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Evaluation of the Capacity Building Programme for Natural Disaster Reduction (CBNDR) in Central America and the Caribbean

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The Capacity Building Programme for Natural Disaster Reduction (CBNDR)
Regional Action Programme for Central America (RAP-CA)
(519RLA2040, Funded by the Government of the Netherlands)

Evaluation

FINAL REPORT

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Executive Summary

Background of activities evaluated

As a follow-up to the International Conference on Natural Disaster Reduction held in Yokohama in 1994, a preparatory working group for launching the “Coordination Programme for Disaster Reduction through Sustainable Development (CPDRSD)” was established by the International Institute for Aerospace Survey (ITC), in the Netherlands in 1995. Representatives of ITC undertook a mission to Costa Rica in November 1995 with the objective of formulating a first Regional Action Programme for Central America. In the period 1996-1997 extensive discussions on the content of the programme were undertaken between UNESCO and various partners. The partners included:

- the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC);
- the International Institute for Geo-Information Science and Earth Observation (former International Institute for Aerospace Survey, ITC, the Netherlands);
- the Technical University of Delft (TUD, the Netherlands);
- Utrecht University (UU, the Netherlands);
- the GeoForschungsZentrum (GFZ, Germany); and
- the Bureau des Recherches Géologiques et Minières (BRGM, France).

Agreement between UNESCO and partners was reached on the scientific content of the programme in January 1998. In December 1998 the Netherlands Ministry of Education, Culture and Sciences (MOCW) expressed his willingness to cooperate with UNESCO on a project which included a general worldwide component, and the first Regional Action Programme addressing natural disaster reduction issues in several Central American Countries. UNESCO’s role was that of overall coordinator, with the International Institute for Aerospace Survey and Earth Sciences (ITC, the Netherlands) hosting the Secretariat, and the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC, Panama) being the regional coordinator for Central America. Others partners were the Technical University of Delft and Utrecht University. The Netherlands Ministry of Education, Culture and Sciences (MOCW) made a donation, formalized through a funds-in trust arrangement, amounting to NLG 2,000,000 for a period of four years (1999 – 2002).

The project objectives were:

- the integration of technical and scientific knowledge, methods and tools of natural hazard assessment with existing knowledge in the region into practical methodologies of natural hazard and risk zoning applicable in local, national, and regional planning for development
- to develop co-operation and networking at the local, national, and regional levels by creating a common ground for understanding between earth scientists, engineers, and decision makers at various levels leading to procedures which can contribute to decrease in the vulnerability of societies faced with natural phenomena such as landslides, flooding, earthquakes and volcanic eruptions.

The following outputs were expected:

- Networks established for the exchange of information, expertise and experiences in the field of natural disaster reduction with special emphasis on geohazard zonation, increased awareness in disaster prevention, and decision support systems.
- Local expertise and capacity will be generated through integration of existing knowledge and filling in of knowledge gaps in different countries. The acquired capacity shall be adequate to solve local problems in natural disaster reduction and sufficient for interaction with regional and world-wide initiatives and information.
- Courses, documentation and training packages developed and made available for use by other organizations active in the field of disaster reduction.

The evaluation examines the project strategy, the project results and impact at the institutional, local, national and regional levels. Obstacles, success factors and lessons learned from the implementation of the project are to be identified.

The evaluation addresses the following key issues:

- The relevance of the programme in relation to the needs of the beneficiary countries;
- The effectiveness of the activities in meeting the objectives and expected results of the programme;

- The replicability of the programme's practical results at the local level, the capacity of beneficiaries for the application of Geographical Information Systems (GIS) and remote sensing as tools for analysis of hazard, vulnerability and risk for disaster prevention at the local level;
- The replicability of the programme's practical results in other countries and regions of the world and the steps taken to disseminate the lessons learned;
- The extent to which the project enhanced UNESCO's contribution to the International Strategy for Disaster Reduction (ISDR).
- Extent to which financial and human resources were wisely used.

Information collection activities for this component comprised a document review, individual and group interviews in Europe and Central America as well as the evaluation of a questionnaire survey carried out with the participants of RAP-CA.

Disaster risk reduction spans the set of measures which inhibit events associated with natural phenomena from causing damages, losses, destruction of property, interruption of services and processes, as well as loss of lives. While in developed countries disaster risk reduction is practiced via the enforcement of building codes, urban and rural planning incorporating land-use norms that facilitate prevention, and social and economic conditions allow for the implementation of such measures, in developing countries this is not the case. As mentioned in the project documents, as well as in the vast literature on the subject, poverty, lack of norms, lack of experience or knowledge, as well as institutional and legal weaknesses are causes for risks that lead to disasters. Historically, developing countries react to disasters and have not really been proactive. In the past decades, governments have reacted to such disasters via the establishment of emergency committees or commissions to improve the capacities related to disaster response. However, since the 90s, when the International Decade for Natural Disaster Reduction was launched, international, regional, national, and local efforts have been promoted to change this paradigm of response into one of disaster prevention and mitigation. The modern view of disasters defined as consequences of risks which are modeled as a combination of hazards and vulnerabilities is being dispersed throughout the developing world, and efforts on risk assessment are now beginning to take shape in many of these countries focusing on different types of hazards. Information from such assessments should then be fed into the current models of development to identify measures that need to be implemented not only to reduce existing risks, but also to inhibit the creation or generation of new risks in the future. But as the lessons learned demonstrate, a frequent bottleneck exists between information providers and users: if information is not requested, the capacity to use the information effectively does not exist, the means to initiate actions based on the information are not provided, and the dissemination of this information does not happen efficiently, then even the best technology cannot have an impact.

Conclusions

Major Findings (achievements and challenges):

On effectiveness:

Based on the information which was gathered to assess the effectiveness, it can be stated that the project was able to deliver several of the proposed outputs and, judging by the comments emanated from those who participated in the project, it achieved the main objectives for which it was set up: integration of scientific/technical and local knowledge, and cooperation and networking.

Through the execution of training workshops at ITC and in Central America, as well as through the joint implementation of case studies, capacities of staff working within the participating Central America agencies were strengthened on topics such as GIS for risk assessment. However, institutional weaknesses within these agencies also inhibited the completion of several products originally foreseen and stipulated in the project documents.

For 24 risk maps planned, 6 risk maps were produced, one for each case study which focused on a community. For the 6 trained teams, in the end it can be concluded that one regional team was created, as in some countries out of the three initial participants only one concluded the project. Of the 20 participants which were initially trained in Holland from these countries, only 9 finished the project and continue to function within this group. Training packages have been produced and are available on the internet as well as on CDs. While RAP-CA was able to establish a regional thematic group with a common interest focusing on the use of GIS for hazard and risk assessment, it failed to establish a network per-se. RAP-CA, through its case studies, was able to describe in a more technical framework

of risk management problems that were not addressed in this fashion before. As other projects carried out in the region, it proved the usefulness of GIS as a tool to elaborate hazard, vulnerability, and risk maps. However, it did not solve the problem of disasters in such communities or cities where the case studies were conducted. It was expected that participants would continue the training programs within their respective institutions and programs. In several countries this did not materialize, due to various reasons, such as participants no longer working in respective institutions, organisations not interested in capacity building, lack of resources, etc.

On efficiency:

The project suffered a major delay due to the manifestation of hurricane Mitch in October 1998, which halted activities in the region for several months, in which many institutional changes (e.g. legislation and re-organization) took place. Regarding the project plan, all activities except the training facility were carried out: the initial training course was held at ITC in the Netherlands in spring and summer of the year 2000; the regional training facility was not established, as the institutional representatives of the countries proposed the strengthening of capacities within each country independently, rather than the setup of such a regional facility; case studies were conducted under the guidance of ITC in each country which participated in the project; dissemination of studies and training material took place via internet as well as regional and national workshops conducted by ITC and project participants from the region; a final workshop was conducted in conjunction with the regional Mitch+5 symposium; in addition, a refresher training course was held in the summer of 2004 in Guatemala to keep the momentum of the project going. However, in relation to the optimal use of means in terms of financial aspects, it can be concluded that only 25% of the total available funding for the project eventually reached the Central American region and the Dominica Republic, while 64% went to ITC (for various financial issues such as honoraria, travel expenses, materials, etc.); and 11% to UNESCO. Nevertheless, it is worth mentioning that the Coordinating Unit at ITC was successful in securing resources from another Ministry of the Netherlands to conduct the initial training course held at ITC.

On impact:

Among the issues that stand out in relation to the impacts introduced by the project, the main one identified is the recognition of the usefulness of GIS as a tool for information management, to the point that national disaster reduction agencies increasingly establish GIS units within their organizational structure. In respect to disaster reduction, a change is noted regarding the use of GIS tools for information management recognized by institutions within all Central American countries, but this has to be seen as an integral contribution from many projects executed in the region, and not just RAP-CA alone. For example, the extensive evaluation carried out throughout Central America under the Mitch+5 assessment comments on the usefulness of information management to promote risk reduction, but failed to identify RAP-CA, ITC, and UNESCO explicitly as projects and agencies respectively which contributed to this result. The project, due to its structure and objectives, did contribute to the overall Yokohama framework: International development agencies (ITC) contributed to the strengthening of capacities in developing countries, and the use of information and of novel information technologies on issues of disaster-risk management was carried out via the execution of case studies in five countries. The project did contribute as well to CBDNDR objectives, as it provided the example on where to build upon. In this context, the project delivered information, experiences, manuals and lessons learned to make it transferable to other regions of the world where disasters are frequent, such as Asia and Africa. The low number of participants is another factor which limits severely the impact: 20 participants were initially trained at ITC, but only nine completed the project and the case studies. Therefore, the group can only be expected to make some contributions on the development practices at the local, national, or regional level.

On relevance:

The relevance of the project to Central America was asserted not only via the existing risks in the region and their root causes, as clearly demonstrated through the catastrophic impacts provoked by hurricane Mitch at the time the project proposal was being finalized, but also - after its inception - at the highest political level in the region through the Presidential Declaration on the reduction of vulnerability (1999) which defined the need to confront disasters in a new way through risk

management. As part of the problem recognized by CEPREDENAC and others in the region was the lack of use of technical information on hazards and risks to promote a more sustainable development. This choice clearly opens the door for project proposals enabling not only the generation of such information on hazards, vulnerabilities, and risks, but their systematization and dissemination to decision makers so that it can be incorporated towards the reduction of the number of elements at risk. Integration of scientific/technical and local knowledge, as well as cooperation and networking - the purpose as stated in the final project document - do not provide a comprehensive foundation for a substantial contribution to the overall objective (development goal) "to reduce the loss of life and property inflicted by natural disasters". In regard to technology transfer and capacity building, sufficient evidence exists to prove the relevance of the RAP-CA project towards the fulfilment of the Yokohama strategy and to demonstrate the commitment of UNESCO and the Dutch Government to this noble cause. RAP-CA was the first action programme to be carried out under the CPDRSD and provided ample examples of inter-institutional coordination for the execution of pilot case studies, enhancing the capacity of Central American government agencies to reduce disasters. Results of RAP-CA are now available to be transferred to other developing countries via documentation on pilot studies and training modules.

On sustainability and replicability:

Considering the activities undertaken as well as the implementation strategies, sustainability of capacity building efforts was not really considered in the project. The project targeted the strengthening of capacities of institutions via the training of its staff dedicated to GIS and risk management, and while it was foreseen to establish a regional training centre, such a facility did not materialize at the request of Central American institutions. This means that neither CEPREDENAC, nor the institutions devoted to risk management, could provide the sustainability to such efforts. Instead, it remained an option or was left at the will of participants to train the next generation. Thanks to RAP-CA, technical and human resources are now available, as demonstrated via the case studies, and training material can be downloaded to carry out training on a voluntary and limited level without the technical and financial support by UNESCO. CEPREDENAC found itself not as coordinating partner, but only as an agency which was requested to assist in the efforts. During the execution of the project, no permanent additional personnel was assigned to CEPREDENAC as part of CBNDR, and the institution had little or no influence on the implementation of the project. Under these conditions, CEPREDENAC lost interest in the project. Even though the assistance was compatible with the capacities of national institutions, the countries of the region continue to operate within a weak institutional framework that does not promote long-term stability of staff within institutions. From the point of view of the national disaster-risk management agencies, the lack of RAP-CA's visibility (e.g. in the Mitch+5 country reports) leads to the conclusion, that the intervention was not an institutional project, but a project targeting individual experts. The institutional responsibility to sustain efforts of the project was then limited to sustain the GIS units set up via RAP-CA and other agencies. ITC has gathered and systematized the experience, and can transfer this approach to other regions of the world where disasters are frequent, such as Asia and Africa. In addition, some of the RAP-CA group members in Central America are still working in their institutions and could undertake capacity building efforts.

On partnership:

CPDRSD was definitely instrumental to set the stage for the participation of UNESCO in the activities of the International Decade for Natural Disaster Reduction and facilitated the implementation of RAP-CA (providing a substantial part of the overall / development goals for the intervention). However, the clarity on the functions of RAP-CA and CPDRSD when comparing their general objectives, becomes blurred (same project purpose) whereby a contribution of RAP-CA to the purpose of CPDRSD is expected. What concerns the functions of the two projects also applies to the roles of the actors. CPDRSD is a UNESCO-ITC Programme and an executive secretariat (established at ITC) is responsible for the implementation (= operational coordination and management). Instead of UNESCO acting as overall and operational coordinator, one would have expected that the operational tasks for the implementation of RAP-CA are taken care off by the CPDRSD executive secretariat (including financial management) and the overall coordination as defined by the project document (progress assessment, setting targets for implementing agencies) including the monitoring of the relevance, is carried out by UNESCO with its various links to other international initiatives in disaster risk reduction

(e.g. IDNDR). The title 'CEPREDENAC – UNESCO Project' implies a role of CEPREDENAC which did not coincide with the perception of the Central American institution once the programme was implemented.

On appropriateness of design and management:

The initial documentation elaborated by CEPREDENAC and ITC to set up the project proposal in February 1998 was well structured in terms of an overall and general description of the problem of natural disasters in Central America, backed up with data on the impact of recent events in the region, and a systematization of the problem analysis in a hierarchical structure. The logic of the project design is demonstrated through a fully developed project matrix (logical framework) spanning objectives, strategies, results, indicators, external factors and activities in direct connection to the problem analysis. This, however, was lost in the final document of the CEPREDENAC-UNESCO project proposal which fails e.g. to state assumptions (external factors), to discuss risk management or to establish performance indicators. The problem analysis had to be reconstructed to allow an evaluation of the relevance of the stated objectives and to establish the factors which hindered the implementation of the project (e.g. political will, commitment by institutions). Based on the documentation available, no actions were taken to influence the political will to promote the activities within the project, even though the importance became very evident when working at the pilot studies. A progress monitoring approach based on indicators, assumptions and yearly operational plans is not recognized. In this context, changes been agreed on and reported, such as the replacement of a regional training facility by the support to existing infrastructure in the partner countries in CA, are mentioned in the yearly reports but not recorded in a revised project document.

Recommendations

Disaster risk reduction and capacity building:

- Considering that RAP-CA was the first action programme to be carried out under the CPDRSD, it has provided ample examples of inter-institutional coordination for the execution of pilot case studies and made a contribution to improve the capacity of Central American government agencies to reduce disasters. UNESCO and ITC should further pursue the strategy set out by CPDRSD/CBNDR as already shown by CASITA (Asia) and RAP-AF (Africa).
- If the weak points, as identified by the evaluation, are addressed, a modified approach can be replicated by UNESCO and partners such as ITC in other regions affected by natural hazards (Asia, Africa, Latin America) provided that
 - Local experts are increasingly involved in skills training measures.
 - The capacity of local institutions is strengthened.
 - The variety of practised techniques for risk assessment are compiled, compared and norms for their application at different levels been developed.
 - The linkage to international initiatives for risk reduction, like the Hyogo strategy, are made and the relevance of the projects been monitored by UNESCO.
- Recognizing that disaster risk reduction depends on measures to be taken at local level (land use planning, building codes), the relevant actors and institutions need to be part of the project implementation to increase the impact of the intervention.
- Interventions aiming at the improved development of communities and countries need to strongly consider mandates and continuity of the institutional environment to ascertain the impact of capacity building measures.
- The strategy of moving from 'capacity building' to 'building on capacity' is the way forward. The establishment and/or support of local training facilities should be the key objective of any future capacity building programme.

Programme/project implementation:

- The project design should explore the strength of each partner; here: UNESCO as a multidisciplinary international organisation acting as the overall coordinator, ITC providing training expertise and project management services through its secretariat, and CEPREDENAC as regional coordinator mobilising experts and institutions (e.g. regional training centre).
- UNESCO with its various links to other international initiatives in disaster risk reduction (e.g. IDNDR) is well suited to monitor the relevance of projects. The operational tasks including the financial management should be delegated to contracted partner organisations (e.g. the CBNDR secretariat).
- The project partners should jointly carry out a problem-analysis and reach consensus about the key issues to be addressed (project objectives, intervention strategy); both activities are crucial factors for effective cooperation. Changes in the intervention strategy are made transparent by indicating the shift-of-priority in the objective and problem analysis.
- UNESCO as the coordinating agency has to keep updated versions of the relevant documentation to reflect changes been agreed during the implementation of programmes / projects
- A detailed listing of assumptions and an analysis of risks has to be part of the project document.
- A strategy for dealing with the risks identified should be suggested and certainly helps to draw the attention of all project partners to certain critical factors to be monitored.
- The long-term development objective of the programme is better served by incorporating regional Central American consultants already trained in GIS and risk reduction in the implementation of the project. The expert services of institutions like ITC should be more complementary than central.

Lessons

A culture for risk reduction needs to be created to foster sustainable development instead of concentrating only on preparedness.

The social, economic, cultural, and institutional environment must be considered to ascertain that capacity building can contribute to risk reduction.

The combination of skills training for geoinformation handling and pilot studies for hazard mapping, vulnerability analysis and risk assessment proves to be an excellent approach to build the capacity of intersectorial teams.

GIS and Remote Sensing are proven technologies to support land use planning. To be effective in the context of risk reduction high resolution baseline data need to be available to allow the application at local level (1:2000 – 1: 10000)

RAP-CA contributed to the appreciation of GIS in disaster management and more organisations establish geoinformation units in Central America. At the start of the project there were very few qualified GIS/RS consultants on disaster reduction available in the region, thanks to the project this has improved.

The involvement and commitment of local experts and institutions are important conditions for the sustainability of capacity building programmes.

Only a transparent and participatory approach to planning and management can ascertain the ownership of and resultant commitment to the project's objectives. The clarification of roles and mandates is an important pre-requisite.

The ground for participation is prepared by jointly analysing the problems to be addressed and the joint decision on the intervention strategy. Then a sense of ownership can grow.

Strategies on capacity building and risk reduction mobilize synergy and can facilitate the effective coordination of programmes by and within UNESCO.

List of Abbreviations and Acronyms

BRGM	Bureau des Recherches Géologiques et Minières
CA	Central America
CASITA	Capacity Building in Asia using Information Technology Applications
CBNDR	Programme for Capacity Building for Natural Disaster Reduction
CEPREDENAC	Centro de Prevención de Desastres Naturales en América Central
CIDA	Canadian International Development Agency
CNE	Comisión Nacional de Prevención de Riesgos y Atención de Emergencias de Costa Rica
CONRED	Coordinadora Nacional para la Reducción de Desastres
CPDRSD	Coordination Programme for Disaster Reduction through Sustainable Development
CRID	Centro Regional de Información sobre Desastres
GFZ	GeoForschungsZentrum
GIS	Geographical Information Systems
ICE	Instituto Costarricense de Electricidad
IDNDR	International Decade for Natural Disaster
IGCP	International Geological Correlation Programme
IGN	Istituto Geográfico Nacional “Pablo Arnoldo Guzmán”
IOC	Intergovernmental Oceanographic Commission
IOS	Internal Oversight Service
ISDR	International Strategy for Disaster Reduction
ITC	International Institute for Aerospace Survey
JICA	Japan International Cooperation Agency
LA RED	La Red de Estudios Sociales en Prevención de Desastres en América Latina
LFA	Logical Framework Analysis
LFM	Logical Framework Matrix
MOCW	Netherlands Ministry of Education, Culture and Sciences
RAP	Regional Action Programme
RAP-AF	Regional Action Programme for Africa
RAP-CA	Regional Action Programme for Central America
RBM	Results Based Management
SNET	Servicio Nacional de Estudios Territoriales de EL Salvador
TUD	Technical University of Delft
UCR	University of Costa Rica
USGS	United States Geological Survey
UU	Utrecht University

The Programme

As a follow-up to the International Conference on Natural Disaster Reduction held in Yokohama in 1994, a preparatory working group for launching the “Coordination Programme for Disaster Reduction through Sustainable Development (CPDRSD)” was established by the International Institute for Aerospace Survey (ITC), in the Netherlands in 1995. During the 28th session of UNESCO’s General Conference, in October 1995 a draft resolution was submitted by the Netherlands, recognizing UNESCO’s “responsibility to participate in the activities of the Programme of the International Decade for Natural Disaster (IDNDR)”. The spirit of this draft resolution is reflected in the adopted Resolution 28 C/II para.C (b)¹.

Representatives of ITC undertook a mission to Costa Rica in November 1995 with the objective of formulating a first Regional Action Programme for Central America RAP-CA. In the period 1996-1997 extensive discussions on the content of the programme were undertaken between UNESCO and various partners. The partners included:

- (i) the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC);
- (ii) the International Institute for Geo-Information Science and Earth Observation (former International Institute for Aerospace Survey, ITC, the Netherlands);
- (iii) the Technical University of Delft (TUD, the Netherlands);
- (iv) Utrecht University (UU, the Netherlands);
- (v) the GeoForschungsZentrum (GFZ, Germany); and
- (vi) the Bureau des Recherches Géologiques et Minières (BRGM, France).

Agreement between UNESCO and partners was reached on the scientific content of the programme in January 1998.

In December 1998 the Netherlands Ministry of Education, Culture and Sciences (MOCW) expressed his willingness to cooperate with UNESCO on the Programme for Disaster Reduction through Sustainable Development, and the first Regional Action Programme addressing natural disaster reduction issues was launched to cover several Central American Countries. UNESCO’s role was that of overall coordinator, with the International Institute for Aerospace Survey and Earth Sciences (ITC, the Netherlands) hosting the Secretariat, and the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC, Panama) being the regional coordinator for Central America. Others partners were the Technical University of Delft and Utrecht University.

The Netherlands Ministry of Education, Culture and Sciences (MOCW) made a donation, formalized through a funds-in trust arrangement, amounting to NLG 2,000,000 for a period of four years (1999 – 2002).

The project objectives were:

- the integration of technical and scientific knowledge, methods and tools of natural hazard assessment with existing knowledge in the region into practical methodologies of natural hazard and risk zoning applicable in local, national, and regional planning for development
- to develop co-operation and networking at the local, national, and regional levels by creating a common ground for understanding between earth scientists, engineers, and decision makers at various levels leading to procedures which can contribute to decrease in the vulnerability of societies faced with natural phenomena such as landslides, flooding, earthquakes and volcanic eruptions.

The following outputs were expected:

¹ Resolution 28 C/II C (b): *Invites* the Director-General, in particular: under Programme II.3, 'Environmental sciences and sustainable development': to support international and regional co-operation in research and capacity-building in earth sciences through the International Geological Correlation Programme (IGCP); to apply modern geodata handling to non-renewable resources management; and to strengthen hazard-prone Member States' capacity in natural disaster reduction;

- Networks established for the exchange of information, expertise and experiences in the field of natural disaster reduction with special emphasis on geohazard zonation, increased awareness in disaster prevention, and decision support systems.
- local expertise and capacity will be generated through integration of existing knowledge and filling in of knowledge gaps in different countries. The acquired capacity shall be adequate to solve local problems in natural disaster reduction and sufficient for interaction with regional and world-wide initiatives and information.
- courses, documentation and training packages developed and made available for use by other organizations active in the field of disaster reduction.

The Purpose of the Evaluation

The evaluation of the programme was recommended by the donor, and ITC, and planned for by UNESCO as published in the evaluation plan in the 32 C/5 Approved Programme and Budget². The evaluation will examine the project strategy, the project results and impact at the institutional, local, national and regional levels. Obstacles, success factors and lessons learned from the implementation of the project are to be identified. The evaluation will focus on the following, among other issues:

- The relevance of the programme in relation to the needs of the beneficiary countries;
- The effectiveness of the activities in meeting the objectives and expected results of the programme;
- The replicability of the programme's practical results at the local level, the capacity of beneficiaries for the application of Geographical Information Systems (GIS) and remote sensing as tools for analysis of hazard, vulnerability and risk for disaster prevention at the local level;
- The replicability of the programme's practical results in other countries and regions of the world and the steps taken to disseminate the lessons learned;
- The extent to which the project enhanced UNESCO's contribution to the International Strategy for Disaster Reduction (ISDR).
- Extent to which financial and human resources were wisely used;

Main stakeholders include the individuals and institutions that benefited from this programme, UNESCO's former SC/GEO Division³, regional bureaux and field offices; the donor; and the partner agencies ITC, CEPREDENAC, UU, TU-Delft.

The evaluation will provide information to assist in, and guide the design and the implementation of future similar projects. With regards to dissemination, the findings from the evaluation will be annexed to, and disseminated with the programme results on UNESCO web site.

² 'Central America is one of the regions most prone to natural disasters. The five pilot projects in Central America and the Caribbean included in the evaluation serve as demonstration cases for the application of Geographical Information Systems (GIS) and remote sensing as tools for analysis of hazard, vulnerability and risk for disaster prevention at the local level. Furthermore, the objective is to influence politics and/or politicians at the national and regional levels to shift the emphasis of policies concerning disaster reduction from short-term actions to longer-term actions and thinking. The evaluation will examine the project strategy, the project results and impact at the institutional, local, national and regional levels. Obstacles, success factors and lessons learned from the implementation of the project will be addressed'.

³ In December 2004, restructuring in the Science Sector resulted in activities related to the prevention of natural disasters being moved from the former SC/GEO Division to the Division of Basic and Engineering Sciences (SC/ BES)

Disaster Risk Reduction

Disaster risk reduction spans the set of measures which inhibit events associated with natural phenomena from causing damages, losses, destruction of property, interruption of services and processes, as well as loss of lives.

While in developed countries disaster risk reduction is practiced via the enforcement of building codes, urban and rural planning incorporating land-use norms that facilitate prevention, and social and economic conditions allow for the implementation of such measures, in developing countries this is not the case. As mentioned in the project documents, as well as in the vast literature on the subject, poverty, lack of norms, lack of experience or knowledge, as well as institutional and legal weaknesses are causes for risks that lead to disasters.

In this sense, disasters in developing countries are now seen as unresolved problems associated with the way development planning and implementation is carried out. In this context, risk must then be understood as long-term process whereby vulnerabilities are generated due to factors such as poverty, migration to urban areas, temporary compromises made by populations in settling in urban areas, population growth, lack of experience or knowledge, etc. The result of this process of risk generation is then manifested as a disaster, when an event such as an earthquake or a hurricane triggers destructions, losses, and fatalities.

Historically, developing countries react to disasters and have not really been proactive. In the past decades, governments have reacted to such disasters via the establishment of emergency committees or commissions to improve the capacities related to disaster response. However, since the 1990s, when the International Decade for Natural Disaster Reduction was launched, international, regional, national, and local efforts have been promoted to change this paradigm of response into one of disaster prevention and mitigation.

The modern view of disasters defined as consequences of risks which are modeled as a combination of hazards and vulnerabilities is being dispersed throughout the developing world, and efforts on risk assessment are now beginning to take shape in many of these countries focusing on different types of hazards. Information from such assessments should then be fed into the current models of development to identify measures that need to be implemented not only to reduce existing risks, but also to inhibit the creation or generation of new risks in the future.

The impact of disasters on sustainable development and the coping capacity of societies have been stated again by the Hyogo Declaration. The following statements outline the challenges:

- States have the primary responsibility to protect the people and property on their territory from hazards, and thus, it is vital to give high priority to disaster risk reduction in national policy, consistent with their capacities and the resources available to them. (-> policy advice, capacity building for actors in government and civil society organisations)
- Strengthening community level capacities to reduce disaster risk at the local level is especially needed, considering that appropriate disaster reduction measures at that level enable the communities and individuals to reduce significantly their vulnerability to hazards. (-> ascertain information flow to local actors and provide mandates as well as means so that they can take appropriate measures)
- Disasters remain a major threat to the survival, dignity, livelihood and security of peoples and communities, in particular the poor. Therefore there is an urgent need to enhance the capacity of disaster-prone developing countries in particular, the least developed to reduce the impact of disasters, through strengthened national efforts and enhanced bilateral, regional and international cooperation, including through technical and financial assistance. (-> including the provision of geoinformation on hazards and risks by local institutions).

But as the lessons learnt demonstrate, a frequent bottleneck exists between information providers and users: if information is not requested, the capacity to use the information effectively does not exist, the means to initiate actions based on the information are not provided, and the dissemination of this information does not happen efficiently even the best technology cannot have an impact.

Project Planning and Management

A project is understood as a series of activities aimed at bringing about clearly specified objectives within a defined time-period and with a defined budget. A project should also have:

- Clearly identified stakeholders, including the primary target group and the final beneficiaries;
- Clearly defined coordination, management and financing arrangements;
- A monitoring and evaluation system (to support performance management); and
- An appropriate level of financial and economic analysis, which indicates that the project's benefits will exceed its costs.

Development projects are a way of clearly defining and managing investments and change processes. Development projects can vary significantly in their objectives, scope and scale. Smaller projects might involve modest financial resources and last only a few months, whereas a large project might involve many millions of Dollars and last for many years. In order to accommodate this kind of diversity, it is important that project management systems support the application of standard working modalities/rules in a flexible manner.

A well-formulated project should derive from an appropriate balance between the international, regional, national development policy priorities and the partner's development priorities. Within the scope of these policy priorities, the executive arms of government or non-governmental agencies formulate the broad areas of work required to implement policy decisions. These broad areas of work are often called programmes, which, like projects, may vary significantly in scope and scale. The definition of what a programme is depends essentially on how the responsible authority(ies) choose to define it.

For example, a programme may:

- cover a horizontal issue (e.g. Disaster Risk Reduction Programme, here IDNDR or CPDRSD);
- or focus on one part of the issue (e.g. CBNDR).

Project objectives should therefore contribute to national and sector policies wherever a public sector activity is being supported. When non-state actors are implementing projects, a distinction needs to be made between activities fully outside the realm of the public sector and activities undertaken on behalf of government. In the latter case, non-state actors typically deliver services of a public nature as if these services had been 'contracted out' by government. Even if a formal 'contracting out' process has not occurred, it is important that such functions should be consistent with government policy to ensure their relevance and promote prospects for sustainability.

As requested by the TORs for this evaluation, a Logical Framework Analysis (LFA) should be used. The LFA is an analytical process and a set of tools used to support project planning and management. It allows information to be analysed and organized in a structured way, so that important questions can be asked, weaknesses identified and actors can make informed decisions based on their improved understanding of the project rationale, its intended objectives and the means by which objectives will be achieved. It is useful to distinguish between the LFA, which is an analytical **process** (involving stakeholder analysis, problem analysis, objective setting and strategy selection), and the Logical Framework Matrix (LFM) which, while requiring further analysis of objectives, how they will be achieved and the potential risks, also provides the documented **product** of the analytical process. In the context of the Logical Framework Matrix, a project is defined in terms of a hierarchy of objectives (inputs, activities, results/outputs, purpose and overall objective) plus a set of defined assumptions and a framework for monitoring and evaluating project achievements (indicators and sources of verification)⁴.

The implementation of the project can then be supported by Result-based Management. RBM is understood as a team-based and participatory approach to management that seeks to focus an organization's or project's effort on expected results by means of

⁴ Based on Project Cycle Management Guidelines (2004), European Commission

1. Defining realistic expected results, based on appropriate analysis.
2. Clearly identifying program beneficiaries and designing programs to meet their needs.
3. Monitoring progress towards results with the use of appropriate indicators.
4. Identifying and managing risks.
5. Increasing knowledge by learning lessons and integrating them into decisions;
6. And reporting on results achieved and the resources involved⁵.

The evaluation is based – at best as possible – on these planning and management concepts. The understanding of the consultants is that these approaches are not dogmas but can, in a flexible and transparent manner, be used to

- analyse relevance, impact, effectiveness, efficiency and sustainability
- evaluate the process of the intervention
- and, most importantly, initiate a learning process to facilitate the way-forward

In this spirit, the evaluators sought the consensus from all actors involved in RAP-CA to the proposed evaluation guide derived from these concepts⁶.

⁵ E.g. Results-Based Management in CIDA: An introductory Guide to the Concepts and Principles. (1999), Performance Review Branch.

⁶ Villagran de Leon J.C., Zeil P.: Inception Report. (15. January 2006)

The Method used for the Evaluation

The purpose of the evaluation aims to provide information to assist in, and guide the design and the implementation of future similar projects and thus contributes to the formulation of a strategy as well as the development of a capacity building concept for disaster risk reduction within UNESCO.

The evaluation process spanned the following activities:

- an assessment of the project documents as provided by the Section for Disaster Reduction in the Natural Science Sector,
- discussions with staff members of UNESCO, ITC, CEPREDENAC
- interviews with participants of the project in Central America
- the evaluation of a questionnaire filled by the participants of RAP-CA
- an assessment of additional literature and documents elaborated within Central America, such as the country reports elaborated in November 2003 under the umbrella of the Mitch+5 consultation process: as well as documentation elaborated by consultants for CEPREDENAC.

The assessment addressed the relevance of the project at three stages:

- a. at the time of the project design (pre-1999) as reflected in the various documents leading up to the final project proposal used for implementing the project;
- b. taking into account (as best as possible) the changes occurring in the project environment (mandates of institutions, policy directives, regional initiatives) during the implementation period;
- c. the relevance of the action after completion of the programme in respect to impact and replicability.

The project implementation has been evaluated in regard to efficiency (use of project means for achieving planned outputs, management), effectiveness (do the outputs ascertain the achievement of the purpose?), risks (have assumptions been taken into account and were they monitored?), impact (how does the purpose contribute to the overall objectives?) and sustainability (do benefits produced by the project continue to flow?) using two approaches:

- a systematized analysis of the project proposal in the context of the circumstances at the time when it was conceived,
- and an analysis of the proposal in the context of the results achieved, considering the changed political environment and the impacts of other projects.

Lessons learned in particular in regard to capacity building and the establishment of networks were collated and allow assessing the provisions needed for the design and implementation of similar projects in future (replicability) and recommendations for the development of strategies for disaster risk reduction and capacity building are provided for UNESCO and ITC.

The method of evaluating the criteria by using the logical framework structure is shown in Fig. 1:

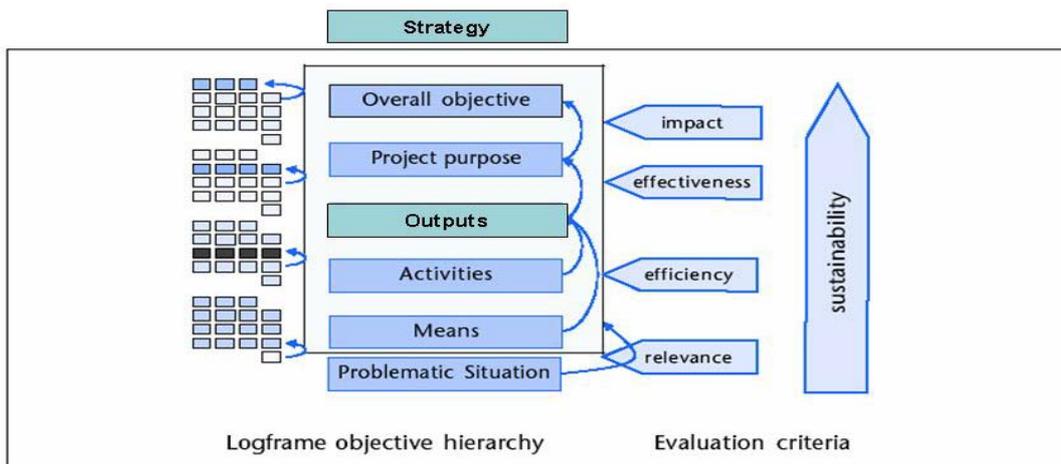


Fig. 1: Evaluation criteria and their relation to the logical framework structure.

However, a complication arises in the evaluation of these criteria when considering the various versions of documents regarding objectives, outputs, and activities presented in different documents, as well as in the Terms of Reference (CEPRENAC-UNESCO Project Proposal; Annex A: RAP-CA project proposal; Terms of Reference). While all attempts have been made to put the three different versions in some context, it remains uncertain if the perceptions of actors involved were based on the same objectives. A main recommendation to UNESCO as the coordinating agency is therefore to keep always an updated version of the documentation, as well as some kind of log of documents and respective changes been agreed.

Applied to the project document which formed the basis for the implementation of the RAP-CA programme in 1998 the following matrix is established when considering project objectives and activities as described in the Terms of Reference for this evaluation.

EVALUATION MATRIX

<i>Overall Objectives</i>	CBNDR	YOKOHAMA	DISASTER REDUCTION IN CENTRAL AMERICA	
<i>Main Objectives</i>	Integration of scientific / technical and local knowledge	[Methods]	Cooperation and Networking	[Procedures]
<i>Outputs</i>	Capacities built to: - Address local problems - To interact at world level		Networking	Courses, documents
<i>Activities</i>	Training workshops in ITC and Central America on GIS / RS		Training on hazard / risk assessment techniques	Conduction of case studies
<i>Means</i>	Financial resources	Existing infrastructure, technical resources	Existing capacities	Existing data, information

↑ ↑ ↑ ↑

relevance

Fig. 2: Schematic logical framework for the RAP-CA Programme (based on project document dated 10 November 1998)

To adequately assess the relevance, the problem analysis made by the actors involved was reconstructed from different documents (1997-1999), and extended by factors assumed to be present at the time of the programme development. The intervention strategy is reflected by the objectives selected for implementation.

Programme Environment

The project was initially conceived in Europe, but was executed in Central America. At the time of planning, Central American institutions in charge of CEPREDENAC were mostly focusing on disaster/emergency response. However, hurricane Mitch in October and November 1998 brought about major changes in policy and institutional mandates that increased the relevance of the project.

Relevance

The assessment of relevance is carried out under the consideration of two aspects:

- a. Physical and policy environment within which the project was implemented. This involves assessing the relevance in relation to:
 - Disaster reduction in Central America
 - The Yokohama Strategy
 - The CPDRSD⁷
- b. Appropriateness of the project objectives to the problems that it was supposed to address. This involves the analysis of the project design as stated in the project proposal and annexed documents as well as the internal logic and coherence of the intervention strategy.

a. Physical and policy environment within which the project was implemented.

Relevance in the context of disaster reduction in Central America:

Disasters have been frequent throughout Central America. The establishment of national emergency committees in the countries of the region arose since the 60s and 70s as the governmental reaction to a series of major disasters. Nevertheless, earthquakes in Nicaragua (1972), El Salvador (1986), Guatemala (1976), as well as hurricanes, and landslides manifested the limitations of this approach to minimize disasters and their losses in terms of human lives, destruction of infrastructure, and socio-economic losses.

A more modern approach to reducing the impact of disasters in the region originally emanated from the conceptualization of disasters and their causes under the auspices of the International Decade for Natural Disaster Reduction (IDNDR) which was adopted by CEPREDENAC as the optimal one to reduce disasters in an effective way by the end of the 90s, as it focuses on the root causes of such disasters. For example: while disaster preparedness focuses on promoting a better response and a capacity to manage losses, destruction, fatalities and affected people, risk management advocates measures that reduce the impact of a natural event. This conducive environment prepared by CEPREDENAC led to the Guatemala Presidential Declaration of the Ordinary Meeting of the Presidents of Central America, Dominican Republic, and Belize in Oct. 1999 entitled: Strategic Framework for the Reduction of Vulnerabilities and Disasters in Central America.

In this context, the relevance of the project was asserted not only via the existing risks in the region and their root causes, as clearly demonstrated through the catastrophic impacts provoked by hurricane Mitch at the time the project proposal was being finalized, but also at the highest political level in the region through the Presidential Declaration on the reduction of vulnerability which defined the need to confront disasters in a new way through risk management.

Considering the state of legislation regarding disaster management in all countries of the region up to 1998, it could be concluded that the project was only partly relevant for emergency management agencies, as such agencies did not have a mandate to target the reduction of elements at risk, but to

⁷ The acronym was later changed to CBNDR (Programme for Capacity Building for Natural Disaster Reduction). The original title (Programme for Disaster Reduction through Sustainable Development) however implies a much wider scope than capacity building. Despite a short comment in the progress report for the period Dec 98 – Oct 99 ('It should be noted that, in several annexes to the present progress report, another title for the Program is used: CBNDR') no further explanation was found for the change. Up from Jan 2001 CBNDR is used throughout the UNESCO reports consulted.

promote an efficient and timely response in the case of a disaster. Nevertheless, the relevance was then asserted through both hurricane Mitch and the Presidential Declaration, which subsequently lead to modifications in legislation regarding disaster and risk management for relevant institutions in all countries of the region. This change process takes time and is still on-going; the newly acquired expertise of RAP-CA participants still waits to impact on disaster risk reduction in the major part of the region.

However, an important issue to note in the project proposal is the fact that the purpose as stated in the proposal does not provide a comprehensive foundation for a substantial contribution to the overall objective (development goal) “to reduce the loss of life and property inflicted by natural disasters”. The two main objectives (project purpose) are stated as follows:

- Integration of scientific/technical and local knowledge
- Cooperation and networking

Relevance of the project in the context of the Yokohama Strategy:

The Yokohama strategy dictates several main guidelines to be followed regarding disaster reduction in the scope of IDNDR such as:

- Information, knowledge and some of the technology necessary to reduce the effects of natural disasters can be available in many cases at low cost and should be applied. Appropriate technology and data, with the corresponding training, should be made available to all freely and in a timely manner, particularly to developing countries.
- The international community and the United Nations system in particular must provide adequate support to the International Decade for Natural Disaster Reduction.
- The Yokohama Strategy will develop and strengthen national capacities and capabilities and, where appropriate, national legislation for natural and other disaster prevention, mitigation, and preparedness.
- The Yokohama Strategy will promote and strengthen sub-regional, regional, and international cooperation in activities to prevent, reduce, and mitigate natural and other disasters with particular emphasis on:
 - Human and institutional capacity building and strengthening.
 - Technology sharing, the collection, dissemination, and utilization of information.
 - Mobilization of resources.

At this point sufficient evidence exists to prove the relevance of the RAP-CA project in regard to the fulfilment of the Yokohama strategy and demonstrate the commitment of UNESCO and the Dutch Government to this noble cause.

Relevance in the context of CPDRSD:

The objective of the CPDRSD is to strengthen the capacity of developing countries to reduce the occurrence and the adverse effects of natural disasters in their countries. Among the issues to be addressed by CPDRSD, the following deserve mentioning in relation to RAP-CA:

- Coordinate and streamline already available expertise.
- Create a common basis of understanding of earth scientists, planners, and decision makers.
- Establish networks, link expertise, and exchange experiences.

Considering that RAP-CA was the first action programme to be carried out under the CPDRSD, it has provided ample examples of inter-institutional coordination for the execution of pilot case studies, enhancing the capacity of Central American government agencies to reduce disasters. Results of RAP-CA are now available to be transferred to other developing countries via documentation on pilot studies and training modules (brochures, publications, CD-ROMs, websites⁸).

⁸ The following websites contain information on the project and the country pilot studies

www.itc.nl/external/unesco-rapca/ www.unesco.org/science/earth/disaster/rapca_disaster.shtml

The reference in the region is made by www.cepredenac.org/03_proye/unesco/rapca.htm (only short description of CBNDR and RAP-CA); www.crid.or.cr (only the country pilot studies reports, but not the training material)

b. Appropriateness of the project objectives to the problems that it was supposed to address

In the late 90s, within the framework of the International Decade for Natural Disaster Reduction, an analysis of the root causes leading to disasters was elaborated by CEPREDENAC. Evidence of such an analysis is found in the draft project proposal (February 1998) elaborated by CEPREDENAC and ITC as is reproduced in the following chart:

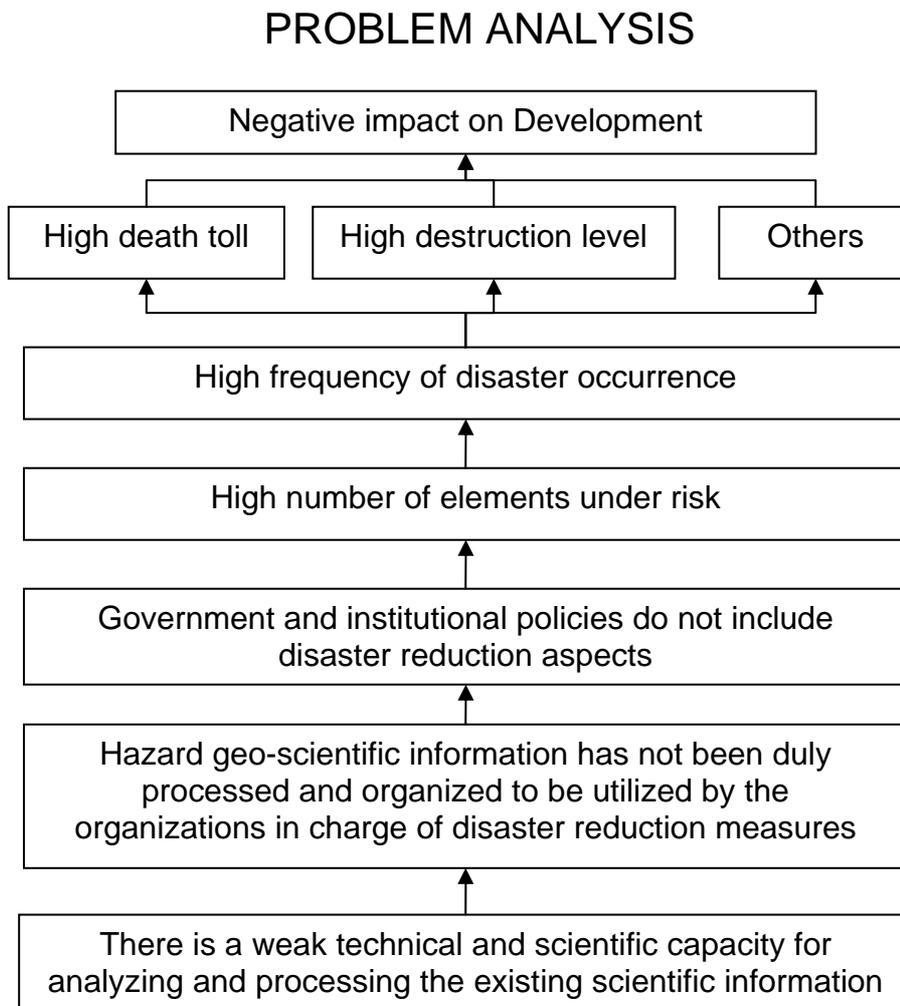


Fig. 3 Problem analysis for disaster impact by CEPREDENAC and ITC (approx. 1998)

This chart reflected the perception of CEPREDENAC regarding the impact of disasters not only in relation to fatalities and high destruction level, but also specifically in relation to development. While this problem tree provided the basis for the RAP-CA project, this analysis seems to get lost in the final project proposal dated 10th of November, 1998. However, this perception was not shared at the time by the Central American national emergency committees or commissions, whose mandates were to respond efficiently after the disaster, as only then would such agencies be allowed to target resources to carry out their mandates.

As can be seen from the chart, an element of the problem recognized by CEPREDENAC and others in the region was the lack of use of technical information on hazards and risks to promote a more sustainable development. This choice clearly opens the door for project proposals enabling not only the generation of such information on hazards, vulnerabilities, and risks, but their systematization and

dissemination to decision makers so that it can be incorporated towards the reduction of the number of elements at risk.

Metamorphosis of project documents: loss in clear logic and terminology

The initial documentation elaborated by CEPREDENAC and ITC to set up the project proposal in February 1998 was well structured in terms of:

- an overall and general description of the problem of disasters in Central America, backed up with data on the impact of recent disasters in the region;
- a systematization of the problem analysis in a hierarchical structure.

TABLE 1 COMPARISON OF ELEMENTS IN PROJECT PROPOSALS

Topic	Draft project proposal Feb. 1998 (page 14: project matrix)	Annex A, Project Proposal Nov 1998
General objective {development objectives}	Reduction of negative impact of disaster on the region development	Reduce the negative impact of natural disasters on the regional development. Contribute to disaster reduction in Central America region through capacity building, and in this way give a contribution to the development of communities and countries of the region.
Immediate objective {purpose}	Give to the regional, national, and local authorities technical instruments to reduce the number of elements under risk.	To strengthen the capacity for disaster reduction using technical and scientific information in a holistic view and to develop participating methodologies in decision making (page 6, par. 3)
Results / Issues? {outputs}	<ul style="list-style-type: none"> ▪ Technical teams trained ▪ Hardware and software installed ▪ Hazard and risk zonation maps produced ▪ A catalogue of disaster-reduction measures proposals established 	<ul style="list-style-type: none"> ▪ 20 earth scientists become experts in geo-hazard assessment ▪ Training packages provided ▪ Good code of practice for successful dissemination of knowledge
Activities	<ul style="list-style-type: none"> ▪ Start-up regional workshop ▪ Training courses ▪ Training facility installation ▪ Field work / case studies ▪ Specific workshops ▪ Individual / group work in pilot projects ▪ Final workshop (conference) ▪ Regional co-ordination 	<ul style="list-style-type: none"> ▪ Start-up regional workshop ▪ Initial training course ▪ Installation of a regional training facility. ▪ Pilot studies with fieldwork and specific workshop. ▪ Specific workshops ▪ Final workshop (conference) ▪ Dissemination of results
External factors {assumptions}	<ul style="list-style-type: none"> ▪ Government's will to support disaster reduction programs and sustained support from international organizations and sponsor governments. ▪ National and local political will is needed to implement disaster reduction measures. ▪ Professional job stability ▪ Active participation of institutions which are not members of CEPREDENAC. ▪ Efficient coordination at different levels. 	
Indicators	Indicators defined for all objectives.	
	Project matrix	

The logic of the project design is demonstrated through a fully developed project matrix (logical framework) spanning objectives, strategies, results, indicators, external factors and activities in direct connection to the systematization of problems (1998, page 14).

However, it is the perception of the consultants carrying out the evaluation of the project that such a logic regarding the project was lost in the project document contained in Annex A of the CEPREDENAC-UNESCO project proposal dated 10 November 1998. Table 1 presents a comparison of the main elements in these documents.

Two elements that also do not find their way from the draft proposal drafted in February 1998 into the Project Proposal presented later in 1998 are:

- The deduction of the project purpose (the selection of level of intervention) which is clearly described in the first document (Feb. 1998 draft proposal, pages 8-9).
- An explicit discussion regarding the missing link between scientific / technical teams and decision makers and the population concerning already existing documentation on risk management within the region.

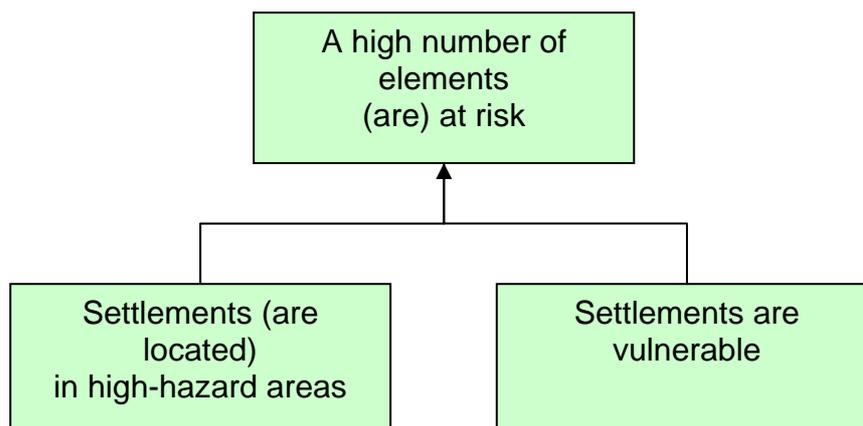
The consultants also wish to note that the project objectives communicated to them in the TORs for the evaluation could not be identified as such in one of the project documents consulted.

Incompleteness of problem analysis

A subsequent analysis of the problem tree presented in the Feb. 1998 draft proposal leads to the identification of missing factors that are necessary to achieve the proposed objectives, which span the reduction of the number of elements at risk. These missing factors are part of the Central American social, economic, cultural, and institutional environment. The following charts illustrate a more complete problem tree, and includes in shaded blue boxes the elements contained in the original CEPREDENAC problem tree and proposed actions.

How to read the problem tree:

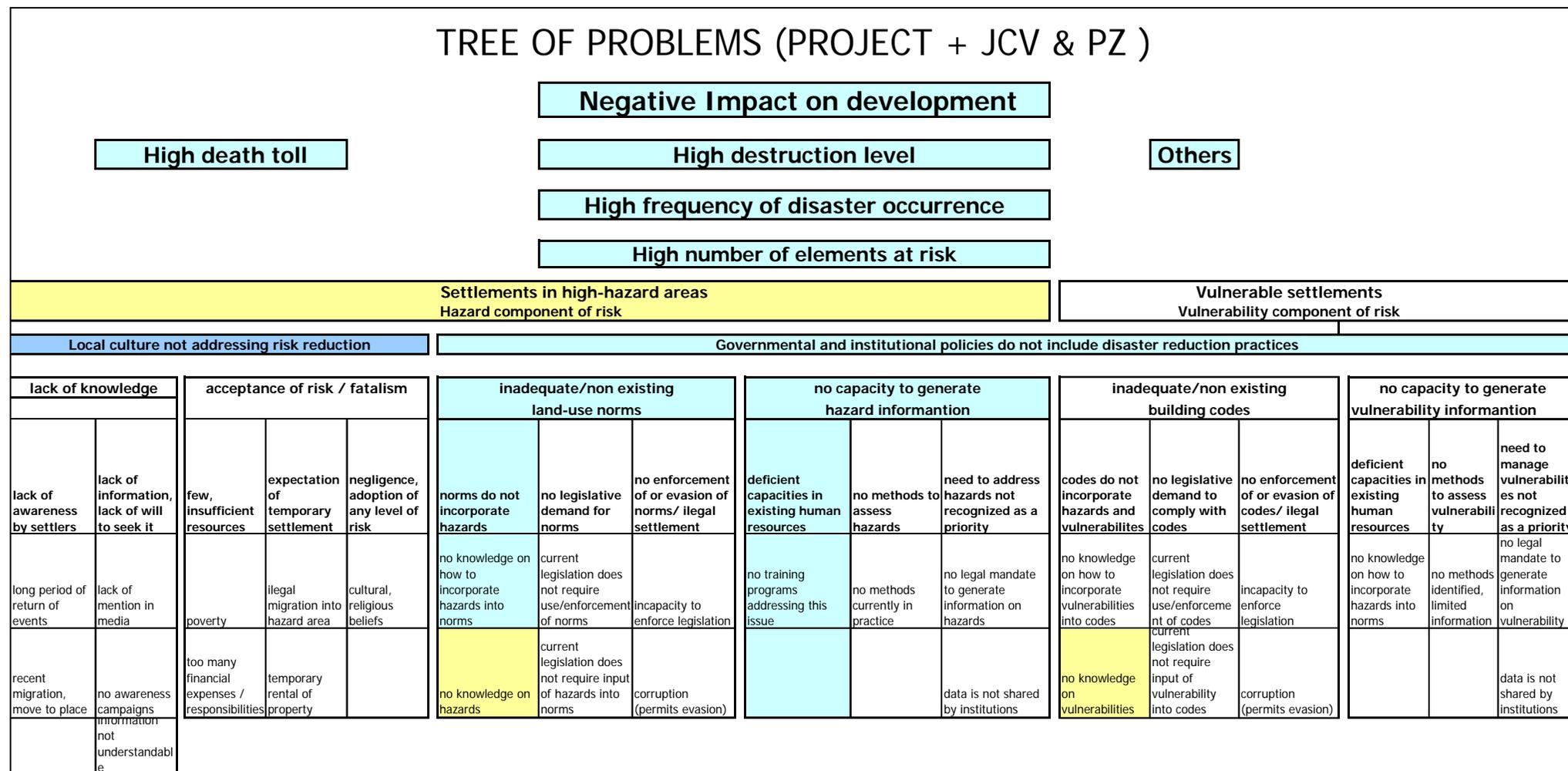
Individual problem statements are sorted into a cause and effect relationship.



'Settlements in high-hazard areas' together with 'vulnerable settlements' are the cause for 'a high number of elements at risk'; or 'a high number of elements at risk' is the combined effect of 'settlements in high-hazard areas' and 'vulnerable settlements'.

The **analysis of objectives** ('tree of solutions') is employed to describe the situation in the future once identified problems have been remedied, and to verify the means-ends relationship for the selection of the intervention strategy.

TREE OF PROBLEMS (PROJECT + JCV & PZ)

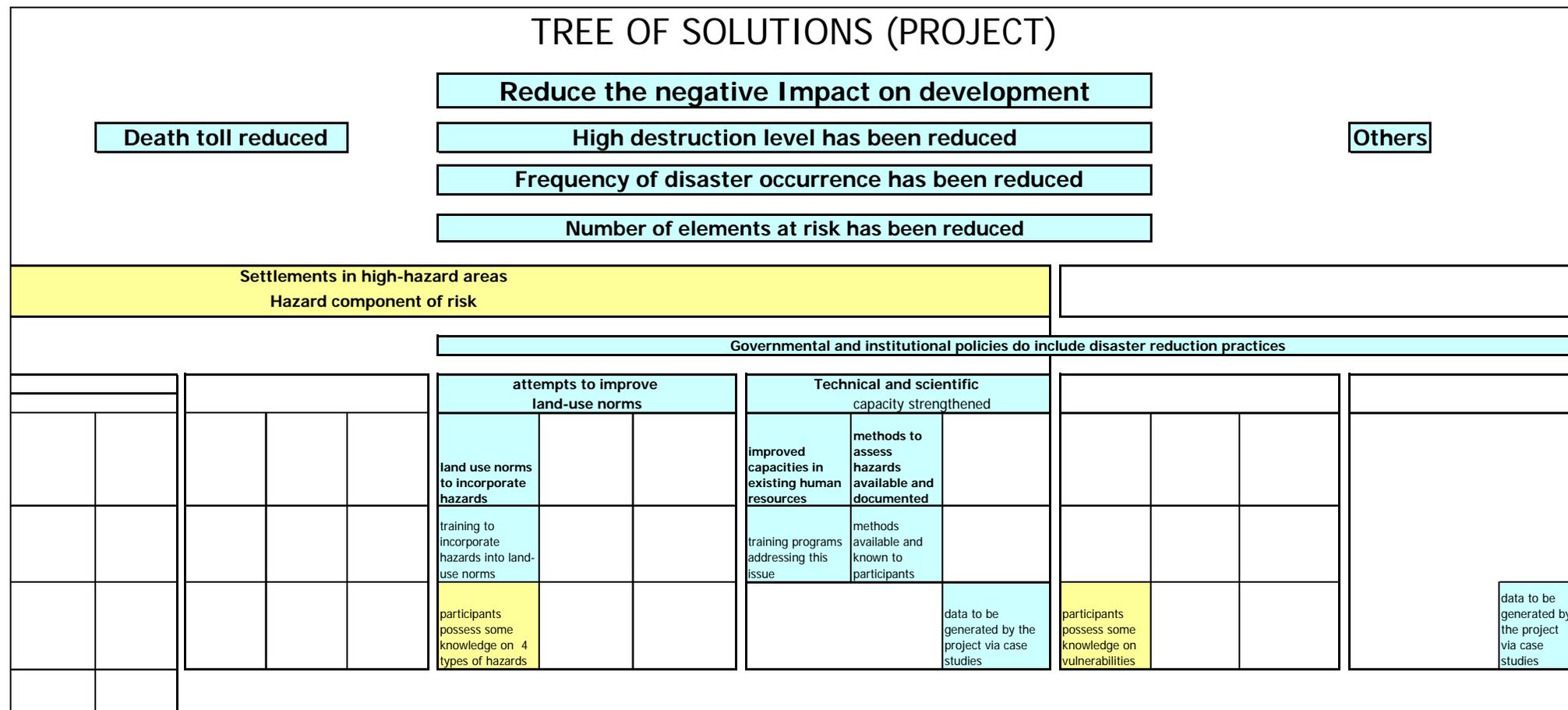


CONSTRUCTED FROM OLD PROJECT DOCUMENT (Doc No. 9)
+ COMMENTS FROM JCV

text filled in this color identified as part of the problems

text filled in this color mentioned as part of problem, but not addressed specifically in Problem Tree (page 10)

TREE OF SOLUTIONS (PROJECT)



text filled in this color identified as part of the solution

text filled in this color mentioned as part of solution, but not addressed specifically in Solution Tree (page 11)

Nested framework: CPDRSD + RAP-CA versus RAP-CA

When assessing the relevance, an additional confusion arises when considering the CEPREDENAC-UNESCO umbrella project document and the RAP-CA project proposal document (Annex A). The CPDRSD was developed by UNESCO and ITC and communicated by a well structured 'ultimate' draft document in December 1997 (cover letter by W. Eder dated 23. December 1997). The objectives are clearly formulated, the roles of the partners defined (ITC: executive secretary, coordination of Programme, formulation of Action Programmes (RAPs), liaison with donors and partners), a concise organizational framework outlined, assumptions and risks noted, and even a guide for internal evaluation included. The Annex B to the final project document one year later contains unfortunately only remnants of the draft; here the programme strategy only mentions the preparation and implementation of RAPs.

The consultants' understanding is that CPDRSD was definitely instrumental to set the stage for the participation of UNESCO in the activities of the International Decade for Natural Disaster Reduction and facilitated the implementation of RAP-CA (providing a substantial part of the overall / development goals for the intervention). However, the clarity on the roles between RAP-CA and CPDRSD when comparing their general objectives, becomes blurred (same project purpose) whereby a contribution of RAP-CA to the purpose of CPDRSD is expected.

What concerns the roles of the two projects also applies to the roles of the actors. CPDRSD is a UNESCO-ITC Programme and an executive secretariat (established at ITC) is responsible for the implementation (= operational coordination and management). Even though Annex A (page 13) states that 'UNESCO Division of Earth Sciences has the general overview to co-ordinate the project and experience with disaster reduction in general, but does not have the manpower for operational coordination and management', in the following paragraph tasks as execution of project, reporting, accounts, dispatch of funds are assigned to UNESCO. One would have expected that the operational tasks for the implementation of RAP-CA are taken care off by the CPDRSD executive secretariat and the overall coordination as defined by the project document (page 13: coordinating point of progress assessment, setting targets for implementing agencies) including the monitoring of the relevance, is carried out by UNESCO with its various links to other international initiatives in disaster risk reduction (e.g. IDNDR). The title 'CEPREDENAC – UNESCO Project' implies a role of CEPREDENAC which did not coincide with the perception of the Central American institution once the programme was implemented.

Recommendations

- Considering that RAP-CA was the first action programme to be carried out under the CPDRSD, it has provided ample examples of inter-institutional coordination for the execution of pilot case studies and made a contribution to improve the capacity of Central American government agencies to reduce disasters. UNESCO and ITC should further pursue the strategy set out by CPDRSD/CBNDR as already shown by CASITA (Asia) and RAP-AF (Africa).
- The project partners should jointly carry out a problem-analysis and reach consensus about the key issues to be addressed (project objectives, intervention strategy); both activities are crucial factors for effective cooperation. Changes in the intervention strategy are made transparent by indicating the shift-of-priority in the objective and problem analysis.
- UNESCO with its various links to other international initiatives in disaster risk reduction (e.g. IDNDR) is well suited to monitor the relevance of projects. The operational tasks including the financial management should be delegated to contracted partner organisations (e.g. the CBNDR secretariat).
- UNESCO as the coordinating agency has to keep updated versions of the relevant documentation to reflect changes been agreed during the implementation of programmes / projects.

Impact

Considering the framework proposed for the evaluation of impacts, three parallel lines of analysis have been conducted. Impacts of the project are assessed in the following three contexts:

- Central America and its agencies
- Yokohama Strategy
- CBDNDR

Impacts within Central America and its agencies.

Among the issues that stand out in relation to the impacts introduced by the project, the main one identified is the recognition of the usefulness of GIS as a tool for information management, to the point that national disaster reduction agencies increasingly establish GIS units within their organizational structure. In respect to disaster reduction, a change is noted regarding the use of GIS tools for information management recognized by institutions within all Central American countries, but this has to be seen as an integral contribution from many projects executed in the region, and not just RAP-CA alone. For example, the extensive evaluation carried out throughout Central America under the Mitch+5 assessment comments on the usefulness of information management to promote risk reduction, but failed to identify RAP-CA, ITC, and UNESCO explicitly as projects and agencies respectively which contributed to this result (see detailed assessment in Annex 6).

Planned versus achieved impacts:

When analyzing both the project documents, as well as the results achieved during the execution of the project, it is important to contrast the proposed project purpose with the outcome once the project was concluded.

In relation to the impact of the project, it can be stated that there are external limitations which make it very difficult for the project to impact on the overall objective. Among these:

1. The overall framework of risk management continues to be very new in the region and thus is not fully appreciated at all levels.
2. There are no institutional mandates or provision at the local level to incorporate measures for the reduction of hazards and risks into development and/or land use planning.
3. Municipalities at the local level still do not use annual or bi-annual planning as a strategy.
4. As illustrated previously when discussing the problem analysis, there are other social, economic, and political factors which still inhibit the insertion of risk management into standard development practices.

In addition, it is necessary to assess the impact in relation to the project outcome at this level. In this case, 20 participants were initially trained at ITC, but only nine completed the project and the case studies. The low number of participants is another factor which limits severely the impact.

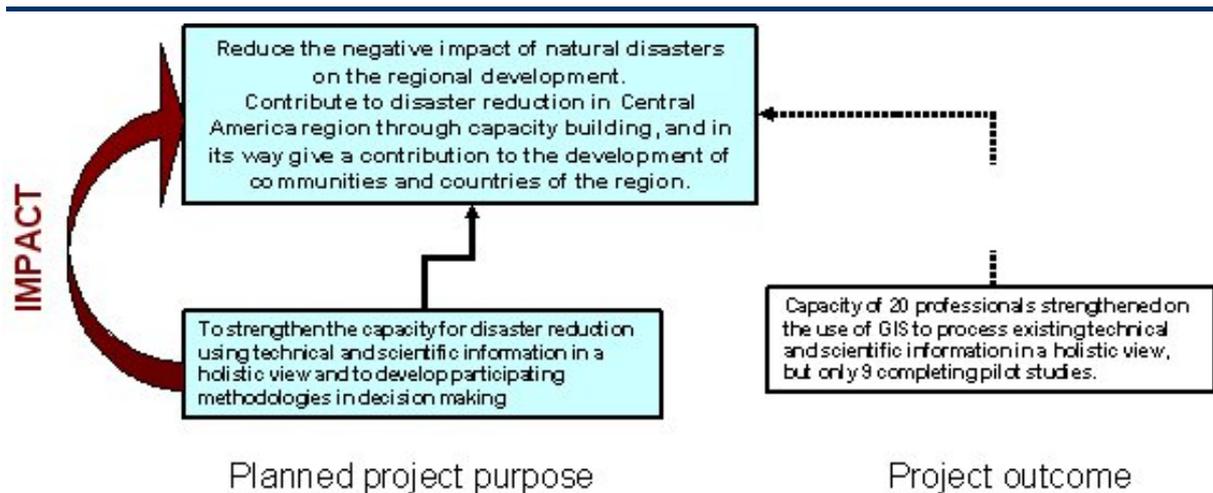


Fig. 4 Impact planned versus achieved

These nine professionals have highly developed skills regarding the use of GIS; they represent a regional thematic group, but to make their impact felt some capacities are still missing:

- The transformation of technical and scientific information into proposed development actions at the local level, such as recommendations for land-use planning and territorial ordainment;
- retrofitting of building codes with information gathered through vulnerability assessment; and,
- development and implementation of strategies to involve the population in such planning processes (participatory approaches).

In addition, due to missing institutional links (CEPREDENAC and national agencies), this group has no capacity to make an impact on the development practices at the local, national, or regional level. In this sense, it seems the project proposal contemplated a target audience (land use planners, urban planners, etc.) that could have impacted more in this sense, but unfortunately, the project coordination was not able to reach such proposed target group and/or ascertain their participation in the programme.

Another factor contributing to the limited impact of the project is related to lack of sufficiently detailed digital layers and hazard assessments. In this case it is important to recognize that the modification of land-use norms by incorporation of hazard information requires information to be presented on a high resolution scale. Unfortunately, in many cases digital cartographic layers on which to base the GIS system are not available in this required resolution. Another factor to consider is the lack of hazard assessments at this high resolution level in the first place.

Impact in relation to the Yokohama framework:

The project, because of its structure and objectives, did contribute to the overall Yokohama framework.

- International development agencies (ITC) contributed to the strengthening of capacities in developing countries
- The use of information and of novel information technologies on issues of disaster-risk management was carried out via the execution of case studies in five countries.

Impact in relation to the CBDNR:

The project, because of its structure and objectives, did contribute to CBDNR objectives, as it provided the example on where to build upon. In this context, the project provided information,

experiences, manuals and lessons learned to make it transferable to other regions of the world where disasters are frequent, such as Asia and Africa.

Recommendations

- Recognizing that disaster risk reduction depends on measures to be taken at local level (land use planning, building codes), the relevant actors and institutions need to be part of the project implementation to increase the impact of the intervention.
- Interventions aiming at the improved development of communities and countries need to strongly consider mandates and continuity of the institutional environment to ascertain the impact of capacity building measures.

Effectiveness

Effectiveness has been assessed in two separate levels:

Level 1: degree to which the outputs have led to the achievement of the objectives of the programme.

Level 2: degree to which the activities have led to the achievement of the proposed outputs

However, in the case of the assessment of effectiveness the consultants were presented with two sources of documentation that contain information pertinent to the evaluation of effectiveness:

- Terms of Reference of the Evaluation
- Project Proposal document

In the case of the TORs (Fig. 5), effectiveness is assessed in two parallel areas:

1. Integration of scientific / technical and local knowledge
2. Cooperation and networking

MATRIX for RAP-CA (1)

Overall Objectives	CBNDR	YOKOHAMA	DISASTER REDUCTION IN CENTRAL AMERICA	
Main Objectives	Integration of scientific / technical and local knowledge	[Methods]	Cooperation and Networking	[Procedures]
Outputs	Capacities built to: - Address local problems - To interact at world level	Risk maps	Networking	Courses, documents
Activities	Training workshops in ITC and Central America on GIS / RS	Training on hazard assessment techniques	Conduction of case studies	
Means	Financial resources	Existing infrastructure, technical resources	Existing capacities	Existing data, information



effectiveness

Fig. 5 Effectiveness for project objectives as stated in the TORs

In the case of the project document (Fig. 6), effectiveness is also addressed in areas, but differently stated:

- To strengthen the capacity for disaster reduction using technical and scientific information in a holistic view.
- To develop participating methodologies in decision making (page 6, par. 3).

MATRIX for RAP-CA (2)

Overall Objectives	Reduce the negative impact of natural disasters on the regional development. Contribute to disaster reduction in Central America through capacity building, and in its way give a contribution to the development of communities and countries of the region					 effectiveness
Main Objectives	To strengthen the capacity for disaster reduction using technical and scientific information in a holistic view		To develop participating methodologies in decision making			
Outputs	20 earth scientists become experts in geo-hazard assessment	Training packages	Good code of practice for successful dissemination of knowledge			
Activities	Start-up regional workshop	Training courses, workshops	Training facility installation	Group work in case studies, pilot projects		
Means	Travel expenses for start-up workshop	Salaries, DSAs, and travel expenses for experts	Training facility equipment	Expenses to conduct case studies (travel expenses, etc.)	Travel expenses for final workshop	

Fig. 6 Effectiveness for project objectives as stated in the project document (Annex A) dated 10. Nov. 1998

It is also important to consider that the results proposed to achieve these purposes vary from the Project Proposal document to the TORs, and thus, assessments are to be conducted differently.

As in the case of the analysis of impacts, it is also important to consider both the assessment via Ex-ante and Ex-post situations.

Achievement of main objectives

Considering the matrix associated with the project proposal (Fig. 6): The strengthening of capacities for disaster reduction using technical and scientific information in a holistic way is proposed to be achieved via the following results:

- Transformation of 20 earth scientists into experts in geo-hazard assessment.
- Training packages
- Good code of practice for successful dissemination of knowledge

Based on this information it is easy to conclude that through the training of professionals the capacities in the region and the countries would be strengthened. In addition, such capacities would also be strengthened via the introduction of practices to disseminate information successfully.

The project was successful in training 20 participants in Holland (ITC) and in Costa Rica to a sufficient degree for participants to be able to carry out tasks proposed in the project (compilation of information, conduction of a case study). In all cases, capacities of participants on GIS were enhanced (based on interviews with participants and questionnaire results). In addition, the project was very successful in complementing theoretical training (in ITC and in Holland) with the conduction of case studies not only to put in practice theoretical concepts, but to incorporate the notion of case study projects where inter-institutional efforts are carried out to identify hazards and risks within a specific town.

Considering what is mentioned in the project document under Issue 1: *Raising knowledge with respect to natural hazards and natural disaster prevention*, one has to state that the RAP-CA program basically targeted the training of selected individuals from countries from the start, and these individuals indeed comment that their knowledge was raised on the use of GIS, as to a lesser degree in the issue of hazards and disaster prevention. In addition, a revision of documentation prepared by CEPREDENAC and other regional consultants, in particular, the national documents elaborated for the regional symposium Mitch+5 manifest that advances have been made in this issue of raising knowledge, basically in terms of the production or systematization of hazards. While agencies like USGS, JICA, and national agencies and universities are cited explicitly in the elaboration of such studies, neither are ITC nor UNESCO were mentioned in this respect. Two explanations are proposed:

- Budgets allocated by JICA and USGS are larger than the budget allocated by UNESCO for this purpose. This enhanced budget could allow for more visibility for these projects in national and regional events.
- Projects by USGS and JICA targeted institutions, rather than specific persons as in the case of the RAP-CA project.

However, the Mitch+5 reports and similar documentation still stress the issue that the transfer of knowledge from technical people to decision makers and the population still does not take place. Therefore, it can be concluded that the strategies regarding dissemination of results employed by RAP-CA were not successful in raising knowledge within a larger audience already familiar with the topic of disaster-risk management.

In respect to Issue 2: *Enhance expertise of local and regional authorities with respect to natural disaster prevention and mitigation*, RAP-CA addressed the use of GIS tools to systematize existing information regarding hazards and risks. The production of technical documents in every case study is a direct proof of this. However, the project failed to address the issue which had already been stressed by CEPREDENAC: a gap in the link between the technical and scientific teams which generate information and the decision makers (politicians) and the population. Unfortunately, the technical reports elaborated within the RAP-CA project continue to maintain this gap:

- The terminology employed in the documents continues to be too technical for local authorities.
- The documents do not propose measures such as guidelines on land-use norms, territorial ordainment, nor modification of building codes to target disaster prevention and mitigation. Throughout Central America existing norms regarding land-use still do not incorporate hazards, and the documentation presented does not address this issue. In a similar fashion, building codes could be improved via incorporating issues that emerge from vulnerability assessment, but then again, the RAP-CA documentation does not reflect this issue.

A final and crucial factor that inhibited the results from the project being reached is the fact that the problem analysis, as proposed in the Project Proposal document, fails to consider relevant social, political, and economic issues which also need to be incorporated for the objectives to be reached. Another factor that contributes to the incapacity to achieve results could be due to the way in which participants were selected. While initially in the design phase of the project participants were to stem from institutions in fields such as land-use planning, urban development planning, infrastructural planning, and water resources planning, the agencies in charge of nominating participants were not able to target such audiences. This could be seen as a weakness at the time (1998) of CEPREDENAC in not having a wider span of agencies, as it basically focused on disaster management agencies, and scientific and technical agencies of every country.

Another important issue to mention is the fact that the use of GIS implies the availability of digital cartography. Furthermore, the use of mapping for land-use norms, and for vulnerability reduction at

the local level requires high-resolution cartography (scales 1:2,000 – 1:10,000). This is particularly important for hazards such as floods and landslides, where topographical features a few meters apart can make a large difference. In all countries of the region where RAP-CA was executed, such cartography was not available, and thus the results, as presented in the various technical reports elaborated by the participants, are not directly useful to decision makers or land-use managers, as such studies lack the resolution required to make them applicable at the local level.

Capacity Building

An issue to be confronted during the evaluation process is the meaning or definition of “capacities”. There is no unique definition of neither ‘capacities’ nor ‘strengthening of capacity’ agreed between the organisations to be used for the assessment. One issue that stems from the analysis is the fact that skills’ training (for example the training of professionals in the use of GIS as a tool) has to be considered different from capacities to manage information. That skills can make an impact and therefore improve capacity has been recognized by ITC which mentions that organisational and institutional strengthening are essential components for an effective capacity building⁹. A strategy in development at UNESCO¹⁰ recommends that the UNESCO effort in capacity building focuses particularly on capacity building in engineering, science and technology to assist developing countries to effectively pursue sustainable social and economic development by

- Development and promulgation of educational materials at all levels: primary and secondary, tertiary, and continuing education
- Training materials, and programs to train trainers for developing countries
- Workshops for educators (e.g., on curriculum development, best practices, quality assurance, etc.)
- Conferences for decision makers from developing countries (e.g., on resources and methods for capacity building)

In the light of this new thinking on capacity building, the planned training facility in CA would have been a major factor for improving disaster risk reduction in the region. Considering the institutional mandate and expertise, the objective of UNESCO should be to work for an enabling environment for capacity to grow on an international, regional and national level targeting governments and regional institutions, whereby ITC caters for the scientific and technological skills required.

Modality of the implementation

Considering the modality of the implementation of the project and if one is to consider the intermediate objective: *“improving and strengthening the technical and scientific capabilities of the countries of the region, for processing and analysis geo-hazard information, utilizing Geo information Systems (GIS) and adapted (tailor-made) methodologies of risk modelling, in such a way that they will be able to provide the decision support system and population, with information duly processed and organized for their practical use”* then it can be stated that the project strengthened capacities of 20 persons, 9 of whom finished the project on issues of GIS for risk mapping. However, the delivery of information in a format that is usable by decision makers was still not achieved. In regards to capacities at the national level, RAC-CA and other similar projects indeed contributed to strengthen such capacities.

Regarding Issue 1 it can be concluded that in the case of some participants knowledge was enhanced, while in the case of others, this was only minimally achieved. Concerning Issue 2, the project was not able to reach authorities at local and regional levels with sufficient strength to enhance their expertise by itself, but in conjunction with other projects, in some pilot cases at the local level, capacities have been strengthened (for example the combination of the RAP-CA and USGS projects represented an interesting synergy of actions, as USGS focused on the donation of hardware and GIS software explicitly).

The project could have benefited from using a different approach in terms of:

- institutions involved in the project

⁹ Beerens S.J.J.: From ‘Building Capacity’ to ‘Building on Capacity’ in Asia. (2005), XXth ISPRS Congress, Commission VI, Istanbul

¹⁰ personal communication by Badaoui Rouhban, UNESCO

- activities to be carried under the project
- the involvement of CEPREDENAC

The project, because of its regional coordination within Central America, failed to target three types of agencies which could have made RAP-CA more effective:

- Government agencies devoted to strengthen capacities of municipal administrations which are tasked with spatial planning, executing land-use regulations, and enforcing building codes.
- Government agencies which manage the regional, departmental (provincial) and municipal councils of development; which could benefit from this modern knowledge and have the capacity to direct funding to projects.
- National Geographical Institutes which have the legal and institutional mandates regarding mapping in these countries.

While this approach might have required additional funding, the use of regional consultants, instead of a large team from ITC, could have allowed for these tasks to be conducted.

As stated earlier, the project did contemplate reaching participants from planning agencies, but unfortunately CEPREDENAC and the national-level institutions in each country could not reach such planning institutions for their support. It is necessary to consider that this can partly be attributed to the fact that the project was being executed within the span of the hurricane Mitch reconstruction efforts, and institutional strengthening had not take place at this time.

The execution of the training course at ITC limited the number of participants from the region to attend. Should arrangements have been made within the region, a larger number of participants could have been accommodated with the same budget. The focus on GIS technologies for the project may have inhibited other issues to be addressed, such as the transformation of technical documents into documents that can be understood and utilized by municipal administrations; or the training of specialists in issues such as the incorporation of hazard information into land-use norms; the introduction of vulnerability information to improve building codes; the analysis of the factors which are required to ensure that technical information on hazards and risks are employed in the decision making process by authorities at different levels; the introduction of advanced technologies such as GIS targeting few, well trained individuals, versus the introduction of less advanced techniques of urban planning incorporating hazards, targeting individuals or staff members from local authorities.

As a regional agency promoting the subject of risk management, CEPREDENAC was allocated only a minimal role in directing and shaping the project. For example:

- CEPREDENAC could have facilitated synergies within the region regarding projects which were focusing on similar issues.
- CEPREDENAC could have enhanced the visibility of the project and its results via additional work. However, its task was minimized to the organization of the project, rather than to the follow-up and subsequent adaptations that may have ensured the completion of results.

To strengthen its role in the implementation (ownership) and to perform its function as regional coordinator more effectively, the organisation required additional resources. It seems that this was the consensus between the Executive Secretary of CEPREDENAC and the Program Director at ITC as they suggested at the onset of the project to seek the agreement with the donor to second an associate expert to CEPREDENAC for 2 years to 'to help to coordinate the activities for the RAP-CA project' (UNESCO Progress Report 1: Programme for Disaster Reduction through Sustainable Development 519 RLA 40 12/98 - 10/99). However, the idea was not implemented and this may have reduced the effectiveness of CEPREDENAC.

The role of partners

CEPREDENAC and ITC had a vision of the role of UNESCO which framed the institution as a financial agency only. Thus complains that UNESCO took on a more active part in operational issues as the decision regarding some activities (e.g. selection of countries to be included in the case studies), were voiced by the partners (see also page 25). Considering the institutional expertise of UNESCO, it is noted that several other sections such as Water Resources, Seismology and Remote Sensing were not visibly involved during the planning and implementation of RAP-CA. This may be attributed to the

lacking strategy on disaster risk reduction in the organisation at the time, but could have catered for improved effectiveness of RAP-CA or – at least – created an inner-institutional synergy around the topic.

Monitoring system

The annual progress reports give evidence that the implementation of the project has been monitored in regard to activities carried out, problems encountered, planned activities for the next reporting period. This can be considered as a basic monitoring approach. Referring to the concepts for project management (see chapter on Project Planning and Management), however an approach based on indicators, assumptions and yearly operational plans is not recognized. In this context, changes been agreed on and reported, such as the replacement of a regional training facility by the support to existing infrastructure in the partner countries in CA are not recorded in a revised project document.

Project schedule

The onset of the project was delayed due to the occurrence of hurricane Mitch at the end of 1998, which prevented the initial workshop to take place before September 1999. However, once the project began, activities were carried out as planned. Frequently there were complaints been raised that some activities are delayed as it took quite some time to process contracts and financial issues or institutional response in the region was slow. Despite the fact that these issues commonly arise when large organisations and/or many regionally distributed institutions are involved, reference is made to the observations regarding the organisation of the project and the roles of actors (see chapter: relevance). Under the assumption that UNESCO monitors the project's relevance and impact (overall coordination), the executive secretariat at ITC takes care of the operational coordination and the management of the implementation (including financial issues) and CEPREDENAC acts as the regional executive agency, part of the problems encountered could have been avoided.

Achievements – Summary

For 24 risk maps planned, 6 risk maps were produced, one for each case study which focused on a community. For the 6 trained teams, in the end it can be concluded that one regional team was created, as in some countries out of the three initial participants only one concluded the project. Of the 20 participants who were initially trained in Holland from these countries, only 9 finished the project and continue to function within this group. Training packages have been produced and are available on the internet as well as on CDs.

While the project addressed the use of GIS to map hazards, it did not really developed novel visualization techniques different to those already available through GIS packages. In most countries, RAP-CA was essential to the establishment of GIS units within the national-level disaster management agencies. While prior to RAP-CA national disaster-management agencies possessed computers and one of them might have had a GIS package as a donation from a project or an agency, it was RAP-CA which really allowed for the establishment of a GIS unit as an institutional unit. The only exception was Costa Rica, where such a unit existed before the project was carried out. However, this has not been the case at the local level in some cases.

While RAP-CA was able to establish a regional thematic group with a common interest focusing on the use of GIS for hazard and risk assessment, it failed to establish a network per-se. As a regional group, it is not considered by CEPREDENAC as its own resource group on GIS issues, in the same way as it considers for example LA RED as a resource group regarding risk management (conclusions from the interview process within Central America).

RAP-CA, through its case studies, was able to describe in a more technical framework of risk management problems that were not addressed in this fashion before. As other projects carried out in the region, it proved the usefulness of GIS as a tool to elaborate hazard, vulnerability, and risk maps. However, it did not solve the problem of disasters in such communities or cities where the case studies were conducted.

It was expected that participants would continue the training programs within their respective institutions and programs. However, in several countries this did not materialize, due to various

reasons, such as participants no longer working in respective institutions, are not interest in capacity building, lack of resources, etc. (see section on risks).

Recommendations

- The strategy of moving from ‘capacity building’ to ‘building on capacity’ is the way forward. The establishment and/or support of local training facilities should be the key objective of any future capacity building programme.
- The project design should explore the strength of each partner; here: UNESCO as a multidisciplinary international organisation acting as the overall coordinator, ITC providing training expertise and project management services through its secretariat, and CEPREDENAC as regional coordinator mobilising experts and institutions (e.g. regional training centre).

Assumptions and risks

The initial draft proposal (dated 24 Feb. 1998, page 14) indeed identified assumptions (external factors) which may threaten the implementation and the sustainability of the project:

- Governments' will to support disaster reduction programs and sustained support from international organizations and sponsor governments (at development objectives level)
- National and local political will is needed to implement disaster reduction measures (at project purpose level).
- Professional job stability.
- Active participation of institutions which are not part of CEPREDENAC.
- Efficient coordination at different levels.

How to deal with the underlying risks is partly addressed in the section 4.4 of the same document and is reproduced here for clarification:

Political will:

'...this suggests that the National Co-ordination Committee must assure the necessary commitment from the corresponding institutions'.

Other institutions participation:

'The active participation of the institutions which are not members of CEPREDENAC should be a priority and must be assured from the beginning.'

Efficient co-ordination:

'Given the number of institutions participating in the project, co-ordination is a very important element, even more, taking into account that different types of hazards are to be included, the different teams should be duly coordinated in order to have unified results'.

Whereby the political will and the job stability rank as true assumptions as the project had little means to influence these conditions, the participation of institutions (with the uncertainty if it would be an active one) as well as the efficient coordination are activities the project can perform and do not classify as assumptions. Nevertheless, at this point and also in the final draft of the CPDRSD, these external factors (risks) were mentioned and therefore recognized as crucial for the success of the project. However, these considerations can not be found in the final project document.

Based on the documentation available, no actions were taken to influence the political will to promote the activities within the project, even though the importance became very evident when working at the pilot studies. The factors involved could have been identified if a thorough problem analysis had been carried out (see chapter on relevance). The lack of institutional commitment and job stability can be seen as causing the initial teams in Honduras and the Dominican Republic ending up with a single participant.

Recommendations

- A detailed listing of assumptions and an analysis of risks has to be part of the project document.
- A strategy for dealing with the risks identified should be suggested and certainly helps to draw the attention of all project partners to certain critical factors to be monitored.

Efficiency

Efficiency is to be assessed by analyzing how the means available to the project were targeted to complete the activities proposed by the project.

MATRIX for RAP-CA (2)

Overall Objectives	Reduce the negative impact of natural disasters on the regional development. Contribute to disaster reduction in Central America through capacity building, and in its way give a contribution to the development of communities and countries of the region				
Main Objectives	To strengthen the capacity for disaster reduction using technical and scientific information in a holistic view		To develop participating methodologies in decision making		
Outputs	20 earth scientists become experts in geo-hazard assessment	Training packages	Good code of practice for successful dissemination of knowledge		
Activities	Start-up regional workshop	Training courses, workshops	Training facility installation	Group work in case studies, pilot projects	
Means	Travel expenses for start-up workshop	Salaries, DSAs, and travel expenses for experts	Training facility equipment	Expenses to conduct case studies (travel expenses, etc.)	Travel expenses for final workshop



Fig. 6 Efficiency –means to outputs

Considering the evaluation matrix for the project proposal (Annex A), 5 distinct means have been identified to carry out the activities. An assessment of these means and the proposed activities allows for the conclusion that the means proposed formed a complete set to carry out all activities proposed.

The project suffered a major delay due to the manifestation of hurricane Mitch in October 1998, which halted activities in the region for several months, in which many institutional changes (legislation and re-organization for example) took place.

In addition, there was a delay at the onset of activities, due to slow financial transactions (Intermediate Report 1999 – CBNDR program, page 3). Further delays ranging from 6 to nine months in starting the pilot case studies were related to contracting and advancing funding by UNESCO (Final Report, 2003, Annex 3, page 1). In the end, only 75% of the funds allocated were actually spent.

Regarding proposed activities, all activities except the training facility were carried out (PP 28 Oct. 1998, pages 4 -6).

- The **initial training course** was held in ITC in the Netherlands in the spring and summer of the year 2000.

- The **regional training facility** was not established, as the institutional representatives of the countries proposed the strengthening of capacities within each country independently, rather than the setup of such a regional facility. The project therefore allocated resources for the acquisition of software and hardware in countries which participated in the project.
- **Case studies** were conducted under the guidance of ITC in each country which participated in the project.
- **Dissemination of studies** took place via regional and national workshops conducted by ITC and project participants from the region. In addition, publications of each case study were elaborated and distributed among institutions in CA.
- a **final workshop** was conducted in conjunction with the regional Mitch+5 symposium.
- In addition, a refreshing training course was held in the summer of 2004 in Guatemala to keep the momentum of the project going.

However, in relation to the optimal use of means in terms of financial aspects, it can be concluded that only 25% of the total available funding of the project reached the Central American region and the Dominican Republic, while 64% went to ITC (for various financial issues such as honoraria, travel expenses, materials, etc.); and 11% to UNESCO.

If the segment of the funding reaching Central America and the Dominican Republic is split into the 5 countries participating, then one is led to the conclusion that the project targeted only 5% of the resources to activities, hardware, software, and case studies. This low amount of funding would explain:

- The lack of visibility in the region
- The lack of institutional commitment to the project.

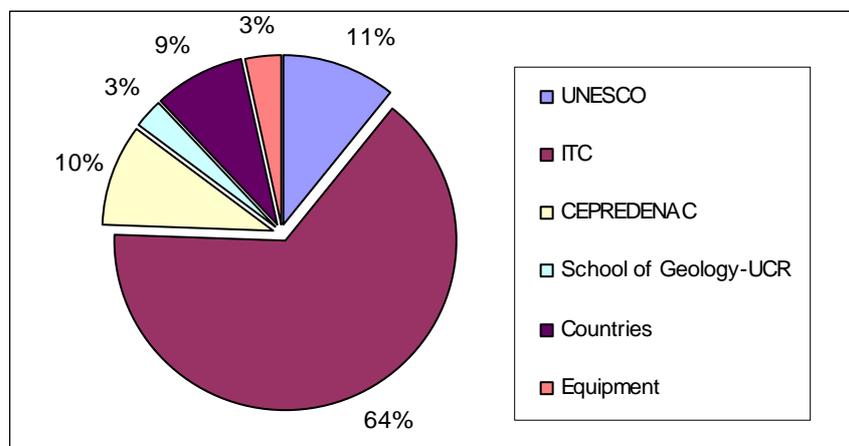


Fig. 7 Efficiency – distribution of funds (derived from contracts consulted)

This low ratio of funding reaching the region in contrast to the funding directed towards local or national executing agencies was mentioned during the Mitch+5 regional symposium as an issue to be overcome, in particular with the aim to increase the fraction of funding of project that really reaches and targets local agencies and the population.

Recommendations

- The long-term development objective of the programme is better served by incorporating regional Central American consultants already trained in GIS and risk reduction in the implementation of the project. The expert services of institutions like ITC should be more complementary than central.

Sustainability

The sustainability of the project was not addressed initially in the project proposal. As a project targeting the reduction of disasters by providing capacity building, it is logical to address the sustainability of capacity building measures.

Considering the activities undertaken as well as the implementation strategies, sustainability of capacity building efforts was not really considered in the project. This comment is based on the following issues:

The beneficiary countries were supported via:

- Training of 3 professionals from each country in the use of GIS for hazard and risk mapping.
- The conduction of a case study, which involved allocation of monetary resources to carry out some segments of the study.
- The donation of hardware and specialized software for GIS analysis.

However, it has been recognized that it is better to target institutions rather than highly qualified professionals.

The project targeted the strengthening of capacities of professionals directly, and while it was foreseen to establish a regional training centre, such a regional training facility did not materialize at the request of Central American institutions. This means that neither CEPREDENAC, nor the institutions devoted to risk management, could provide the sustainability to such efforts.

In addition, the project targeted the replication of GIS knowledge within the region via the original 20 participants. However, agencies including CEPREDENAC neither reached a consensus to establish a joint training centre for the use of GIS technologies, nor were committed to send participants to such a training facility. Instead, it remained an option or was left at the will of participants to train the next generation. Thanks to RAP-CA, technical and human resources are now available, as demonstrated via the case studies, and training material can be downloaded to carry out training on a voluntary and limited level without the technical and financial support by UNESCO.

As a third issue, CEPREDENAC found itself not as coordinating partner, but only as an agency which was requested to assist in the efforts. During the execution of the project, no permanent staff was assigned to CEPREDENAC as part of CBNDR, and the institution had little or no influence on the implementation of the project. Under these conditions, CEPREDENAC lost interest in the project.

While the assistance was compatible with the capacities of national institutions, the countries of the region continue to operate within a weak institutional framework that does not promote long-term stability of staff within institutions (Mitch+5 findings).

The strongest indicator for sustainability would have been the explicit mentioning of RAP-CA in the Mitch+5 country reports, which were basically prepared by the national disaster management agencies the project had targeted. The reports fail to refer to RAP-CA. From the point of view of the national disaster-risk management agencies, the lack of RAP-CA's visibility leads to the conclusion that the intervention was not an institutional project, but a project targeting individual experts. The institutional responsibility to sustain efforts of the project was then limited to sustain the GIS units set up via RAP-CA and other agencies.

While the approach is replicable in other countries, it is important to systematize lessons learned, to dimension properly problem trees and institutional assessments so that objectives, assumptions and risks can be managed in a better fashion. In addition, as recognized by ITC and during the Mitch+5 regional symposium, institutions in Central America are still focusing on disaster response rather than on risk management, therefore this issue needs to be taken into account and addressed in the intervention strategy. ITC has gathered and systematized the experience, and can transfer this experience elsewhere. In addition, some of the RAP-CA group members in Central America are still working in their institutions and could undertake capacity building efforts.

At the regional level CEPREDENAC is improving a regional atlas of hazards contributing to awareness rising. In the context of geoinformation for risk reduction, several projects have already taken place with similar results to RAP-CA in terms of the development of hazard and risk maps. Such efforts have been carried out by specialized government agencies from donor countries (JICA, USGS), technical and scientific agencies from Central American countries (Ministries of Agriculture, Natural Resources, Institutes of Territorial Studies), universities, and by NGOs.

Risk maps are still not really used, except in some selected cases. For example, in CONRED the major demand for the GIS unit is for the elaboration of situation maps after a disaster. The notion of risk maps is still being introduced in the region at all levels. In many cases, the risk maps are at a scale which makes them difficult to use, as they are not sufficiently accurate enough to allow for measures to be planned e.g. the design of land-use norms at local levels.

Risk maps need to be produced by interdisciplinary/intersectorial teams. However, it is important to note that inter-institutional and multi-level approaches are not common in Central America as yet.

Recommendations

- If the weak points, as identified by the evaluation, are addressed, a modified approach can be replicated by UNESCO and partners such as ITC in other regions affected by natural hazards (Asia, Africa, Latin America) provided that
 - Local experts are increasingly involved in skills training measures.
 - The capacity of local institutions is strengthened.
 - The variety of practised techniques for risk assessment are compiled, compared and norms for their application at different levels been developed.
 - The linkage to international initiatives for risk reduction, like the Hyogo strategy, are made and the relevance of the projects been monitored by UNESCO.

Lessons

A culture for risk reduction needs to be created to foster sustainable development instead of concentrating only on preparedness.

The social, economic, cultural, and institutional environment must be considered to ascertain that capacity building can contribute to risk reduction.

The combination of skills training for geoinformation handling and pilot studies for hazard mapping, vulnerability analysis and risk assessment proves to be an excellent approach to build the capacity of intersectorial teams.

GIS and Remote Sensing are proven technologies to support land use planning. To be effective in the context of risk reduction high resolution baseline data need to be available to allow the application at local level (1:2000 – 1: 10000)

RAP-CA contributed to the appreciation of GIS in disaster management and more organisations establish geoinformation units in Central America.

The involvement and commitment of local experts and institutions are important conditions for the sustainability of capacity building programmes.

Only a transparent and participatory approach to planning and management can ascertain the ownership of and resultant commitment to the project's objectives. The clarification of roles and mandates is an important pre-requisite.

The ground for participation is prepared by jointly analysing the problems to be addressed and the joint decision on the intervention strategy. Then a sense of ownership can grow.

Strategies on capacity building and risk reduction mobilize synergy and can facilitate the effective coordination of programmes by and within UNESCO.

Annexes

- Annex 1: Terms of Reference
- Annex 2: Itinerary of Evaluation Mission to Central America
- Annex 3: List of persons interviewed
- Annex 4: Interview guide
- Annex 5: Evaluation of questionnaire
- Annex 6: List of documents
- Annex 7: Review of documents from Central America in regard to RAP-CA

Annex 1: Terms of Reference*Final May 2005*

Terms of Reference for the evaluation of activities under

The Capacity Building Programme for Natural Disaster Reduction (CBNDR)

Regional Action Programme for Central America (RAP-CA)

(519RLA2040, Funded by the Government of the Netherlands)

1. BACKGROUND INFORMATION

1.1: Establishment of the programme: As a follow-up to the International Conference on Natural Disaster Reduction held in Yokohama in 1994, a preparatory working group for launching the “Coordination Programme for Disaster Reduction through Sustainable Development” was established by the International Institute for Aerospace Survey (ITC), in the Netherlands in 1995. During the 28th session of UNESCO’s General Conference, in October 1995 a draft resolution was submitted by the Netherlands, recognizing UNESCO’s “responsibility to participate in the activities of the programme of the International Decade for Natural Disaster (IDNDR)”. The spirit of this draft resolution is reflected in the adopted Resolution 28 C/II para.C (b).

1.2: Agreement on scientific content and launch of the programme: Representatives of ITC undertook a mission to Costa Rica in November 1995 with the objective of formulating a first Regional Action Programme for Central America. In the period 1996-1997 extensive discussions on the content of the programme were undertaken between UNESCO and various partners. The partners included: (i) the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC); (ii) the International Institute for Geo-Information Science and Earth Observation (former International Institute for Aerospace Survey, ITC, the Netherlands); (iii) the Technical University of Delft (TUD, the Netherlands); (iv) Utrecht University (UU, the Netherlands); (v) the GeoForschungsZentrum (GFZ, Germany); and (vi) the Bureau des Recherches Géologiques et Minières (BRGM, France). Agreement between UNESCO and partners was reached on the scientific content of the programme in January 1998.

1.3: Launch of the programme and mandate: In December 1998 the Netherlands Ministry of Education, Culture and Sciences (MOCW) expressed his willingness to cooperate with UNESCO on the Programme for Disaster Reduction through Sustainable Development, and the first Regional Action Programme addressing natural disaster reduction issues was launched to cover several Central American Countries. UNESCO’s role was that of overall coordinator, with the International Institute for Aerospace Survey and Earth Sciences (ITC, the Netherlands) hosting the Secretariat, and the Centro de Prevención de Desastres Naturales en América Central (CEPREDENAC, Panama) being the regional coordinator for Central America. Other partners were the Technical University of Delft and Utrecht University.

1.4: Budget: The Netherlands Ministry of Education, Culture and Sciences (MOCW) made a donation, formalized through a funds-in trust arrangement, amounting to NLG 2,000,000 for a period of four years (1999 – 2002).

1.5: Main objectives and expected results of the project: The project objectives were:

- the integration of technical and scientific knowledge, methods and tools of natural hazard assessment with existing knowledge in the region into practical methodologies of natural hazard and risk zoning applicable in local, national, and regional planning for development
- to develop co-operation and networking at the local, national, and regional levels by creating a common ground for understanding between earth scientists, engineers, and decision makers at various levels leading to procedures which can contribute to decrease in the vulnerability of societies faced with natural phenomena such as landslides, flooding, earthquakes and volcanic eruptions.

The following outputs were expected:

- Networks established for the exchange of information, expertise and experiences in the field of natural disaster reduction with special emphasis on geohazard zonation, increased awareness in disaster prevention, and decision support systems
- local expertise and capacity will be generated through integration of existing knowledge and filling in of knowledge gaps in different countries. The acquired capacity shall be adequate to solve local problems in natural disaster reduction and sufficient for interaction with regional and world-wide initiatives and information
- courses, documentation and training packages developed and made available for use by other organizations active in the field of disaster reduction

2. PURPOSE OF THE EVALUATION

2.1: Initiation of the evaluation: The evaluation of the programme was recommended by the donor, and ITC, and planned for by UNESCO as published in the evaluation plan in the 32 C/5 Approved Programme and Budget. The evaluation will examine the project strategy, the project results and impact at the institutional, local, national and regional levels. Obstacles, success factors and lessons learned from the implementation of the project are to be identified. The evaluation will focus on the following, among other issues:

- The relevance of the programme in relation to the needs of the beneficiary countries;
- The effectiveness of the activities in meeting the objectives and expected results of the programme;
- The replicability of the programme's practical results at the local level, the capacity of beneficiaries for the application of Geographical Information Systems (GIS) and remote sensing as tools for analysis of hazard, vulnerability and risk for disaster prevention at the local level;
- The replicability of the programme's practical results in other countries and regions of the world and the steps taken to disseminate the lessons learned;
- The extent to which the project enhanced UNESCO's contribution to the International Strategy for Disaster Reduction (ISDR).
- Extent to which financial and human resources were wisely used;

2.2: Main stakeholders: Main stakeholders include the individuals and institutions that benefited from this programme, UNESCO's former SC/GEO Division¹, regional bureaux and field offices; the donor; and the partner agencies ITC, CEPREDENAC, UU, TU-Delft.

2.3: Intended use of the evaluation findings: The evaluation will provide information to assist in, and guide the design and the implementation of future similar projects. With regards to dissemination, the findings from the evaluation will be annexed to, and disseminated with the programme results on UNESCO web site.

3. EVALUATION SCOPE

3.1: Timeframe and geographic coverage: The evaluation will assess the performance of the project in the period 1999 – 2002, with developments after 2002 being considered where relevant. Geographic coverage will primarily be confined to Central America (Costa Rica, Guatemala, El Salvador, Honduras, Dominican Republic), and Europe (UNESCO Paris, and the Netherlands).

3.2: Results-Based Evaluation: A fundamental task of the evaluation will be to establish whether a common understanding exist about the expected results of the project and the necessary criteria, measures, or performance indicators that will be used to assess the achievement of results. As such the evaluators should, if necessary, undertake an appropriate logical framework analysis with the participation of the implementing unit to establish and agree on the said criteria, measures, or performance indicators, within the context of completing the evaluation plan. Issues in this case would include:

- How the effectiveness of networks is to be measured, and
- The criteria to be used for assessing the extent to which 'capacity' had actually being built through the project.

3.3: Evaluation questions: The evaluation will focus on identifying changes, planned or unplanned, positive or negative, brought about by the activities of the programme, particularly with respect to the application of Geographical Information Systems (GIS) and remote sensing as tools for analysis of hazard, vulnerability and risks for disaster prevention. The following major questions are to be answered by the evaluation. The list given

¹ In December 2004, restructuring in the Science Sector resulted in activities related to the prevention of natural disasters being moved from the former SC/GEO Division to the Division of Basic and Engineering Sciences (SC/ BES)

here is indicative, and not exhaustive. The external evaluators will have to consider additional evaluation questions where they deem necessary.

Relevance: The relevance of the objectives, activities and areas for support in the light of the needs of the beneficiary countries and the mandate of UNESCO.

- How were the needs of the beneficiary countries determined – and consequently were these appropriately articulated in the objectives of the various projects?
- Were the objectives pursued by UNESCO, the programme strategy and modalities of action relevant to the needs of the beneficiary countries, and the local contexts?
- Does the programme reflect sound RBM principles?

Efficiency: The optimal transformation of inputs into outputs:

- Were the activities delivered within the budget and the timeframe foreseen?
- Could the same results have been achieved at lower costs?

Effectiveness: The degree to which the activities has achieved the objectives of the programme.

- What factors have contributed to and/or prevented from the achievement of the objectives of the project?
- Was the modality of the implementation of the project effective in achieving the objectives of the project?
- Was coordination within UNESCO and between UNESCO and the partners effective in achieving the objectives of the project?
- Was an appropriate monitoring system in place and was ~~the~~ monitoring appropriately conducted and reported to the Headquarters?
- Has the project progressed as scheduled? If not, why?

Sustainability: Durability of the positive results of the project after the termination of UNESCO's intervention.

- Were the beneficiary countries involved with the activities both in terms of human resources and financial resources?
- Are the beneficiary countries capable of implementing without UNESCO's technical and financial support?
- Was the assistance compatible with national institutions and were institutional sustainability requirements met?
- Is the approach employed in these activities replicable to other countries or other projects? If so, how were the lessons learned disseminated?
- Are the achievements of the programme replicable in other local, national, and regional settings?

Risks: Any risks that may threaten a successful achievement of results

- Are there any risks identified that may threaten the successful sustainability of the programme results?
- In case there are any risks identified, are there any measures to be taken to mitigate these risks?

4. EVALUATION METHODS

The evaluation methods to be employed will be part of the programme evaluation framework (Evaluation Plan) to be proposed by the external evaluator, showing how each of the evaluation questions will be answered with regards to sources of data, methods, and data collection procedures. The evaluation methods may include:

- Document review (desk study)
- Interviews
- Field visits and observations, and
- Questionnaires / surveys with stakeholders

ITC is planning to organize a refreshment course Guatemala for the benefit of the RAP-CA participants on 18-29 July 2005. It would be advisable to take this opportunity to carry out whole or part of the evaluation investigations with the RAP-CA participants and CEPREDENAC.

An initial list of documentation to be included in the desk study is attached as **Annex I**. Further documents may have to be added to this list by the stakeholders as the evaluation progresses. Also, **Annex II** shows an initial list of specific 'entities' to be assessed by the evaluation. Here also the stakeholders and, or evaluation team may have to include additional entities where necessary.

5. EVALUATION TEAM COMPOSITION

A lead external evaluator will conduct the evaluation. He (she) will ensure contribution and participation of other evaluators as appropriate. The evaluation team will be independent of UNESCO and have no present or former UNESCO staff members, or individuals who have had responsibilities covering the planning and implementation of the Capacity Building Programme for natural Disaster Reduction (CBNDR).

The external evaluator is required to satisfy the following qualifications and skill areas requirements:

- Prior experience in programme evaluation; strong knowledge of evaluation methods and data collection skills;
- Technical competence drawn from GIS, remote sensing, and disaster management, and
- Relevant in country or regional experience, language competency.

6. PLANNING AND IMPLEMENTATION ARRANGEMENTS

6.1: Management arrangements: SC/BES will assist in the preparation and organisation of the evaluation exercise and will facilitate the fieldworks of the evaluation team. IOS will have a quality assurance role in the evaluation.

6.2: Timing: The evaluation will start in *(June/ July 2005)* with a preparatory meeting at UNESCO HQ and desktop studies, followed by field visits in *(July/August 2005)*, and the submission of the final evaluation report by the end of September 2005. The **evaluation team** will be responsible for being self sufficient as regards logistics (office space, administrative and secretarial support, telecommunications, printing of documentation, etc.). However, suitable working space, when necessary, will be provided for the team when they visit UNESCO Headquarters and other stakeholders. While the evaluation team is primarily responsible for the dissemination of all methodological tools (surveys, questionnaires), the contracting unit should seek to facilitate this process to the extent possible (providing contact information, email addresses, etc.). Relevant stakeholders are being requested to provide planning documents, mission reports or other documents relevant to the evaluation. Table 1 shows a tentative schedule for the evaluation. The schedule is to be firmed up in the evaluation plan to be submitted by the external evaluator (s).

6.3: Deliverables: Three main deliverables are envisaged from the evaluation, namely:

- The evaluation plan highlighting, among other details, the methods to be adopted by the evaluation team, and the time schedule for completing the evaluation;
- The draft evaluation report, which will be circulated among stakeholders for comments.
- The final evaluation report in which comments submitted by the various stakeholders would have been considered and appropriately incorporated by the external evaluators. The final report should include but not necessarily be limited to, the following elements:
 - Executive Summary (maximum 3 pages)
 - Programme description
 - Evaluation purpose
 - Evaluation methods
 - Major findings (given in terms of achievements and challenges)
 - Conclusions and recommendations
 - Lessons learnt/ factors contributing to the achievements (of results) or lack thereof
 - Annexes, including interview list, key documents consulted, itinerary, etc.

The **executive summary**, in particular, should be in a format suitable for direct incorporation into relevant reports on evaluation to the Executive Board. Namely, the Executive Summary should contain the following elements:

- Brief description and background of the programme/projects evaluated;
- Major findings – achievements;
- Major findings – challenges; and
- Recommendations.

Table 1: Tentative Schedule for the evaluation

WHEN	WHAT	WHO
April 2005	Draft TOR	SC/BES, ITC, IOS
May 2005	Finalization of TOR	SC/BES, IOS
June 2005	Hiring of external evaluator	SC/BES
June 2005	Briefing of Evaluator	SC/BES, IOS
	Completion of Evaluation Plan, including identification of individuals/institutions/countries for evaluation, and firming up on the evaluation methodology	SC/BES, ITC, Evaluator
July 2005	Field visits, preliminary report writing	Evaluation Team
November 2005	Submit and validate draft final report	Evaluation Team, IOS, SC/BES, ITC
	Validation meeting	IOS, SC/BES, ITC
November 2005	Submission of final evaluation report to donor	SC/BES

7. ANNEXES

Annex I - Suggested Initial List of documents for background and desk study:

- Project document;
- UNESCO progress reports I, II, III;
- UNESCO final report and products
- CV and admission forms of the RAP-CA candidates
- ITC Report on the Introductory Training Programme (April-July 2000)
- ITC Reports on Activities (4 reports)
- ITC Proposal for a refreshment course on Flood Risk management in Central America
- Yokohama strategy and plan of action

Annex II - Initial list of specific ‘entities’ of the programme to be assessed

Entity	Stakeholder
Design, and Implementation of RAP-CA	UNESCO Headquarters, Paris SC/BES, SC/AO...
Design and implementation of training activities, technical Assistance, Secretariat	Project Secretariat and project partners, the Netherlands (ITC And others)
The pilot Project: “Reinforcement of information analysis and processing capacity for natural risk reduction at the municipality level using Geographical Information Systems tools, Costa Rica”.	Beneficiaries in Costa Rica

<p>The pilot Project: “Flooding and Land sliding Risk Analysis in the area of the Arenal de Monserrat, San Salvador, El Salvador”</p>	<p>Beneficiaries in El Salvador</p>
<p>Assisting the design, the implementation and the regional coordination of RAP-CA</p> <p>Evaluation of the pilot Project: : “Natural Hazards Zonation of the Rio Samala Basin and Risk Analysis of San Sebastian, Retalhuleu, Guatemala”</p>	<p>CEPREDENAC, Guatemala</p> <p>Beneficiaries in Guatemala</p>
<p>The pilot Project : “Geographical Information System (GIS) Development for natural disaster awareness and preparedness for emergencies”</p>	<p>Beneficiaries in Honduras</p>
<p>The pilot Project: “Development of a methodology for the Assessment of Floods and landslides hazard and risk in the medium and lower part of Rio Yaque del Sur, Dominican Republic”</p>	<p>Beneficiaries in the Dominican Republic</p>

Annex 2: Itinerary of Evaluation Mission to Central America

Date / Time	Country / Place	Person / Organisation
Jan 6 evening	Guatemala City / Guatemala	arrival
Jan 7 09:00 – 18:00	Guatemala City / Guatemala	conceptualization of evaluation
20:00 – 23:00	“	David Smith / CEPREDENAC
Jan 8 09:00 – 19:00	“	editing inception report
Jan 9 08:00 – 09:30	“	David Smith / CEPREDENAC
09:30 – 13:00	“	Manuel Pinelo / CONRED Hugo Hernandez / CONRED
14:30 – 17:30	“	Otto Galicia / CONRED Gustavo Barrios / CONRED
Jan 10 09:00 – 11:00	“	RAP-CA Guatemala Group: Mario Rodriguez Estuardo Lira
14:00 – 18:00	“	editing inception report
Jan 11 08:00 – 10:00	Travel to Costa Rica	
11:00 – 17:00	San Jose / Costa Rica	joining the Disaster Reduction Hyperbase – Third Core Member Meeting (CMM3) Dave Zervaas / formerly CRID – now ISDR Rolando Duran / former Executive Secretary of CEPREDENAC Alan Lavell / consultant to LA RED
17:00 – 19:00	“	RAP-CA Costa Rica Group: Douglas Salgado / CNE
Jan 12 09:00 – 11:00	“	RAP-CA Costa Rica Group: Alvaro Climent / ICE
12:00 – 13:30	“	Luis Diego Morales / CNE
15:00 – 19:00	Travel to El Salvador	
Jan 13 08:00 – 12:00	San Salvador / El Salvador	RAP-CA El Salvador Group: Giovanni Molina / SNET José Deras / IGN-RSI and Antonio Arenas / SNET
13:00 – 15:00	Travel to Guatemala	
Jan 14 09:00 – 18:00	Guatemala City / Guatemala	compiling notes / study of reports
Jan 15 12:00 -	Departure to Europe	

Annex 3: List of persons interviewed

Name	Function	Topics covered
UNESCO Paris December 12. – 14. 2005		
Prof. Alaphia Wright	Advisor IOS	Introduction to the evaluation context – institutional framework, guidelines, quality assurance
Badaoui Rouhban	Chief, Section for Disaster Reduction, Natural Science Sector	Scope and objectives of the evaluation, establishing consensus on evaluation criteria and indicators
Helen Papa	Programme officer, Section for Disaster Reduction, Natural Science Sector	Same as above; provision of documents
Robert Missotten	Secretary, International Geoscience Programme, Chief, Earth Observation Section, Division of Ecological and Earth Science	Capacity building programmes in the earth science sector related to GIS and Remote Sensing
Keith Alverson	Head of Section, Secretariat of the UNESCO Intergovernmental Oceanographic Commission IOC	Disaster Risk Reduction in the context of tsunamis; capacity building in the framework of IOC
Walter R. Erdelen	Assistant Director-General for Natural Sciences	Reaching consensus on evaluation scope, criteria and indicators
International Institute for Geo-Information Science and Earth Observation – ITC, Enschede, December 15. - 16. 2005		
Cess van Westen	Associate Professor, Earth Science Applications	Program design, implementation, follow-up activities
Kurt Sijmons	Chief Cartographer	Map production for pilot studies
Mark Noort	Head Project Services	Project planning, implementation and project management
Niek Rengers	Former Vice Rector, ITC	Development of program, project planning, follow-up activities
Paul van Dijk	Programme Director, Applied Earth Sciences	Capacity building concept
Sabine Maresch	Senior Project Officer, Marketing & Project Services	Project implementation, management
Evaluation Mission to Guatemala, Costa Rica, El Salvador January 6 – 15 2006		
David Anthony Smith Wiltshire	Centro de Coordinación para la Prevención de los Desastres Naturales en América Central. (CEPRENAC)	Project implementation, management
Manuel Pinelo	Coordinadora Nacional para la Reducción de Desastres (CONRED)	
Hugo Hernandez	Executive Secretary, CONRED	
Otto Galicia	CONRED	

Gustavo Barrios	CONRED	
Mario Rodriguez	Grupo Sierra Madre, Guatemala	
Estuardo Lira	United States Department of Agriculture USDA	
Dave Paul Zervaas	Formerly: Centro Regional de Información sobre Desastres (CRID) – now: International Strategy for Disaster Reduction ISDR	
Rolando Duran	former Executive Secretary of CEPREDENAC	
Alan Lavell	consultant to LA RED	
Douglas Salgado	Comisión Nacional de Prevención de Riesgos y Atención de Emergencias de Costa Rica (CNE)	
Luis Diego Morales	President, CNE	
Alvaro Climent	Instituto Costarricense de Electricidad (ICE)	
Giovanni Molina	Servicio Nacional de Estudios Territoriales de EL Salvador (SNET)	
Antonio Arenas	Director, SNET	
José Deras	Istituto Geográfico Nacional “Pablo Arnoldo Guzmán” (IGN-RSI), El Salvador	
Interviews during the Third International Conference on Early Warning, 27-29 March 2006, Bonn, Germany		
Dr. Wolfgang Eder	Former Director, Division of Earth Sciences, UNESCO	Project implementation, management
Pablo Torrealba	Former Project Director, CEPREDENAC; now UNDP-BCPR Bangkok	Project implementation, management

Annex 4: Interview guide

Objectives	Processes involved	Major questions to be answered
<i>Project design</i>		
- Relevance	Needs assessment Problem analysis	How were the needs of the beneficiary countries determined – and consequently were these appropriately articulated in the objectives of the various projects? Were the objectives pursued by UNESCO, the programme strategy and modalities of action relevant to the needs of the beneficiary countries, and the local contexts? Does the programme reflect sound RBM principles? How was the assessment been done? Who was involved? What alternative strategies were considered?
<i>Project implementation</i>		
- efficiency	Management	Were the activities delivered within the budget and the timeframe foreseen? Could the same results have been achieved at lower costs? What were the roles of UNESCO, ITC, Ceprednac? CPDRSD?
- effectiveness	Results -> purpose	What factors have contributed to and/or prevented from the achievement of the objectives of the project? Was the modality of the implementation of the project effective in achieving the objectives of the project? Was coordination within UNESCO and between UNESCO and the partners effective in achieving the objectives of the project? Was an appropriate monitoring system in place and was the monitoring appropriately conducted and reported to the Headquarters? Has the project progressed as scheduled? If not, why? Were the planned outcomes achieved? The networks established – scale/range? Local problems been solved? Training material accessible in the region? Who does integration? Training facility?
- risks	assumptions	Are there any risks identified that may threaten the successful sustainability of the programme results? In case there are any risks identified, are there any measures to be taken to mitigate these risks? How were the risks managed?
- impact	Purpose -> Overall objectives	Are modalities for risk mapping in place at local level? Are beneficiaries' networks actively using methodologies/training materials? At what scale?
-sustainability	RAP-CA as part of Disaster reduction in the region	Were the beneficiary countries involved with the activities both in terms of human resources and financial resources? Are the beneficiary countries capable of implementing without UNESCO's technical and financial support? Was the assistance compatible with national institutions and were institutional sustainability requirements met? Is the approach employed in these activities replicable to other countries or other projects? If so, how were the lessons learned disseminated? Are the achievements of the programme replicable in other local, national, and regional settings?

		<p>Training provided by local partners? Risk maps been used by DM actors? Risk maps produced by interdisciplinary/intersectorial teams?</p>
<i>Lessons learnt</i>		
	Capacity building	<p>If you consider your institution to have the capacity to use remote sensing and GIS technologies as tools for risk management, which indicators can you provide to us regarding the fulfilment of such a capacity?</p> <ul style="list-style-type: none"> ▪ Specific technical personnel trained on the use of these techniques ▪ Complementary information available to apply such techniques? ▪ Relevant institutions (such as Met Dept. Planning Agencies, Geographical Institutes) involved in the process? ▪ Legal mandates? Frameworks?
- replicability	Networks	<p>Given the fact that there are already networks involving environmental agencies (CCAD), hydrological agencies (CRRH), technical agencies (seismology, vulcanology); what is the advantage of having a group focusing on GIS remote sensing at the national and regional levels?</p>
		<p>To what degree does your institution recognize the value of using GIS technologies in relation to hazard and risk mapping? Has your institution replicated the activities carried out by RAP-CA in other geographical areas? What are the strategies which your agency is using to carry out risk management activities? If you were designing a new project tailoring the use of information to promote a more sustainable development focusing on capacity building regarding the use of hazard maps as a tool for such development:</p> <ul style="list-style-type: none"> ▪ Do you feel you possess the properly qualified personnel to carry out this capacity building process within your country? ▪ How would you go about the project?
<i>Strategy level</i>		
Disaster risk reduction & capacity building	concepts	<p>What can you comment on standard techniques for hazard assessment? Given the many different techniques to go about hazard assessment (from the simplest to the most complex), has your agency selected one in particular to use and promote? Are you aware of the RAP-CA products in this area? How would you rank such products from RAP-CA?</p>
Disaster risk reduction & capacity building	strategy	<p>In your view, which are the strategies required to go about disaster risk reduction? Given the current situation within the country regarding risk management, how should capacity building be addressed within this situation?</p>

Annex 5: Evaluation of questionnaire

**UNESCO RAP-CA
Questionnaire for Evaluation und Feedback**

Your name

Your function and institution at the time of RAP-CA:

function:	<input style="width: 98%; height: 15px;" type="text"/>
Institution:	<input style="width: 98%; height: 15px;" type="text"/>

Your present function and institution:

function:	<input style="width: 98%; height: 15px;" type="text"/>
institution:	<input style="width: 98%; height: 15px;" type="text"/>

What were in your perception the goals of RAP-CA?

Topic: Capacity building					
	excellent/ very high		good / medium		deficient/ very low
Did the training provided by RAP-CA improve your GIS skills?					
How do you rate the impact of the training course at ITC in regard to your knowledge in hazard mapping?					
...in hazard zonation?					
...in vulnerability assessment?					
...in risk assessment?					
How important were the case studies (pilot projects) for the achievement of RAP-CA's goals?					
At what rate were other institutions (than your own) involved in the case study?					
Did the case study contribute to understanding the elements involved in disaster risk reduction in your country?					
How feasible is it to replicate the approach used for the case study?					
Did RAP-CA strengthen the capacity of your institution to contribute to disaster risk reduction?					
Did RAP-CA strengthen the capacity of the Central American Region to reduce risks due to natural hazards?					
Did the strengthening of GIS capacities within Central American Region reduce risks due to natural hazards?					

What are the two aspects in the program you value most?

1.	<input style="width: 95%; height: 15px;" type="text"/>
2.	<input style="width: 95%; height: 15px;" type="text"/>

Which topics were missing?

If a similar program is organised today, what would you like to see changed?

Topic: Co-operation and networking at the local, national, and regional levels

	😊				☹️
Did RAP-CA create a regional network?					
How do you rate the impact of RAP-CA for the formation of national networks for disaster risk reduction?					
How do you rate the impact of RAP-CA on your own involvement in regional activities?					
How do you rate the impact of RAP-CA on your own involvement in risk reduction activities at local level?					
How do you rate the impact of regional networks on local policy formulation for disaster risk reduction?					

Please define the difference between the terms "collaborative network" and "group with a common interest"

Based on the answer to the previous question, what is in your opinion the outcome of RAP-CA :

- a) a **group** of experts
- b) a **network** of institutions
- c) other

please specify:

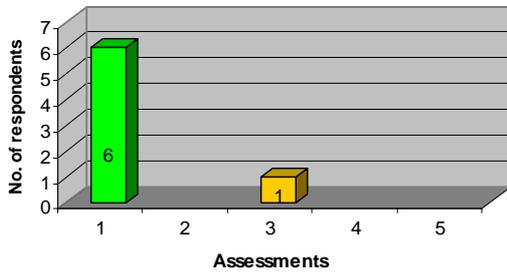
Topic: Program implementation

	😊				☹️
How do you evaluate the role of UNESCO as the responsible executing agency?					
How do you evaluate the role of CEPREDENAC as the local partner representing CA government institutions?					
How do you evaluate the role of ITC as contracted training institution?					
How do you rate your own influence on the project implementation?					

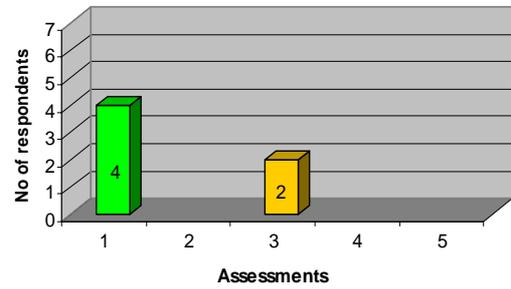
Any other comment you wish to make:

For all figures: ranking for assessments from 1 (excellent/very high) to 3 (good / medium) and 5 (deficient/ very low)

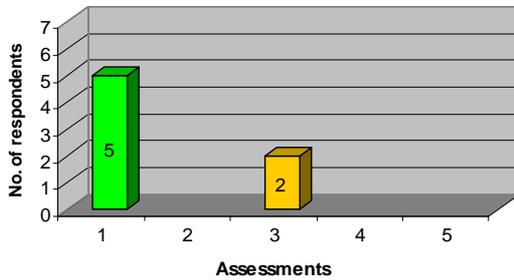
Did the training provided by RAP-CA improve your GIS skills?



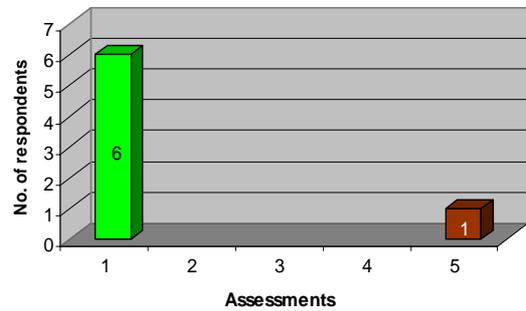
How do you rate the impact of the training course at ITC in regard to your knowledge in hazard mapping?



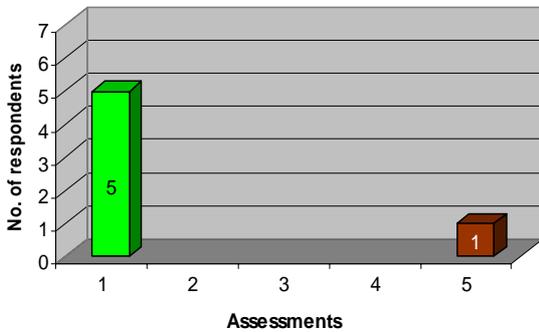
...in hazard zonation?



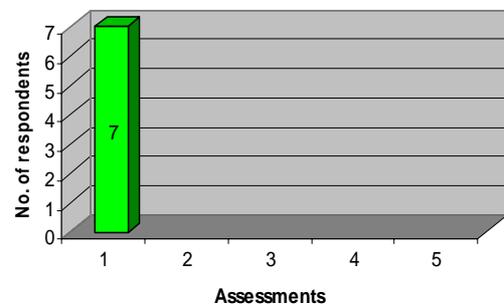
...in vulnerability assessment?



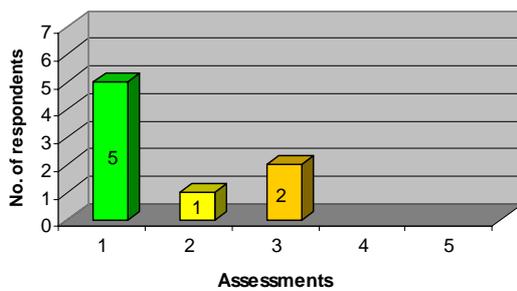
...in risk assessment?



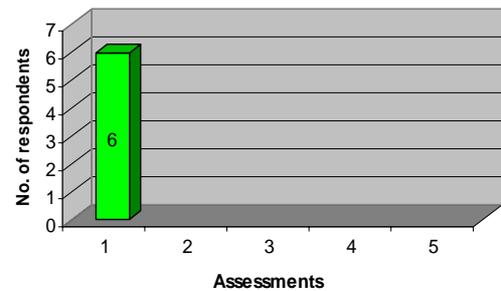
How important were the case studies (pilot projects) for the achievement of RAP-CA's goals?



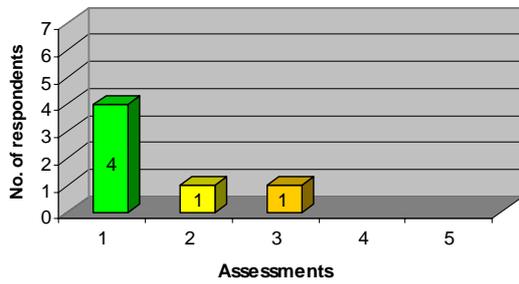
At what rate were other institutions (than your own) involved in the case study?



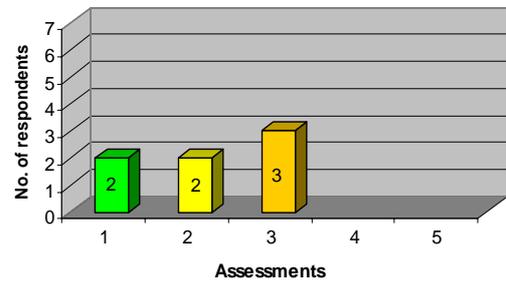
Did the case study contribute to understanding the elements involved in disaster risk reduction in your country?



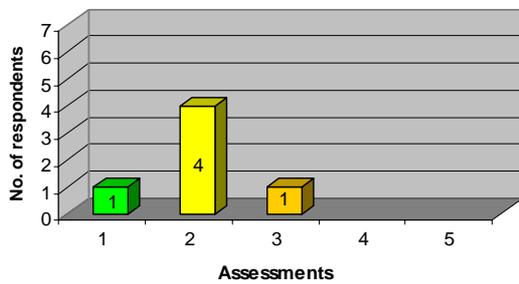
How feasible is it to replicate the approach used for the case study?



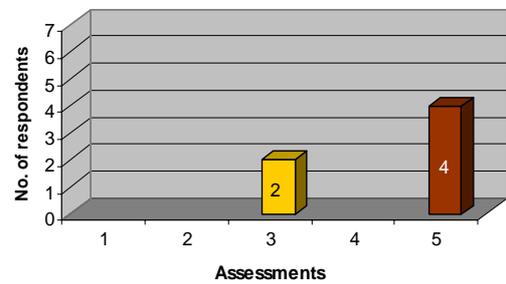
Did RAP-CA strengthen the capacity of your institution to contribute to disaster risk reduction?



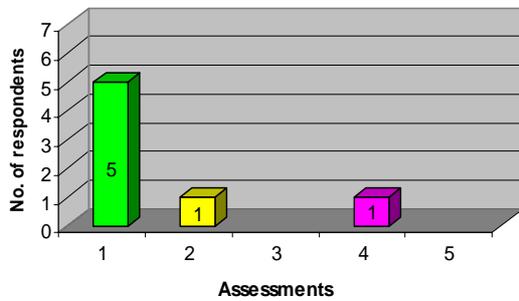
Did RAP-CA strengthen the capacity of the Central American Region to reduce risks due to natural hazards?



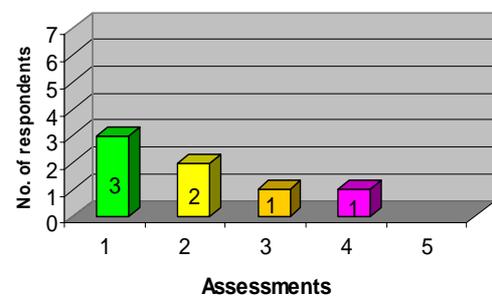
Did the strengthening of GIS capacities within Central American Region reduce risks due to natural hazards?



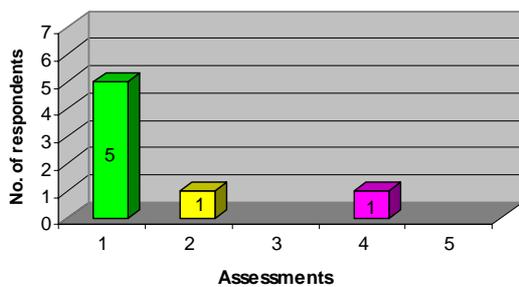
Did RAP-CA create a regional network?



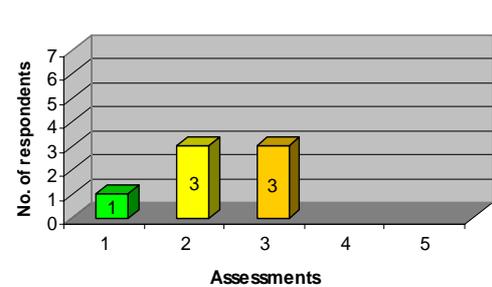
How do you rate the impact of RAP-CA for the formation of national networks for disaster risk reduction?



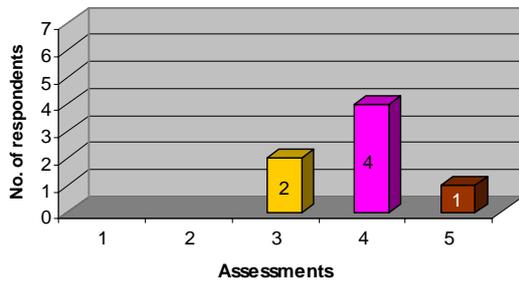
How do you rate the impact of RAP-CA on your own involvement in regional activities?



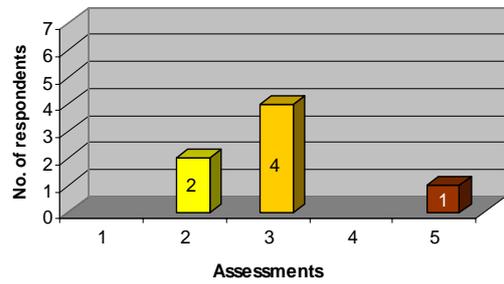
How do you rate the impact of RAP-CA on your own involvement in risk reduction activities at local level?



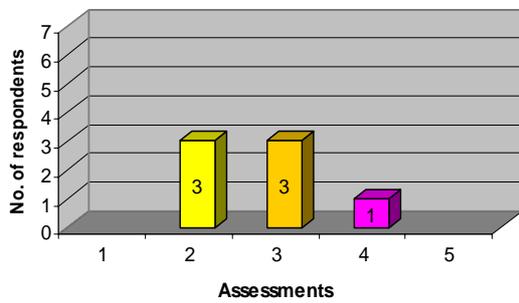
How do you rate the impact of regional networks on local policy formulation for disaster risk reduction?



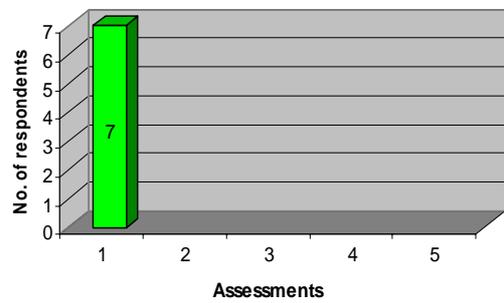
How do you evaluate the role of UNESCO as the responsible executing agency?



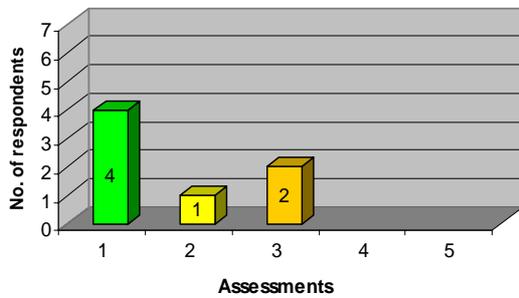
How do you evaluate the role of CEPREDENAC as the local partner representing CA government institutions?



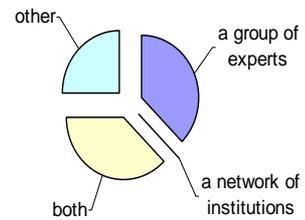
How do you evaluate the role of ITC as contracted training institution?



How do you rate your own influence on the project implementation?



The network created by RAP-CA is



What were in your perception the goals of RAP-CA?

Fortalecer la capacidad de las Instituciones en Centro América en el tema del manejo de información y zonificación de Amenazas Naturales.
Fortalecer la capacidad de las Instituciones en Centro América en el tema del manejo de información y zonificación de Amenazas Naturales.
Capacitar personal centroamericano en el uso de sistemas de información geográfico relacionado con la temática de las amenazas naturales. Fortaleciendo y actualizando dicho conocimiento. Capacitar personal en la temática indicada anteriormente y que sirviera como agente multiplicador en cada institución y país. Propiciar la relación de personal e instituciones centroamericanas que trabajan en la temática de las amenazas naturales
Fortalecimiento institucional y nacional de capacidades en el manejo del tema de la zonificación de amenazas, vulnerabilidades y riesgo
Fortalecer las capacidades técnicas de generación de información de la Región centroamericana para la prevención de desastres con el soporte de los SIG y e
Fortalecer la capacidad de las Instituciones en Centro América en el tema del manejo de información y zonificación de Amenazas Naturales.

What are the two aspects in the program you value most?

1. Capacitación de alto nivel en ITC y establecimiento de contactos con colegas en Centro América y otras regiones
2. Implementación de un estudio de caso en Guatemala con apoyo financiero y técnico del Programa
1. El conocimiento adquirido
2. La conformación de una red de técnicos en SIG (en general) y en desastres (en específico)
1. La capacitación y entrenamiento de alto nivel en el ITC
2. El Desarrollo de los estudios de caso
1. Uso de SIG en la estimación de las amenazas, vulnerabilidad y riesgo.
2. Capacitación, propiamente en la evaluación de cada amenaza y sus aplicaciones.
1. Capacitación de alto nivel en ITC y establecimiento de contactos con colegas en Centro América y otras regiones
2. Implementación de un estudio de caso en Tegucigalpa con apoyo financiero y técnico del Programa
1. Análisis integrado de amenazas y vulnerabilidades
2. Metodología para integración e interpretación de datos e información sobre amenazas y vulnerabilidad
1. Capacitación de alto nivel en ITC y establecimiento de contactos con colegas en Centro América y otras regiones
2. Implementación de un estudio de caso en Guatemala con apoyo financiero y técnico del Programa

Which topics were missing?

Un poco más de práctica para todos los expertos en el tema de manejo e interpretación de imágenes de sensores remotos y su aplicación.
Mas que temas, talvez mas tiempo para explorar cada uno de los temas a mayor profundidad
Un poco mas de Sensores remotos y uso de teledeteccion el tema
Incluir el tema de amenaza sísmica más profundamente, como se realizó con los otros temas de amenazas.
Un poco más de práctica para todos los expertos en el tema de manejo e interpretación de imágenes de sensores remotos y su aplicación, así como el uso de tecnologías SIG para procesos participativos comunitarios para la identificación del riesgo.
análisis probabístico de riesgo y construcción de escenarios de riesgo orientado a la toma de decisiones
Manejo de sensores remotos en la idenficación de zonas suceptibles a desastres.

If a similar program is organised today, what would you like to see changed?

La forma de escoger a los participantes, se debería ser más cuidadoso para no desperdiciar recursos (participantes que regresaron de Holanda y no cumplieron las metas)
La eficiencia para ejecutarlo (disponibilidad de fondos principalmente), la estabilidad laboral en las instituciones y la voluntad de las autoridades para tomar decisiones con soporte técnico
Debe existir una participación mas activa de las instituciones regionales.
Que los participantes preparen la mayoría de mapas básicos para el proyecto de trabajo de campo.
La forma de escoger a los participantes, se debería ser más cuidadoso para no desperdiciar recursos (participantes que regresaron de Holanda y no cumplieron las metas)
La composición de los participantes, debería incorporarse mas el nivel municipal y comunitario. Incluir además la parte estimación de pérdidas
Incluir además la parte estimación de pérdidas probables basadas en un modelo de adquisición y valoración de infraestructura
Que se buscara la forma de aplicar los conocimientos adquiridos en las instituciones de desastres nacionales o una vinculante al proyecto para no perder el recurso humano capacitado.

Please define the difference between the terms "collaborative network" and "group with a common interest"

A primera vista no me parece que haya ninguna diferencia significativa porque normalmente las redes son un grupo con un interés común.
la red tiene una estructura institucional, en el grupo la colaboración es mas por buenas relaciones que por "mandato institucional"
No encuentro la diferencia.
Red Colaborativa: es un grupo de personas o instituciones que han llegado a un acuerdo de cooperación en un campo específico. Grupo de interes común: grupo de personas o instituciones que trabajan en un campo común
A mi punto de vista son iguales!
En el caso de una red o network colaborativo, existe una asociación con visión y misión concertada por los miembros, además existen acuerdos para cumplir objetivos, actividades y programas en un plazo determinado. Los miembros están claramente identificados, reconocidos, y asumen roles y responsabilidades que son monitoreadas y evaluadas por un organismo conductor o responsable. En el caso de grupo de interés los miembros mantienen una asociación, mas por afinidad y vinculos comunes, y no necesariamente se rigen o se comprometen a funciones, sino básicamente a intercambiar opiniones, discutir, construir vínculos, entre otros.
El grupo de interes no necesariamente tiene que ser vinculante al apoyo o desarrollo de aplicaciones es solamente una afinidad de intereses, mientras que la red colaborativa, nos permite intercambiar experiencias y buscar soluciones a problemas planteados.

Catalogue la red creada por RAP-CA en su opinión

others:

Se creó un movimiento en las dos direcciones: personas e instituciones
Amigos que estamos dispuestos a trabajar conjuntamente
En algunos casos es mas el interes de los expertos, no de las instituciones
en ambas direcciones se acciono
red de interés y de usuarios afines a la temática de SIG y Riesgos
El grupo de expertos crea una red institucional que indirectamente apoya el intercambio de soluciones.

Any other comment you wish to make:

La estructura de ejecución del proyecto fue muy compleja y burocrática: Gobierno Holandés dándole dinero a UNESCO para que ellos contrataran una institución holandesa !!! (el ITC) bajo la mirada y apoyo administrativo del CEPREDENAC. Eso hasta cierto punto llegó a complicar la ejecución de algunas actividades. Para futuros proyectos similares habrá que simplificar más esta pirámide.

Se debe dar continuidad al proyecto RAP-CA. Actualmente se tienen por lo menos 10 personas en la región dispuestos a darle continuidad. Sin embargo, se debe buscar una estructura más estable (universidades o asegurar la estabilidad laboral de los parti

En general me parece que fue un excelente proyecto, siendo las instituciones organizadoras muy responsables y la capacitación de buena calidad. Pero se tuvo ciertas dificultades debido a la irresponsabilidad de los propios participantes centroamericanos, algunos de los cuales mostraron muy poco interés en la capacitación e inclusive abandonando el proyecto apenas que regresaron a su país. Gran parte de la culpa considero se le debe achacar a las instituciones de cada país que escogieron mal a sus participantes.

El que UNESCO manejara la plata complico el proceso, se requiere de una instancia más ágil en el manejo administrativo.

Realmente Centroamérica requiere el fortalecimiento de capacidades regionales, nacionales y locales en el manejo de información sobre riesgos de desastre. El socio promotor principal CEPREDENAC, no ha cumplido con el impulso en esta materia, posiblemente por las debilidades estructurales que ha atravesado en diferentes periodos. Además por una serie de deficiencias y vacíos en la concepción sobre los roles de la información en la toma de decisiones territoriales (prevención, mitigación, por ejemplo), además de una débil influencia para la promoción de tecnologías uniformes o estándares en la integración de datos e información para el análisis del riesgo. La necesidad de un programa permanente de creación, mantenimiento y sostenibilidad de aplicación de herramientas de bajo costo o accesible para el análisis del riesgo, aun sigue siendo una necesidad impostergable. Los desastres ocurridos durante el periodo 1990-2000, indican que esta región del mundo, presenta problemas serios en el uso y potenciación de información sobre amenazas y riesgos en sectores estratégicos, tales como transporte, energía, ambiente, educación, salud.

Un programa de aplicaciones sobre información de riesgos, de manera transversal a sectores sensibles de las economías centroamericanas podría generar impactos diferentes al programa RAPCA anterior, y probablemente impactos sociales ampliados.

Annex 6: List of documents

Documents provided

No	Title	Provider	Date
1	UNU-ITC programme on Capacity Building for Disaster Geo-Information Management (DGIM) A draft proposal for a 5-year programme (2005-2009)	ITC	29.09.2005
2	ITC strategy for rapid disaster response - the Disaster Information Analysis Group (DIAG)	ITC	29.09.2005
3	UNU-Associated Institution ITC - Annual Report January 1 - October 18 2005	ITC	18.10.2005
4	Watching over the world's oceans - NATURE, Vol 434, 3 March 2005 (Keith Alverson)	IOC-UNESCO	01.03.2005
5	Guiding Principles for Evaluation at UNESCO	IOS-UNESCO	01.12.2005
6	Terms of Reference for the Evaluation of the Capacity Building Programme for Natural Disaster Reduction (CBNDR) - Regional Action Programme for Central America (RAP-CA)	IOS-UNESCO	01.05.2005
7	UNESCO-ITC Fee Contract No. 4500012556 The Regional Action Program for Central America (RAPCA), within the framework of the Program for Capacity Building for National Disaster Reduction (CBNDR) - Final Report	SDR-UNESCO	01.01.2004
8	Intermediate report 1999 - CBNDR program	SDR-UNESCO	10.01.1999
9	(Project Document) - without title -	SDR-UNESCO	24.02.1998
10	Programme document for the Coordination Programme for Disaster Reduction through Sustainable Development - Final Draft -	SDR-UNESCO	22.12.1997
11	Back-to-Office Report (Cees van Westen) October 20 - October 30	SDR-UNESCO ?	
12	Project Proposal - CEPREDENAC - UNESCO Project for Reduction of Losses from Natural Disasters in Central America (Regional Action Programme) and Support to the Coordination Programme for Disaster Reduction through Sustainable Development	SDR-UNESCO	10.11.1998
13	(Unedited text) Working Draft Paper Natural Disaster Reduction - A Strategy for UNESCO	SDR-UNESCO	13.10.2005
14	From Building Capacity to Building on Capacity in Asia - Sjaak Beerens	ITC	?
15	Capacity Building for Natural Disaster Reduction (CBNDR) - Regional Action Program for Central America (RAPCA): 1999-2004; Final Report,	SDR-UNESCO	01.04.2004
16	UNESCO Progress report 1 Programme for Disaster Reduction through Sustainable Development 519 RLA 40 12/98 - 10/99	SDR-UNESCO	01.11.1999
17	UNESCO Progress report 2 Programme for Disaster Reduction through Sustainable Development 519 RLA 40 11/99 - 12/00	SDR-UNESCO	01.01.2001
18	UNESCO Progress report 3 Programme for Disaster Reduction through Sustainable Development 519 RLA 40 01/01 - 12/02	SDR-UNESCO	15.12.2002
19	Final Report Programme for Capacity Building for Natural Disaster Reduction - Regional Action Programme - Central America 519 RLA 2040	SDR-UNESCO	01.12.2003
20	Approved Programme and Budget 1998-1999 29 C/5	SDR-UNESCO	01.12.1997
21	Approved Programme and Budget 2000-2001 30 C/5	SDR-UNESCO	01.01.2000
22	Approved Programme and Budget 2002-2003 31 C/5	SDR-UNESCO	01.12.2001
23	UNESCO Program Capacity Building for Natural Disaster Reduction (CBNDR) Regional Action Program Central America (RAP-CA) - Report on the introductory training program April to July 2000 in the Netherlands and the case study in the Turrialba area in Costa Rica (+ CD)	SDR-UNESCO	01.03.2001
24	GUATEMALA DELCARATION; XX ORDINARY MEETING OF THE PRESIDENTS OF CENTRAL AMERICA, DOMINICAN REPUBLIC, AND BELIZE, OCTOBER 1999	CEPREDENAC	01.01.2000
25	STRATEGIC FRAMEWORK FOR THE REDUCTION OF VULNERABILITIES AND DISASTERS IN CENTRAL AMERICA	CEPREDENAC	01.01.2000
26	CEPREDENAC - DESPUES DEL HURACAN MITCH	CEPREDENAC	01.10.2000
27	INVENTARIO DE FUENTES DE INFORMACION CARTOGRAFICA DE AMENAZAS, VULNERABILIDADES Y RIESGO EN LA REGION CENTROAMERICANA	CEPREDENAC	01.10.2000
28	FACING THE CHALLENGE OF NATURAL DISASTERS IN LATIN AMERICA AND THE CARIBBEAN. AN IDB ACTION PLAN	Inter-American D	01.03.2000
29	INICIATIVAS DE REDUCCION DE RIESGO A DESASTRES EN CENTROAMERICA Y REPUBLICA DOMINICANA. UNA REVISION THE RECIENTES DESARROLLOS 1997-2002	CEPREDENAC	01.05.2002
30	FINAL REPORT: NATIONAL WORKSHOPS ON DEBATE AND EXCHANGE OF NOTIONS REGARDING RISK MANAGEMENT	UNDP-CEPREDI	01.11.2003
31	ESTRATEGIA REGIONAL PARA LAS ACCIONES DE APOYO EN REDUCCION DE RIESGOS EN CENTROAMERICA	UNDP	01.01.2000
32	MITCH + 5 COUNTRY REPORT. GUATEMALA	CEPREDENAC	01.11.2003
33	MITCH + 5 COUNTRY REPORT. EL SALVADOR	CEPREDENAC	01.11.2003
34	MITCH + 5 COUNTRY REPORT. COSTA RICA	CEPREDENAC	01.11.2003
35	MITCH + 5 COUNTRY REPORT. HONDURAS	CEPREDENAC	01.11.2003
36	MITCH + 5 REGIONAL REPORT. COMPONENT ON INFORMATION; RESEARCH; AND EARLY WARNING SYSTEMS	CEPREDENAC	01.12.2003

Annex 7: Review of documents from Central America in regard to RAP-CA

RAP-CA Evaluation Process

Review of documents elaborated in Central America, 1999-2005

IEWS AND COMMENTS ON THE RAP-CA PROJECT AS SEEN IN CENTRAL AMERICAN DOCUMENTS

TITLE:

**GUATEMALA DELCARATION; XX ORDINARY MEETING OF THE PRESIDENTS OF
CENTRAL AMERICA, DOMINICAN REPUBLIC, AND BELIZE, OCTOBER 1999**

Source: CEPREDENAC publication, (2000)

The document states the fact that natural disasters are impacting the Central American region and are exposing its vulnerability. In addition, it recognizes the impacts of climate change, as external to the region, as well as the impacts of deterioration, degradation and pollution of natural resources within the region, as factors which magnify and accentuate natural phenomena within the region.

The document manifests the will of the governments of the countries of the region, at the highest political level, to reduce vulnerabilities and mitigate damages caused by natural disasters within the context of the Central American Sustainable Development Alliance, -ALIDES-.

It then concludes that the region will adopt the **Strategic Framework for Vulnerability and Disaster Reduction in Central America** and explicitly mentions this framework as an integral part of the declaration, along with frameworks regarding **Integrated Water Management and Conservation of Water Resources** and **Prevention and Control of Forest Fires**.

In addition, the declaration states the establishment of the **Central American Quinquennium for Vulnerability and Disaster Impact Reduction** for the period 2000 to 2004, delegating the coordination to CEPREDENAC. Within this period of time efforts will concentrate in the transformation and search of sustainable development of Central American societies.

To promote the initiative, the Central American Security Commission will be instructed to establish transparent and participative mechanisms of joint action, in coordination with the competent national authorities, in the shortest term possible, for hazard prevention (the text in Spanish states "risk prevention") and disaster mitigation in the region with the support of the corresponding regional institutions.

The document states that domestic financial resources will be designated according to the financial possibilities of each country to target the implementation of initiatives on the subject. In addition, it

calls on the international cooperation community to contribute to these efforts regarding vulnerability reduction.

RELEVANCE TO RAP-CA:

The Guatemala Declaration sets the regional and national frameworks for disaster reduction, and requests CEPREDENAC to coordinate regional efforts within the 2000-2004 Quinquennium regarding this task.

STRATEGIC FRAMEWORK FOR THE REDUCTION OF VULNERABILITIES AND DISASTERS IN CENTRAL AMERICA

Source: CEPREDENAC publication, (2000) (joint with the previous one)

This framework has been designed to promote the reduction of physical, social, economic, and environmental vulnerabilities and to reduce the impact of disasters in Central America. The Framework was elaborated by CEPREDENAC and then approved as part of the Guatemala Declaration of Presidents in October 1999. The framework promotes active participation of the government sector, civilian society, integrating women, local communities, and ethnic groups of greater vulnerability; articulating activities at the regional, national, and local levels.

The general objective of the framework is to assist in the sustainable development of countries in the Central American region by means of reduction of vulnerabilities (physical, social, economic, and environmental) and the impact of disasters.

The specific objective at the regional level (Central America) will be to establish a coordinating platform between the integration of institutions linked to the theme, the General Secretariat of CAIS (Central American Integration System), and the coordinators of the respective national plans.

The specific objectives of the framework at the national level are to promote:

- An increased level of security at the human settlements and infrastructure.
- A better ordainment of the territory as a means to reducing vulnerability (which is directly linked to efforts of the RAP-CA project goals).
- To include variables of prevention and mitigation, preparedness and risk efforts in plans, programs, and projects for sustainable development.

The framework is composed of five Components:

1. **Sector Strategies and plans:** involving many sectors of society such as health, education, energy, transportation, housing, agriculture, industry, and other sectors.
2. **Local Capacity for risk management,** via the strengthening of capacities at this local level (municipal and local governments).
3. **Information and research** focusing on natural and anthropogenic hazards which may promote a reduction in vulnerabilities. (Relevant to RAP-CA project)
4. **Early warning systems,** with emphasis on strengthening networks devoted to monitoring seismological, hydrometeorological, volcanic, tsunami, landslide, and climate-related hazards, as well as training of technical personnel targeting these hazards.
5. **Institutional strengthening for emergency efforts,** to improve the capacity of response and humanitarian assistance during emergencies. Efforts will include a diagnosis of the national response systems, updating national emergency plans, and the subsequent execution of such plans.

RELEVANCE TO RAP-CA:

The Framework allows CEPREDENAC to coordinate regional activities in 5 key areas. The area of Information and Research is the one of most relevance to RAP-CA, although products from RAP-CA will surely be used as inputs for early warning, disaster preparedness, and local risk management.

TITLE:**CEPREDENAC - DESPUES DEL HURACAN MITCH****Source: CEPREDENAC publication, October 2000**

The document outlines activities carried out by CEPREDENAC between November 1998 and June 2000. With the Guatemala Declaration of Presidents, and the launching of the Quinquennium in March, 2000 in San Salvador, El Salvador, CEPREDENAC focused its resources on three axes to consolidate its position within Central American agencies:

- The “ripening” of the concept of mitigation or risk management as an indispensable element within the agenda for development.
- The institutional consolidation of CEPREDENAC as the specialized agency of CAIS in the topic of disaster management.
- Improvements in the execution of projects in the countries related to mitigation.

The document ends with a listing of regional and national projects in execution up to 1999, as well as new projects being initiated as of 2000. RAP-CA is mentioned explicitly as one of the six regional project in execution by 1999, citing CEPREDENAC as the responsible agency within Central America, and mentions UNESCO as the source of funding. In addition, UNESCO is mentioned in 7 national projects complementing RAP-CA on strengthening capacities within the educational sector (elaboration of training modules); promoting awareness via information and communication campaigns in several countries of the region.

In addition, the document cites the elaboration of the first inventory of sources of information regarding hazards, vulnerabilities, and risks (supported via the Swedish International Development Agency – SIDA-).

RELEVANCE TO RAP-CA:

The document mentions explicitly the RAP-CA project as a regional project targeting the use of Geographical Information Systems for hazard impacts, as well as the elaboration of digital maps at the local scale.

It is interesting to note that RAP-CA stands out as the single regional project which targets the use of GIS for hazard issues at the regional level in contrast to other CEPREDENAC projects targeting its institutional strengthening, as well as local risk management.

In Annex 2, the document outlines 66 projects in execution or proposed by various agencies in relation to the five components of the Quinquennium Plan. RAP-CA is again mentioned as a project spanning 8 countries (Gua, Sal, Hon, Nic, CR, Pan, Bel, Dom Rep). Other projects relevant to RAP-CA are:

Nicaragua	INETER, a project supporting GIS for a database targeting hazards, vulnerabilities, and risk.
NIC, CR	tsunami modeling on coasts of Nicaragua and Costa Rica
Central America	Central American Seismic Center –CASC-, tsunami modeling for production of warnings.
Costa Rica	National Emergency Commission –CNE-, proposed project on development of a Local GIS.

INVENTARIO DE FUENTES DE INFORMACION CARTOGRAFICA DE AMENAZAS, VULNERABILIDADES Y RIESGO EN LA REGION CENTROAMERICANA

Source: CEPREDENAC publication, no date (possibly fall, 2000)

This document presents a listing of existing information which is available in map format regarding hazards, vulnerabilities, and risk, as well as related information for the Central American countries, Belize and the Dominican Republic. The team carrying out the survey was able to identify 180 specific sources of maps in the region, and the document outlines the situation regarding such information per country, as well as the list of all documentation. In addition, it mentions extra-regional efforts by international agencies such as the Organization of American States –OAS-; the United States Geological Survey –USGS- ; the United Nations World Food Programme –WFP- and Environment Program – UNEP-. In particular, the document mentions an effort by OAS since 1985 to use GIS tools to assess risks using information on hazards, vulnerability and risk mitigation strategies. Furthermore, it mentions the efforts by USGS in developing a Central American Hazard Atlas, focusing mainly on Nicaragua and Honduras.

It is interesting to note in the document the larger institutional experience and thus knowledge in Costa Rica in relation to other countries. The National Emergency Commission of Costa Rica –CNE- is mentioned as having a GIS unit since 1993, as well as an ATLAS of hazards at the District level (Canton).

As general conclusions, the document mentions the following:

- Most of the cartographic information found in the region targets hazards, with a notable lack of maps on vulnerability and risk.
- While there can be many agencies which generate information, there are no systems to gather and consolidate the information available within the country (with the exception of Belize).
- Cartographic information (digital & paper) is found in very diverse formats.
- A substantial amount of information found in the survey is not backed up with relevant support documentation.
- The civil engineering sector has been the main user of this information, mostly focusing on seismic information. There is a notable lack of information on floods.
- The most successful experiences in mapping are those which employ simple formulas and feedback from local sources.

RELEVANCE TO RAP-CA:

The document lists characteristics of 213 items. The following table presents a summary by country. The number of hazard, vulnerability, or risk maps in GIS format is presented in the last column.

Country	Total	Hazard	Vulnerability	Risk	GIS Format
Guatemala	35	14	2	1	3
El Salvador	32	8	-	3	10
Honduras	22	2	-	3	-
Nicaragua	28	6	-	10	3
Costa Rica	59	33	-	4	15
Panama	23	5	-	4	3
Belize	3	-	-	-	-
Dominican Republic	11	1	-	1	-
Total	213	69	2	26	34

Basically, within the region a third of the map information can be related to hazards and slightly over 10% to risks. Furthermore, about 50% of the information on hazards, vulnerabilities, and risks is available on digital fashion. The typical GIS products mentioned in the survey are ARC-INFO, ARC-VIEW and MICRO-STATION.

TITLE:**FACING THE CHALLENGE OF NATURAL DISASTERS IN LATIN AMERICA AND THE CARIBBEAN. AN IDB ACTION PLAN****Source: Inter-American Development Bank publication, March 2000**

The document presents a view on the current state of affairs regarding the capacity of Latin America and the Caribbean to cope with natural disasters, an analysis of what needs to be done, and the plan of action to be implemented by the IADB to contribute to the efforts promoting disaster reduction.

The document starts with a description of natural disasters in the region, pointing out that while the larger countries may outnumber the smaller countries in total amount of natural events in the period 1900-1998, the smaller countries, especially in Central America, have often seen a greater proportion of their people killed by natural disasters. Recognizing the vulnerability of societies as a direct link to disasters, the document describes the main causes of vulnerability:

Rapid growth and increasing poverty in urban areas. Latin America is already predominantly urban, with 75% of its population living in cities, and many cities are rapidly approaching the scale of mega-cities. However, cities are also absorbing greater percentages of poor people, leading to informal residential settlements in high-hazard areas

Poverty and environmental degradation in rural areas. In rural areas, 50% of households are considered as poor. The lack of development opportunities in rural areas has contributed to a deterioration of the natural environment in these areas due to factors such as deforestation for subsistence agriculture, overgrazing, river-bank alterations, and inappropriate hill-side cultivation. Some of these actions then contribute to make soils more susceptible to landslides, and to floods in flood-plains.

Poor policy planning. With few exceptions, the region has not pursued policies that reflect an understanding of its vulnerabilities. Land-use planning and enforcement of building codes are still generally inadequate or poorly enforced in most hazard-prone areas. In addition, there are no incentives to encourage the private sector to target such measures as well.

Lack of political interest in prevention. In most countries efforts target more response and recovery after disasters rather than prevention. Disaster prevention is not yet in the day-to-day discourse of politicians, nor of the people.

Inability of scientific community to convey results to the community, governments and the private sector. In many cases, technical reports outlining an event or a phenomenon are not translated into information which is understandable to those who can make use of it.

Therefore, according to the view of the Bank, three areas of engagement are essential to change this culture of disasters:

- Macro-economic stability and consolidation of democracy.
- Emerging government agendas
- Specialized institutions and civil society.

In relation to risk management, the Bank's strategy to approach risk management is to tackle the region's growing vulnerability to hazards, as well as the human and economic consequences of natural disasters. As key elements in disaster management, the Bank recognizes two phases: Pre-disaster and Post-disaster.

The pre-disaster phase targets efforts on risk identification, mitigation, risk transfer, and preparedness, while the post-disaster phase targets emergency response, rehabilitation, and reconstruction. In addition, it recognizes the need to strengthen national systems for disaster prevention and response which comprise inter-sectoral agencies; planning and regulatory frameworks; coordination mechanisms, and multi-stakeholder involvement.

One of the areas where the Bank is providing technical assistance grants is in the strengthening of capacities to use cutting-edge information technology as a tool for identifying risks in the region. Other areas receiving support from the Bank are early warning, institutional reforms, and the establishment of an Emergency Reconstruction Facility, a mechanism that permits to respond rapidly to a disaster. Such a facility makes available resources to finance a pre-established menu of eligible activities such as the restoration of life-lines, clean-up, etc.

RELEVANCE TO RAP-CA:

The document identifies as a basic action in relation to risk management the assessment of risks, in particular the assessment of hazards and vulnerabilities. It then stresses the importance of introducing risk assessment into the project cycle via the need to identify potential risks during the design stages of the project.

TITLE:**INICIATIVAS DE REDUCCION DE RIESGO A DESASTRES EN CENTROAMERICA Y REPUBLICA DOMINICANA. UNA REVISION THE RECIENTES DESARROLLOS 1997-2002****Author: Allan Lavell CEPREDENAC publication, May 2002.**

The document describes the impacts of natural disasters on societies, and explains the shortcoming in the reduction of disasters. It then encompasses the evolution of the notion of risk management within the region, including within local, national, and the regional CEPREDENAC agencies and how it is being interpreted in some cases. The document then proceeds to describe the changing of views, roles, and modalities which have taken place within CEPREDENAC, and complements this section with other parallel initiatives from various NGOs, UN agencies, and technical agencies from foreign governments. Examples cited are:

The Central American Mitch Initiative –CAMI- promoted by OFDA-US-AID which targeted twelve million dollars to post-Mitch efforts on disaster preparedness and risk management, channeling funds through national government agencies like USGS, NOAA, FEMA, and OFDA, as well as through NGOS such as CARE, Catholic Relief Services –CRS- , Cooperative Housing Foundation –CHF- and others.

The World Bank and Inter-American Development Bank initiatives channeling funds for projects, and the specific programs in Honduras and Nicaragua by the World Bank through loans to these two countries, promoting risk management via government agencies.

The Organization of American States project on reduction of vulnerability in small basins which promoted the design of early warning systems in rural communities of Central America.

The Swiss Cooperation Agency for Development and its project on disaster prevention, basically focusing in Nicaragua, El Salvador, and Honduras, and also promoting a culture of risk management.

The ECHO-DIPECHO programs in the region, which target funding from ECHO through European and international NGOs to promote local risk management in rural, remote areas of these countries.

The document focuses the discussion on the notion of risks and risk management, and recognizes the fact that at the political level there continues to be a lack of interest on the subject. In addition, it manifests the current trends in Central America to manage both, sustainable development and risk management as parallel but independent discourses, rather than risk management becoming an integral element of sustainable development. It also concludes that more efforts targeting the settlement of the notion of risk management at the local level have been targeted by foreign NGOs, rather than by national level agencies.

The document ends with a discussion on the current bottlenecks in relation to risk reduction within the region. For example:

- The lack in interest in the private sector to become more involved on issues of risk management efforts.
- The lack of methodologies to assess vulnerability in its full social, economic, and physical contexts.
- The lack of norms and regulations to promote risk management in contrast to the continuing support basically focusing on disaster preparedness.
- The limited options for higher level and professional education on risk management, which basically continue to span mostly the civil engineering sector.
- The lack of results in the strategies to target the education sector, despite some efforts by UNESCO and national government agencies.
- The negative impact of decentralization on the design and establishment of a national agenda on local risk management.
- The lack in coordination of a large number of isolated projects on risk management, in particular those executed by NGOs.

RELEVANCE TO RAP-CA:

The document mentions how CEPREDENAC has undergone a change in approaches in recent years from a project-based structure to a program-based structure, and cites three such programs:

- **RAP-CA** as a UNESCO funded project, supported with efforts from Holland, Germany, and France.
- **The Program on Local Risk Management**, which was established in 2001 with funding from UNDP and IADB targeting the establishment of a conceptual framework, and a revision and systematization of experiences in local risk management.
- **The Disaster Management Training Program**, particularly focusing on national level UN agencies and is coordinated by UNDP as well.

While the document manifests the proliferation in the use of GIS tools within the region, the practice is still in its infancy as there are weaknesses that inhibit its wider use such as the cost of training, technical capacities, maintenance problems in equipment, and updating information, as well as the gap in making GIS outputs useful, nevertheless, it mentions two efforts at decentralization of GIS systems to rural areas in El Salvador for example.

TITLE:**FINAL REPORT: NATIONAL WORKSHOPS ON DEBATE AND EXCHANGE OF NOTIONS REGARDING RISK MANAGEMENT**

Author: David Smith, as the Support Specialist of UNDP to the UNDP-CEPREDENAC regional program on risk management. UNDP-CEPREDENAC Publication: November 2003.

The document presents the results of workshops held in each of the Central American countries as part of the UNDP-CEPREDENAC program on risk management, which targeted the discussion of issues related to risk management in an inter-institutional, inter-sectorial fashion in every country.

The workshops would focus on four topics or modules as they have been labeled:

1. Conceptual- theoretical models of local risk management within the framework of development.
2. Guidelines for analysis of parameters and cases.
3. Guidelines for analysis of actors involved in local risk management.
4. Development of strategies and policies focusing on local risk management.

The document presents the main points and conclusions reached by those participating in the round table discussions, as well as suggestions on how to proceed. In general, the findings presented in the document point to the use of the terms “risk”, and “risk management” but in many countries the resulting comment is that such terms still remain vague, and difficult to apply. There are no guidelines, and there are many perspectives on how these terms are applied.

In addition, the document evidences the fact that at the national and local levels risk management is still in its infancy, the terms being used more as a “in vogue” or as a “catchy” terms, to try to present an image of being up to date with the most modern theories and discourses, but there is no substance behind it.

RELEVANCE TO RAP-CA:

The document mentions in very few occasions the need to carry out hazard and risk assessments, as these presume already a well structured notion on risk management which does not exist yet in the region. In particular, this evidences the fact that the region is not yet ready to be able to make use of GIS experts on mapping of hazards as an element of risk management, as these concept is still not yet clear to many agencies at the national and local levels.

TITLE:**ESTRATEGIA REGIONAL PARA LAS ACCIONES DE APOYO EN REDUCCION DE RIESGOS EN CENTROAMERICA**

Source: United Nations Development Program –UNDP- **publication:** no date, after 2000.

The document presents notions for the design and implementation of a regional program focusing on risk management within Central America. The document starts with a discussion on risk management in the context of the current situation of Central America, and in the context of the situation of each of its countries. The notion is contrasted with such issues as regional integration efforts within the countries, institutional organizational settings, capacity building, and in the context of CEPREDENAC. Views on each of the countries and the current activities carried out by UN agencies and UNDP are contrasted with activities and views within each country on issues of risk management.

The document then presents the main justification for a regional UNDP strategy: to strengthen regional efforts targeting the implementation of the **Strategic Framework for Vulnerability and Disaster Reduction** as proposed in the Guatemala Declaration of Presidents in October 1998 and the recently approved **Regional Plan for Disaster Reduction** by CEPREDENAC. In this sense, UNDP sees its efforts as supporting CEPREDENAC in its mandate to coordinate these efforts.

The proposed goals for such a regional UNDP effort are:

- Support to national programs focusing on risk management, strengthening the institutional capacity in each country and promoting the elaboration and execution of National Disaster Reduction Plans which emanate from CEPREDENAC's regional plan.
- Strengthening the regional capacity of UNDP to support the execution of CEPREDENAC's regional plan for disaster reduction.
- Strengthening of capacities of UNDP and of the UN system of agencies to promote the inclusion of risk management as an approach in all projects, and to develop methodologies, instruments, and training processes necessary to ensure sustainability of the effort.

Nine components are addressed as part of the regional program:

1. Strengthening of UNDP and UN agencies capacities on risk management.
2. Risk management and sustainable development.
3. Strengthening of capacities on local risk management.
4. Intervention systems and early warning systems.
5. Institutional strengthening.
6. Information systems for risk management.
7. Systematization of experiences.
8. Capacity building – training of human resources
9. Formulation of policies.

RELEVANCE TO RAP-CA:

The document identifies as a basic component the development of information systems for risk and disaster management. UNDP could support the following types of activities:

- Establishment of a permanent database on historical disasters and a regional synthesis of such disasters.
- Development of an inventory of information on risks in each country and within the region, to identify gaps and design measures to fill such gaps.
- Identification within each country of agencies in charge of generating, systematizing, storing, analyzing, and disseminating information regarding risks.

- Elaboration and application of methodologies to use existing information in the process of risk assessment, and definition of risk scenarios.
- While the document outlines this section, it does not address RAP-CA efforts by UNESCO in this respect.

TITLE:
MITCH + 5 COUNTRY REPORT. GUATEMALA

Source: CEPREDENAC webpage: www.cepredenac.org. Document elaborated in Nov. 2003 in preparation for the Mitch + 5 regional symposium.

As stated in the report, the purpose of the document has been to present the response of Guatemalan in relation to the commitments acquired through the Declaration of Presidents regarding the reduction of vulnerability in the region.

The document spans, like all the other country reports, a synthesis of advances, difficulties, challenges, and goals in relation to disaster reduction encompassing policies, strategies and sectorial plans, legal and institutional aspects, institutional strengthening for disaster management, local risk management, early warning systems; and information and research.

While the document acknowledges the conclusion that hurricane Mitch was essential to include the notion of risk management into public policies; it also stresses underlying factors which are increasing vulnerabilities that need to be addressed, in particular poverty in a country like Guatemala.

The main advances cited in the Guatemalan report in relation to this Presidential mandates are in the following areas:

- The inclusion of vulnerability in the strategies regarding the reduction of poverty at the national, department, and municipal levels as a transversal element spanning social and economic areas.
- The establishment of legislation by the Congress of the Republic of Guatemala regarding the National Policy for Social Development which spans five axes:

- health
- education
- employment
- migration
- social communication and risk management

The Policy has been implemented through the Presidential Strategic Planning Secretary - SEGEPLAN-. In the component regarding risk management, it emphasizes the need to carry out risks assessments which span the causes which enhance them, in order to implement two strategies:

- The National Program of Prevention, Mitigation, and Response in case of Natural Disasters.
- The National Strategy for the Protection for the Population in case of Natural Disasters.
- The establishment of a Policy focusing on the Environmental Framework to try to control social factors leading to the degradation of the environment such as deforestation (commercial and subsistence) the transformation of forests into agricultural lands which lead to erosion and to a modification of geologic hazards such as landslides; the loss of nutrients in the soil, evapo-transpiration, and sedimentation in basins and channels. The policy spans the integral management of hydrological resources, soil, environment, and management of liquid and solid wastes.
- Within the transportation sector, the main task following hurricane Mitch was the reconstruction of the road and infrastructure network to promote economic growth, links throughout the country, and satisfaction of transport needs to the society. A post-disaster assessment of damages has lead to the elaboration and establishment of a contingency plan within the Ministry of Public Works, Communications, and Housing.
- In the Education sector a special commission focusing on Educational Reform was establish to promote a disaster-risk management culture in this sector via the introduction of the topic in the school curricula. Parallel efforts within the Ministry of Education span the National Campaign on Alphabetization, as well as an Education Reform of the Sector.
- In the health sector, the Ministry of Public health has established in the National Health Plan 2000-2004 the topic of risk management, which is being managed by a special unit on Risk Management established in the year 2000.

Within the section on Information and Research, the document stresses the fact that hurricane Mitch displayed the following institutional weaknesses:

- Lack of information or inefficient use of it, in particular geographical information;
- Absence of a national government platform for the exchange of information:

To improve the use of information, the Ministry of Agriculture established the Emergency Program on Natural Disasters which began activities in 1999, which has created and currently operated a sophisticated geographical information system that encompasses information on hazards and risks for many distinct types of hazards.

To cope with the absence of a platform for the compilation and exchange of information, the National Geographic Institute has been establishing the National Geographical Information System as an inter-institutional platform to promote information sharing, normalization of databases and GIS metadata, as well as to normalize the exchange of post-processed information.

In addition, with the support of the Government of Japan, the Japanese International Cooperation Agency is carrying out a project focusing on the establishment of basic hazard maps for the National Geographical Information System of Guatemala. The project spans multi-hazard assessment (floods, earthquakes, volcanic eruptions, landslides) and is executed with three Guatemalan counterparts: the Presidential Secretary for Planning and Programation –SEGEPLAN-; the National Institute for Seismology, Vulcanology, Hydrology, and Meteorology, -INSIVUMEH-; and the National Geographical Institute –IGN-.

Finally, the National Coordinating Agency for Disaster Recution –CONRED- established a Geographical Information Unit with the support of various agencies (US-AID, US-South Command, NASA, LATUV, CONABIO). The Unit is applying GIS for hazard zonation for floods, landslides, hurricanes, and forest fires.

In addition, the document comments on other weaknesses:

- Transfer of personnel from one institution to another or desertion of highly trained personnel from government agencies;
- Lack of resources at the level of NGOs to focus explicitly on this field.
- Information dispersed in many institutions or persons. There is no agency which is centralizing all pertinent and relevant information on the subject.

Other efforts by CONRED span the execution of an inter-institutional project in the urban settlements of Guatemala City which spanned a risk assessment (hazards, vulnerabilities, and deficiencies in preparedness) associated with landslides using GIS of 9 settlements in four municipal districts which span the larger Guatemala City metropolitan area.

UNICEF also promoted the elaboration of a risk assessment as an inter-institutional effort spanning the National Institute for Municipal Strengthening which was carried out at the municipal level focusing on the housing sector.

SEGEPLAN also conducted an assessment of risks (hazards, vulnerabilities) using census data with a methodology developed by JCV again targeting the housing sector within communities in four departments (provinces) of the country in relation to four hazards (floods, earthquakes, volcanic eruptions, and landslides). The methodology is based on a GIS framework.

Within the NGO sector, CARE is mentioned as carrying out an integral project which also focused on the assessment of risks as a tool for strategic planning in the Alta Verapaz and Baja Verapaz departments (provinces) of the country.

In relation to international agencies, USGS is also recognized as another agency which has carried out hazard assessments in various parts of the country.

The document concludes with statements and recommendations regarding:

- The need to strengthen actions within the context of the project titled: National Multi-Sectorial System for Risk Reduction. Such a system needs to be consolidated within the framework of the Councils for Development which have been set up at the national, regional, departmental, and municipal level.
- Planning and execution of tasks associated to risk management need to be continued in distinct government agencies under the coordination of SEGEPLAN. Efforts must also span the

introduction of the variable of risk assessment as part of the requisites for the execution of projects and public works. Such a measure would be introduced via the Financing System for Pre-inversion –SINAFIP- which is operated by SEGEPLAN.

- Promoting a risk-management culture within the education sector, as well as a national strategy to promote such a culture.
- Improvements regarding territorial ordering and urban planning so as to inhibit the creation of risks via illegal human settlements in hazardous areas.

RELEVANCE TO RAP-CA:

The document identifies the need to manage geographical information in relation to risk management via hazard mapping and zonation. It mentions efforts on GIS, several projects which have been executed by several agencies using GIS for these purposes, as well as a national level effort to set up a National Geographical Information System under the coordination of the National Geographic Institute as an inter-institutional effort to collect, systematize, and share information. However, RAP-CA is not mentioned as a project explicitly, nor are UNESCO and ITC mentioned in the report in this context. It is also important to note that ITC may have not considered two issues:

1. Already existing capacities at the national level on GIS (Ministry of Agriculture, SEGEPLAN).
2. Targeting additional agencies and instances which could have provided more sustainability to the project, rather than persons. –SEGEPLAN-, IGN, Ministry of Agriculture.

The first factor could have arisen as a weakness of the process whereby the regional agency CEPREDENAC is called to set up a project, and no institutional analysis was elaborated as part of the planning process, only the problem tree for all countries.

TITLE:
MITCH + 5 COUNTRY REPORT. EL SALVADOR

Source: CEPREDENAC webpage: www.cepredenac.org. Document elaborated in Nov. 2003 in preparation for the Mitch + 5 regional symposium.

In the case of El Salvador, it is important to recognize that several disasters have manifested themselves in the past decades: a large earthquake in 1986, and again two unexpected large earthquakes in 2001. In a similar fashion, hurricane Mitch provoked major destruction in some areas of the country, particularly on the Lempa basin, the largest in the country and one of the largest throughout Central America. The flood-plains of this particular river had been transformed from large single-owner to multi-owned plantations in the framework of an agrarian reform which was started in the 1980s. However, the impacts of hurricane Mitch can be disastrous to such processes, especially in small countries like El Salvador which do not have a strong economy to be able to elude such impacts.

Like all the other country reports, a synthesis of advances, this document presents difficulties, challenges, and goals in relation to disaster reduction encompassing policies, strategies and sectorial plans, legal and institutional aspects, institutional strengthening for disaster management, local risk management, early warning systems; and information and research. However, in contrast to other country reports where risk management is seen as a strategy to promote sustainable development, in the case of the El Salvador report, it is sustainable development which is seen as the main strategy to promote risk management.

Among the measures taken by the Government of El Salvador in the particular case of risk assessment and risk management at the national level was the establishment of the National Service for Territorial Studies –SNET-, congregating hydrological, meteorological, seismological, and volcanologic agencies into a single one, which also contemplates territorial ordainment as a component of risk management.

As stated in the chapter devoted to capacities, strengths, and weaknesses, the main challenge is to get people to visualize risk management, territorial ordainment, and actions targeting prevention as tools which contribute towards sustainable development; as well as recognizing the hazards, their nature and dynamics so as to minimize their impacts.

The document spans the collection of experiences, lessons learned and recommendations, tailoring it in terms of sectors. The following paragraphs present just a review of some elements of the many pages which contain all this information.

- Within the health sector, the Security Alliance of the National Plan of the Government has been fitted with the component related to the strengthening of security systems for the people in case of disasters. Among the strategies implemented as part of this Plan, the following deserve mention:
 - Coordination with NGOs and international organizations to execute projects focusing on the local level.
 - Training and capacity building within institutions and at the local level.
 - Advice and monitoring in relation to the elaboration of risk maps and mapping of resources using GIS technologies.
 - Elaboration of 32 hazard maps highlighting high risk areas.

However, as in the case of all Central American countries, the major obstacles to achieving results is the lack of financial resources; the custom of execution of isolated actions without coordination, particularly in the case of NGOs; the lack of a unified approach to risk management, and the advancement only in terms of pilot projects, rather than in a programmatic fashion.

- Within the Education sector three main target areas have been defined as strategic:
 - To elevation in the average level of school education of the average citizen of El Salvador minimizing differences among geographical regions, social groups as well as differences between public and private educational institutions.
 - To empower the citizen via education to allow him the freedom required to develop within a modern society.
 - To promote the participation of the family and the community in the educational process of children and young adults.

As in the case of the health sector, the major difficulty identified is in relation to the lack of resources not only to implement these three strategies, but also strategies in relation to the risk management.

- The Environmental sector has benefited in recent years with the approval of five distinct policies:
 - National policy for the environment.
 - National policy on the management of solid wastes.
 - National policy to combat desertification.
 - National policy on protected natural areas.
 - National policy on the sustainability of hydrological resources.

The main advance in this sector regarding risk management, as mentioned before, has been the establishment of the National Service for Territorial Studies –SNET-. In fact, the creation of SNET is a direct result of the inadequacies of the previous approach to risk management via separate agencies in distinct ministries to target different hazards. In this sense, SNET has developed a GIS unit that gathers information on hazards, vulnerabilities, and risks which is available to all government and private institutions for their subsequent use.

One of the main projects which is being promoted by SNET in conjunction with the Vice-Ministry for Housing and Urban Development is the formulation of a National Plan on Territorial Ordering and Development. The proposed plan is to promote improvements in: infrastructure systems and services, agricultural activities, tourism, fishing, and risk management.

Within the context of local risk management, two policies are contributing to this goal: the National Policy on Government Decentralization and the Policy to strengthen inter-municipal associations. To support these policies the Social Inversion Fund for Local Development –FISDL- has allocated financial resources which target the following areas:

- Elaboration of risk maps at the municipal and local levels.
- Training in risk management and civil protection.
- Efforts on territorial ordering which include the risk management component.
- Reconstruction of damaged or destroyed infrastructure.

In addition, FISDL has been promoting the use of GIS to contribute to the identification of planning strategies, in particular to identify quickly those geographical zones which are to be considered with high priority for investment due to their classification as high-risk zones.

However, among the main deficiencies found at this local level the following have been addressed in the report:

- Municipal administrations still do not employ working plans to outline activities to be carried out in an annual or bi-annual basis.
- The component of local risk management is still not included in the plans for local development drafted by municipal administrations.

In the context of external cooperation and NGOS, several projects have targeted risk management via hazard or risk assessment, early warning, and disaster preparedness.

Within the section on Information and Research, the document recognizes the value of the use of information systems to identify and establish high-risk zones. However, it recognizes that there are difficulties regarding the implementation of a risk management strategy, namely:

- No norms legally established to proceed regarding the implementation of risk management at all levels.
- Lack or insufficient financial resources to carry out the proposed tasks.
- Lack of interest among many agencies to introduce the topic into their institutional frameworks.
- Lack of technically trained personnel in this field.

Nevertheless, work is advancing in several areas with the support of universities within the country, as well as with the support of scientific agencies from developed countries like USGS. Efforts have spanned the analysis and mapping of various types of hazards (landslides, earthquakes and soil dynamics, volcanic eruption, floods), vulnerabilities, and risks.

RELEVANCE TO RAP-CA:

The document identifies the need to manage geographical information in relation to risk management via hazard mapping and territorial ordainment. It mentions efforts on GIS, several projects which have been executed by several agencies using GIS for these purposes, as well as a national level effort to set up the National Service for Territorial Studies, SNET. While capacities have also been strengthened in terms of such projects, and the need to such training is still required, there is no explicit mention of RAP-CA as an institutional project, nor are ITC and UNESCO mentioned in this respect.

TITLE:
MITCH + 5 COUNTRY REPORT. COSTA RICA

Source: CEPREDENAC webpage: www.cepredenac.org. Document elaborated in Nov. 2003 in preparation for the Mitch + 5 regional symposium.

In the case of Costa Rica, like in the case of other countries, guidelines provided by CEPREDENAC were followed to acquire and systematize information in a particular fashion.

However, in the context of hurricane Mitch, Costa Rica did not received a substantial amount of international assistance due to two reasons: lesser impacts provoked by the hurricane and a more developed social and economic situation in comparison to the northern Central American countries. The document presents difficulties, challenges, and goals in relation to disaster reduction encompassing policies, strategies and sectorial plans, legal and institutional aspects, institutional strengthening for disaster management, local risk management, early warning systems; and information and research.

Within the context of strategies and sectoral plans, the document manifests the fact that even in Costa Rica the topic of risk management still is not embedded in a coherent and systematic policy which spans the participation of all sectors of the society. Nevertheless, institutions participating in the analysis agreed that it is the National Emergency Commission which is the reference agency in this topic.

In addition, as in the case of the other Central American countries, the main weakness recognized is the lack of financial resources to carry out activities in the context of risk management, and the main challenges are related to the limitations presented by the current legal frameworks. Current legislation and legal frameworks are not explicitly targeting the topic of disaster reduction. Nevertheless, participants do agree in the need for resources, technology, information, training, and a means to incorporate risk management into their institutional programs in a more permanent fashion.

The following paragraphs present just a review of some elements contained in the report.

- Within the agricultural sector there is a recognized difficulty with respect to the lack of financial resources, and thus the challenge to increase the sensibilization of the technical and political leaders and to strengthen capacities within the sector with respect to the topic of disasters. Nevertheless, the topic has been introduced into CORECA, and in agendas of regional agencies. Within the institutional segment, the following needs are identified:
 - Financial and technical resources to set up geographical information systems and to conduct vulnerability studies, and studies of impacts of historical events, as well as to characterize the impact of meteorological situation within the sector.
 - Training and capacity building within institutions and at the local level.
- Within the health sector, the main difficulties and challenges are related to the dissemination of the strategic framework and the national policy on health in case of disasters. Therefore, there is a need to incorporate this topic within the current programs in execution in the sector, as well as awareness on the activities already executed.
- Within the Education sector the main difficulty identified relies on the fact that there is a lack of policies in this sector targeting risk management, and thus there is a need to modify national educational policies to include this topic, to articulate institutional efforts and to develop a common and unique approach to the subject.
- The transportation sector (public works) also mentions the lack of policies on the subject, limitations in the application of norms and regulations in the building of public infrastructure, and minimal awareness on the subject. However, it is important to note that a regional project executed under the umbrella of the Organization of American States –OEA- focused on the identification of vulnerabilities of the vital road corridors in Costa Rica, in particular in the Costa Rican segment of the Pan American highway.
- Within the housing sector, several weaknesses have been identified:
 - Weak institutional policies to manage the setup of urban settlements.
 - A problem regarding influx of Nicaraguan population and settlement in high-hazard areas.

- Weakness in local governance regarding housing and settlements.
- National policy on protected natural areas.
- An urban growth within San José and other cities which is difficult to control.

The sector recognizes the need to focus on the alleviation of poverty to control vulnerability, the development of norms regarding settlements in urban areas, as well as audits on the quality of building materials.

Another weakness detected within this sector is the lack of controls or support to enforce current legislation on territorial ordainment, and thus there is a need to strengthen efforts in this area or territorial ordainment. Such efforts should also target municipal administrations.

Within the context of local risk management, the following weaknesses have been identified:

- Current efforts target more emergency response than risk management. In this sense, the habit of humanitarian assistance is more common than the habit of prevention.
- Lack or insufficient financial resources to carry out the proposed tasks or difficulties in having access to existing resources.
- Current legislation does not include local risk management.
- Weak coordination among institutions working at this level.

Within the section on Information and Research, the document recognizes the value of the use of information systems to identify and establish high-risk zones and recognizes notable advances within Costa Rica in comparison to other Central American countries in this field. However, it recognizes that there are still difficulties regarding the implementation of a risk management strategy. Interestingly enough, the existing advances in Costa Rica promote an advance view on the needs, namely a more holistic, integral approach, spanning multi-hazards.

Current challenges addressed by Costa Ricans in this segment are:

- De-concentration and decentralization of information.
- Minimize institutional jealousy regarding research and information generated.
- Distribution of information so that it can be used as an instrument for planning purposes.

Nevertheless, work is advancing in several areas with the support of universities within the country, as well as with the support of scientific agencies from developed countries like USGS. Efforts have spanned the analysis and mapping of various types of hazards (landslides, earthquakes and soil dynamics, volcanic eruption, floods), vulnerabilities, and risks.

RELEVANCE TO RAP-CA:

As in the case of other Central American country reports, the document identifies the need to manage geographical information in relation to risk management via hazard mapping and GIS tools. While capacities have also been strengthened in terms of such projects, there is no explicit mention of RAP-CA as an institutional project, nor are ITC and UNESCO mentioned in this respect.

TITLE:
MITCH + 5 COUNTRY REPORT. HONDURAS

Source: CEPREDENAC webpage: www.cepredenac.org. Document elaborated in Nov. 2003 in preparation for the Mitch + 5 regional symposium.

In the case of Honduras, like in the case of other countries, guidelines provided by CEPREDENAC were followed to acquire and systematize information in a particular fashion.

In the context of hurricanes, Honduras is the most exposed country in the region, and hurricane Mitch is the latest episode in this respect. Like hurricane Fifi in 1974, hurricane Mitch demonstrated the existence of vulnerabilities in many sectors of the Honduran society, but an important issue to recognize when comparing damages provoked by this hurricane in Honduras in relation to other countries is the fact that hurricane Mitch remained idle for many days affecting Honduras before proceeding in its path towards the south. The erratic path followed by this hurricane, and the narrow width of the Central American isthmus were ideal conditions for the hurricane to mobilize humidity from both the Caribbean and the Pacific, thus enhancing precipitation throughout this country and the region.

In addition, as in the case of the other Central American countries, the main weakness recognized is the lack of financial resources to carry out activities in the context of risk management, and the main challenges are related to the limitations presented by the current legal frameworks. Nevertheless, an important advancement in this issue is the approval of the Law of Territorial Ordainment by Congress in October 2003, which obliges all proposals regarding the use of lands or soils to be carried out within the span of this legislation. In addition, the Honduran government has established the National Commission on Territorial Ordainment and Human Settlements –CONOTAH–, which is the agency in charge of promoting this new legislation.

The following paragraphs present just a review of some elements contained in the report.

- Within the health sector there have been considerable advances since hurricane Mitch in 1998. There is now a National Health Plan for the Reduction and Response in case of Disasters. In addition, several operational units have already been established in several regions of the country. In addition, a strategy for the nutritional system has been established. However, there are still some difficulties such as:
 - Lack of a framework which supports the establishment of norms to elaborate emergency plans.
 - A need to socialize the national nutrition system.
 - Weakness in local governance regarding housing and settlements.
 - Consolidation of the strengthening of the institutional capacity regarding reduction in vulnerability and response in case of disasters within the Secretariat for Health.
 - Lack of technological resources to implement telecommunications via internet.

As goals within the sector, the following deserve mention:

- Design and implementation of national level programs and projects focusing on risk management.
 - Establishment of emergency committees at all levels, down to the local level in all municipalities of the country.
 - To establish a national system of risk maps for all communities of Honduras.
 - Reduce the vulnerability of all health facilities throughout the country.
 - Consolidation of the strengthening of the institutional capacity regarding reduction in vulnerability
- Within the Education sector the main difficulty identified relies on the fact that the subject of risk management is still not included within the school curricula. Therefore there is a need to strengthen the political commitment in this respect, so that risk management can be included as a topic. Among the difficulties identified within this sector, the following stand out:

- The fact that electoral processes leading to changes in government administrations also provoke the destitution of staff which have been formerly trained and are committed to the topic.
- The lack of sensibilization within government authorities.

Nevertheless, there are advances in the sector in relation to the design and execution of training programs for teachers in the topic of risk management, the elaboration of educational materials, popular awareness campaigns, and the establishment of high-school programs which focus environment and forestry which incorporate risk management as well.

Among the challenges or targets for the future in relation to research and information management, the following deserve mention:

- The introduction and strengthening of research by teachers and students on these topics of environment, natural resources, and risk management.
 - The establishment, organization, and modernization of information systems and of laboratories as tools to maintain databases up to date.
 - The establishment of research institutes and university academic programs that focus on this topic in a scientific, organized, and prospective basis.
- Within the housing sector, the main problem identified is the existence of urban settlements in high hazard areas, and the challenge is to propose and execute solutions with the restriction of limited resources that need to go through legal, financial and social processes for their approval, including land use norms. Issues such as poverty have been recognized as the leading cause for vulnerability.

There is a recognized need to have all private and public institutions work together, to share data, in order to plan interventions regarding territorial ordainment, systems to control the application and fulfillment of norms and legislation, which also facilitate the implementation of quality projects by different types of institutions. As needs in this topic, the following deserve mention:

- Update in the map of soils at the municipal level.
- Development of territorial ordainment plans.
- To identify in a clear manner the sharing or splitting of institutional responsibilities and competencies at the public level.

The participants within this sector recognize the need to collect information at the national and regional level through exchange and via bibliographical material, internet, etc. In addition, there is a conclusion that efforts regarding the development of territorial ordainment plans at the municipal level have to be carried out in coordination with the National Commission on Territorial Ordainment and Human Settlements.

Within the context of local risk management, the following weaknesses have been identified:

- Current efforts target more emergency response than risk management. In this sense, the habit of humanitarian assistance is more common than the habit of prevention.
 - Lack or insufficient financial resources to carry out the proposed tasks or difficulties in having access to existing resources.
 - Current legislation does not include local risk management.
 - Weak coordination among institutions working at this level.
- Within the agricultural sector there are two important advances:
- The development of guidelines for the institutional reform that may help consolidate the efforts focusing on sustainable development of this sector as a compromise among all private and public actors.
 - The establishment of a near-real time weather monitoring system for agriculture and its linkages with development and productivity.

- Within the document a special chapter has been dedicated to territorial ordainment and risk management. As mentioned earlier, the Government of Honduras has approved the Legislation regarding Territorial Ordainment, as well as the implementation of the National Commission on Territorial Ordainment and Human Settlements. Among the advances which deserve mention, the following stand out:
 - The definition of sectoral and local competencies regarding the approaches to the use of land within the country.
 - The inclusion of the topic of territorial ordainment within different sectorial agendas and the cooperation to generate sectorial and local plans, policies, and strategies.
 - The insertion of Risk Management Plans as part of the Territorial ordainment plans, as well as vulnerability studies carried out in various cities of the country.

Among the challenges which need to be addressed, the following deserve mention:

- The introduction of territorial ordainment in a country where such norms have not existed before.
- The lack of definition regarding territorial limits between municipalities which is inhibiting advances in the development of ordainment plans, and the frictions which are generated trying to address this issue.
- The lack of specialized human resources in this topic as well as sufficient funding to carry out the necessary activities.
- The incapacity of municipalities to target funding to include a component directly focusing on this issue of territorial ordainment.
- The implementation of territorial ordainment plans considering the high degree of poverty existing within the country.

Within the section on Information and Research, the document recognizes the value of the use of information systems to identify and establish high-risk zones and recognizes advances within various institutions of the country through the execution of various projects.

The use of GIS in universities and institutions within the country is advancing, and maps of different kinds are being elaborated by such agencies. However, the elaboration of hazard and risk maps still continues to present a challenge as there are no set national or regional guidelines on how to elaborate them, the scales to be employed, as well as the level of detail in such maps and the type of hazards to be addressed.

Among the projects which have been executed that target such information, the following stand out:

- Municipal Program on Natural Disasters. This project is focusing on the elaboration of cartography, hazard and vulnerability maps, as well as proposals regarding territorial ordainment at the municipal level.
- US-AID – USGS project targeting hazard studies focusing on floods in 15 communities, as well as an inventory of landslides throughout the territory provoked by hurricane Mitch.
- Project on the Management of Natural Resources which is contributing via studies on hazards, vulnerabilities, and risks.
- A project by the University of Honduras to set up a library containing information on disasters.
- A project with the support of the Government of Japan and coordinated by JICA to develop high-resolution, multi-hazard maps for the cities of Tegucigalpa and Comayaquela, as well as the proposal of measures to manage them.
- A project executed by the national disaster management agency –COPECO- to carry out studies regarding hazards in all departments (provinces) of the country (project pending approval by JICA).

One important challenge identified and addressed is the need to ensure the compatibility in the information generated using different formats, as it has been identified that the outputs from some projects are not easily merged with others due to the lack of standard regarding information formats (metadata).

RELEVANCE TO RAP-CA:

As in the case of other Central American country reports, the document identifies the usefulness of GIS tools to manage information in relation to hazards, vulnerabilities, and risks. While capacities have also been strengthened in terms of several projects, there is no explicit mention of RAP-CA as an institutional project, nor are ITC and UNESCO mentioned in this respect.

TITLE:**MITCH + 5 REGIONAL REPORT. COMPONENT ON INFORMATION; RESEARCH; AND EARLY WARNING SYSTEMS**

Source: CEPREDENAC webpage: www.cepredenac.org. Document elaborated in Dec. 2003 as part of the Mitch + 5 regional symposium.

Within the workshop, parallel sessions took place focusing on various topics, among them one on information, research, and early warning systems. The aim of the session was to gather the opinion of participants from all countries of the region regarding advances and recommendations on how to proceed. Five thematic areas were proposed by CEPREDENAC for the discussion: policy, institutional, programmatic, legal, and financial. The following paragraphs contain a selection of the information gathered from this session.

In the context of **policies** several conclusions were reached. Among them:

- The fact that updated legislation in several countries contributed to promote research and information management.
- The combined efforts of governments, international cooperation, and NGOs augmented significantly research, procedures for gathering, classifying, and managing information, as well as to enhance the number and quality and number of early warning systems in the region.
- However there continues to be a lack of mechanisms to transfer, interpretation, and application of information at the local levels.
- There is a lack of strategies to enhance the communication between those who generate information and the end-users of such information, in particular those who need to use it to make decisions.
- The lack of definition on the roles of civil society and mechanisms to include it in the generation of information regarding risks and in the elaboration of plans to manage such risks.
- Weakness on the policies to strengthen local capacities to manage information and early warning.
- High dependency (and thus vulnerability) of the region on foreign assistance for the implementation of early warning systems and information systems.

Therefore, the following recommendations were issued:

- To elaborate information for public use and to make decisions in a format that is understandable for decision makers.
- Promotion of national and regional policies to continue strengthening capacities created at the local levels and to continue collecting, processing, and applying information in the context of risk management.
- Strengthening capacities on project management within the region and the countries to be able to orient in an effective way the interventions of bilateral and international cooperation.
- Strengthening the role of regional agencies for monitoring and evaluation regarding the compliance with goals related to the transfer of information for risk management.
- Promote policies for the inclusion of information on risks in the planning at the local level and within development agencies.
- Promote policies which establish minimum standards for information that target free access, mechanisms for exchange, and for regionalization of such information.

In the segment targeting **institutional aspects**, the following conclusions were reached:

- There is a continuation in the institutional vision regarding the view of sectorial projects and programs without compatibility in relation to other sectors.
- There are advances in the conformation of national, inter-institutional platforms for the collection, processing, and dissemination of information regarding hazards, vulnerabilities, and risks.

- Institutions whose mandates span territorial ordainment and environment appear as key ones to promote inter-institutional processes regarding information management to promote the reduction of disasters. CEPREDENAC is identified as the main promoter in these inter-institutional efforts.
- Institutions within the region are emerging with the potential to guide information processes, research, and education within Central America. For example the Regional Center for Disaster Information –CRID-.
- There is a significant increase in the number of professionals trained in the topic of risk management. However, such professionals continue to have little impact on the activities of institutions dealing with this topic.

Therefore, the following recommendations were issued:

- To promote inter-institutional arrangements for risk management based on lessons learned within countries of the region and on initiatives which are already working in these countries.
- Promote the establishment or strengthening of institutions which can centralize and distribute information at the regional level regarding risk management such as CRID.
- Consolidate or promote the establishment of efficient coordination mechanisms to inhibit duplication of efforts, generation of information, and products of projects.

In the segment targeting **programmatic aspects**, the following conclusions were reached:

- In general, networks to monitor hazards have been strengthened; however there are some networks which are now obsolete.
- A significant advance is perceived in the region regarding hazard and risk mapping. There is a strong input from international organizations in this respect, but there is a lack of homogeneity in such approaches.
- Channels to disseminate basic information to end-users are still not efficient.
- There is a recognized need to develop risk indicators. Such indicators are needed to guide processes related to risk management in the region.
- There are advances regarding the training of human resources in information management, early warning, and research. However, there are no indicators to evaluate such training processes.
- While information is being generated in a continuous fashion and there is recognition of the value of information for risk management purposes, processes and efforts at systematizing information are still weak.
- There is still a larger demand for information regarding disasters in comparison with the demand for information regarding risks.
- CRID is recognized as a strong Central American information network regarding disasters and has a strong presence in the region.

Therefore, the following recommendations were issued:

- To modernize equipment for hazard monitoring.
- Normalize cartographic formats (symbols).
- Promote the participation of citizens in the elaboration of risk maps.
- Amplify risk mapping in geographical span to cover, local, national, and regional issues.
- Strengthening technical municipal departments or units to promote the use of information for risk management.
- Promote strategic alliances within universities, NGOs, and the private sector to carry out research.
- Analyze and adopt methodologies which assure the impact of training on information management and operation of early warning systems.

In the segment targeting **legal aspects**, the following conclusions were reached:

- There is a recognition regarding the role of research and information on the elaboration of building codes and norms, and in norms focusing on territorial ordainment in the countries of the region.
- There are voids in legislation with respect to information management, and particularly in regards to access to information regarding risks and disaster reduction as a legal right of citizens of the countries of the region.
- Institutional responsibilities and functions regarding risk management are not clearly defined in the legal frameworks.

Therefore, the following recommendations were issued:

- To promote the generation of legal and normative frameworks targeting the homogenization of norms and codes regarding the use of information and of early warning systems in prevention and mitigation of disasters.
- Establishment of a legal framework regarding territorial ordainment and risk management based on the existing accords at the Central American level.
- Promote the assignation of financial resources for the elaboration of risk atlases, including accounting mechanisms.
- Include by law studies targeting risk assessment in the feasibility of projects promoting urban and rural development.

RELEVANCE TO RAP-CA:

As in the case of other Central American country reports, the document identifies the usefulness information management, legislation, policies, and institutional aspects in relation to risk management. While capacities have also been strengthened in terms of several projects, there is no explicit mention of RAP-CA as an institutional project, nor are ITC and UNESCO mentioned in this respect.