

## 1.1 Resilience

Resilience is a key property of sustainability. Resilience can be **defined** (Walker and Salt 2006; Adger 2000) as the capacity of a system to absorb external shocks to their social infrastructure -such as environmental variability or social, economic and politic upheaval- and re-organize while undergoing change so as to still retain essentially the same function, structure, identity and feedback. The loss of resilience leads to a reduced capacity to lead with change. Learning how to deal with uncertainty and adapt to changing conditions is becoming **essential** in a world where humanity plays a major role in shaping biospheric processes (Olsson *et al.* 2004; Folke *et al.* 2002). A resilient community is able to respond to changes or stress in a positive way, and is able to maintain its core functions as a community despite those stresses. A particular change may have vastly different consequences in different communities, and different communities will demonstrate different degrees of resilience to the change (Kelly 2004).

Societies of mass uniformity are highly vulnerable (Greaves and Lishman 1980). Faced with changes in the factors upon which they are based, they must either adapt themselves as a whole or be faced with tensions which they may not survive. Our society is close to such a crisis. A community-based economy provides with resilience to face the impacts that are certainly arriving (*ibid.*).

For Smith and Kristiansen (2009), local participation is a must to generate social resilience. Olsson *et al.* (2004) think that **community approaches** are the most feasible to build resilience. Berkes *et al.* (2004) describe the critical factors for dealing with nature's dynamic in social-ecological systems, and state that building resilience involves enhancing the capacity for self-organization. Resilient communities are capable of bouncing back from adverse situations. They can do this by actively influencing and preparing for economic, social and environmental change. When times are bad they can call upon the myriad of resources that make them a healthy community (LFS n.d.).

The resilience approach has been used for different purposes comprising economic, social and environmental aspects, such as to understand how communities can co-exist with **natural hazards** such as volcanoes and bushfires (Paton and Johnston 2006), to explore the **social dimensions** of climate change in the Great Barrier Reef (Fenton *et al.* 2007) and to understand issues around **resource dependency** (Marshall *et al.* 2007). Resilience is not only to face sudden impacts, as storms, floods or most extreme weather events.

The current **economic** recession is showing the high vulnerability of our society to unemployment, homes lost and debt increases, plus the massive arrival of immigrants from regions that are in worse conditions, that civilized societies have not always been able to integrate.

Enhancing local resilience requires an optimal balance of three community-based frameworks typically viewed as independent and separate domains: community development, resource management, and resource management (Figure ). Community development provides the enabling governance, socioeconomic, and cultural conditions for resilience (IMM n.d.; CCE 2000).



**Figure - Resilience building factors.**

Table gathers a number of good practices on resilience-building for a series of combined core capacities and resilience elements. Each benchmark can also be understood as a desirable condition to assess and compare with the current situation.

A key feature included in these benchmarks is the **reduction of the exposure to impacts**, which is also fundamental to reduce their consequences. That is what occurs in communities, locations or regions with

- a diversified economy that includes sectors with low exposure to insecurities and businesses that use energy and water rationally, that generates the energy it needs and that stocks water from rain and other sources that are wasted today;
- an engaged society that fosters education and capacity-building of its members , self-confident and committed to local prosperity; and
- a communities network that is able to help those people that are affected by diverse impacts, and to reintegrate them into local life.

A town, region or country like this will be able to recover more easily, and even reinforced, from economic, social or environmental crisis. **Table - Benchmarks for Each Resilience Element by Core Capacities**  
(Source: USAID 2007)

Resilience Element	Benchmarks			
	Policy and Planning Capacity	Physical and Natural Capacity	Social and Cultural Capacity	Technical and Financial Capacity
<b>Governance</b>	A1. Community development policies, plans, and programs are implemented and monitored in a participatory and transparent manner.	A2. Basic services (i.e. water, transportation, security, etc.) are accessible to all sectors of society.	A3. Participatory collaboration mechanisms among different sectors and various levels of government are established and used to manage for resilience.	A4. Technical and financial support mechanisms are transparent, accountable, and available to support planned community actions.
<b>Society and Economy</b>	B1. Development policies and plans build social capital and skills for economic diversity and self reliance.	B2. Local economies are characterized by diverse and environmentally sustainable livelihoods.	B3. Social and cultural networks promote self-reliant communities and have the capacity to provide support to disaster-stricken areas.	B4. Technical and financial resources are available to promote stable and robust economies, reduce vulnerability to hazards, and aid in disaster recovery.
<b>Coastal Resource Management</b>	C1. Policies and plans are implemented and monitored to effectively manage natural coastal resources.	C2. Sensitive coastal habitats, ecosystems, and natural features are protected and maintained to reduce risk from coastal hazards.	C3. Communities are actively engaged in planning and implementing coastal resource management activities.	C4. Communities and local governments value and invest in management and conservation to sustain their natural resources.
<b>Land Use and Structural Design</b>	D1. Land use policies and building standards that incorporate measures to reduce risks from hazards and protect sensitive habitats are established, monitored and enforced.	D2. Critical infrastructure are located outside high-risk areas and constructed to address risks from priority hazards.	D3. Developers and communities incorporate risk reduction into the location and design of structures.	D4. Education, outreach, and training programs are established to improve compliance with land use policies and building standards.
<b>Risk Knowledge</b>	E1. Coastal hazard risk assessments are completed at a scale appropriate to the community and routinely updated.	E2. Coastal hazard risk assessments are comprehensive and incorporate risks to all elements of resilience (e.g. livelihoods, coastal resources, land use, etc.).	E3. Community participates in the hazard risk assessment process.	E4. Information from risk assessment is accessible and utilized by the community and government.
<b>Warning and Evacuation</b>	F1. Community warning and evacuation systems, policies, plans, and procedures are in place and capable of alerting vulnerable populations in a timely manner.	F2. Community warning and evacuation infrastructure is in place and maintained.	F3. Community is prepared to respond to hazard warnings with appropriate actions.	F4. Technical and financial resources are available to maintain and improve warning and evacuation systems.
<b>Emergency Response</b>	G1. Predefined roles and responsibilities are established for immediate action at all levels.	G2. Basic emergency and relief services are available.	G3. Preparedness activities (drills and simulations) are ongoing to train and educate responders.	G4. Organizations and volunteers are in place with technical and financial resources to support emergency response activities.
<b>Disaster Recovery</b>	H1. Disaster recovery plan is pre-established that addresses economic, environmental, and social concerns of the community.	H2. Disaster recovery process is monitored, evaluated, and improved at periodic intervals.	H3. Coordination mechanisms at international, national, and local levels are pre-established for disaster recovery.	H4. Technical and financial resources are available to support the recovery process.