

Since there is a need to connect on what is done in the high and medium part with the low part of the basin its necessary to mention that urban areas including the Capital San Salvador and the unsustainable agricultural practices give several pressure to the territory and the need for executing environmental and territorial management focusing on sustainable development activities is every time more necessary; as a result of the pressure over the upper basin there have been efforts to minimize the erosion, deforestation and unsustainable practices over the natural resources: Three main programs have been executed: El Salvador Environmental program (PAES) and the first phase of the Trinational Plan Trifinio, and a permanent program of environmental management in the Lempa river; besides those some other programs with objectives of soil and water conservation, training and development and the management of three main dams for hydroelectrically production (Guajoyo, Cerron Grande and 15 de septiembre) which had positive impact over the area.

Some recent studies developed by National Service for Territorial Studies (SNET) and its Hydrological service had found some variation and the decrease of the rivers flows (decreasing from 40 to 80% compared to historic behavior) during the dry season, due to some factors: Changes on the land uses, (principally the increases of urbanizations) variations on rain regimens and evaporation and transpiration, changes on the demand contrasting with the amount of surface draining and the increasing of flows during the raining season. Which has caused flooding almost every year in the lower basin.

The medium basin has special characteristics due to its high elevations and slopes creating the surface drainage produce the more high flows and sediments to the river and it covers two of the most zones more poverty in El Salvador (Cabañas and Morazan)

## **THE CASE OF THE LOWER LEMPA RIVER VALLEY**

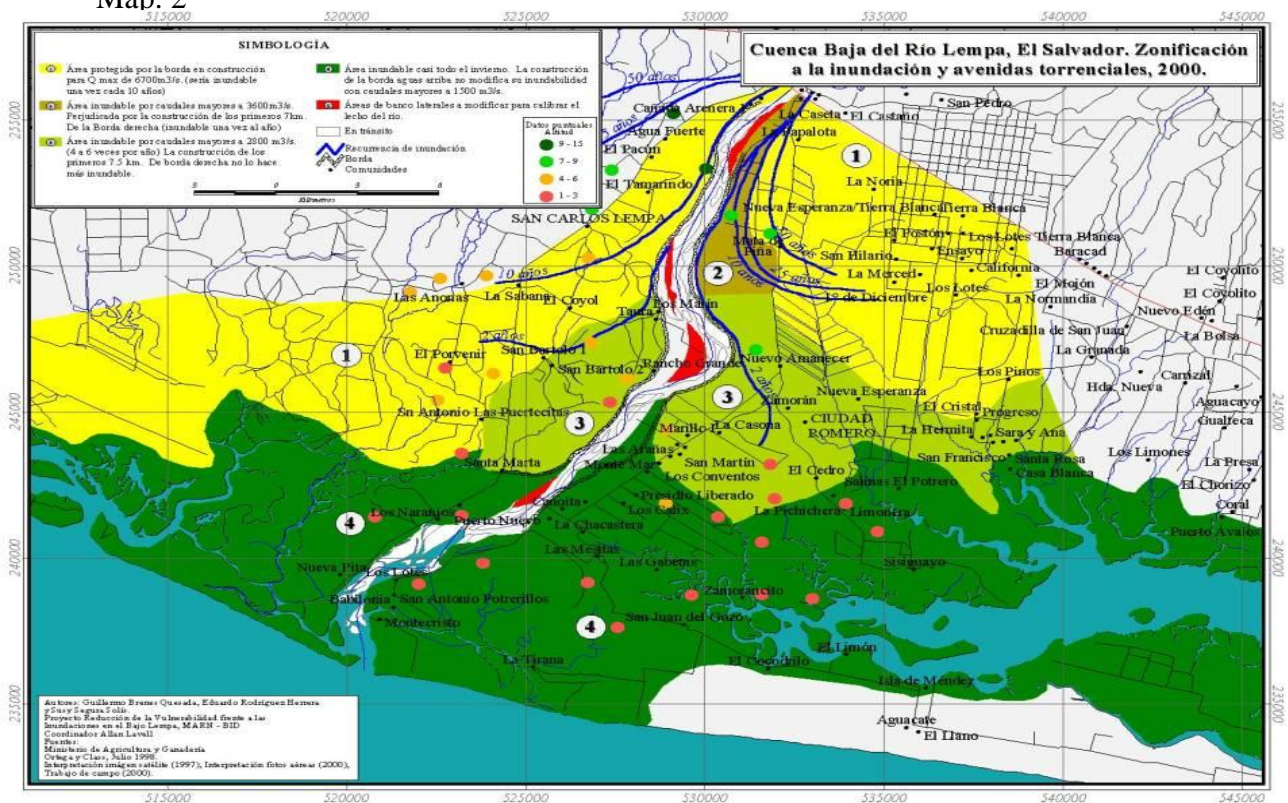
The lower Lempa river valley covers an area of some 850 square kilometers and is located between the Salvadoran Pacific Coastline and the Littoral highway that links San Salvador, the country's capital with the country's eastern territories and Honduras, the people in the valley present a very complex social and political situation with competing and antagonistic organization and views. (Map. 2)

The Lower lempa valley is a present populated by around 35,000 persons; many of whom are extremely poor; most of them occupied the zone after 1992 with the signing of the peace agreement between government and FMLN Guerrilla forces new settlements were built in the area along side previously established settlement., and many of these were located in areas prone to flooding. Many of the immigrants came from highlands and even urban areas and had little experiences on low lands or flood plains

From 1911 to 1974 there is a report of 11 flooding in the area; none of them reflects losses on any sector; there is none report from 1974 until 1990: from this date until now there are more than 15 times different areas has reported flooding problems with impact over the population and its goods; the most recent was on October 2004. It is interesting to note that disastrous flooding is a recent phenomenon in the zone. Between 1950 and 1980 when the area was occupied by large scale commercial

agricultural holding, specially cotton plantation, few disastrous flooding incidents were reported. This can be explained by the lower densities of population, the more adequate location of infrastructure, the greater resilience of the population and the more adequate dyke and drainage systems In place. During the 1980s the area was virtually abandoned given it was a natural route for arms shipments to the Guerrilla forces and was subject to constant confrontations between these forces and army

Map. 2



Since reoccupation of the area from 1992 onwards, the zone has been characterized by high levels of communities and local organization. Two major organizations emerged this period, CORDES on the right bank, and the Coordinating for communities of the Lower Lempa valley- La Coordinadora on the left bank. These developed very different visions of development in the area and were constantly opposed on many issues, despite their common affiliations with the FMLN. Little cooperation or contact existed between the two in 2000. in addition to these two dominant organizations many other smaller area or community based group emerged that established different levels of cooperation with the two major organizations

Since 1992 to 1998 (Hurricane Mitch impact) main activities in the area were related to agriculture and some livestock with almost none knowledge of how to deal with the flooding every year. Since then the zone received relatively large scale development support from numerous international and national NGO's and government institutions. This was particularly true during the post Mitch period. A general lack of coherence, dispersion and overall competition marked this type of support; a pop pourry of different interventions, many of which were technically, social and environmental not so coordinated, the river marked a frontier with little cross river cooperation

It is well known that vegetation covers plays an important positive role in the flooding process, in the lower Lempa river between 1950 and 1979 the forest was reduced drastically due to the cotton plantation that uses most of the land for cultivation purposes. An estimated of more than 15,000 hectares of forest were eliminated (Villacorta and Benitez 1998). Since 1980 to 1992 most of the vegetation recovers and actually according to the National System of natural Protected Areas there are 8 protected areas: La Calzada, El Pichiche, Isla Tasajera, Normandía, Chaguantique, La Esperanza y Nancuchiname with approximately 3211 hectares total. Actually There is a big pressure over the forest due to external pressure over the resources (Woods, medicine species, etc) but the destruction is not coming mainly from the communities around if not from external agents (people from the cities around come and take the resources). even the areas are declared protected; there are not plans of protection and management actually excepting Nancuchiname witch is the largest (1030 hacs)

Even though Hurricane Mitch in 1998 reveal the global vulnerability of the place and cause several damages (agriculture and housing were the most affected in the lower part of the river valley); the improper management of the 15 de septiembre damp located to few kilometers upstream worse the situation and the pressure of the communities and the local actors brought the creation of some mechanism to prepare and to attend the emergencies and develop some plans for rehabilitation. (There improvement of an early Warning System with the coordination of the National Emergency Committee COEN, The Lempa River Hydroelectrically Commission CEL, NGO's, The Local Communities and the cooperation of SNET giving information related to the behavior on real time of upstream.) created some ideal sceneries to develop some other activities and try to live with the risk.

Between 1998 hurricane Mitch and 2001 two big earthquakes there were several investments of different Programs such as "Sustainable Development and risk Reduction in the Lower Lempa Valley: Experiences with local participation" financed by the Inter American Development Bank – IADB and run through the country's Ministry of Environment and Natural Resources and some other programs supported by Inter American Development Bank, International cooperation by USAID, Spain Cooperation, European Economic Community, JICA, and some countries such as Holland, Germany etc. besides the social projects financed by national government and the support by local actors (NGO's Mayors and community leaders)

1991 marked a very difficult situation for the country, two big earthquakes impact all over the territory: 944 death, 5565 injured, 1,364,160 affected 169,692 damaged houses and 149,563 houses destroyed. And the impact over the lower Lempa valley besides their permanent problems with flooding make them remember that seismic hazards was and will be a problem to solve; so in the proposal to develop and management of the zone there was a need to introduced a multi hazard aspects and the global vulnerability as part of the proposal of development.

## **THE FIRST STEPS TO AN INTEGRAL DEVELOPMENT PLAN IN THE ZONE**

The accumulation of different proposals until 1991 opened an interesting space of discussion searching for opportunity to have an integrated sustainable development plan for the area focusing in working and live with risk, but mainly some proposals were discussed between the local actors and the civil and government institutions. With emphasis in: Risk reductions and disaster management, Socialization of prevention and mitigation, Very effective response during emergencies, rapid recuperation of affected areas, forest management and development plans, management and development plans for costal areas, (Including eco tourism) development of principals and secondary roads development; the continuation of some projects: support of agricultural productions; planting production industrialization and exportation of cashew nut. Diversification of agriculture and the investment on irrigation systems; forest nursery; Development of cooperative systems and system of storage and support to the agro industry; projects of support to the social infrastructure; the development of a sustainable rebuilding of the houses with proper constructive system according to the needs (Flooding problems.)

The project Sustainable Development and risk Reduction in the Lower Lempa Valley: Experiences with local participation” did a diagnosis in which reveal the social, economic, lifestyle, infrastructural and other problems; but also the potential of development, and the preliminary projects recommended for the development of the area, as it is mentioned in the last paragraph.

In the mean time there were many interesting initiatives and projects already in action and some others plans for the future of the area ; these developed with different purposes and planned also with different point of views but all of them focused on develop the different potentials of area (Fishery, Tourism, Agricultural diversification, agroindustry, roads, proper building of houses (most of tem with techniques to protect from flooding), development of social services, management of the forest, etc) the main challenge was to bring planers and local actors together and share the ideas for the future. Some has been accomplished but some others still not. Being the lack of communities cohesion, the dispersion of individual proposal and the social complexity the challenges to overcome

Most of the activities of development were done **in the right bank of the river valley** with more than 2500 families and close to 40 small communities; with advisory of CORDES. They took their proper initiatives taking on count their proper experiences and the new scenario after Mitch and the earthquakes and develop some different programs: school for all the communities, a network on health assistance, 60% of the population with formal housing, roads partially pavement, dikes maintenance, drainage and shelters partially constructed, local market, 98% of electricity coverage, 30% on site telephone and 30% of cellular phones coverage, Public transport with some regularity, the base for an Early Warning System, parks communal and sport areas (60% coverage), 3 offices of public security besides there ahs been developed some systems of production and services (Financial services, “El Roble”, Agricultural and heavy machinery and transport and workshop “Maquilishuat”, production and marketing of vegetables, “Agrolempa” Agricultural formation “School farm Juan mendez”, Agroservice San Carlos Lempa, Agroindustrial service of cashew nut “SAMO” Agroindustry of milk “BIOLACT”, Eco agro tourism “Lempa mar” Center for business management and agribusiness, Grocery stores “ACOSCAL DE R.L.” Potable Water “Lempa abajo” all of these

initiatives are true for the areas mentioned above and the percentage of the total population is still low.

Actually the execution of a project (2003 – 2004) the “Designing a Sustainable development program” financed by the Inter American Development Bank – IADB and run through the country’s Ministry of Environment and Natural Resources has taken on count the different initiatives and for the purposes of development; and as it was recommended in studies before the area has been divided in 6 zones, each zone with different characteristics of land uses and different potential of development and it has been characterized economically, socially environmentally and has reviewed the different studies related to its global and very particularly vulnerability as well as the main hazards for natural events and risks and it is proposed already several programs to promote the territorial management.

### **PRELIMINARY CONCLUSIONS**

It could be said that the experiences is still in construction but in the last 4 years there is been an advance due to more conscious planning of some NGO’s and government institutions. meanwhile partial development planning process has initiate with relatively good results which has reduced some levels of vulnerability in a very particularly communities with the expectative to reduce risk. The social, physical and economic vulnerability has decrease in some communities compared to what it was 8 years ago, but in general the situation continues to be fragile and vulnerable. Being necessary to execute an adequate management of the upper and middle basin and the continuous of the improving of the early warning System for Flooding which includes the continues improving of the forecasting, management of damp levels and discharges and coordination between communities, National Emergency Committee and CEL.

we haven’t had another climatologically event as big as Mitch (19968) again and knowing that people security depend on factors such as the efficiency of the Early Warning System, adequate management of the damp and how sustainable is the actual organization and the continues progress of the economic capacity response of the people before, during and after any impact. The author estimate that even there are been many improves on the planning for flooding management and begins options for the development of the area; it is still too early to say that is safely to live in the area of the Lower Lempa river valley. Being very important challenges still to overcome. such as: To finish a general territorial development plan of the total area; national policies and plans have to focus on the protection and development of the whole basin (with some emphasis on the Lempa Valley) the cohesion of the communities is a factor to improve, there are many important lessons and experiences that can be replicated even in the same area; the vulnerability is still high with some up decreases on the levels on certain periods of times; many of the local population has begging to use the hazard as an opportunity, there are big potentials which makes a rich area on natural resources and lot of opportunities to develop; and finally is necessary to elaborate and execute forest protection and conservation plans.