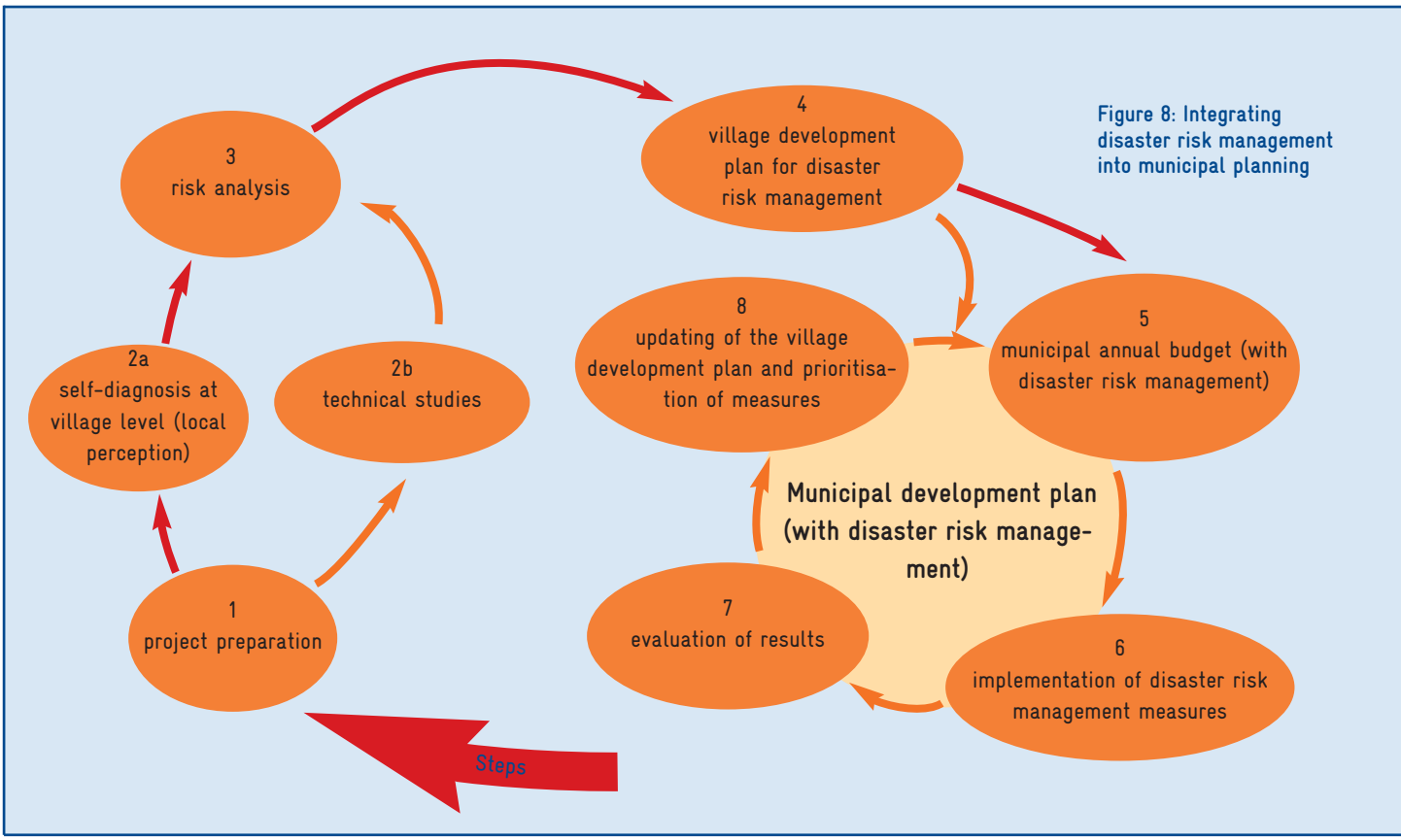

Figure 8: Integrating disaster risk management into municipal planning

Figure 9: Rainwater harvesting basin for complementary irrigation

3.2.2 Infrastructural measures to prevent and mitigate the impacts of natural events

Alongside the measures to institutionalise and mainstream disaster risk management, infrastructural measures were implemented to help prevent and mitigate the impacts of drought, erosion and landslides. The results of these measures swiftly became evident, which motivated the population to become actively involved.[5]

Drought prevention measures

To lower vulnerability to drought and reduce the possibility of a food crisis, PGRSAP decided to increase the area of land under irrigation. Before the project was launched only ten percent of farmland was irrigated.

Until that point, the population were using diverted river water. Rainwater collection methods were largely unknown to them. This limiting of irrigation to river water meant that water was only being delivered to cropland in valleys. The PGRSAP measures aimed to help protect a major proportion of crops through additional irrigation. This complementary irrigation is now being realised through rainwater harvesting basins (see Figure 9) and micro-irrigation schemes.

5 For a more detailed description of the individual measures: see annex.

Figure 10: Terracing of steep slopes

Figure 11: Protecting the riverbank slope on which San Pedro de Buena Vista is located

Erosion control and soil amelioration

High priority was attached to protecting farmland against erosion. Only by protecting cropland and increasing its productivity can food security in the Río San Pedro watershed be stabilised on a sustainable basis. As the risk analysis made clear, inappropriate forms of agriculture (overgrazing, utilisation of steep slopes) exacerbate the already high vulnerability of this cropland to erosion. PGRSAP therefore opted for a strategy involving various training and infrastructural measures including terracing (see Figure 10), construction of seepage ditches, soil amelioration (involving organic fertilisers, natural pesticides), pasture management and fodder storage, all of which were designed to make farming practices more appropriate to the fragile ecosystem.

Controlling river flows and stabilising slopes

Within the scope of the risk analysis the population identified landslides as a key hazard for the infrastructure of the region. Overutilisation of the natural vegetation cover and the location of infrastructure and cropland in hazardous zones make the population vulnerable to landslides. PGRSAP therefore opted to stabilise mountain slopes and protect fields and infrastructure at risk through river training (see Figure 11) and afforestation measures.

Figure 12: In the village tree nursery

3.2.3 Participatory monitoring

To evaluate their progress in disaster risk management, the village inhabitants – together with the municipal administration – reviewed the results achieved at the end of each year. On the basis of the village development plans drawn up on a participatory basis, as well as the municipal plans of operations, they reviewed the achievement of designated objectives for the implemented measures. Where a village fell short of the objectives it had set out to achieve, the actors involved analysed the causes, and incorporated the measures into the respective plan of operations once again. New activities were only included once the planned activities had been successfully completed. The municipal administrations rewarded those villages and families that had integrated the most disaster risk management measures into their agricultural practices (e.g. largest terracing schemes by linear metre) with prizes of implements or materials for a micro-irrigation system.

Figures 13 and 14: Presentation of the village development plans and awards

4 What Was Achieved? – Results

PGRSAP succeeded in successfully implementing its activities, and met with a high degree of acceptance among the population. Yet which results did it achieve and which long-term, change processes did it initiate with regard to risk reduction and food security? These questions are explored below, taking into account the various actors involved.

Improving the nutrition situation

Within the scope of the project activities the village population increased their area of land under cultivation, and intensified their production. By the end of 2006 they had constructed across the entire project region around 213 rainwater harvesting basins, thanks to which a further 319 hectares of farmland could be irrigated, and more water could be made available for household use and for livestock. A total of 841 families profited from these innovations. Since the rainwater harvesting basins were constructed using simple technology and largely with local materials, farmers are able to maintain this infrastructure self-reliantly. Using the water delivered by the total of 83 micro-irrigation schemes built by the end of 2006, an additional 780 hectares of farmland are now being irrigated on a year-round basis by some 900 families. As well as protecting their crops, many families have also been able to diversify their production. Whereas previously it was mainly maize, wheat and potatoes that were grown, the farmers now also cultivate other varieties of vegetable such as onions, leeks, beans, beetroot, marrows, lettuce and carrots. Furthermore, production has also been raised to two harvests per year.

Thanks to terracing, the construction of seepage ditches and soil amelioration measures, almost 4,000 families have been able to protect 300 acres of their cropland against erosion, and increase the productivity of their fields. The terracing put in place reduces loss of the production base, and in many cases enables steep slopes that were previously used only as pasture to be cultivated now. Reduced pest and disease infestation and stronger crop resistance against drought already led to a higher crop yield at the subsequent harvest.

The river training measures have proved a highly effective element in changing river flow behaviour and in protecting the riverbank slopes. Since a distance was kept between the protective barriers, the village inhabitants are able to divert river water via a channel behind these barriers, where it then deposits its fertile fine sediment. Using the total of 100 gabion barriers, around 100 hectares of farmland were protected or newly claimed in the project region. In the years of heavy rainfall (2003 and 2005) the protective barriers already fulfilled their purpose by preventing further sub-surface erosion of the slope at San Pedro de Buena Vista.

The village communities have afforested 678 hectares of degraded land in the Río San Pedro watershed. By the end of 2006 eighty percent of families in Torakari had a small afforested area of around one-and-a-half hectares each. The population's strong interest in participating in the community work at the village tree nurseries is a key factor in their sustainability. Through the afforestation measures PGRSAP pursued twin strategies. It linked income-generating measures

Figure 15: Contrast between cropland receiving complementary irrigation (left) and non-irrigated fields (right)

Figure 16: Afforested site on a heavily degraded slope

with reducing the vulnerability of mountain slopes to landslides and erosion. Around 4,000 village inhabitants in 245 villages profited from the afforestation measures.

Local actors assume responsibility

The farmers' intensive involvement in the project activities has enabled them to apply instruments (e.g. participatory budget planning) and methods (e.g. construction of terracing appropriate to the relief of the land) that were new to them, and to feel responsible for maintenance of the infrastructure. Furthermore, in around 100 villages disaster risk management organisations emerged in which the trainers trained by the project are involved. The close cooperation with local authorities and the integration of traditional social forms strengthened the local organisations, boosted solidarity among the village inhabitants and increased their identification with the project measures. More than ten percent of the entire population of the Río San Pedro watershed were actively involved in the planning and implementation of the disaster risk management measures.

One key result of the project is planning by the village jointly and on its own responsibility. The population's strong interest in disaster risk management and the integration of disaster risk management into village development plans are key factors for the project's sustainability.

Signs of a changed risk perception among the population

Although it is difficult to measure any change in risk perception after a project lasting only four years, a change in the behaviour of both the population and political decision-makers in the Río San Pedro watershed is nevertheless evident. Especially significant in this context were the participatory risk analysis and the swift implementation of the measures. The risk analysis led to the population focusing on their vulnerability and attempting to reduce it directly. The complementary irrigation in particular made it clear to the population that they could and can reduce their own vulnerability. Traditional practices that were at risk of falling into oblivion (e.g. seepage ditches) as a result of outward migration by the younger generation are now being applied once again. Behavioural changes among the population are also evident in the context of the afforestation measures and the specially-created village tree nurseries. In contrast to previous practices, farmers now make sure that their livestock do not graze on sites where

Figure 17: Taking payment in saplings

young and therefore vulnerable saplings are present. Many families keep the plastic covers provided by the tree nurseries in order to raise their own saplings from collected seed.

Institutionalisation of disaster risk management at the municipal level

As a result of the joint planning and implementation the five municipal administrations have been sensitised to disaster risk management and recognise its importance. The creation of a fixed budget of at least five percent of the total budget for disaster prevention measures in all project municipalities provides clear proof of this.[6] A further indicator is the creation of the commissions for environment and disaster risk management that are responsible for planning and steering future disaster risk management measures. Furthermore, all municipalities involved in the project now employ at least one technical expert for disaster risk management. The municipalities of San Pedro de Buena Vista and Arampampa have also explicitly mainstreamed disaster risk management in their municipal development plans. This mainstreaming, in conjunction with the definition of concrete activities in the municipal plans of operations drawn up annually (on the basis of the village development plans), guarantees the sustainability of the project measures implemented.

Developing disaster prevention measures through municipal associations

The municipal associations MMNP and MMCC have pledged to transfer the experience gained in San Pedro de Buena Vista to other municipalities. One visible result of this pledge is the cooperation already launched between MMCC and the Agencia Española de Cooperación Internacional (AECI) for micro-irrigation.[7] The cooperation with municipal associations also reinforced their importance in the minds of the population. Given the short duration of the project and the still weak structures of the associations, the change processes that have been initiated at this level have generated only few visible results. The Ministerio de Desarrollo Sostenible y Planificación (Ministry for Sustainable Management and Planning) plans to continue the institutionalisation of disaster risk management begun by PGRSAP at the level of the municipal associations, using loan 1121 of the Inter-American Development Bank (IADB).[8]

Figure 18: Village planning

6 In San Pedro de Buena Vista the budget for disaster risk management for 2007 is around 500,000 Bolivianos (approx. 50,000 euros). This is equivalent to six percent of the municipal budget.

7 In cooperation with AECI and the Mancomunidad de Municipios de la Cuenca del Río Caine (MMCC) 16 model sites for peach cultivation were created, managed such that droplet irrigation is delivered through micro-irrigation schemes. An agreement has been reached with AECI and MMCC to link a further 54 model sites to the micro-irrigation schemes put in place. Peach cultivation is an innovation in the region, from which the farmers expect to generate further income.

8 Loan 1121 of IADB is designed to support the elaboration of a national framework plan for disaster risk management, as well as the mainstreaming of disaster risk management in national, regional and local institutions.

Launching mainstreaming of disaster risk management at the national level

Despite difficult circumstances at the national level – during the four years of the project there were three changes of president – the project also established a track record of results at that level. One milestone on the road toward integration of disaster risk management into national planning was the granting of loan 1121 by IADB in December 2005. PGRSAP advised the Ministerio de Desarrollo Sostenible y Planificación on applying for the loan, and trained ministry personnel in disaster risk management.

Contribution to the international debate

By preparing various studies and project publications, PGRSAP moved the importance of a local approach to sustainable disaster risk management onto the agenda of the international debate. Together with the municipal administration of San Pedro de Buena Vista, PGRSAP also disseminated the project strategy and lessons learned at various international conferences, such as the Third International Conference on Early Warning (EWC III) held in March 2006 in Bonn, Germany. It was the experiences of the mayor of San Pedro de Buena Vista that led to the ”Declaration of the Mayors' Conference on the occasion of the International Conference on Early Warning” including a clear commitment to civil society participation.

Having said that, it is still too early to be able to assess the project results in terms of the sustainable protection of livelihoods. We will have to wait and see how the increased crop yields and forest management affect household economics, and whether the disaster prevention measures are also applied in remote areas of the Río San Pedro watershed.

5 Success Factors and Challenges

During project implementation it became clear which principles and implementation strategies were particularly conducive to positive results. At the same time, it also emerged which external factors presented a challenge to the project.

5.1 Success factors that emerged

Participation by the population

Key to the success of the project was the participatory approach. By involving local actors in planning, implementation and evaluation, capacities were created at village level, and a strong sense of identification with planning processes and project measures was achieved. As a result the village inhabitants became actively involved in the individual measures, and integrated disaster risk management into their everyday working practices. Key to this was the visualisation of hazards, vulnerabilities and risks using self-drawn maps, results chains, farming calendars etc.

Risk analysis

The heavy involvement of the population in the analysis played a key role in making the planning process responsive to their needs. At the same time the village inhabitants were sensitised to their own vulnerability, enabling them to identify options to reduce that vulnerability. The combination of local perceptions (self-drawn maps, results chains etc.) and technical methods (aerial photos etc.) was of major importance, not only for the precision of planning. It also simplified the process of sensitising both political decision-makers and the technical units within the municipality (e.g. by visualising the risks in GIS maps). One key lesson learned in the process was to collect only as much technical data as was really needed (e.g. to prepare the GIS). It also proved helpful to begin implementing activities already on the basis of the first results of the risk analysis. Through the visible, positive results of the activities (e.g. maintenance and increase of crop yields generated by irrigation), the village population were able to see the benefit of the risk analysis, and remained motivated to continue their involvement in the implementation of disaster risk management activities.

Competitions

A motivating element in both the planning and implementation phases were competitions. The municipal administrations rewarded with prizes the best-designed village plans, village work oriented toward disaster risk management and families who had made particularly intensive efforts for disaster risk management. Prizes included agricultural implements, as well as materials for micro-irrigation schemes. These provided strong incentives for both village communities and families to integrate disaster risk management measures into their agricultural production systems.

Figure 19: Prize giving in the municipal competition

Exchange of experience

As the village inhabitants were unfamiliar with a number of the methods disseminated by the project, they were initially somewhat reserved toward them. To convince the village population of the benefits of the activities, PGRSAP organised excursions to other regions of Bolivia, and later within the project region. These excursions created opportunities for an exchange of experience between village inhabitants who had already profited from disaster risk management measures, and those who were still at the beginning of the planning process.

Visibility through flexibility and an adequate budget

People in the Río San Pedro watershed were initially sceptical about innovations. However, the rapidly visible benefits of the measures created broad interest and commitment among the local population. Given a project limited to four years and without sufficient funds, however, visible results of this kind are almost impossible to achieve. In the case of PGRSAP the adequate resources provided made a key contribution to its impact on public awareness.

Pilot zone for testing measures

The approach of "running through" the project measures in their entirety in a pilot phase and in a small project region, and then transferring the tried and tested methods and instruments to the other municipalities, proved helpful. PGRSAP was thus able to learn from the experiences in San Pedro de Buena Vista, and further refine the project strategy. The measures were transferred not according to a rigid scheme, but in such a way as to harness the creativity and potentials of the participating population.

Combining tradition with technology

By complementing traditional forms of survival with elements of technology the project was able to develop locally appropriate and accepted project activities. PGRSAP carefully promoted practices that were dying out (e.g. the digging of seepage ditches, traditionally practiced forms of mutual assistance), and incorporated these into the implementation strategy. For the construction work involved in the labour-intensive infrastructure measures (e.g. rainwater harvesting basins, terraces, protective barriers etc.) the project utilised traditional community practices. This guaranteed swift completion of the measures, and revived traditional community practices – also among the younger generation. At the same time, integrating and revitalising these traditional social forms strengthened both solidarity within the villages, and the identification of the inhabitants with their village. The combination of tradition with technology was also an enriching experience for PGRSAP project staff. They were able to familiarise themselves with local practices and the perceptions of the local population, which enabled them to repeatedly reflect on the implementation strategies and adapt them to local conditions.

Mayors a good advertisement

Another key element was the fact that the mayors recognised the importance of disaster risk management for the region. Political will and keen interest on the part of the mayors, especially in San Pedro de Buena Vista, made it easier for PGRSAP to plan and implement all project measures. The mayor of San Pedro de Buena Vista turned out to be a real advertisement for disaster risk management, both within his own municipality and in neighbouring ones, as well as at the national level and at international conferences.

Trust won by a dedicated team

The project was able to win the trust and confidence of the local population above all thanks to the dedication of the team members. Their willingness to live in the remote project region and work jointly with the people on the project measures won PGRSAP a reputation for being a reliable partner.

5.2 Challenges for achieving results

Location of the project region

The extremely peripheral nature of the project region made cooperation with other actors difficult, as barely any other organisations operate in the Río San Pedro watershed. PGRSAP was therefore able to generate only very limited synergy effects (e.g. cooperation with AECI). Furthermore, there were no structures in place that the project could have utilised. The remoteness of the region will make the transfer of project activities by other institutions difficult.

Discontinuity and competency disputes at national level

The positive results at national level were limited by two factors: firstly the unstable political situation, which during the life of the project included several changes of presidency, road blocks and unrest; secondly the competency disputes between the Ministerio de Desarrollo Sostenible y Planificación (MDSP – Ministry for Sustainable Development and Planning) and the Ministerio de Defensa Nacional (MDN –Ministry of Defence), to which the Defensa Civil (Civil Defence) reports. MDN is responsible for disaster risk management, but must act in consultation with MDSP. A further decree meant that MDSP was assigned responsibility for formulating national disaster risk management policies, which entailed an artificial division of competences for the theme, and made the elaboration of a holistic national strategy more difficult. The interministerial differences were compounded by frequent changes of personnel within the ministries, which made sustainable capacity development for disaster risk management more difficult.

6 Beyond PGRSAP: Recommendations for Future Measures

The example of PGRSAP demonstrates how even within a short project duration of just four years, behavioural changes within the population can be achieved for disaster risk management. The basic prerequisite for this is the involvement of local actors in the project activities. This is because the incorporation of their perceptions, experiences and traditional practices to ensure their survival are key to the development of appropriate project strategies. Furthermore, integration of the local population is also key to the sustainability of a project. Where village inhabitants do not have simple planning instruments at their disposal, and do not feel responsible for the infrastructure put in place, the results are unlikely to outlast the project.

Figure 20: Planting trees together

Disaster risk management measures are labour-intensive, and often mean economic sacrifices for the population in the short term. These measures must therefore produce rapidly visible results, especially in regions suffering from extreme poverty. In order to guarantee this, at least some measures should reduce the risk as directly as possible, as opposed to generating results only in the long term.

A good example of this is provided by the irrigation schemes introduced by PGRSAP. Within one year, agricultural output was increased through complementary irrigation during dry periods. This made the population more interested in disaster risk management, and increased their willingness to invest time and labour in measures of this kind.

Although there is no blueprint for the success of a project, it is nevertheless possible to highlight a few generally valid success factors on the basis of the experiences described. Participation, transparency, flexibility and political will, for instance, are just as crucial to project success as local institutional capacity building, the incorporation of local knowledge, and a corresponding project budget for implementing rapidly visible measures. The methods and instruments should be easily replicable, but should be tried and tested and adapted on a context-specific basis.

Protracted processes such as the mainstreaming of disaster risk management at regional and national level, or the marketing of food, can be initiated by a project within four years, but not brought to completion. Strategic partnerships with other organisations are therefore of major importance. Through its alliance with IADB, PGRSAP secured the further integration of disaster risk management into national and regional planning processes. The partnership with AECI also guaranteed the diversification of agricultural production, and the introduction of innovative irrigation systems (e.g. droplet irrigation). PGRSAP thus fulfilled its function as a development-oriented emergency and transitional aid project and formed a 'bridge' between short-term aid and the initiation of longer-term development processes.

PGRSAP not only made a significant contribution toward protecting the livelihoods of the population in the Río San Pedro watershed, but also initiated sustainable development processes in the region.

7 Further Literature and Project Materials

BMZ/Division 213: "Development-Oriented Emergency and Transitional Aid". Bonn 2006

GTZ: "Development-Oriented Emergency Aid. A Working Concept." Eschborn 1998

GTZ: "Disaster Risk Management. A Working Concept". Eschborn 2002

GTZ: "Guidelines: Risk Analysis – a Basis for Disaster Risk Management". Eschborn 2004

GTZ/PGRSAP: "Percepciones culturales sobre riesgo natural y relaciones de género en comunidades del extremo Norte de Potosí". Cochabamba 2003

GTZ/PGRSAP and Municipio San Pedro: "Estudio de Ganadería en Tres Pisos Ecológicos Representativos de la Cuenca Alta del Río San Pedro". La Paz 2004

GTZ/PGRSAP: "Apreciación de las Condiciones de Seguridad Alimentaria en las Comunidades Campesinas de Choroma, Hank'oyu, Wenqalla y Linde de la Cuenca de San Pedro/Bolivia". La Paz 2004

GTZ/PGRSAP: "Contribución al Análisis de Riesgo de Desastre en la Cuenca Alta del Río San Pedro". La Paz 2004

GTZ/PGRSAP: "Proyecto Gestión de Riesgo y Seguridad Alimentaria en la Cuenca del Río San Pedro (PGR-SAP)" (project video). La Paz 2004

GTZ/PGRSAP: "Buscando el Riesgo y a la Gente". La Paz 2005

GTZ/PGRSAP: "Gestión y Diseño de Atajados para Cosecha de Agua. Norte-Potosí – Bolivia". La Paz 2006

GTZ/PGRSAP: "Cuatro Años Generando Experiencias y Vivencias, el Camino está abierto". La Paz 2006

GTZ/PGRSAP: "Cartillas de Capacitación". La Paz 2006

Description of the infrastructural prevention and mitigation measures

Rainwater harvesting basins

One key measure for drought prevention was the construction of so-called atajados – rainwater harvesting basins. These are used to irrigate crops during the dry season or during dry periods of the rainy season. This means that despite shortened periods of precipitation, crops can be protected and food security maintained. Technically speaking atajados are water reservoirs with a capacity of at least 1,000 cubic metres. They are built on gentle mountain slopes to collect and store rainwater. To guarantee the functionality of the system, certain preconditions must be met, particularly as regards soil properties. Rainwater harvesting basins in soils with a low clay content were sealed using a plastic sheet to prevent seepage of the water into the ground. Depending on its size, a rainwater harvesting basin is used by two to three families.

Micro-irrigation schemes

Micro-irrigation schemes also reduce vulnerability to drought. They consist of a rainwater harvesting basin, and receive their water from small water streams all year round. Since their location is dependent on the water stream, they often have to be built on ground that is rather unsuitable (e.g. clay content too low). The basins are therefore always sealed with plastic sheeting.

Terracing

To prevent advancing cropland losses and preserve the fertility of soils, the village population learned new methods of terrace construction. As a result, forms of terracing were introduced that were appropriate to the relief of the respective terrain. This meant that steep slopes could be utilised, and the vulnerability of cropland to erosion reduced. To this end stone walls 40 to 80 centimetres in height are built, extending longitudinally along the relief of the slope. The distance between the walls is calculated according to the gradient of the slope. This method prevents the fertile soil from being washed away. Over the course of time the eroded soil forms a terrace behind the wall that can be managed. Soil properties are also ameliorated, because water and nutrients remain in the soil. Terrace construction not only reduces productive resource losses, but in many cases also allows farmers to cultivate crops on steep slopes hitherto used only as pasture.

Construction of seepage ditches

To enable more rainwater to seep into the farmland, seepage ditches were dug in the project region. The ditches were dug parallel to the slope, each being 40 to 60 centimetres in depth and breadth. They are two metres long. Seepage ditches are especially appropriate in very dry terrain and on pastureland. As well as storing moisture for dry periods, seepage ditches reduce erosion caused by rapid runoff of precipitation water.

Soil amelioration practices

Erosion control alone does not increase soil productivity. PGRSAP therefore introduced practices to improve soils and protect against pests and disease. The farmers learned for instance to produce organic fertiliser comprised of animal dung, vegetable waste, yeast and water. They were also trained in pesticide production. Lime sulphur is used as an organic insecticide in particular because it can be produced locally.

Pasture management and fodder storage

Since overgrazing is a major cause of erosion-induced productive resource losses, together with the local population and the municipal administration PGRSAP developed alternatives to the grazing system being practiced. Overgrazed sites were for instance declared out of bounds for grazing, to allow the vegetation to regenerate. Furthermore, alternative fodder plants with a high nutritional value were disseminated. This reduced pressure on the natural vegetation. A key component of pasture management was alternative fodder storage practices. Traditionally the farmers dry the animal fodder in the forks of tree branches – a method that leaves the fodder too perishable. Using an easily replicable silage method, animal fodder can now be made less perishable by storing it in a hole in the ground.

River training measures

During the rainy season the Río San Pedro and its tributaries carry a heavy load of sediment that they deposit on the river bed. As a result the course of the river changes constantly, and the river erodes valley flanks and farmland located on the fertile riverbed. To reduce the vulnerability of this cropland and to reclaim areas already washed away, together with the village population PGRSAP erected a series of gabion-type barriers (gaviones). These consist of a wire basket fixed to the ground and filled with stones and loose material. The barriers have proved a highly effective element in changing the river flow behaviour and in protecting the undercut banks. They have a service life of around 20 years. Since a gap was left between the barriers, the village inhabitants are able to divert river water via a channel to a point behind the gaviones, where the river then deposits its fertile fine sediment. Thus within two to three years former cropland is reclaimed and new cropland is gained.

Afforestation

Due to the heavy erosion of slopes in the Río San Pedro watershed, many sites have already become unsuitable for agriculture. The only option for extracting economic benefit out of these sites is forestry. Afforested sites can later be used to obtain construction materials, firewood or animal fodder. To guarantee the sustainability of the afforestation measures, eleven tree nurseries were established and promoted that produce between 40,000 and 85,000 saplings per annum. The tree nurseries are strategically distributed across the project region such that a large number of families are able to participate in the work that needs to be performed in the tree nurseries. They are remunerated with saplings.

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List of Acronyms and Abbreviations

AECI Agencia Española de Cooperación Internacional (Spanish Agency for International Development Cooperation)
BMZ German Federal Ministry for Economic Cooperation and Development
CDM Consejo de Desarrollo Municipal (Municipal Development Council)
EWC III Third International Conference on Early Warning
GIS Geographic Information System
IADB Inter-American Development Bank
GTZ Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (German Technical Cooperation)
MDG Millennium Development Goals
MDN Ministerio de Defensa Nacional (Ministry for National Defence)
MDSP Ministerio de Desarrollo Sostenible y Planificación (Ministry for Sustainable Development and Planning)
MMCC Mancomunidad de Municipios de la Cuenca del Río Caine (Association of Municipalities of the Río Caine Watershed)
MMNP Mancomunidad de Municipios del Norte de Potosí (Association of Municipalities of North Potosí)
PDR Programa de Desarrollo Rural (Rural Development Programme)
PGRSAP Proyecto Gestión de Riesgo y Seguridad Alimentaria en la Cuenca del Río San Pedro (Disaster Risk Management and Food Security in the Río San Pedro Watershed Project)
PROMIC Programa Manejo Integral de Cuencas (Integrated Watershed Management Programme)
PROSANA Proyecto de Seguridad Alimentaria y Nutricional en las Provincias Arque, Bolivar y Tapacari (Protecting Livelihoods in Arque, Bolivar and Tapacari Provinces Project)

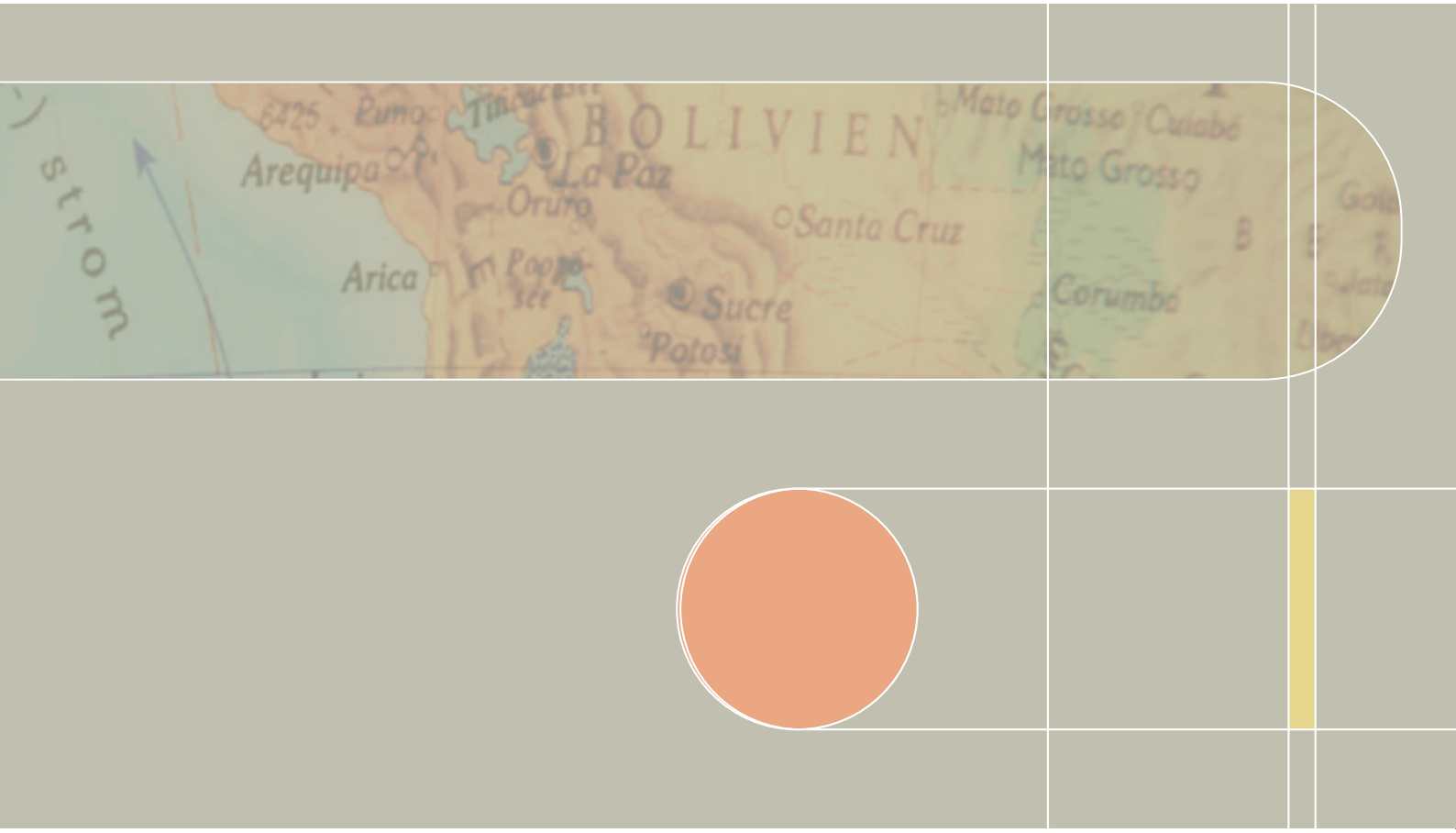
Sector Project
Disaster Risk Management in Development Cooperation
(10/2003 – 12/2008)

Background
In recent years, natural disasters have increased significantly in both scale and number. Natural disasters not only bring developing countries to a halt, but also throw them back – sometimes by years. In these situations, disasters and poverty are directly linked. Poor sections of the population are barely able to protect themselves against extreme natural events, and recover from disasters only very slowly. Conversely, natural disasters lead to poverty because they destroy people's houses, infrastructure and base of production. In high-risk countries, disasters call into question the achievement of the Millennium Development Goals (MDGs). Yet disasters are not inevitable. Through appropriate behaviour to prevent and mitigate disasters, disaster preparedness measures and early warning, the disaster risk can be reduced significantly, or even eliminated. This is where disaster risk management comes into play to help build the foundations for sustainable development. As such it is an integral component of development cooperation. The Sector Project for Disaster Risk Management is commissioned by Germany's Federal Ministry for Economic Cooperation and Development (BMZ) to support the mainstreaming of disaster risk management in German development cooperation. It is also supporting BMZ in its efforts to contribute toward international risk reduction processes.

Project
To achieve this objective the sector project pursues five lines of action.

1. It develops application-oriented strategies and methods for disaster risk management.
2. It promotes the institutionalisation and mainstreaming of disaster risk management in German development cooperation.
3. It designs training measures for development cooperation personnel and political decision-makers.
4. It supports BMZ in defining its international position on disaster risk management.
5. It administers a fund for promoting small-scale measures to integrate disaster risk management into ongoing projects.

Results
Disaster risk management is now receiving distinctly more attention within German development cooperation. The number of projects in German development cooperation's partner countries that are applying disaster risk management strategies and instruments has increased significantly.
The experiences with disaster risk management generated and communicated within the scope of German development cooperation have won international acclaim, and demand for them is rising.



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