

# **Developing a methodological approach to create indicators contributing to measure the effects of policies in rural areas - Case study in Alentejo, South Portugal**

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## **Abstract**

There is a need to go beyond the state of the art in characterizing rural areas “as a whole” instead, considering different landscape assets and constraints as well as socio economic dynamics in order to better target rural development policies. A crucial issue to explore is which set of indicators can best represent the different dimensions embedded in an array of possible rural development options, from production and protection to consumption, or a combination of those, framed according to socio economic and institutional dynamics in place. The aim of this paper is thus to develop a methodology for a typology based on a set of different indicators encompassing several dimensions in order to identify the different potentialities or vocations for the Alentejo territory in southern Portugal. By applying a set of indicators for each one of the dimensions namely production, protection and consumption, proposed by Holmes (2006) altogether with a socio-economic dimension different vocations or the territory were gauged and further an appropriate framework of policies likely contributing to enforce the implementation of vocations were described. Results show that the ways in which the set of indicators selected were used to gauge the vocations of the territory can be a valuable tool to inform the public in general as well as the decision and policy makers, including potential investors. Nevertheless, further work needs to be done in order to both refine the indicator set now used as well as to include other possible dimensions also relevant for measuring the possible effects of different policies into a differentiated countryside.

## **Introduction**

A substantial body of work has been highlighting a close relationship between landscape characteristics and socio-economic development (Carvalho Ribeiro et al. 2010, Horling and Marsden, 2010, EU, 2007, 2009, OECD, 2001, 2006). On one side, landscape contains economic value that can manifest itself through the implementation of certain economic activities. On the other side, the process of economic development shapes landscape composition and configuration. Therefore, Studies on the spatial impact of the Common Agriculture Policy (CAP) have been revealing the close and specific relationships between agriculture and the countryside landscapes of Europe (EU, 2007, 2009; Vejre et al., 2007). Therefore, it has been acknowledged that the CAP determines the development patterns of many rural areas (Pinto-Correia et al., 2004; Pinto-Correia and Jorge, 1996; Turpin et al., 2009). The CAP impact varies a great deal from region to region depending on the specific environmental, cultural, and socio-economic conditions and partly on the types of production and market organization.

It has been increasingly recognized that the CAP benefited, in particular, agricultural incomes in areas of the EU which were already being intensively farmed, since the sums paid were related to historical earnings. Areas in which there was less intensive farming tended to be disadvantaged, leading to an increase in the prosperity gap between individual agricultural regions (OECD,2006). In this low intensive farmed agricultural land, normally located on peripheral European regions, attempts have recurrently been carried out in order to integrate agricultural policy with the broader economic and social context of rural areas. At this regard, experience has been showing how diversifying farming into activities such as the development and marketing of high-quality products, agricultural tourism and investment projects related to the environment, which have until now been marginal, can open up new prospects and opportunities.

A key part of the 1992 CAP reform concerned the environmental aspects of agriculture. There are examples showing that programs geared towards lowering the intensity of animal farming and increasing environmentally friendly farming methods have improved the environmental situation and brought financial gains. These programs yet increasing and developing throughout the time are nevertheless still marginal in the overall CAP budget (OECD, 2006)

It follows from the above that there is a need to further investigate how can these peripheral rural areas of Europe be understood today? What are the possible development pathways and what can the role of CAP policy be in gear those transition pathways? In order to do so there is a need to explore the differences across a variety of rural areas in the European context.

It is acknowledged that a huge effort has been made in creating and developing European scale typologies (e.g by OECD, FAO, RUFUS project...) for distinguishing between rural areas across Europe (van der Ploeg and Marsden, 2008). Those efforts are immensely relevant but still need to fully address and better understand the new modes of rural dynamics and occupancies (Holmes, 2006; Hurlings and Marsden, 2010; van der Ploeg et al., 2009; van der Ploeg and Marsden, 2008; van der Ploeg et al., 2000). Most of the typology work developed so far is mostly data driven and lacking on conceptual background as well as in a solid research framework behind (OECD, 2001, 2006).

In order to fill this research gap the aim of this paper is to propose a solid conceptual framework but framed in a simple and clear way. This work starts with the conceptual background proposed by Holmes (2006) for Australia, further adapting it to the context of Europe's peripheries. It thus aims at developing a new typology of rural areas, considering the multiple drivers of change of the rural today based on three dimensions from Holmes namely production, consumption and protection which will be further related to the socio-economic and institutional dynamics in place. In order to develop the approach the case study region of Alentejo will be used as a test.

### **Conceptual background, data & methods**

The typology developed throughout this work aimed at gauging the dimensions proposed by Holmes (2006) with socio-economic and institutional dynamics as the drivers that might make it possible for one or other of the previous vocations to be exploited/developed. In this way the conceptual model by Holmes (2006) is here used as a simple and clear basis grounding the conceptual framework by unquestionably representing the different development patterns rural areas might follow (a combination of production, protection and consumption) that drive rural areas across different but constant processes of change that can turn out into very different transitions pathways.

As shown in Figure 1 the three faces of the Holmes (2006) triangle- production, protection and consumption can assume different relevance according with the socio-economic dynamics in place in a certain rural area.

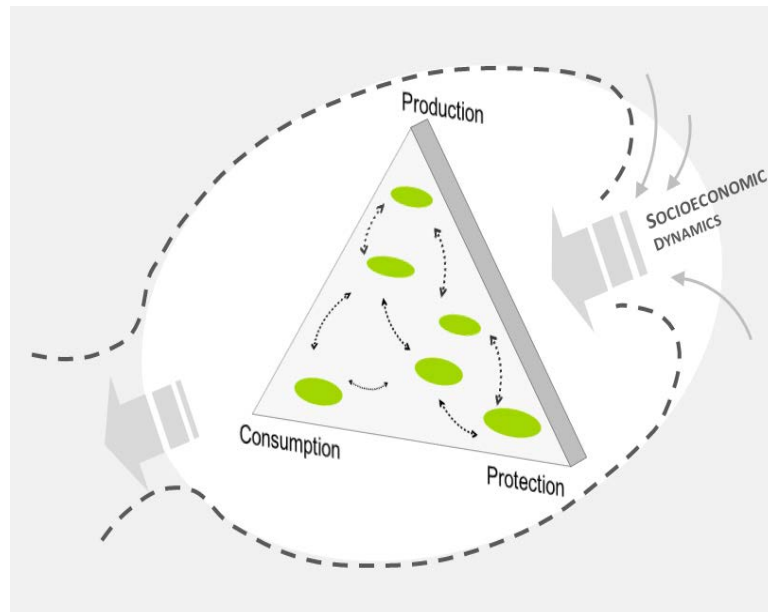


Figure 1. A schematic way of representing the conceptual model of the typology developed.

The typology, although conceptually grounded on the three dimensions by Holmes (2006) – production-consumption and protection- thereafter framed according to the socio-economic and institutional dynamics in place, still had to tackle the issues of how to consider the appropriate indicators set to represent those different dimensions in contrasting rural areas.

In order to test the development of the method the case study region of Alentejo was selected. Alentejo is located in southern Portugal, its administrative organization comprises a set of 47 municipalities covering an area of 31 551 Km<sup>2</sup> (a third of the area of the country). Although encompassing significant differences across the area, Alentejo is well known in Portugal by its peculiar rolling plains and flat land landscapes as well as by its dry Mediterranean climate. In the area, primary activity sector namely dry land agriculture systems are still a very prominent land cover and it's most representative agroforestry system is the montado (Pinto-Correia and Primdahl, 2009; Pinto-Correia and Vos, 2004; Pinto Correia, 1993).

Based on both the empirical knowledge of the study area as well as a literature review a set of variables were selected to be tested a set of indicators comprising the four dimensions analyzed. Table 1 describes the set of indicators selected.

Concerning production, the variables included were for example the Weight and Net Change of some of the CORINE classes (or its sum) that allowed a characterization and differentiation on the type of the productive system in each one of the Alentejo municipalities.

Concerning consumption, variables selected were the ones that allowed an understanding of the capacity of the municipalities to attract people namely by the attractiveness of its landscape, for example by having water bodies (widely reported in the literature as being an attractiveness-special in dry climate contexts such as in Alentejo), or even diverse land covers (by using Shannon Diversity Index).

Concerning protection, variables included were for example the area of shrubs, natural grazing areas as those are related with naturalness and wild ecosystems. Other variables included in this dimension were also the ratio of the agriculture and forestry areas inside protected areas. Finally, the variables selected to characterize the socio-economic dimension were both related to population dynamics (ageing, entrepreneurship) but also territorial by including distances to more dynamic urban centers.

Table 1. The four dimensions and its indicator set

<b>As defined by Holmes (2006)</b>			
<b>PRODUCTION (Agro-forestry areas oriented to production functions)</b>	<b>CONSUMPTION (landscape attractiveness)</b>	<b>PROTECTION (Conservation)</b>	<b>SOCIO-ECONOMIC and Institutional (socio-econmoic data)</b>
WeightAgr_06 (weight)	Rescale_IJI	%Montado	N_Enterp_PopAct (Number of Enterprises in relation to the Active Population)
Net Change NC NCAgr_9006	Rescale_SHDI	%Pastures	%_Pop65 (Percentage of population aged 65 years or more)
Weight3223_06	Rescale_ACT	%Shrubs	%_PopES (Percentage of population with higher education)
NC3223_9006	%Montado	%Olive groves	DenPop (Population Density)
Weight324_06	%Water Body	%AAF_AP (Agricultural and Forest Area in Protected Sites)	Time-Distance (It comes to the time-distance in two steps: First pondered whether the distance of each County Center (Headquarters) to Lisbon and Sines.  In the second phase, the distance is divided by a weighted average speed of 80 km)
NC324_9006			PopActiva_Agri (Percentage of Active Population in agriculture)
Weight212_06			
NC212_9006			
Weight221_06			
NC221_9006			
Weight223_06			
NC223_9006			
Weight231_243_321_9006			
NC231_9006			
Number of Dairy Cows in relation to the agricultural area			

### Testing the methodology in Alentejo, South Portugal

The analysis proceeded in such a way that for each one of the 47 Alentejo municipalities the four dimensions – based on the different variables listed in Table 1- were computed and afterwards mapped. Figure 2 shows the ways in which the different Alentejo municipalities ranked on the three dimensions as defines by Holmes (2006) – production, consumption and protection.

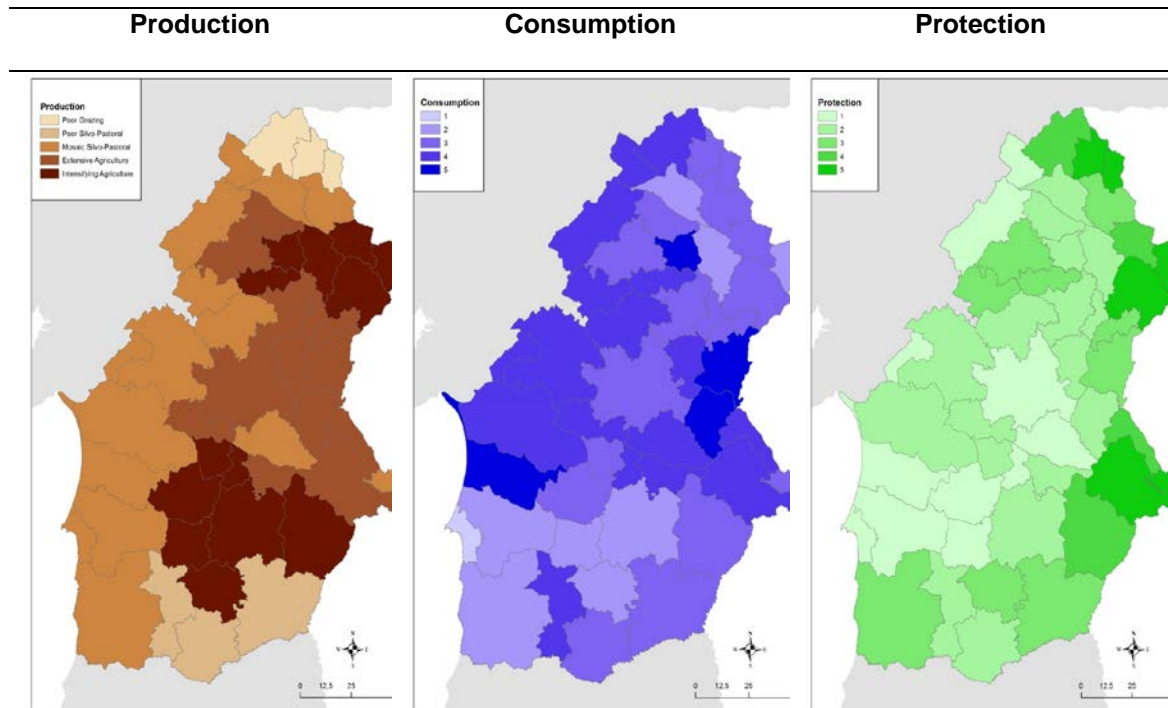


Figure 2. The case study region according to the three dimensions by Holmes (2006)

Acknowledging the importance that the socio-economic and institutional dynamics in place might have in either driving or steering a way a particular municipality from a “process of change possibly leading to a specific transition pathway” the three dimensions by Holmes (2006) were further cross-checked with a fourth socio-economic/institutional dimension. Figure 3 shows the resulting map. This was done because it has been reported that rural development pathways are not determined on the exclusive basis of its environmental potential but the social and institutional contexts also play a very important role (Carvalho Ribeiro et al 2010). For example, an area might have touristic potential but there is only a couple of people living in the place and for socio-economic and institutional reasons they are not willing in doing so.

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## Socio-economics

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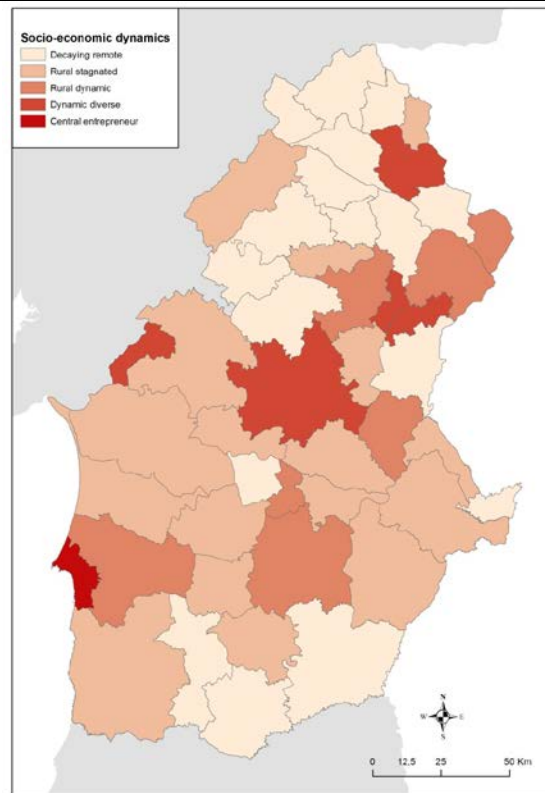


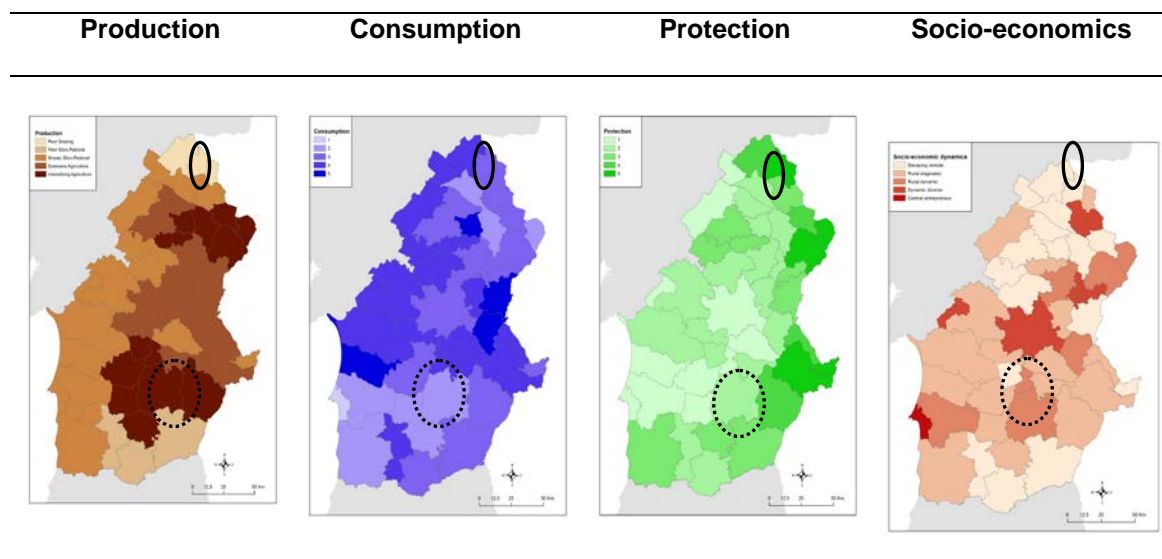
Figure 3. The socio-economic classification of Alentejo

As can be seen in Figure 3, according to the variables used for the socio-economic dimension, the municipalities throughout the Alentejo region were classified as ranging from a decaying remote to central entrepreneur. This classification was based on the most prominent variables in the contrasting groups of municipalities.

In order to assess the ways in which the four dimensions related to the study area two contrasting municipalities one in North another in the Southern part of the region were examined in detail. Those municipalities were Castelo de Vide in the North (shown in black circle) and Beja in the South (shown by a dashed circle).

Concerning Castelo de Vide the results show that there is a decaying extensive production, but high amenity and conservation values. The results also show that there is too a lagging behind socio-economic context. Options for development here should build one the asset of a combination of conservation and low impact consumption. But, there is a need to empower the community and stimulate rural entrepreneurship.

On the contrary, Beja in the south was classified as intensifying agriculture, but low amenity and conservation values in a dynamic socio-economic context. This might mean production oriented farming is an asset that can be easily coupled with a dynamic entrepreneur capacity already in place. However, caution has to be made in order not to damage environmental quality.



## Discussion

The work presented throughout this paper developed and tested a methodological approach to create indicators able to contribute to assess the ways in which differentiated policies might either enhance or otherwise hinder different development paths in rural areas.

The variety of rural landscapes are likely to “explore” different potentials and vocations (Pinto-Correia and Breman, 2009). Some clearly put emphasis on the productive functions, either agriculture or timber production functions. Other communities rather explore “other productions” such as intensive livestock grazing. Yet others put a huge effort on developing its recreational and amenity use. Increasingly, others are willing to get into carbon markets or focus on transforming forest biomass into “green sources of energy”. Recently, both farmers and forest managers, as well as governments and societies have become engaged in a constant trade-off between productive and other environmental functions such as protection and recreation (Holmes, 2006).

In addition to the previous, a huge amount of research done so far, for example by Elianor Ostrom and colleagues, shows that there is no panacea in addressing management of rural resources despite an overall tendency by policy (namely at EU scale) to apply the same set of policies in very different areas in order to diversify the “lagging behind” rural (Ostrom et al., 2007).

The work here presented contributed to explore the ways in which differentiated policies might either enhance or otherwise hinder different development paths in rural areas based on building a set of indicators incorporating different dimensions. However, the proposed approach should still be improved namely by addressing a finer scale namely by downscaling the results to the LAU units (parish scale) instead of the municipality NUTs IV level. At a finer scale it is likely that other type of indicators can be used that likely will refine and give more detailed insights into the analysis. In addition to the previous there is also a need to further develop the set of socio-economic indicators namely by extending them to the institutional dimension comprising governance indicators. Although difficult to get data on this, the information is crucial to refine and improve the analysis here developed as a test.

Another issue needs further discussion is to assesses the extent to which this adaptation of Holmes (2006) methodology when cross-checked with socio economic dynamics is appropriate and at which scale. Is it appropriate only for the Mediterranean? -As it seems from the analysis

of the Alentejo data in this paper- or can it be extended for the peripheries in Europe- excluding central productive areas? Furthermore what are other dimensions and also which specific indicators can be used for example for better represent the institutional and governance dimensions? Are those similar across European regions or should they vary according to the rural context?

In our view, one of the strongest points of the approach is to be based on conceptual issues instead of being data driven as most of the work on mapped typologies has been normally conducted. Due to the importance of the theoretical background, it is still necessary to go deeper in assessing which might be the alternative conceptual models that can be used to improve the robustness of the approach.

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