



# Adaptation to Climate Change in El Salvador

## Vulnerability and Capacity Analysis of Communities *Amando López* and *Octavio Ortiz* in the Lower Lempa Valley



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### Abstract

In the past few years great disasters following climatic extreme events have increased in El Salvador. They tend to be portrayed by national media as *natural* and *unavoidable*, building a barrier to effective adaptation to climate change. This work summarizes research done on capacities and vulnerabilities of two Salvadorian *campesino* communities prone to annual flooding. Results show that community vulnerabilities are based on unsatisfied basic needs such as poor access to education, health service, public infrastructure and constant food insecurity. Capacities of farmers are evident on their 19 adaptation strategies at work, presenting 26 other adaptation proposals for the future. They are initiatives combining traditional and innovative approaches based on disaster risk reduction, climate-resilient livelihoods and capacity development, also addressing underlying causes of vulnerability. Capacity assessment in state institutions for the implementation of national adaptation strategies shows, however, insufficient comprehension of the poverty/vulnerability relationship. Governmental support for rural areas is almost non-existent and *development* projects for national economic growth often generate new local risks. With most productive land in the hands of small farmers, community-based adaptation to enhance resilience of vulnerable communities is, for the time being, one of the most effective implementation approaches to adaptation to climate change in rural areas of El Salvador.

### Introduction

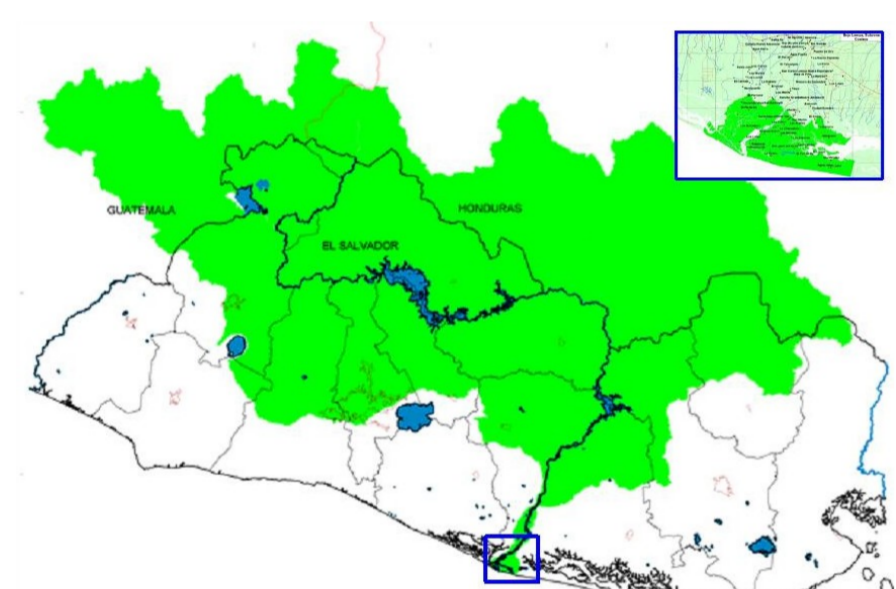
Main research objectives:

- gathering information to integrate adaptation in resource management/livelihood programs in the two communities
- producing a final document to disseminate results, guiding similar research work -easily replicable in communities of the Lower Lempa Valley- and for political advocacy
- elaborating an adaptation plan for the two communities (to be completed in 2012)
- giving voice to vulnerable communities

### Climate change in Central America:

climate variability (increased frequency/intensity of extreme weather events), rising sea levels, rising temperatures<sup>(1)</sup>

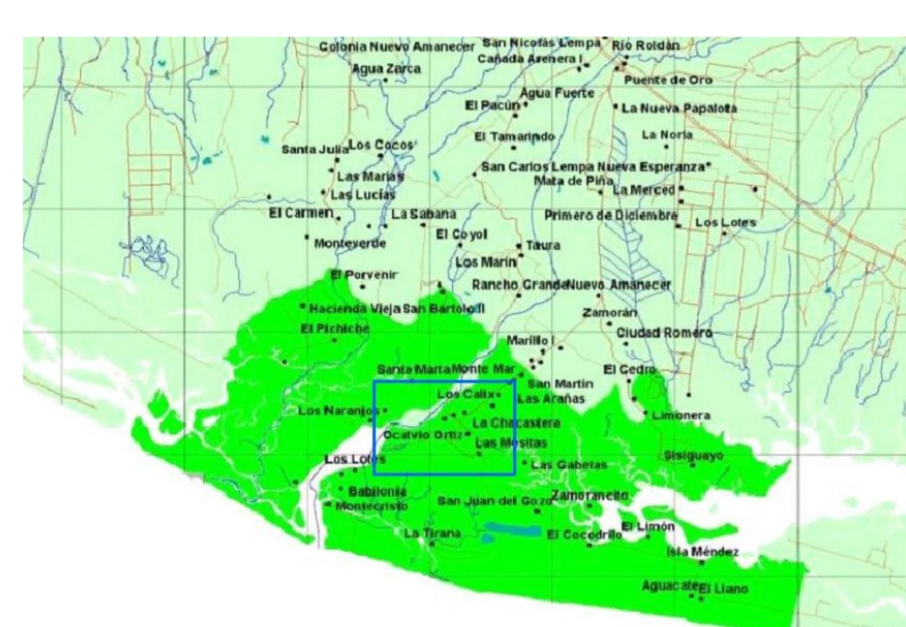
El Salvador and the River Lempa Basin<sup>(2)</sup>



Highly vulnerable to hydro-meteorological events

From 2002 to 2011 struck 9 times by cyclones/low pressure systems

Las 3 events -E/96 Ida, Agatha, TD 12E- caused \$1300 million losses (6% GDP)<sup>(3)</sup>



Lower Lempa Valley Communities *Amando López* and *Octavio Ortiz*<sup>(4)</sup>

continuous multiple hazards

### Methodology

1 year research project (2010/2011)

Levels of analysis: household/community/ municipal/national

### Quantitative Research Elements



- 206 questionnaires
- Participation of 37 young volunteer researchers, many from the Lower Lempa Valley
- 7 workshops needed to prepare volunteers

### Qualitative Research Elements

Climate Vulnerability and Capacity Analysis (CVCA)

Ethnographic tools:

- Participant Observation
- 28 informal/semi-structured interviews

Participatory Rural Appraisal (PRA):



- 7 focal group workshops (hazard mapping, seasonal calendar, historical timeline, vulnerability matrices, Venn diagrams)
- 3 Transect Walks

### MAJOR CLIMATIC HAZARD: FLOODS



Last flood events:  
Agatha Storm (2010)  
TD 12E (2011)

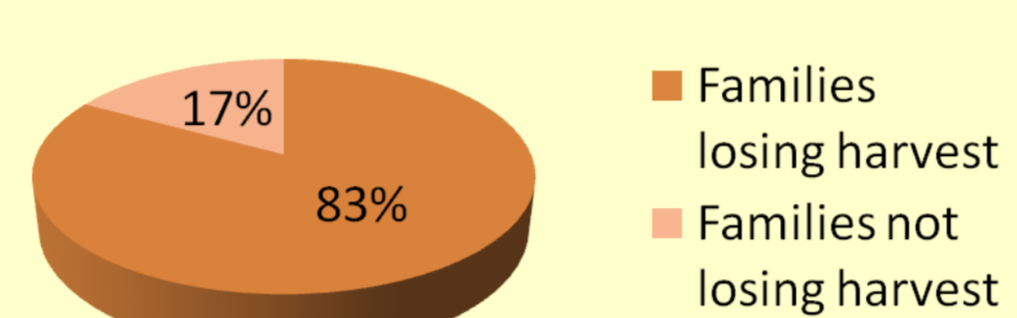
Second major climatic hazard: droughts  
Last drought events:  
2008, 2009

Main livelihood activity: subsistence agriculture

### RESOURCES AT RISK

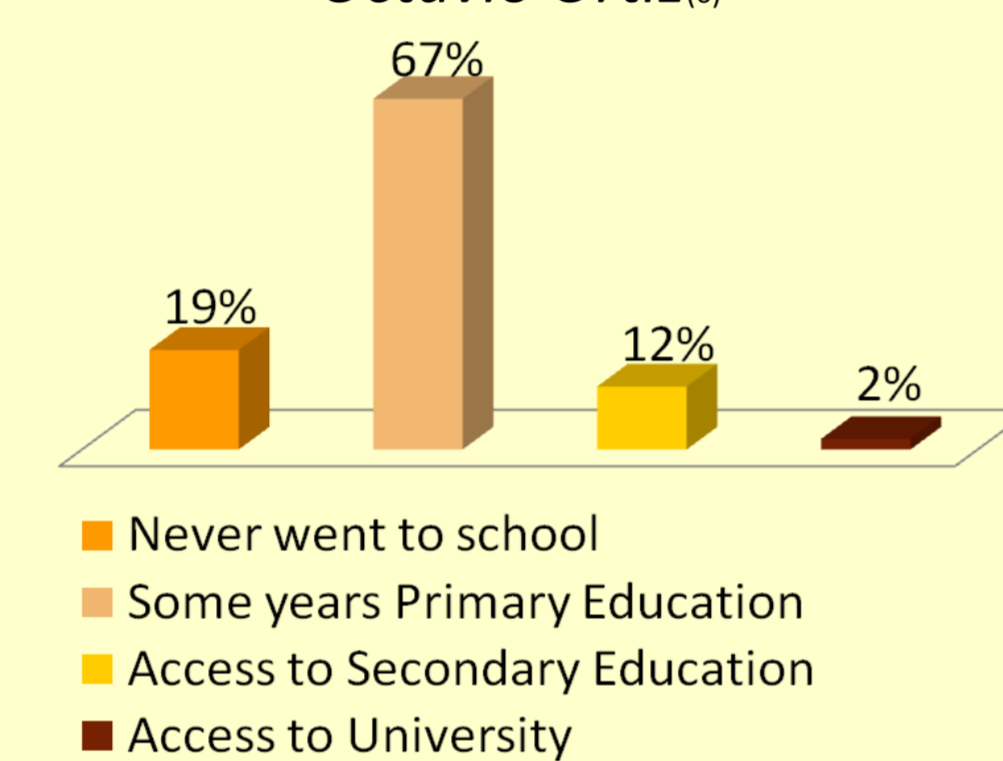
- Agricultural lands
- Water
- People and their capacities
- Public infrastructure and productive assets

Agatha Storm - Harvest Losses in *Amando López* and *Octavio Ortiz*<sup>(5)</sup>



### VULNERABILITIES

Access to Education - Community *Octavio Ortiz*<sup>(6)</sup>



### Education

Most vulnerable: women, children, disability sector

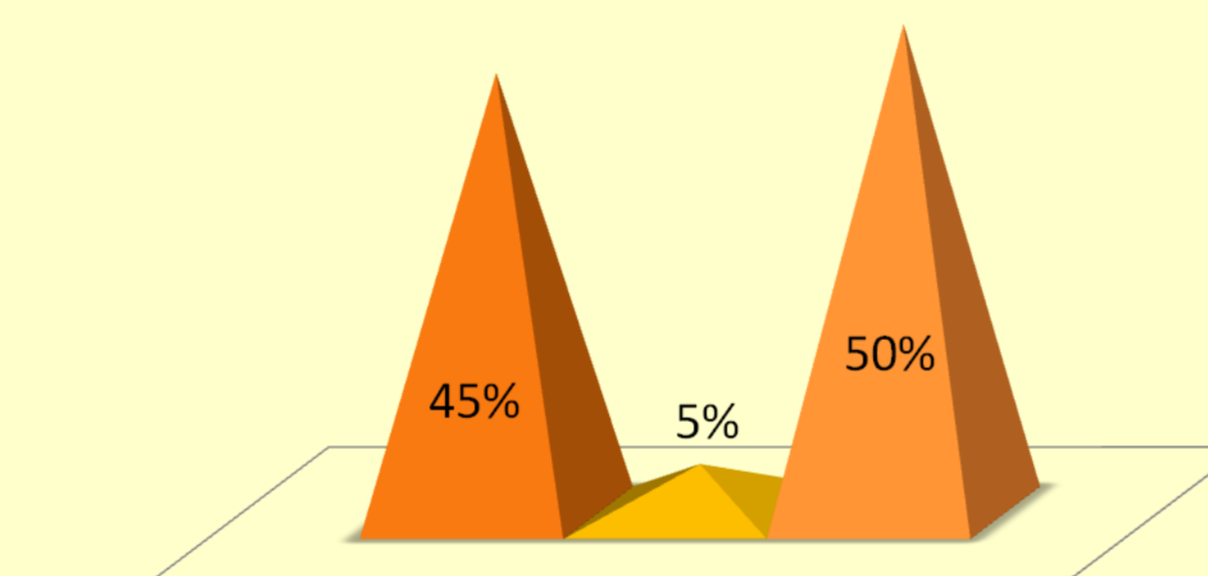
Financial Support in Case of Disaster Communities *Amando López* and *Octavio Ortiz*<sup>(7)</sup>

- No access to financial support
- Access to credit by financial institutions
- Access to informal sources of credit

### Chronic Food Insecurity

- Reduced food intake after harvest losses
- Families forced to sell/use last assets and/or ask for credits
- Absence of risk transfer mechanisms

Most vulnerable: children



### Health

Main health problems:

- Chronic respiratory diseases
- Malnutrition
- Chronic Renal Insufficiency (CRI)

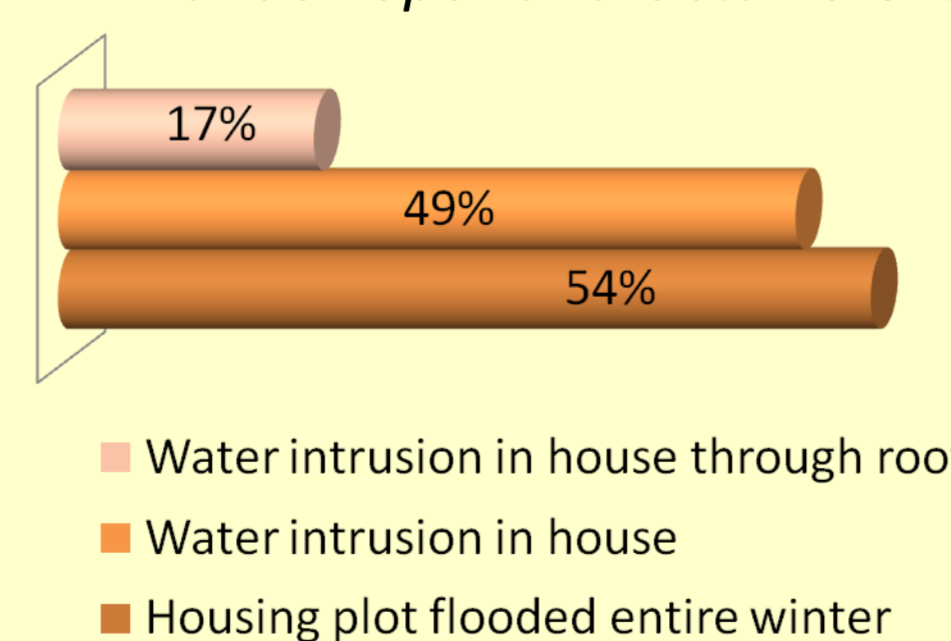
Most vulnerable: children

Health service provision limited by:

- lack of a laboratory to accelerate diagnosis and avoiding spread of diseases
- shortage of medicines/equipment/qualified staff

### Infrastructure/Provision of Basic Services

Floods and Households - Communities *Amando López* and *Octavio Ortiz*<sup>(8)</sup>



- No post-disaster rehabilitation
- No sewage system
- No garbage collection
- Unpaved streets
- No public lighting
- No systematic maintenance of drainage system

Most vulnerable:

pregnant women/with small children, disability sector, elders

### References

- Parry, M. et al. (2007) - *IPCC Fourth Assessment Report: Climate Change 2007 (AR4) - Impacts, Adaptation and Vulnerability*, Cambridge University Press, UK & USA
- [http://www.visionmundial.org.do/archivos-de-usuario/File/JustoAguilar/webagua/images/rios/lempa\\_trinacional.png](http://www.visionmundial.org.do/archivos-de-usuario/File/JustoAguilar/webagua/images/rios/lempa_trinacional.png)
- Ministry of the Environment and Natural Resources, Government of El Salvador
- <http://desenredando.org/public/varios/2001/riolempa/atlas/szcoatera.jpg>
- 5/6/7/8. Own elaboration based on questionnaires' results
- Ministry of Finance, Government of El Salvador
- Personal interview (15/3/2011)

### Main Findings

#### Disaster Risk Reduction



#### COMMUNITY-BASED



ADAPTATION EFFORTS

(handout with full list of CBA initiatives and proposals)

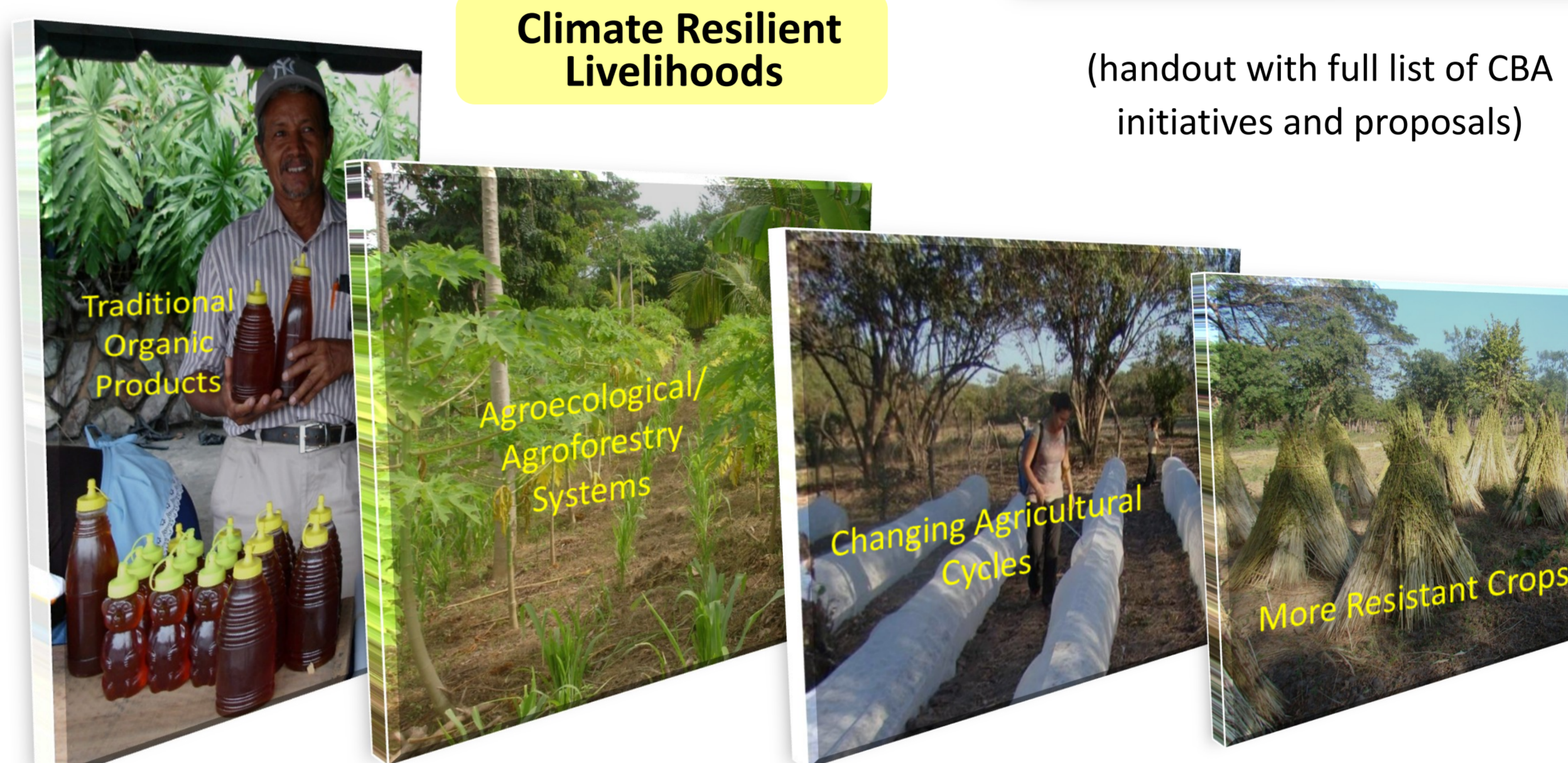
#### Capacity Building



#### Addressing Underlying Causes of Vulnerability



#### Climate Resilient Livelihoods



#### BARRIERS TO ADAPTATION

#### Unaddressed Anthropogenic Risk Factors

- Breakages in the Lower Lempa Valley Flood Protection System - initiated in 1999 and never completed
- Water discharges by Hydroelectric Power Station

#### Ineffective Poverty Alleviation

- Poverty/vulnerability nexus unaddressed
- Obsolete Poverty Indicators - *Family Shopping Basket*
- Poverty Reduction National Programs - Lower Lempa does not qualify

#### Lack of Institutional Capacities

- Adaptation not considered a national priority but an additional cost - No Climate Change/Adaptation National Programs. Key themes for adaptation (food insecurity, water), not prioritized
- DRR concentrated on emergency assistance - no post-disaster rehabilitation of local economies
- Limited investigation/information sharing

#### Adaptation vs Development

- Climate change considerations not integrated in development planning
- Priority: rising country's competitiveness in international markets

#### Lack of Investment for Local Food Production

- Public Investment 2009<sup>(9)</sup>:
- Agriculture 3.5%
- Environment 1.4%
- Transport Infrastructure 67.5%



New Northern Highway, 184 kms of deforestation in the area with higher national levels of annual precipitation

#### Decision Making Processes Dominated by Private Sector

- Most economic sectors controlled by family oligarchies
- Job creation primary directed to temporary employment and trade free zones (*maquilas*)

**"Investment in education, health, technical assistance, research and capacity building for rural areas has been reduced. From this we can conclude that we are neither contributing to reduce vulnerability to climate change, nor do we have programs focused on building adaptive capacity."** (Ivette Aguilar, 10 years UN Focal Point for Climate Change in El Salvador)<sup>(12)</sup>

### Conclusions

Lower Lempa Valley affected by multiple climate hazards, floods being main threat. Rural poor subsistence farmers/their territories most vulnerable.

Irrational resource use tolerated in the name of *national development*. It generates/accumulates risks, increasing local exposure and susceptibility. Any climatic phenomena easily transformed into major disaster.

National DRR efforts concentrate on attending emergencies once events transform into disasters. Unaddressed anthropogenic risk factors facilitating/causing overflowing of the Lempa River. Reactivation of local economies not included in post-disaster rehabilitation.

While *development* efforts serve national elites/foreign interests, communities' vulnerabilities continue to be based on unsatisfied basic needs. Poverty/vulnerability nexus ignored.

Food sovereignty at risk by lack of investment in rural producers for local markets. Violation of human, political and civil rights -*rights to life, physical integrity, employment, property and food*-.

Lack of State capacities for adaptation. Main climate change concern: implementing mitigation projects to enter carbon markets.

Community-based adaptation, already effectively implemented by populations at risk and NGOs, is currently most efficient approach to increase long-term resilience and adaptive capacity in vulnerable communities in El Salvador.

### Recommendations for Further Research

El Salvador lacks studies on: urban vulnerability, the effects of rising-sea levels, vulnerabilities and capacities of communities at risk, and ongoing CBA experiences Highly recommended to...

...use a multidisciplinary research approach. Social impacts of climate change understudied

...demystify disasters as *natural* events by including local risk knowledge

...apply a rights-based approach when revising plans/programs of economic development

...reconsider traditional migration push factors to include loss of livelihoods. It will help to identify new territories and sectors at risk

Research report (in Spanish) can be found at: [http://www.trocaire.org/sites/trocaire/files/pdfs/policy/Climatico\\_en\\_ElSalvador.pdf](http://www.trocaire.org/sites/trocaire/files/pdfs/policy/Climatico_en_ElSalvador.pdf)