Integrating socio-economic information into impact & vulnerability assessments

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Sharing a case study:
Integrated vulnerability & adaptation assessments & planning of rural communities living in the coastal plain of El Salvador

GEF-regional project: "Strengthening National Capacities for Stage II Adaptation in Central America, Mexico & Cuba" (2003-2007)

Conceptual Framework

Vulnerability = f {Exposure, Resilience, Adaptive capacity} ➡ V = f {E, R, A}

Adaptation strategy: ⇩ E, ⇧ R, ⇧ A

Territory = geographic space characterized by the inner natural, sociocultural & economic environments created by people living there

Territory = human system = adaptive complex system

Adaptive complex system = non linear & dynamic (develops emergent functions, such as resilience & capacity to auto-organize through adaptive cycles)

The selected territory as a human system or a socio-natural system

Explicative variables of climate vulnerability (V)

Variables / Order	Type of explicative variables							
First	Climate exposure (E)		Resilience (R)			Adaptive Capacity (A)		
Second	Temperature extreme events	Dry & wet extreme events	Flexibility of organizaton	Mechanisms of control	Structural coupling	Resources potential	Experimentation & innovation	Complexity of organization

Vulnerability approach:

$V = f\{E, R, A\}$

Risk approach:

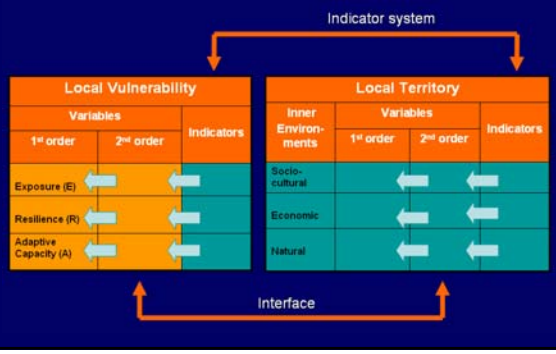
$Risk = f\{E, V\}$; $V = f[R, A]$ => $f\{E, f[R, A]\}$

Socio-economic & natural variables of the local territory

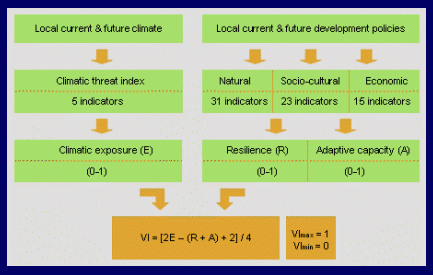
Explicative variables characterizing the local territory

Inner environment	Dimension (First order variables)	Second order variables	Indicators
Economic	Production	Productive organization	Economic
		Technological level	
	Distribution & consumption	Source of family income	
		Land tenure	
	Circulation	Market diversification	
Socio-cultural	Regulatory framework	Type, nature, scope & level of organization	Socio-cultural
		Legal & institutional framework	
	Cultural	Harmonization human activities & natural processes	
		Historical, cultural & territorial identity	
	Psycho-social	Quality of life, security & spatial functionnality	
Natural	Natural	Environmental essential functions	Natural
		Environmental funct. supporting human activities (G&S)	
	Socio-natural	Prevailing environmental processes	
		Environment & natural resouces management	

Interface between the variables & indicators of the local territory and the vulnerability-related variables



Relational framework to calculate and integrate socio-economic information to vulnerability assessments



To develop local socio-economic scenarios it should be fully considered:

- The linkages accross the different levels: local, national, regional & international;
- The interactions & couplings among the natural, socio-cultural & economic local environments of the selected local territory;
- The local knowledge, traditional and empirical.

Socioeconomic scenarios: 4-step participatory process

- Analysis of current national macro-policies & key indicators or driving forces;
- Integrated analysis of the future dynamics generated by the national macro-policies & driving forces;
- Definition of the future local expression of the macro-policies & driving forces for each of the 3 inner environments of the local territory;
- Definition & local validation of the future local socioeconomic scenario based on the future values of the whole indicator system.

Current socioeconomic scenario:
Strenghs & weaknesses of the territory (current value of the indicator system) determining the values of resilience (R) and adaptive capacity (A);

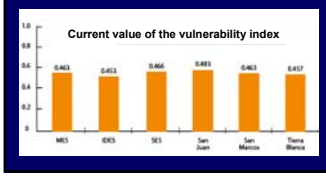
Future socioeconomic scenario (BAU):
Future value of the indicator system contributing to maintain, increse or decrease resilience & adaptive capacity or the current vulnerability level

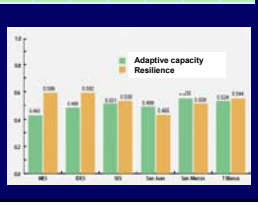
Developing local socio-economic baseline scenarios

- Analysis of current national macro-policies and identification of a related socio-economic indicator system;
- Selection of some key socio-economic indicators that are driving forces, and identification of the associated national & local socio-economic dynamics;
- Design of the local indicator system, including the socio-economic indicators that characterize the selected local territory;
- Assignment of values to the local socio-economic indicator system, incorporating local & traditional knowledge and local validation of the local socio-economic baseline scenario;
- Integration of the values of the socio-economic indicator system to the vulnerability assessment, through the appropriate interface variables.

Calculating current (C) & future (F) values of an integrated vulnerability index and its explicative variables

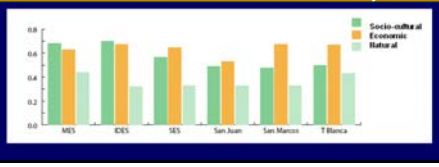
Geographical area / Variable	West bank of the Lempa River						East bank of the Lempa River					
	Area 1		Area 2		Area 3		Area 4		Area 5		Area 6	
	C	F	C	F	C	F	C	F	C	F	C	F
Resilience	0.586	0.619	0.592	0.611	0.530	0.622	0.465	0.546	0.509	0.626	0.544	0.633
Adaptive capacity	0.514	0.559	0.544	0.579	0.556	0.588	0.554	0.562	0.591	0.584	0.578	0.570
Climate exposure	0.475	0.543	0.475	0.543	0.475	0.543	0.475	0.543	0.475	0.543	0.475	0.543
Vulnerability index	0.463	0.477	0.453	0.474	0.466	0.469	0.483	0.494	0.463	0.469	0.457	0.471





Contribution of the 3 inner environments to the current adaptive capacity of the selected local territory

Contribution of the 3 inner environments to the current resilience of the selected local territory



Local participation is relevant to:

- Historical reconstruction of the natural and social processes that transformed the selected territory (including oral tradition);
- Setting the bounderies of the selected territory taking into account the natural, socio-cultural and economic environments;
- Assignment of values to the socio-economic indicator system, to set baseline & future scenarios of the selected territory;
- Prospective and projection of the future values of the socio-economic indicator system related to the selected territory;
- Development of the local adaptation strategy to be incorporated into local development processes, including advocacy actions to influence the policy-making process at different levels.

Incorporating local knowledge to impacts & vulnerability assessments

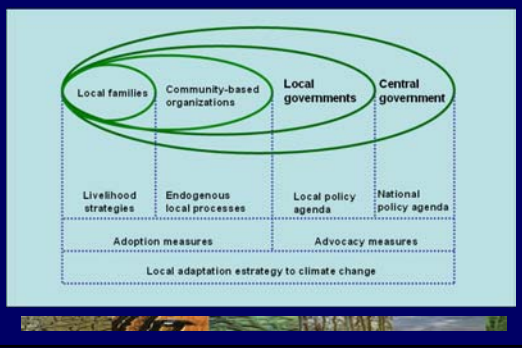
Local knowledge could be either transmitted by oral tradition or empirically acquired and locally validated;

It includes: current human practices and the history and current trends of natural and socio-economic processes;

It could enrich and complement technical knowledge and proposals, thus, it should be rescued and incorporated into current impacts & vulnerability analysis and prospecting;

It could contribute to assign appropriate values to socio-economic indicators, through interviews or focal groups to solve eventual distortions or contradictions among local people.

The linkages accross the different socio-conomic levels are relevant to scoping local adaptation



Synergies between adaptation & mitigation (development) policies

- Any adaptation strategy should include the advocacy for effective mitigation in order to decrease climate change threats
- Mitigation strategies should not include measures that increase climate vulnerabilities in developing countries, such as those that could reduce the acces to or the use of land by rural people (biofuels, forest plantations and other forest-related activities (the sinks options)
- Current disjointed programmes on adaptation under the UNFCCC and the Kyoto Protocol processes are just a few, and are not in synergy with the development policy-making process
- A coordinated international response to the impacts of climate change is required, including developing policy and legal frameworks to climate-proof development and poverty eradication