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Building Resilience in rural areas / A balance between environment, small settlements and their productivity

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148 Abstract

Today's world is going to face a wide spectrum of changes. Since the status of crisis is increasing in many countries, governments are recognizing multiple aspects of the problems they need to face, starting from the financial market crash, to the environmental degradation. Even if rural areas have always been a good example of simultaneous coexistence of natural ecosystems and economic and cultural functions, they often present the worst condition of decline in all of these sectors. It is obvious that a strategy for facing these changes is needed, but still referring to landscape only is not enough, given the complex character of the rural areas. Starting from the definition of rural resilience, this paper further focuses on this concept, by exploring the role of vernacular architecture as part of the sustainable development process of a distinctive contexts.

Introduction

Rural areas occupy the main part of the global territory and host approximately 50% of its population. Agriculture and forestry are the main land covers on these areas, and they play a key role in the management of natural resources and in determining the rural landscape (EC, 2009). Despite this, there are no real definitions on what a rural area is, if not just as the opposite of what an urban areas is: "whatever is not urban, is considered rural"¹. Moreover, planners and politicians often forget the importance of the good management of natural resources: policies usually have large environmental impact in terms of land uses, landscape changes, environmental pollution and biodiversity loss, but also large economic impact in terms of changing demographics, reduction on agricultural employment and diversification of the rural economy (Schouten, 2009). In return, there has been a growing tendency favoring the scientific study of landscapes, more as a natural resource, than as a cultural phenomenon. According to Carl Sauer², most of the inland

scenery, especially in the Mediterranean basin and in many densely populated areas, has a cultural origin that is indissolubly tied to farming, forestry and grazing practices, as well as the environmental conditions changes. Alberto Magnaghi's statement, defining the territory as "the biggest and coral artwork ever created", helps once more to discover the deep and silent bond between landscape and the natural, economic and cultural systems. A complex set of ingenious and diversified techniques of human settlements on the territory has contributed to the survival of population and the construction of a new heritage, where quantity and quality of human transformation define the land value. However, the current interpretation of landscape metrics refers to units, which are characterized by a certain degree of homogeneity, concerning natural conditions (geology, morphology, soil and climate), or even land uses. Unfortunately, a harmonized system of landscape unit does not exist. For this reason, the need to promote and implement conservation and valorization of cultural features of the

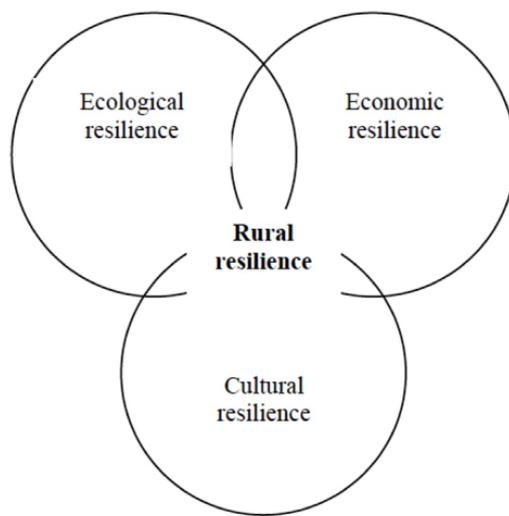


Fig1 / Rural resilience: all in all, reducing resilience – be it economic, ecological or cultural – increases vulnerability, exposing rural systems to greater risk of uncertainty and surprise. As a result, building resilience should be part of the agenda of rural spatial planning and design. source / Heijman et al., 2007

rural landscape, is especially important in Europe (Agnoletti, 2014).

Resilience as a principle of rural area's defence

The capacity of a system to face changes, to absorb disturbances and re-organize itself, so as to still maintain essentially the same function, structure, identity and feedback (Walker et al., 2004), is defined as resilience. This concept was first introduced in 1973 by the ecologist Holling, and ever since its application field has been enlarged from biology to literature, psychology, economics and sociology, until its recent exploitation in the study of uncertainties and rapid changes of rural areas. The rural resilience theory is based on the idea that ecological, economic and social systems become increasingly interleaved and the interactions between these systems are growing in intensity and scale (Heijman, 2007). Rural area

can therefore be termed as a complex social-ecological system (SES) (Ambrosio-Albala et al., 2008), where rural landscape represents the continuous adaptation to difficult environmental conditions, providing products and services, contributing to the quality of life of its inhabitants and producing landscapes of great beauty³. This concept of resilience provides a fresh and useful perspective on sustainable development⁴, increasing economic growth with social responsibility, including respect for human rights and traditional cultures. Both resilience and sustainability deal with the future, and it makes sense to think about resilience as a conceptual basis for sustainability.

Because the future is unpredictable and uncertain, it is important or even essential to explore the resilience of a system by identifying its components and their interaction in a dynamic way.

1 / "The Health Resources and Services Administration of the U.S. Department of Health and Human Services defines the word "rural" as encompassing [...] all population, housing and territory not included within an urban area." ["Defining the Rural Population": Hrsa.gov. Retrieved 2013-04-25.]

2 / "A cultural landscape is fashioned from a natural landscape by a culture group. Culture is the agent, the natural area the medium, the cultural landscapes the result" (Sauer C., 1925, p. 343)

3 / Rural landscapes are linked to agricultural practices and traditional knowledge, defined as "complex systems based on ingenious and diversified techniques, on local knowledge expressed by rural civilization" (Ministerial Decree n. 17070/12, Italy).

4 / In 2005, the three pillars of sustainability have been defined as follows:

- Environmental: the human capacity of intervention in order to decrease and even avoid negative impacts on the environment. Human intervention is able to integrate nature and bioclimatic features, to control the production of pollution and waste, to preserve health and prevent from natural hazards impacts.

- Socio-cultural: the sense of belonging, of identity, of personal and community development. This scope tries to gather all social and cultural positive impacts observed on vernacular heritage. It concerns the protection of cultural landscapes, the transmission of construction cultures, the capacity to stimulate creativity, the recognition of cultural values (tangible and intangible) and the reinforcement of social cohesion.

- Socio-economic: the capacity of reducing the efforts invested during the construction process, the building performance, the maintenance of buildings and all the impacts that contribute to an improvement of living conditions. Here, the concept of effort and work replaces the idea of cost, specially in contexts where no capital-intensive systems were implemented. Vernacular solutions encourage autonomy and local activity, optimize construction efforts, extend the lifetime of the building and save resources. (United Nations General Assembly (2005). 2005 World Summit Outcome, Resolution A/60/1, adopted by the General Assembly on September 2005. Retrieved on: 2009-02-17).

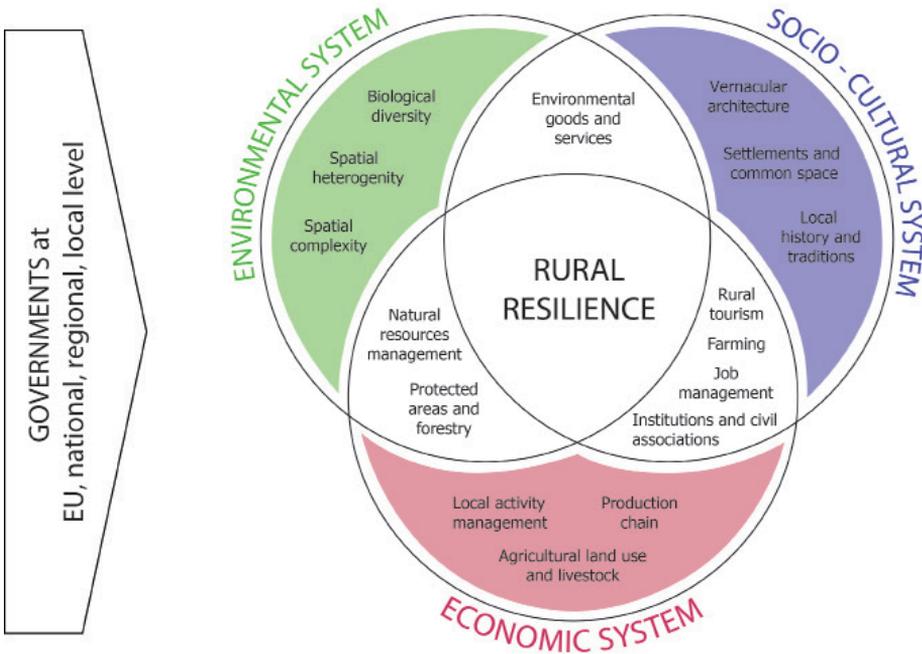


Fig2 / The three pillars of sustainability and their components. The government is treated as being externally influencing the system components: a good management of the whole structure, which considers also the variables in between, makes rural resilience possible / source drawing by the author

Defining good planning for rural areas

Rural areas typically face a wide spectrum of disturbances. Disturbances on the resilience of one system can affect the resilience of other systems. If the ecological sources of a rural area would not be resilient, the conditions for ensuring ecosystem services, landscape services and agriculture development would deteriorate, and as a result the vulnerability of the site would increase (Schouten et al., 2009). Therefore, starting from the geography of a place and its characteristics, we can find different factors of both natural and anthropological systems, that generate analytic indicators for the definition of sustainable growth. An example of good planning is summarized in Fig. 2.

Although socio-ecological systems (SES) are self-organized through a large number of abiotic and biotic variables, the most important changes can be understood by using a small amount of them. As proposed by Walker et al. (2006), the ecological system components have slow-changing variables, whereas the socio-economic components mainly have fast-changing characteristics. Therefore, system managers must focus on the few variables keys, operating at different scales, with slower and faster rates in time and space. Defining a regional specialization of a rural area in terms of service clusters (agro-cluster, rural services or natural reserve) can be the first strategical step to promote resilience in land usage management. Furthermore, the control of soil consumption, land security and maintenance, reuse of

brownfield sites, and adaptation to climate changes, constitute primary of interventions, which define strategic frameworks, programs and assessment tools that integrate climatic, energetic and environmental issues. These actions can be better pursued on a local scale, correlating mitigation (designed to contain future climate changes) and adaptation (aimed at reducing vulnerability to climate change impacts) strategies.

A sustainable lesson from vernacular rural settlements

Rural settlements are often fulfilling the principles mentioned above: with fewer than 50,000 inhabitants, they are able to apply environment-friendly policies, encourage autochthonous production and seek a compromise between modernity and tradition that improves the quality of life of its citizens. The most prevalent indicators of an adequate coexistence with environmental conditions are:

- the settlement morphology,
- the spatial layout of vernacular buildings⁵,
- and their relation with natural resources.

This can moreover activate self-reliance, care of basic needs and promotion of eco-development, such as growth of local societies, respect for differences and cultural specificities, the identification of ways of living based on new principles, which achieves self-determination, the production of wealth referring to the territorial values, achieving eventually ecosystem balances at the local scale. Socio-cultural identities play a crucial role in terms of reducing vulnerabilities

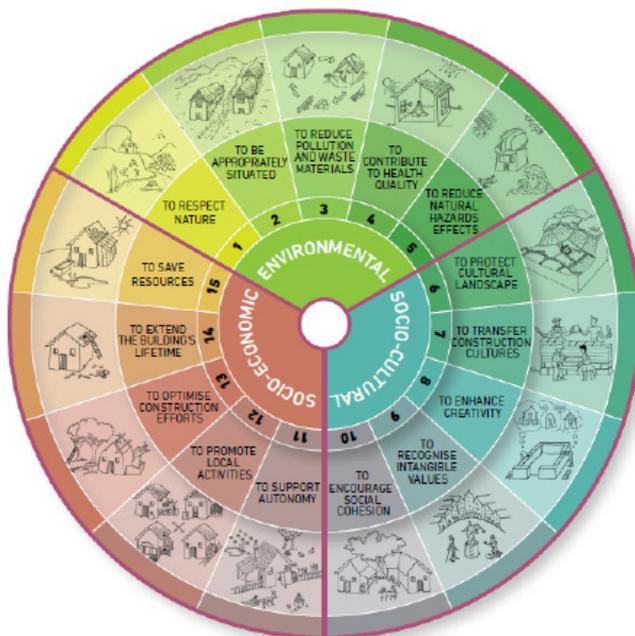


Fig3 / Wheel of environmental, socio-cultural and socio-economic sustainable principles, referred to architectural design. 15 principles that established a wide number of strategies to consider and to integrate in contemporary sustainable architecture / source Correia et al., 2014

and strengthening the resilience of the communities: the indigenous culture is important since it includes the knowledge of management of the territory in an appropriate way, which usually is indispensable to prevent natural disasters. Last but not least, the economy of rural settlements, closely influenced by the climatic and biological characteristics, is strongly linked to the environment, or else to the locally available physical and human resources. Self-sufficiency is therefore the most essential precondition for a community to be socio-economically resilient (Dipasquale et al., 2014). An approach that promotes landscape peculiarity and an active empowerment of local institutions, contributes to the production of new common wealth. Vernacular heritage as part of the socio-cultural system (see Fig. 2) addresses the local context, in terms of employed buildings materials and typical construction techniques, which both reflect the historical background of the population, and provides a good comfort. Sustainable architecture (or resilient, as defined until now), as well as sustainable rural planning, should strongly refer to vernacular buildings as an example of climate responsive design with low environmental impact, able to protect

territorial quality, through social relation in balance with the surrounding. Taking advantage from the VerSus Project's results, published in 2014, after a three years research around the value of the vernacular heritage in the Mediterranean area, we can define sustainable architecture, when responding to the mentioned 15 principles (see Fig. 3). This synthesis is very important for providing the possibility to outline the conditions of existing heritage and to be able to restore it (if needed), or to build it ex novo, respecting the *genius loci*⁶ of the place (VerSus operative approach). Vindication of sustainability in architecture, attempts to equilibrate this dialogue between the natural and the artificial system, and to define architecture as "a fragment of built responsibility"(Dischi, 2008).

Unfortunately, today the building sector mainly uses industrially produced materials. These are characterized by high energy consumption, high carbon emissions and high energy-intensive production processes. Because of globalization, they are extracted, processed and distributed globally with considerable transport costs and environmental impact. Their applications usually do not maintain a close relationship with local traditions,

5 / The term vernacular commonly refers to 'traditional' or 'popular' architecture, as opposed to 'scholarly' architecture. From a theoretical point of view, Paul Oliver (ibid.) refers to Rudofsky in his definition of vernacular architecture and retains the notion of popular architecture, architecture without architects, or even 'people's' architecture (Oliver, 2003), expression of an "indigenous science of construction"(Oliver, 2006).

6 / In the context of modern architectural theory, *genius loci* has profound implications for place-making, falling within the philosophical branch of "phenomenology". This field of architectural discourse is explored most notably by the theorist Christian Norberg-Schulz in his book, *Genius Loci: Towards a Phenomenology of Architecture* (1979). The term usually refers to a location's distinctive atmosphere, or a "spirit of place".

or the environmental characteristics of the site (Achenza and Giovagnorio, 2014). An ecological transformation of building production is possible and is the key concept of a culturally sustainable innovative process, for a Km 0 architecture which takes advantages from the synergistic relationship between land management, economy and design. By respecting soil attitude and climate, natural building materials (like wood, bamboo, hemp, or cotton) can be directly grown, meanwhile others like earth, clay or stones can be used almost without manufacturing. This will increase the occupation on rural areas, will develop know-how and will contribute to employment in a new production chain, which includes farming (local typical products), as well as give thrive to tourism and new business. Many examples are now being developed with this philosophy and are getting even more successful than urban interventions: starting by the need to escape from the pollution of the cities, someone decides to go back to fatherland, restorate old farmstead, preserving a traditional look with an interior modern comfort, able to invite visitors to enjoy the rural landscape features and local products.

Conclusions

When a community implements its settlements, it generates changes of social and economic impacts on the ecosystem conditions. Local communities can reduce their vulnerability in the face of natural hazards and improve their resilience through locally managed and small-scale mitigation activities. However, vulnerabilities can also be reduced through education, raising awareness, and fostering the conscious capacity for building and planning. On the long run, these non-structural methods are often as important as structural mitigation, in a sustainable way of living.

Nature management, agro-clusters, rural services and the role of design as a tool for local resilience, are all fundamental principles to achieve the sustainability. Sustainable architecture must consequently take into account all these aspects of architecture, its surroundings, and human needs, as well as the relationships that exist between them (Memba Ikuga and Murray, 2012). Thanks to an architecture that uses only local resources (internalization or insourcing), both in terms of raw material and of human resources, it is possible to identify the most effective systemic methods to involve the community and workers, holders of the local traditional

culture, already engaged in the territory. By promoting a synergistic development between communities, businesses and land usage, through integration of legislative decrees and regulations, it is possible to facilitate a sustainable development process and moreover to generate employment.

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*Fig / Rural landscape from the Apollonia archeological site
source / Vezir Muharremaj*

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