

## SOCIAL INNOVATIONS IN BIOECONOMY, FOR SUSTAINABLE COMMUNITIES

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### ABSTRACT

A literature review of bio-economic models and applications in communities are presented in the context of economic, environmental and social challenges that emerge in rural regions around the world. Low land productivity of agricultural food production systems, outmigration, poor public services and infrastructure, pollution, climate mitigation, coupled with low institutional capacity and political instability are the main challenges that rural areas face.

The approach is illustrated by means of a number of case studies spatially distributed in both developed and developing countries and regions. The main aim of this paper is the survey and overview the types of challenges faced by each community and region tested against the innovative ways followed so as to adopt sustainable development. Common characteristics concerning economic environmental and societal challenges as well as innovative solutions are also examined in their rural framework and in relation to their level of economic development. The motives and incentives behind the social and technological innovations are analyzed, as well.

**Keywords:** sustainable development, social innovation, bio-economy, eco-communities, NGO, sustainable rural areas, adaptation, planning, governance

### 1. Introduction

Some serious challenges that the whole world faces the recent years are the global population growth, the rapid depletion of resources and the increasing environmental pressures. In an effort to cope with these issues, the world needs to radically change its approach to production, consumption, processing and disposal of its biological resources. In fact, as the European Commission states, the bioeconomy research and social innovation uptake are the keys to unlock the sustainable management of its renewable biological resources and the creation of new and diversified markets in food and bio-based products. The bioeconomy offers a new potential: it can maintain and create economic growth and jobs in rural, coastal and industrial areas, reduce fossil fuel dependence and improve the economic and environmental sustainability of production and processing industries. However, bioeconomy itself without social capital and appropriate governance practices is not enough to bring rural development. Social innovation is considered as important ingredient for sustainable rural communities and rural development (Neumeier, 2012).

According to Neumeier (2012), the recent theoretic concept of social innovation is structured by the following factors:

- Social innovations occur as a result of collaborative groups acting in a network of aligned interests, but only if a certain critical mass of actors decides to enrol in this actor network thus, the potential for social innovations is strongly related to the existence of social networks and the social capital available.
- The development of social innovation is similar to technological or economic innovation in that it is always triggered by an initial impetus...This initial impetus can be triggered by factors that are either internal or external to the actors involved in the social innovation process.

- Social innovations are generally not teleological. That means they successively develop in a process of collaborative acting.
- They build on the aspect of relative novelty; that is, novelty in the subjective perception of the individuals involved.
- They concentrate on changes of attitude, behaviour or perceptions.
- Their practical implementation is connected to their superiority in comparison to existing methods so that the imitation of the new method or solution seems to make sense for the people involved.
- Social innovations are non-material: their material outcomes are solely a supplementary result and they focus not on needs but on asset building.

## **2. Methodology**

The methodology of this paper is based on a review of recent literature, including both peer-reviewed material and grey literature. Before the presentation of the case studies, it is important to begin with the main challenges that rural areas face. The most common ones are: lack of employment opportunities in primary industries, outmigration due to the lack of employment opportunities and inadequate access to educational and leisure facilities, and difficulties in establishing the necessary critical mass of facilities, producer services and investments (Pezzini, 2001).

A diverse number of selected recent initiatives and strategies taken up within Europe (Italy, Greece) and beyond (Brazil, China) based on the relative importance of rural economy to the specific countries and regions consequently, followed by the imminent impacts are overviewed.

### BRAZIL

Rural America is facing challenges like many rural areas in the world as well. Its main challenge is the outmigration of young and highly skilled workers because of the lack of rural jobs. Although agriculture is a key economic sector, most rural areas cannot attract new entrepreneurs due to the insufficient capital and poor infrastructure facilities (Pezzini, 2001). Carnaubais Territory, Piauí in Brazil is another rural region that its agricultural model faced social and economic crisis. The modernization and mercantilization of “conventional agriculture” led to the absolute dependency of the social, economic and production – based local farmers’ relationships on remote demands of leading stakeholders in a global context.

Responding to this challenge, the local farmers developed innovative and sustainable strategies. Among them were the application of endogenous development, an innovative management of agro-eco system and the use of new crops. These initiatives had rapid changes in farmer-market interactions and in adding of value giving place to new types of social organization and cooperation. In addition, environmental protection came as a result of changes in the production process such as the integration and management of biomass have replaced the use of fire to prepare farmland for planting.

### TAOLIWA, CHINA

Taoliwa is a mountainous village that like other regions was covered by forest until the middle of the 1930’s when deforestation supplied agricultural land to cultivation while the population was growing continuously. The main challenge in this region was that the deforestation led to shortage of firewood (Wu and Pretty, 2004).

The solution to the problem came from all the villagers being inspired by one wealthy villager who started the firewood plantation with his own expenses. Pretty soon all households agreed to be responsible for plantation, protection and management for the woodland. “Indeed, the demand for agricultural innovation was so strong that the village representatives have visited the county town to seek new, which at first surprised government officers and professionals because this so seldom occurs” (Wu and Pretty, 2004). The cooperative consciousness of the villagers brought apart from firewood, an extra source of income through construction timber and fruit trees, and also extended to infrastructure, such as the development of the electricity network and a central system of water supply for domestic use and animal breeding. However,

the most important impact of this action of social innovation is that it became a good practice for neighboring villages.

#### MUNICIPALITY OF GORGOGNONE, ITALY

The municipality of Gorgoglione is a region composed of small villages, regional towns and a typical Mediterranean forest that has faced socioeconomic and environmental pressures. In this case, the forest ecosystem with important economic and cultural contribution to the regional society faced with environmental degradation and desertification. The forest mismanagement had further negative socioeconomic impacts such as soil erosion, inefficient cultivations practices, forest productivity decline, increasing unemployment followed by outmigration of young people. (Kelly C, *et al*, 2015)

In that case the community itself was not willing to address the situation because the majority of the locals did not feel that they have own interests. External institutional and governance influences were the vital initial impetus in this case. The weak community-regional interactions were reinforced with the support of 1) agricultural and forest science courses provided by the local university by promoting and facilitating the implementation of sustainable forest management practices, 2) a shift in emphasis to regional policies that empowered the local autonomy and the community-regional interactions (Kelly C *et al*, 2015).

#### MOUNTAIN VILLAGE OF ANAVRA, GREECE

According to the president of Anavra village, Mr Tsoukalas, the village community was almost abandoned due to the degradation or lack of appropriate infrastructure (road network, water supply pipe network, housing facilities with buildings shared with livestock). At the beginning the residents were suspicious to the administration of Mr Tsoukalas. The actions and initiatives taken by the administration contributed to the gain of trust of the villagers. Pretty soon, the non-profit company "Voluntary Organization of Anavra Magnesia for Environment, Sustainability and Culture" under the name "ANAVRA-ZO" was founded and took charge of the sustainable development of the region.

Nowadays, the population of the village is doubled, mainly occupied in farming and small livestock (cattle, sheep, pig) pasture. Organic farming practices with 80 modern livestock facilities in 3 livestock farms around the village led to 0% unemployment rate. Two large sustainable development projects include the wind farm in Alogorachi and the Environmental and Cultural Park "Goura". Also in the area is a shelter of preys and three climbing areas that can provide outstanding experiences to fans of the activity. Also the village has developed a well equipped cultural sector that operates a Folk Museum Livestock Life, two halls, Citizens Service Centre (CSC), a primary school and a kindergarten housed in new buildings, a fully equipped gym (free for residents), football and basketball courts, while a two-storey parking in the central square serves free traffic and parking car, particularly in difficult winter days. Here it should be mentioned that among the driving forces that reinforced this social innovation were the economic ones. Anavra in order to fulfill its objectives, that are the protection and restoration of the natural and cultural environment participates in national and European development programs, cooperates and participates in networks with other agencies (local government region and ministry) and cooperates with research centers.

### **3. Conclusions**

The case studies that have been overviewed verify the initial assumption that the bioeconomy goes hand in hand with social innovation and participatory practices.

In an effort to correspond to the challenges and to spur new growth, local communities in many countries are searching for innovative policies. The successful ones share three common characteristics: 1) shift from sectorial to regional policies, 2) support for "bottom-up" development initiatives and participatory initiatives, 3) new forms of governance with working groups' formation among departments and ministries (inter-departmental and inter-ministerial working groups or committees (Pezzini, 2001).

From the case study of Taoliwa it was ascertained that the social capital in innovation is more important to the marginal areas, where the inflows of external capital and knowledge are limited, contrary to the case study of Gorgoglione. The residents of Gorgoglione identified the need for change and improvement but they didn't go beyond their personal interests. It was external influences (institutional) that helped to the direction of social innovation in bioeconomy.

However it could be said that it is rather optimistic to believe that the social connectedness alone in the presented case studies of Brazil, Taoliwa and Anavra is adequate enough to lead to sustainable rural livelihoods. Wu and Pretty (2004) are right in pointing out that "the benefits of external intervention should not be underestimated, top-down development might be neither successful nor sustainable unless the innovative potential and intrinsic dynamics among the poor are fully recognized and developed". Close communication and interaction between professionals and institutional factors with rural communities are crucial. Participative governance, informed dialogues and active engagement of citizens should not be underestimated as they are able to reinforce the relation among science, society and policy making for stable rural communities. "More informed dialogues will allow science and innovation to provide a sound basis for policy making and informed societal choices, while taking into account legitimate societal concerns and needs in the bioeconomy" European Commission (2012).

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