



Local Action Groups and Rural Sustainable Development. A spatial multiple criteria approach for efficient territorial planning



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ABSTRACT

Rural Sustainable Development is a very important topic under the European Union policy, and it is currently promoted through the European Agricultural Fund for Rural Development 2014–2020. This fund is managed at sub-regional level by the Community-Led Local Development approach that involves Local Action Groups in order to promote the objectives of Rural Sustainable Development within rural municipalities. Each Local Action Group applies the Strengths, Weaknesses, Opportunities and Threats analysis in order to identify for its own rural municipalities the strategic elements to which it will allocate the European Agricultural Fund for Rural Development budget. Nevertheless, this analysis has some general shortcomings, including difficulties in managing a large number of Strength and Weakness factors. In addition, the importance of each factor cannot be measured quantitatively, and the same factor may be characterized both as a Strength and a Weakness. Further difficulties may occur in the case of partnerships between different Local Action Groups, such as disagreement about whether a given factor is a Strength or a Weakness, lack of information about the relationships between Strength and a Weakness factors and decision alternatives, as well as impossibility of ranking the decision alternatives.

Thus, this research aims to overcome the drawbacks of the Strengths, Weaknesses, Opportunities and Threats analysis and to support Local Action Group partnerships in the sustainability evaluation of their rural municipalities, and therefore to aid the identification of a common Rural Sustainable Development strategy to allocate the European Agricultural Fund for Rural Development budget. This decision problem was tackled by applying a Multiple Criteria Spatial Decision Support System that integrates a Geographic Information System with the Multiple Criteria Decision Aiding methods “Technique for Order Preference by Similarity to Ideal Solution” and “Dominance-based Rough Set Approach”.

In order to demonstrate the validity of this methodological approach, this Multiple Criteria Spatial Decision Support System was applied to a study area of thirteen rural municipalities located in Apulia Region (Southern Italy); these municipalities belong to the same landscape unit, but they are managed by five different policy makers that represent the Local Action Groups. The results provided the maps of environmental, economic and social sustainability rankings of rural municipalities as well as their overall sustainability value. Based on these rankings, a specific Rural Sustainable Development strategy was identified for the allocation of the European Agricultural Fund for Rural Development. This methodology provided a common decision making framework that can also be applied to Local Action Group partnerships within the European Union.

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1. Introduction

Sustainable Development (SD) was described for the first time by the Brundtland Commission in 1987 as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (World Commission on Environment and Development, 1987). Although the Brundtland

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Commission illustrated SD as a model based on environmental and developmental dimensions, this is currently defined as a Triple Bottom Line (TBL) model, since SD includes and integrates environmental, economic and social dimensions (Pope et al., 2004).

In recent years, SD has also become a central topic in rural areas (Pašakarnis et al., 2013) due to complex interactions between natural resources, agricultural production and local communities (Mennella, 2006), and therefore policy makers have started to plan and enhance these aspects within the European Union's (EU) rural development policies. In particular, the EU Rural Development Policy 2014–2020 helps EU rural areas to meet and face the wide range of environmental, economic and social challenges and opportunities of the 21st century. This policy is also known as the second pillar of the Common Agricultural Policy (CAP) (European Commission, 2013).

This second Pillar is implemented in each EU Member State through the national and regional Rural Development Programmes (RDPS) (European Commission, 2010), which are supported by the following European Structural and Investment (ESI) funds (European Parliament, 2013): the European Agricultural Fund for Rural Development (EAFRD), the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF) and the European Maritime and Fisheries Fund (EMFF).

Specifically, the EAFRD contributes to improving Rural Sustainable Development (RSD) by taking into account the competitiveness of agriculture and forestry, the natural environment and the countryside, as well as the quality of life and the management of economic activities in rural areas (European Commission, 2005). Thus, the EAFRD provides an integrated management strategy that is related to the following five objectives of RSD (Baldock et al., 2001):

- 1) Diversification of traditional farming activities (Sharpley and Vaas, 2006; Di Domenico and Miller, 2012);
- 2) Multifunctionality of agriculture regarding landscape use and enhancement of environmental, historical and cultural heritage (Van Huylenbroeck et al., 2007; Marsden and Sonnino, 2008);
- 3) Improvement of food security and promotion of local food products (Ayres and McCalla, 1996; De Noronha Vaz et al., 2009);
- 4) Local community involvement in conservation of social and cultural traditions (MacKinnon, 2002; Daskon, 2010);
- 5) Employment and income generation in agriculture (Bhakar et al., 2007).

The EAFRD is managed at the sub-regional level through the Community-Led Local Development (CLLD) approach, a model that involves the local actors in order to promote the RSD within rural municipalities (Soto and Ramsden, 2014). These local actors consist of public and private socio-economic bodies, and are called Local Action Groups (LAGs) (Lukesch, 2007). Each LAG decides how its EAFRD budget will be used for RSD strategies according to the territorial features of their own rural municipalities. Partnerships among different LAGs are also promoted in order to perform a common RSD strategy within rural municipalities with similar territorial features.

The allocation of the EAFRD budget in each LAG is carried out by setting up the Local Development Strategy (LDS) (European Network for Rural Development, 2013) that identifies specific RSD needs and potentials via application of the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis (Helms and Nixon, 2010).

SWOT analysis is an effective strategic development tool that is used in the preliminary stages of decision-making and as a precursor to strategic planning (Srivastava et al., 2005). Specifically, the SWOT framework consists of internal and external assessments. The internal assessment is performed to describe Strength and

Weakness factors of a given context (such as a company, territory, etc.), while the external assessment is applied to discover Opportunities and Threats (Matthews, 2004). This framework makes it possible to identify the best strategy that maximizes the Strengths and Opportunities and minimizes the Weaknesses and Threats (Hill and Westbrook, 1997).

SWOT analysis is mostly applied in the fields of health care, industry, renewable energy and waste management (Zhang and Chen, 2013; Aslan et al., 2014; Chen et al., 2014; Neagu et al., 2015), but can be used also in rural areas. In this specific context, SWOT analysis is useful as a first approximation when the analysis impetus does not arise from a well-identified problem but from a desire to develop a rural area and to optimize the use of its available resources (Tapiador, 2008).

Nevertheless, SWOT analysis has the following general drawbacks: difficulties in managing a large number of Strength and Weakness factors (Coyle, 2004), the impossibility of quantitatively measuring the importance of each Strength and Weakness factor (Schmoltdt and Peterson, 2000), and the possibility of characterizing the same factor both as a Strength or as a Weakness (Henry, 2008). Further difficulties may occur when SWOT analysis is applied in larger contexts, like partnerships between several LAGs. These drawbacks include disagreement about whether a given factor is a Strength or a Weakness (Henry, 2008), lack of information about the relationships between Strength and Weakness factors and the decision alternatives (i.e. rural municipalities) (Kurttilla et al., 2000), as well as the impossibility of ranking the decision alternatives (Pahl and Richter, 2007). This ranking should be performed for every sustainability dimension in order to provide policy makers with a complete overview of the decision problem that can guide them towards global sustainability (Hacking and Guthrie, 2008; Bond and Morrison-Saunders, 2011) and help them to choose the proper sustainable strategies (Devuyst, 2001).

Thus, this research aims to overcome the above SWOT drawbacks and to support partnerships between several LAGs in sustainability evaluation of their rural municipalities, and therefore in identifying a common RSD strategy for allocation of the EAFRD budget. Spatial decision problems in agriculture require a large number of alternatives to be evaluated based on multiple criteria (Silva et al., 2014), therefore a possible solution comes from the integration of a Geographic Information System (GIS) and a Multiple Criteria Decision Aiding (MCDA) technique (Malczewski, 2006, 2010); this integration is known as Multiple Criteria Spatial Decision Support Systems (MC-SDSS) (Sugumaran and DeGroot, 2011).

MC-SDSS have been used in many research fields over the last twenty years, as pointed out by Malczewski (2006), such as environment and ecology, hydrology, agriculture and forestry, geology, transportation, waste management. Within these research fields we underline the works of Dragan et al. (2003), Gilliams et al. (2005), Rahman et al. (2012), De Luca et al. (2012), Vaskan et al. (2013), Comino et al. (2014), Wanderer and Herle (2015).

MC-SDSS link concepts and methods of GIS and MCDA, providing new ways to face decision problems (Malczewski and Rinner, 2015), because a MC-SDSS is a decision support tool that makes it possible to combine geographic data and policy makers' preferences, so that specific information for a decision is presented (Greene et al., 2010; Bottero et al., 2013). In particular, the application of a MC-SDSS to deal with territorial planning decision problems may provide the following benefits: use of appropriate analytical tools for direct involvement of people in a collaborative spatial planning process (Jelokhani-Niaraki and Malczewski, 2015a); possibility of structuring and evaluating the decision problem according to a variety of evaluation criteria that are prioritized quantitatively according to a specific decision rule (Massei et al., 2014); ranking a set of alternatives according to their relative importance

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