

## Program for Prevention and Mitigation of Flood Disasters in the Lower Lempa River Basin

<b>Location:</b>	Lower Lempa River Basin
<b>Date:</b>	1999-2004
<b>Sector focus:</b>	Multi-hazard risk reduction (especially flooding), environmental sustainability, livelihood enhancement, and poverty reduction
<b>Spatial focus:</b>	Zonal, community, and household

### Bibliographical reference

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Government of El Salvador, Ministry of Environment and Natural Resources (MARN), *Programa de Fortalecimiento de las Organizaciones Locales y Comunitarias en el Bajo Lempa: Lecciones Aprendidas*. San Salvador: MARN, 2004.

See also, Allan Lavell, *The Lower Lempa River Valley, El Salvador: Risk Reduction and Development Project*. In: G. Bankoff, G. Frerks, D. Hilhorst, eds., *Mapping Vulnerability: Disasters, Development & People*, pp. 67-82. London: Earthscan, 2004.

### Abstract

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This was the first, diagnostic and planning stage, of a multi-stage program to address simultaneously and synergistically, natural hazard risk, livelihood enhancement and poverty reduction, building the capacity of local organizations, and the protection of a fragile riparian and coastal wetlands environment. The diagnostic and planning phase involved collection of background, secondary data, field study, household level survey, and work with focus groups.

The Lower Lempa River Basin is unique in social terms and in the type of flood hazard it faces. During the civil war in El Salvador, this zone was depopulated. After the war, former combatants from both sides of the conflict were offered land here for resettlement. A number of NGOs and civil society organizations emerged locally and came to the region from San Salvador in order to provide assistance to the settlers. Conflicts in ideology produced conflict and a lack of coordination among some of these organizations.

Seasonal flooding of the Lempa River is only one of the sources of flood hazard. Release of water from an upstream dam has also produced damaging floods in the past, and the combination of high tide with either of these other events can produce a third kind of flood, with even large extent. An action plan was developed and partly funded and implemented.

This case will have interest to any agency or institution working in post-conflict situations, as well as those wishing to take more holistic and integrated approach to risk reduction that is simultaneously a contribution to livelihood enhancement, poverty reduction, increase in social solidarity and organizational capacity, and environmental sustainability.

## Technical description

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**Hazard/risk type:** Flood, earthquake, drought, civil conflict, biodiversity erosion

**Type of assessment:** Integrated diagnosis and action plan for security and sustainable development in the zone

## CRA process

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Collection and analysis of background, secondary data; direct observation in the field; key informants; household survey; work with focus groups both to provide the initial information on hazard, vulnerability, capacity, and livelihood strategies, and to provide feed back on and input to action plans.

**Methods used:** In the focus groups methods included: story telling, community mapping, imaginative scenario building, and action planning. The sequence began with a large public meeting on disaster management and early warning and continued in a series of more focused “popular consultations” in smaller groups with a total of 70 civil society and community leaders from the zone. These discussions modified and validated a hazard and livelihood map developed on the basis of background and secondary data. The community representatives “imagined” and suggested types of intervention that would advance solutions to particular local problems with idea of development and risk reduction whilst maintaining the vision of a single geographical unit, both sides of the river and inland and coast etc.

This locally agreed and validated mapping of sub-regions of the Lower Lempa that had similar degrees of exposure to flooding and similar social and production system characteristics was the basis for focus group discussion of possible actions.

**Was livelihood analysis part of the process?** Yes. This was a core part of the planning process. Livelihoods had complex strategies involving a range of ecosystems: ocean fishing, fish and shrimp farming, horticulture, animal husbandry, and arable farming, as well as small scale artisanal production, and remittances of income from family members living outside the zone or abroad.

**Was external specialist knowledge introduced?** Yes. Detailed professionally produced flood hazard maps were introduced and discussed as well as potential designs for flood and earthquake resistant housing.

## Vulnerability analysis

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Based on survey data, focus group discussions, training sessions, professional consultancy studies and hazard event chronologies, but the overall thrust was collective “visioning” of both local economic development and risk reduction and thus dealt more with capacity, opportunity and social, economic and organizational need, than vulnerability alone.

## Capacity analysis

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**Resources available:** *Financial resources:* Inter-American Development Bank; *Human resources:* specialist members of La Red from Costa Rica and Colombia, staff of two zonal development NGOs, support by MARN and local government officials and staff.

**Limitations to capacity:** *Project implementation capacity* limited by: A good deal of mistrust and tension among civil society groups that required investment a much time in preparing the communities. *Local coping capacity* limited by: Low income and low rate savings in the zone that limit the ability for investments in livelihood diversification; few sources of credit; transportation and marketing difficulties.

## Action planning and implementation

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**What actions were actually planned?** Detailed action plans were developed and proposed to MARN. These included: *protection of woodlands* along the river; a *coastal management plan*, where earthquake risk is high, and where was judged desirable to improve the fishing technology and diversity income sources, including the promotion of eco-tourism; a plan to improve *transportation infrastructure* both for marketing and eco-tourism, and for warning and evacuation purposes; and a plan for strengthening the *capacity of local organizations* to manage risk.

**What actions were actually carried out?** Not all proposals were implemented. To date MARN/ IADB investments have been made to establish organic shrimp production, diversify agricultural and livestock production, establishment of tree nurseries and promotion of tree fruit production (as part of the plan to protect riparian forest cover), development of cooperative societies, construction of warehouses for collecting crops going to market, and assistance to small scale fishing, investment in infrastructure, and improvement in housing (low cost flood and earthquake resistant retrofitting).

**Have these actions turned out to be sustainable?** As of 2005, yes, but as with most externally funded investment programs, once the IADB money stops, it will be a matter of ensuring a minimum level of maintenance of new infrastructure and finding salaries for extension agents, etc. If the new income sources and marketing channels are successful, a surplus that could provide local funding may be available, but this is usually slow to develop. Socially and organizationally, the antagonisms between NGOs in this zone could re-emerge.

**Were there any unanticipated additional benefits of the actions?** Tensions and lack of coordination between the two major NGOs leading development efforts of either side of the river have been at least temporarily dealt with, and both organizations participate in the new Local Committee for the Lower Lempa.

**Were there any unanticipated negative consequences of the action?** No.

**Limitations on action/ sustainability of actions:** This is a very complex environment that provides both a rich diversity of agro-ecosystems and challenges for sustainable management at the best of times. The history of civil war and recent re-settlement (no more and 12 years ago) of this are additional complications: communication and transportation is limited, and cooperation within the zone has also been limited by mistrust and differences in ideology.

## Indicators

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Increase in household income will be one obvious indirect indicator of the success of this integrated approach. However, the investments in organizational capacity and hazard mitigation have not yet been tested by a flood, drought, or earthquake.

## Contextual notes

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**Existence/ role of prior or contemporaneous conflict?** The civil war that ended in 1992.

**Role of displacement/ relocation?** This zone was re-settled following the civil war.

**Role of prior disaster & prior recovery attempts?** Hurricane Mitch (1998) was a signal event for El Salvador, as for other countries in Central America. While El Salvador was not badly affected by Mitch, the event began a focus at national level on disaster mitigation which was further encouraged by the earthquakes in 2001 and the drought that affected much of Central America in 1997-1998 & 2003.

**Significant historical, geographic, economic, political, or cultural issues that influenced this instance of CRA and its consequences?** Fragile and complex coastal and river flood plain environments; history of civil war, depopulation and re-settlement, limited livelihood options beyond subsistence agriculture due to isolation and lack of infrastructure and credit, political and ideological conflict at local (and national) level. Against all these challenges, the “culture” of post-war reconciliation provided a growth medium within which the participatory action planning work could take root. Successful planning and implementation, in turn, reinforced local coordination and cooperation among formerly antagonistic groups and encouraged the “culture” of reconciliation.

## Strategic notes

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**How has this practice of CRA influenced change in policy and practice at the national level?** The Ministry of Environment and Natural Resources (MARN) considers this project a success and is likely to use this kind of integrated approach elsewhere in El Salvador.

**How has this practice of CRA influenced change in policy and practice at local level?** The project has strongly influenced local government and NGO action at the local level. This area has been a kind of “no man’s land” in which civil society organizations have had great influence over the election of local officials and more influence over local people than any form of formal government.

**How has this practice of CRA influenced the level of organization and solidarity in the locality where it was carried out?** It has raised hopes, given encouragement, built organizational capacity, and increased cooperation among local organizations.

**Less divided along class, gender, age, ethnic lines?** Less division along ideological lines dating from the civil war period.

**More divided along these lines?** No.

**Are the people living in this area more able to speak out on issues that concern them?** Yes, the process has been very empowering according to a wide range of experts in El Salvador, Costa Rica, and Colombia who have observed it.

**Have new civil society organizations been created directly or indirectly because of this practice of CRA?** Agricultural and fishing cooperatives as well as a new Local Committee for the Lower Lempa.

## Lessons learned

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- ♦ Disaster risk and risk management must be seen in the light of everyday, chronic risk.
- ♦ Social capital and organizational abilities constitute one of the key factors without which vulnerability cannot be reduced.
- ♦ Projects require an appropriate spatial scale; community scale is too small; region is too large.
- ♦ Integration of spatial levels very important.
- ♦ Participation is of critical importance for operation and sustainability.
- ♦ Multi-hazard approaches are feasible and more rewarding in the long run.

## **Keywords**

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Flood, earthquake, wetlands, coastal management, livelihood diversification, transportation, environmental sustainability.

## **Resource person(s)**

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## Program for Prevention and Mitigation of Flood Disasters in the Lower Lempa River Basin

**Location:** Lower Lempa River Basin

**Date of update:** 13 August 2008

### Background

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The Lower Lempa is a flood plain formerly used for cotton production. By 1992 this zone was selected by the former guerrilla (FMLN) and the government of El Salvador to establish new settlements to its combatants. From the beginning it resulted clear that floods and droughts will be the permanent partners of the settlers.

In the period 1999-2004 community based committees were formed to work with the Salvadoran Ministry of Environment on a series of interventions that would both enhance local production (hence improve and stabilize livelihoods) and reduce risk from flooding. Planning was multi-hazard, including earthquake. In this period following the end of a long civil war, the social situation was complex because residents were all mostly newcomers, being demobilized soldiers both of the national government and the former insurgent forces, and their families.

### Update Time Frame, Mode of Follow Up & Confidence Level

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Four years since project's end and nine since project inception. Follow up done on the basis of the original author's collecting of direct observations by Salvadorans who have recently visited and well acquainted with various umbrella NGOs involved, thus the confidence level is reasonably high. However, caution is required as no direct systematic survey was conducted and there may be variation in the project area that is not reflected. We express our sincere thanks to Luis Roman for his generous assistance.

### Sustainability

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The NGOs are still active in the region, serving as overall coordinators and facilitators of projects to diversify the economic base. These include the Fundación para la Cooperación y el Desarrollo Comunal de El Salvador (CORDES) and Asociación para el Desarrollo de El Salvador (CRIPDES). Earlier tension between "coordinating" NGOs on the left and right banks of the Lower Lempa river have eased, and an overarching organization has been created by several organizations working on the right bank, Grupo del Bajo Lempa. Hence institutionally, there has been sustainability and even deepening and organizational development.

## **Actions implemented**

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A small dairy has been constructed in El Playón, for adding value to milk products for sale. Care was taken in locating the dairy that it is well out of the river flood zone. So flood awareness remains high in the communities. In the Tecoluca zone (left bank of the river) a hostel has been built and other related services developed for an incipient internal and eco-tourism industry. Associated with this, local handicrafts have been developed and a Civil War Museum was opened.

Some of the same NGOs have been involved with in a Ministry of Environment study of vulnerability of the people of the Lower Lempa zone to climate change. These groups include Grupo Bajo Lempa, Coordinadora del Bajo Lempa, Asociacion Mangle and CORDES San Vicente. The results of the study point toward the need for continued economic diversification, environmental management, and engagement with local government and bottom-up impact on policy. In essence, then, these study results validate the conclusions of the earlier Participatory Action Research (PAR) planning exercise (1999-2004).

Local residents are still highly risk conscious, as witness mass marches and demands that led to important improvements in the region: a paved road, cleaned drains and “cañadas”, the beginning of the construction of levees on both sides of the river and the development of different studies and processes to support capacity building of the inhabitants. By the beginning of 2008 the government had practically abandoned the planned construction of the last sections of the levee in Tecoluca, on the right side of Lempa river.

## **Welfare/security results**

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The informant provided no data or observation on welfare and security, and no data disaggregated to the level of these administrative districts (*municipios*) circa 1998-99 (before) and 2006-2008, are available. Nevertheless, with considerably more economic activity, with an all weather road connection allowing more reliable marketing, and diversification livelihood opportunities, it is perhaps reasonable to infer that people are better off, and certainly not worse off, as a result of the activities that have taken place.

## **Replication of method/approach**

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The informant reports an impression that risk management and hazard awareness has become routine and something that is automatically taken into account in the planning an implementation of all local development activities.

## **Lessons learned/open questions**

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1. Organizational capacity takes a long time to become established, but then it does not erode rapidly and can lay the basis for quantum leaps in development and security.
2. Risk reduction can be effectively “mainstreamed” to the extent that it becomes a background “given” in normal development activities.
3. Support and sustainability of actions are more likely when tied directly to livelihood enhancement and accumulation of wealth.

## **Keywords**

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Hazard Risk Type: Climate change, conflict, earthquake, floods

Intended End Users: Disaster Risk Management Field Practitioners, Government Staff, Local Government, NGOs, Policy Makers, Risk Researchers

Scale of Assessment: District, Community

Sector Focus: Agricultural Production, Flood Hazard Mitigation, Multi-Hazard Risk Reduction, Needs Assessment in Post-Conflict Situations, Rural Livelihood Security

Disaster Risk Assessment Method: CVCA, HVA

General Assessment Methods: Economic Analysis, Environmental Analysis, Institutional Analysis, PRA

Participatory Tools: Focus group interviews, Hazard and resource mapping, Historical profiling

Technical Assessment Tools: Direct observation, hydrological maps, key informant interviews

### **Author of Update**

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