

resilience now

sustainable solutions for vulnerable communities
<http://theresilienceinitiative.org/>

INTRODUCTION TO RESILIENCE

What is resilience?

- Resilience refers to the capacity of a system to absorb and recover from shocks.
- The word comes from physics (the property of a material to absorb energy when it is deformed elastically and then, upon unloading to have this energy recovered), then many fields of research: ecology (the capacity of an ecosystem to respond to a perturbation or disturbance by resisting damage and recovering quickly), psychology (the idea of an individual's tendency to cope with stress and adversity)...
- Applied to human communities, it is the ability to avoid and recover quickly from a crisis, be it environmental, economical or social. Resilience is an indispensable constituent of community living.
- Communities have capacities and vulnerabilities, which are the two sides of the same coin. The resilience of a given community improves whenever the capacities increase and the vulnerabilities decrease.
- Capacities and vulnerabilities are relative to a specific risk.

Resilience to what risk?

- All kind of risks are threatening a community, depending on your activity: epidemics if you are a doctor, eruption if you are a volcanologist...
- Here are the main fields of community resilience work:

Natural disasters risk reduction

- How can we make communities more resilient to earthquakes? With seismic-resistant building techniques. Drought? With water storage. And so on.
- Often, environmental management is a great tool to improve resilience. For example: Tsunami? Mangrove plantation. Landslides? Terrace construction. Drought? Reforestation.
- Actually, the environmental degradation is one of the reasons why communities have become more vulnerable. So it's only logical that environmental restoration makes them more resilient.
- Therefore, disaster risk reduction is a great field of work for environmentalists.

Food security

- Definition: “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (World Food Summit of 1996). Commonly, the concept of food security is defined as including both physical and economic access to food that meets people’s dietary needs as well as their food preferences.
- Let’s try to list all the reasons why a little girl will not have food in her belly though needing it: food is not available (not produced or destroyed by some disaster or some political issue or not complying to food preferences...), nor accessible (no money, no road or means of transportation, no marketplace, discrimination makes it impossible to buy...), nor ingestible (no pan, no cooking fuel, no potable water, illness that makes vomit the ingested food, the last of the group allowed to eat...)
- These are all the parameters that have to be worked on in order to improve resilience.

Climate change, peak oil and worldwide economical crisis.

- These are the consequences of globalization and industrialization. All communities are vulnerable in this respect, also and above all the modern ones.
- Climate change:
 - What scientists agree on: climate is changing worldwide + at a fast pace (for the first time in history) + due to the human emission of greenhouse gas. It’s a global warming, but it can be translated locally in more rain, more cold...
 - Climate change is not a problem in itself, it has already happened before and species (among whom humans) adapt to it. The problem is the pace of this change, which makes species don’t have time to adapt. What consequences: more plagues and diseases thanks to the global warming + disruption of food production (though more heat and more CO² is good for plant growth, the agricultural calendar is not reliable any more + extreme climatic events destroy production) + more extreme and more frequent natural disasters, which lead to human life as well as economic loss.
 - Because climate change is due to the human emission of greenhouse gas, it means that we can have an impact on it and lower the effect by changing our way of life.
- Peak oil:
 - Let’s consider historically the era of oil: it’s 200 years in human history (cf. chart). We have passed peak oil, which is “the point in time when the maximum rate of global petroleum extraction is reached, after which the rate of production enters terminal decline”. According to the International Energy Agency’s, peak oil has been passed in 2006 (World Energy Outlook 2010).
 - There will not be such thing as the “last drop of oil”. It will be the end of a cheap and abundant form of energy. The timeframe for this lies from years to decade. What is sure is that we’ll witness it in our lifetime.
 - The end of oil supply is not a problem in itself since human societies have for a long time lived without. The problem is that our society is completely dependent on oil (even for food production) and that no transformation is made to prepare this withdrawal of the key product of our society organization.
 - No alternative at this time. Nuclear: uranium is also a finite resource (and benefits outbalanced by too big a disaster risk). Etc.
- Worldwide economical crisis:

Societies have become inter-dependant, therefore vulnerable to each-other’s fate. If the euro collapses, China won’t be able to sell its products to Europe any more.

The Transition Network organizes communities to work on these challenges: <http://www.transitionnetwork.org/>

What about your community, what risks are they particularly vulnerable or resilient to?

How can we help communities to improve their resilience?

1. List the needs (food, water, energy, shelter, sanitation, waste management, livelihoods, healthcare, education, communication, healthy environment, disaster risk reduction) and assess the risks for each (food disruption, flood, conflict over water resources...)
2. For each item, look at the existing capacity or vulnerability of the community
3. To improve the capacity and decrease the vulnerability of the community, you can work in three fields:
 - Relocalization and diversity: production is more local, more natural, less fuel dependant, with a back-up system, scale adapted, diverse...
 - Education and empowerment: people know how to supply for their needs, they have a clear view of the available resources, they adapt their needs to their supplies ...
 - Solidarity: self-sufficiency is not the goal. The scale of resiliency has to be defined. Communities must help each others on a local, regional and international basis.

Example of a methodology: permaculture

- It's a methodology as well as a set of tool which aims at building resilient and sustainable societies. A way to design a system providing all your needs in a sustainable way.
- Definition: Combining ideas of 'permanent agriculture' and 'permanent culture' **permaculture** refers to the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of landscape and people — providing their food, energy, shelter, and other material and non-material needs in a sustainable way.
- The philosophy behind permaculture is one of working with, rather than against, nature; of protracted and thoughtful observation rather than protracted and thoughtless action; of looking at systems in all their functions, rather than asking only one yield of them; and allowing systems to demonstrate their own evolutions.
- Nature is 30 million years of Research and Development. Copying nature helps design great systems.

Some Permaculture design principles:

Principles that help the system be efficient

- Each element performs multiple functions. *Example*: A pond is used for water storage, fish raising, microclimate regulation, light reflection to warm crops, recreation, wild fire barrier...
- Catch and store energy and materials. Whenever they are at peak abundance, so that they can be used in times of need. *Example*: Rainwater collection.
- Produce no waste. To value and use all the resources available. Also to try use the outputs of one element as the input of another. *Example*: to compost organic matters so you turn a waste into a fertilizer.

Principles that help the system be resilient

- Use and value diversity. Diversity reduces vulnerability to a variety of threats. *Example*: Raising different varieties of the same crop.
- Each important function is supported by multiple elements. Redundancy protects when one or more elements fail. *Example*: In a dry place, to combine well water with rainwater harvesting with dry farming techniques or heavy mulching.
- Use and value biological and renewable resources. They reproduce, build up over time, store energy and assist yield. They also save human labor. *Example*: Chicken tractors: a cage on wheels that allows hens to go about their natural business on a specific piece of land. They free soil of weeds, fertilize it with their poop and clear any soil-borne pests.
