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Definition of landscape character areas and types in Side region, Antalya-Turkey with regard to land use planning

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ABSTRACT

Landscape is the result of the interaction between humans and nature, which often conveys a different character to the land. Recently, land use and landscape planning decisions have been increasingly informed by landscape character assessment (LCA) studies. In this study, LCA methodology was tested at the local scale in Side in the Turkish Mediterranean and its role in the planning system in Turkey is discussed. Here, a combination of two approaches was used: a moderative and technical approach based on an evaluation of different biophysical layers, and an interpretive approach based on the visual and perceptive qualities of the landscape. Side ancient town, Side-Sorgun sand dunes and forest and agricultural lands, on undulating topography covered by macchia, with traditional land use patterns and a distinct and recollective character, are unique landscapes both for Side and the Turkish Mediterranean. Land use planning in Turkey evolves from a top-down, state-led government process. The most relevant planning level at which LCA can be integrated is the Environmental Order Plan (EOP), but a multitude of planning institutions and legislation, and rapid transformation of landscape characters, weaken the capacity of LCA in land use policy and planning in Turkey. Elaborating LCA studies into landscape plans and calling for its integration within spatial planning has potential for the Turkish planning system, but innovative approaches are still needed to include public participation and planning processes with landscape quality objectives through LCA.

Introduction

Landscape is defined as an area as perceived by people whose character is the result of the action and interaction of natural and/or human factors (Council of Europe, 2000). The word 'landscape' has its origin in the Anglo-German language dating back to 500 AD in Europe (Taylor, 2009). According to Swaffield (2005), the shifts in meaning that took place in the 16th and 17th centuries are particularly significant, as 'landscape' was translated from German through Dutch into English. The term originates from the words *landskab* (Danish), *landschaft* (German), *landschap* (Dutch), *landskap* (Norwegian and Swedish) and *landscipe* (Old English), standing for '*land*' and '*scapjan/schaffen*' literally meaning 'shaped lands where people live' (Spirn, 1998; Atik et al., 2009). As a result of the interaction between humans and nature, landscape becomes a diversity of visual, cultural and ecological constructs; therefore different components and characters of the landscape require effective land use policies in order to maintain values and distinctions.

Landscape character is what makes an area unique and different. It is defined as a distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape (Swanwick, 2002; Turner, 2005; Heritage Council, 2006).

Landscape character often reflects the state and quality of the landscape and informs planners on how to manage and maintain the landscape. Landscape evaluation is a fundamental procedure for assessing the conditions and quality of a system and it is the first step towards planning or management actions (Farina, 2000). In this regard, it is important to take into account and understand all features of the landscape, both biophysical and visual in order to integrate them into land use policies (Will, 2005).

Many changes to traditional landscapes related to urbanisation, transportation, recreation and tourism, have broadened the concept of landscape character to include all types of landscapes, as proposed by the European Landscape Convention (Van Eetvelde and Antrop, 2009). Rapid loss of regional diversity and landscape character is more evident, particularly in the Mediterranean countries. In this respect, Turkey is no exception. Located between

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the continents of Europe and Asia on the Mediterranean, Turkey represents a great diversity of natural and cultural landscapes, but the continuing demands of tourism and housing threaten the distinct character of its territory. Therefore, for a better understanding of this change, the landscape-scale approach for spatial and temporal relationships is becoming a major undertaking, where landscape character can be an effective tool to inform the ongoing discourse on the landscape.

Landscape character assessment (LCA) is the process of mapping, describing and evaluating landscapes on the basis of the presence and arrangement of various landscape features (Swanwick, 2002; Jellema et al., 2009). Land use and landscape planning decisions are increasingly being informed by a wide and growing range of LCA studies that are undertaken at national, regional and local levels (Swanwick, 2009).

The results of LCA studies in which natural, cultural, physical and visual characteristics of the landscape are analysed have been employed in different countries. In Hong Kong, the mapping of landscape values provided a basic set-up for upper- and sub-scale planning at national level (Planning Department, 2008). LCA outcomes were suggested for strategic and ecological approaches to conservation planning in South Korea (Kim and Pauleit, 2007). In New Zealand, LCA is based on both the sensitivity and robustness of landscape, and landscape units and character areas that are incorporated into a guide for rural land use decisions (Planning Department, 2008; Atik and Ortaçeşme, 2010).

However, most of the existing academic literature on LCA is mainly from the UK, Ireland (Swanwick, 2002; Turner, 2005; Heritage Council, 2006; James and Gittins, 2007), some other European (Caspersen, 2009; Jellema et al., 2009; Groot et al., 2010) and a few other countries (Stephenson et al., 2004; Kim and Pauleit, 2007; Brabyn, 2005, 2009; Planning Department, 2008; Brown and Brabyn, 2012).

On the other hand, landscape characteristics differ significantly throughout Europe, where the Mediterranean region offers an ever-changing landscape of high mountains, sandy beaches, impenetrable scrubs, steppes, coastal wetlands, etc. (European Commission, 2009). As a Mediterranean country, landscape characters in Turkey are quite different than those from the European environments where LCA is carried out.

Turkey has signed and ratified the European Landscape Convention (ELC) and, therefore, identification of the landscapes throughout its territory and integration of them into regional and town planning policies remains an obligation. Since the ELC came into force in Turkey in 2004, one of the efforts made was to adapt western European-based LCA, which has become a useful tool for implementation of the convention.

Currently, there is no legal instrument in the country to enforce the use of LCA for land use policy and planning. Therefore, the introduction of a landscape-scale approach in land use planning and policy would be an opportunity for the effective management and protection of the Turkish landscape. It would also support the implementation of the ELC in Turkey.

This paper presents an application of LCA methodology in the Turkish Mediterranean context and at local level. We consider that the study is important at a regional level, as Vogiatzakis et al. (2006) indicated that despite the wide use of LCA as a tool for landscape planning and management in north-western Europe, there are few examples of its application in the Mediterranean. In addition, we discussed the role of LCA in land use policy and planning in Turkey.

Materials and methods

Side district, located in the eastern part of Antalya province, Turkey, was chosen as the study area to be a good example that typifies the Turkish Mediterranean. The area encompasses a great diversity of cultural and natural landscapes due to its location on a large coastal plain, rich biophysical land forms and long cultural history making it one of the tourism hotspots in Antalya province (Fig. 1).

Side is characterised by the Mediterranean climate with very hot, dry summers and rainy, temperate winters. The topography changes at a moderately low level between 0 and 50 m. A slightly undulating terrain on a large coastal flat plain enriched by small valleys is unique to Side. The main vegetation types are pine forests, macchia, dunes and riverine vegetation. Turkish pine (*Pinus brutia*) and stone pine (*Pinus pinea*) are the dominant tree species in the forests.

The main land use types are tourism, agriculture and housing. Hot summers greatly encourage tourism activities in the province and, to a great extent, the overuse and exploitation of the natural landscape.

The common LCA methodology was used in this present study which was carried out at local level. The previous studies by Swanwick (2002), Turner (2005), Wascher (2005), and Kim and Pauleit (2007) on LCA were examined and revised to some extent for this study according to the characteristics of Side district. The study was carried out in three main stages: (1) preclassification of landscape character areas and types; (2) field surveys; (3) final characterisation (Fig. 2). These stages are explained below in detail.

Preclassification of landscape character areas and types in Side

LCA is based on a spatial hierarchy. In most cases at national, regional and local level, the classification breaks down landscape character areas further by landscape character types and areas. In accordance with the previous classifications for landscape character areas and types by Swanwick (2002), Wascher (2005) and Heritage Council (2006), the study area was delineated as *Side Landscape Character Area* at local level and as *Mediterranean Flat Alluvial Coastal Plains* at regional level, due to the fact that Side is geographically located on a large flat plain formed by the river Manavgat, the largest river in the region flowing to the Mediterranean (Fig. 3).

From a methodological standpoint, the landscape codes for European Landscape Character Types by Wascher (2005) were customised to include topography, parent material, soil groups, soil capacity and vegetation data for the preclassification of landscape character areas and types for Side. The topography was fairly flat, between 0 and 50 m, corresponding to the lowlands, while the typically Mediterranean climate zone enjoyed hot and dry summers and mild and rainy winters. Taking the nature of the study area into consideration, the soil characteristics, such as soil groups and soil capacity, were added to the landscape codes as new criteria (Fig. 4), due to the fact that soil characteristics are a useful instrument at local level to identify suitability as well as capacity and the conditions of the landscape character areas and types.

Spatial data including geology (Maden Tetkik ve Arama Genel Müdürlüğü, 1997), soil (Tarım ve Köyişleri Bakanlığı, 1993), hydrology, topography (Harita Genel Komutanlığı, 1995), vegetation and land use were stored, processed and interpreted using Geographical Information Systems (GIS) at the preclassification stage. WorldView-1 satellite images were used to define land use classes. All spatial data were geographically referenced in UTM projections, rectified and interpreted in the ArcGIS and ArcMAP software programmes.

In the determination of draft landscape character areas and types in Side, the sources of information were classified under the following codes: *topography* (0–50 m); *parent material* (sub-Pliocene, alluvial, river terrace and sand dune); *soil groups* (alluvial, colluvial, regosol, brown mountain, rendzina, terra rosa and coastal dune); *soil capacity* (capability classes I, II, III, IV, VI and VIII); *vegetation types* (forest, macchia, dune vegetation, stream bed, reed bed