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# A method for analysing and planning rural built-up landscapes: The case of Sardinia, Italy

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ABSTRACT

The implementation of the European Landscape Convention has paved the way for innovative tools able to analyse scattered and medium-small size elements, far beyond the usual isolated relevant landmarks. In this context, planners have been confronted with the problem of defining those characteristics of rural landscapes which are typical of agricultural and forestry activities and ecosystems. The specific focus on rural landscapes has attracted the interest of international scientists. They have approached the question from many perspectives, but have rarely analysed the interplay between landscapes, buildings, and settlements. In this paper we design and apply a method which is able to define, analyse and plan built-up rural landscapes. This method is based on organizing qualitative and quantitative landscape information in fact sheets, a tool that was often used in the last generation of landscape atlases in Italy. We have investigated three landscape units in Sardinia, Italy, one of the first administrations to approve a regional landscape plan which conformed with the European Landscape Convention. Our evidence demonstrates that the method is powerful, as it helps in the identification of the main characteristics of each rural built-up landscape and the drafting of general planning propositions. In particular, the method proves useful in stressing the cross-fertilization between building types and the shape of the rural landscapes: single story buildings on plains and multi-story buildings in mountainous areas. While the method is clearly influenced by the European Landscape Convention and the Italian local regulations, it is based on general principles and can be applied, with proper adaptations, to other cases worldwide.


## 1. Introduction

The European Landscape Convention (hereafter, ELC) made planners place more focus on the territorial systems which create landscapes, including not only isolated and relevant landmarks but also the scattered and medium-small size elements involved. In this respect, ELC implementation in European Union member (and non-member) states has paved the way for new tools. These are suitable for ordinary and distributed landscapes and often applicable to rural and agricultural landscapes. This apparently superfluous definition –in reality European landscapes are broadly rural– has attracted the interest of many scholars in recent times (Dehkordi, 2012; Rogge et al., 2007; Paracchini and Capitani, 2011).

While many definitions of landscape exist (Donadieu, 2014; Romani, 2008; Farina, 2006), in this paper we refer to the landscape as conceived in the ELC: "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (ELC, 2000). The ELC gives the same importance to all types of landscapes: thus natural, rural, peri-urban and urban landscapes are the key factors in European cultural identity (Piorr and Müller, 2009).

Italy signed the ELC in 2000 and ratified it in 2006 (Italian Republic, 2006). In 2004 Italy approved Legislative Decree No. 42 'Code of Cultural and Landscape Heritage' (hereafter, the Code) (Italian Republic, 2004). The Code introduced the ELC principles into the Italian regulatory system by stressing innovative concepts, such as landscape quality, local identity, and cultural values. According to the Code, states and regions must ensure that the whole national territory is properly identified, protected, planned, and managed. Recent studies have observed that the ELC has introduced a common style of landscape planning at continental level for the first time. This has, however, been differently implemented, depending on the institutional frameworks operating in each coun-

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**Table 1**
The Research questions (RQs) that form the basis of this paper.

| $RQ_s$ | Description |
|---|---|
| $RQ_1$ | How are rural built-up landscapes approached in the literature? |
| $RQ_2$ | How are rural built-up landscapes analyzed in Italian regional landscape plans? |
| $RQ_3$ | Is it possible to build an indicator based method for assessing rural built-up landscapes? |
| $RQ_4$ | How can we apply the method to interpret real (i.e. Sardinian) rural built-up landscapes? |

try (De Montis, 2014). They have also reported that roughly half of the Italian regional and provincial administrations have approved landscape plans which conform with the Code, including typical instruments such as landscape units, atlases and catalogues, and focusing specifically and explicitly on the analysis and planning of agricultural and rural landscapes (De Montis, 2016).

The literature on rural landscapes is multi-sectoral, as it includes contributions from many disciplines. The authors often start from theoretical definitions or assessments of the landscape and propose methods based on qualitative and quantitative criteria. As part of this, some papers approach defining rural landscape by describing the architectural and spatial characteristics of rural buildings and settlements (Jeong et al., 2012).

In this paper we intend to discuss the methods, criteria, and indicators adopted when defining and planning rural landscapes, with a special focus on the interaction between buildings and landscape. We start from the definition of rural landscapes in the international literature and then focus on designing a method which is able to assess built-up rural landscapes. In order to arrive at an operative definition, we integrate the method with certain elements obtained from a study of the approaches to rural landscapes proposed by the last generation of landscape plans approved by Italian local administrations. We apply the method to the study of rural landscapes in three regions of Sardinia, Italy, with the intention of extending the Regional Landscape Plan (RLP) of Sardinia (Sardinia, 2006) to the interior of the island.

We report the Research Questions ($RQ_s$) that shape our paper in Table 1.

$RQ_1$ identifies the emergence of an established corpus of scientific contributions which are specifically designed to interpret rural built-up landscapes. $RQ_2$ investigates the approaches used by some Italian Code-based regional landscape plans for analyzing and planning rural built-up landscapes. The answers to $RQ_3$ are a combination and cross-check of the responses to $RQ_1$ and $RQ_2$ and concern the design and application of an indicator based method for characterizing rural built-up landscapes. $RQ_4$ refers to how the model is applied and interpreted in actual cases in Sardinia, Italy.

Based on the $RQ_s$, the argument unfolds as follows. In the next section we discuss a state of the art summary of the scientific contributions on rural built-up landscapes. In the third section we scrutinize some Code-based Italian regional landscape plans, with respect to their importance for rural landscapes and buildings. In the fourth section we design an indicator-based method which is able to define the dimensions of buildings in rural landscapes and in the fifth section we use it to assess the key characteristics of rural built-up landscapes of Sardinia, Italy. In the sixth section we discuss the results obtained and elaborate on the conclusions and perspectives of this paper.

## 2. Rural built-up landscapes: a summary of the state of the art

In this section, we describe the reference selection method and scrutinize some relevant scientific contributions concerning rural landscapes with an emphasis on buildings and settlements.

**Table 2**
State of the art summary on rural landscapes: issues and meaning.

| Issue | Meaning |
|---|---|
| Approach | General conceptual framework |
| Focus | Specific conceptual issues |
| Methods | Methods explained and applied |
| Data | Source, description, and resolution of data adopted |
| Indicators | Qualitative-quantitative measures |

Rural landscapes have been approached from a number of different points of view (Agnoletti, 2013, 2014; Dehkordi, 2012; Rogge et al., 2007). Agnoletti (2014) pointed out that there is a lack of funding and few policies are able to describe and preserve the historical character of rural landscapes. Dehkordi (2012) developed landscape degradation modelling and assessment in the context of rural areas in Japan. Rogge et al. (2007) studied the differences in the perception of Belgian rural landscapes expressed by various target groups: farmers, landscape experts, and country-dwellers.

In 2015 we selected a set of thirty-one journal articles filtered from the sciencedirect.com database by using the following keywords: agricultural landscapes, rural landscapes, rural landscape analysis and planning, and rural buildings-landscape integration. Sciencedirect.com is a well-known scientific database and includes major international journals (for instance, Land Use Policy and Landscape and Urban Planning) in the field of landscape analysis and planning. As a cross-check, we searched the broader database Scopus, using the same keywords, and found the same journals. The selected papers have been filtered according to a set of bibliometric criteria in order to define some key features. The key features have been useful to provide a cluster of context elements linked to a specific rural building and the surrounding rural landscape. We have considered key features including: approach used for studying the rural landscape, focus, methods, data, and indicators. We stress that we aim to provide an overview about a specific set of papers covering the rural built-up landscape dimension. It is not our intention to provide an extensive literature review regarding studies on rural landscapes. We scrutinized the selected papers applying a quali-quantitative analysis of the issues described in Table 2.

The first and second issues obtain the general and specific features of the approach proposed in each contribution. The remaining three issues obtain the description of the method adopted, the data

**Table 3**
Macro-groups of the selected references.

| Macro-groups | Key concepts | References |
|---|---|---|
| Buildings analysis | Architectural shapes and features, building materials and techniques | Jeong et al. (2012); Tassinari et al. (2010); García et al. (2003); García et al. (2006); García and Ayuga (2007); van der Vaart (2005) |
| Dynamic analysis | Landscape change in time, landscape natural and artificial matrices | Gulickx et al. (2013); Pôças et al. (2011); Pedroli et al. (2007); Skowronek et al. (2005); Poudevigne et al. (1997) |
| Landscape ecology | Landscape functions and ecosystem services | Riguccio et al. (2015); Gullino and Larcher (2012); Laterra et al. (2012); Ma and Swinton (2011); Petit (2008); Claval (2005); Mander and Jongman (1998) |
| Sociological and policy analysis | Landscape perception and cultural identity | Hiner (2014); Sklenicka et al. (2014); Wheeler (2014); Øian (2013); Primdahl et al. (2013); Ruiz and Domon (2012); Paquette and Domon (2001) |
| Visual analysis | Human preferences, visual perception | Garcia-Llorente et al. (2012); Qingjuan et al. (2011); Ramírez et al. (2011); Sevenant and Antrop (2007, 2010); Natori et al. (2005); Antrop (2004); Appleton and Lovett (2003) |