

ENVIRONMENTAL MANAGEMENT PLAN

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Abstract: *The evolution of the concept of landscape to incorporate components like cultural and socio-economic factors, in addition to the natural and aesthetic features, influenced the perception of landscape as a resource. On the other hand, the relationships between territorial features as well as the understanding of their temporal dynamics determine the significance of these features for the quality of a landscape and, consequently, for its conservation. This implies that all components ± natural and physical, but also cultural and visual upon which landscape quality is assessed is to be considered and studied globally. Natural resources and cultural heritage, however, are usually considered independently when developing protected areas management plans. Here, we present a methodology, which allows the interrelated analysis of landscape factors such as geology, geomorphology, pedology, flora and vegetation cover as well as the cultural and visual characters. Using the concepts of biophysical sensitivity and visual quality, we evaluated the relevance of these various factors for the determination of the state of equilibrium/degradation of a landscape, and hence for its conservation value.*

Introduction

The European Landscape Convention [1] conceives landscape as an area, perceived by people, whose character is the result of the action and interaction of natural and/or human actors. This definition reflects the notion of evolution through time and reinforces the idea of landscape as a whole, where natural and cultural components are indissociable. Accordingly, landscape should be understood as a resource composed of the assembly of natural, physical, cultural, economic and visual components, and not only as their sum (Figure 1). From a sustainable development perspective, the protection of this resource requires actions to ensure the upkeep of the totality of characteristic features of a landscape justified by its heritage value derived from its natural configuration and/or human activity (European Landscape Convention).

Protected areas management plans (PAMP), as a type of landscape planning, aim to produce technical reports and zoning maps with guidelines and strategies to ensure the preservation of the characteristics that determine the quality and/or uniqueness of a landscape, through assigning land uses

to the most suitable places (Turner, 1995; Marsh, 1991; McHarg, 1969). Generally, these plans are drawn upon methodologies in which natural and physical components are studied and assessed as separate entities, despite their interconnectivity. On the other hand, the cultural character of a landscape expresses the interaction of man with the territory. As such, this interaction is a display of socio-cultural influence and allows the acknowledgment of the connection between specific site features and the history of a society, thereby contributing to the uniqueness and identity of a landscape. Furthermore, landscape quality today is endowed with economic value (e.g. for tourism).

Elements like historical, cultural, economic or aesthetic factors thus demand a joined and interrelated approach in which the relationships between them and with the physical and biological factors would be considered among the assessment criteria, because nature conservation together with the preservation of the cultural heritage of a territory values the landscape (McHarg, 1969; Lyle, 1985). This holistic evaluation allowed the establishment of a zoning map and the definition of protection measures.

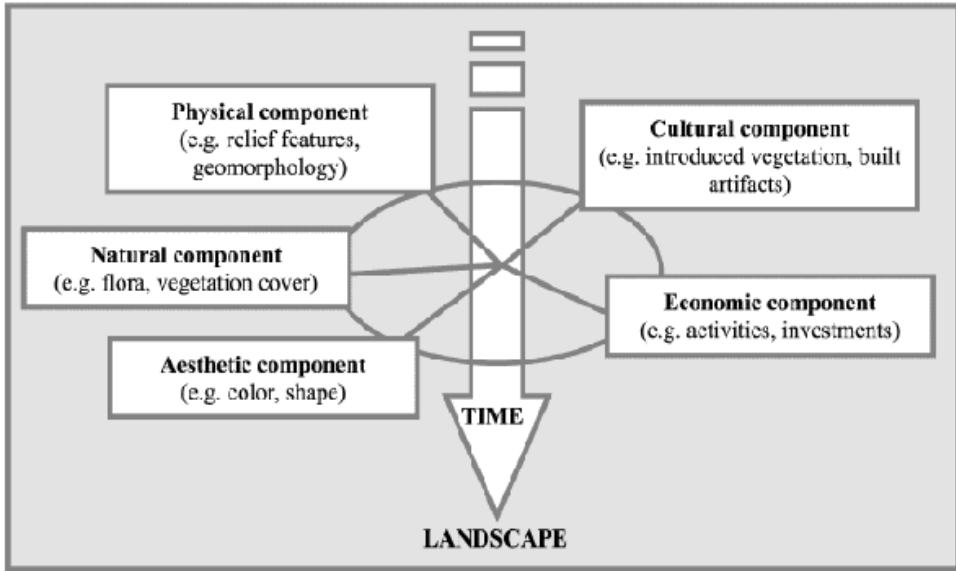


Fig.1. Diagram of landscape resource

The methodology developed for the management plan refers to a holistic concept of landscape as a resource, in which the various components like geology, geomorphology, pedology, relief, flora, vegetation cover and cultural heritage are analysed and evaluated assuming their interrelations and dynamic equilibrium.

The interdisciplinary and parametric methodology was structured in three phases:
 (1) landscape analysis;
 (2) synthesis (biophysical sensitivity and visual quality); and
 (3) management plan (zoning map and guidelines), as shown in Figure 2.

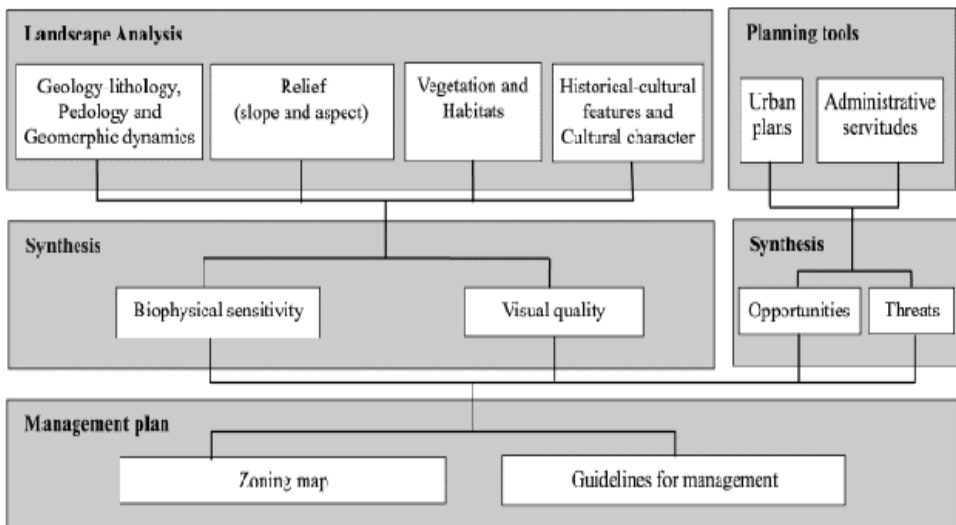


Fig.2. Management plan methodology

In the first phase, a series of landscape components were identified and characterized, namely relief features, geology-pedology, geomorphic dynamics, flora, vegetation cover and historical-cultural heritage. The latter component, which is rarely assessed, is important as patrimonial character that needs to be protected, but also as a mean to understand how man's presence shaped the territory through various actions and activities (e.g. agriculture, religion, recreation) and influenced the evolution of the landscape. The cultural component was assessed through its historical-cultural significance and integrity, that is, the capacity that features have to reflect past periods and events, on the basis of the physical remains and their relation with the surrounding landscape. For this purpose, the history (social, cultural, religious, economical and political aspects) of the location was studied to identify and characterize all features with respect to their antiquity, state of conservation, relevance to the understanding of the territory's occupation, actual use and importance to the maintenance of the character of the landscape. Urban plans and administrative servitudes were also analysed and taken into consideration. The objective of phase 2, the synthesis phase, was to diagnose the conjoint importance of the characterised features for landscape quality and to evaluate its susceptibility to degradation, in order to delineate areas with special value for conservation. Here, the concepts of biophysical sensitivity and visual quality were devised in order to classify the territory in sub-areas, and assign a value to them. The delineation was based on the geographic co-occurrence of significant ecological, natural, historical-cultural and recreation resources

Based in landscape sensitivity, biophysical sensitivity allows assessing the degree of vulnerability of those components of the landscape with respect to impacts of natural origin and pressures of human nature.

Usually, three types of state are considered to exist: stability, fragility and regressivity (alteration) or decline (Mac 2004)

1. The stability state is that one which refers to the environmental system, that, through its own adjusting mechanisms of the natural or socio-economic interventions, is

capable to provide the harmony between the components. That means that no conflicts, of any kind, can come out. Therefore, environmental system has the necessary capacity of achieving the functions which society is demanding. "The loading" with humans activities is, therefore, achieved in tolerable limits, and the system presents "robustness" (durability). Usually, stability represents an attribute of those environmental systems that have a wide spatiality (macro-scalar levels).

2. The fragility state is characteristic to environmental systems that have initial or ulterior precarious connections. Concerning the first aspect, the seacoast environments, the Mediterranean environments and the deltaic ones seem to be the most significant, and concerning the second aspect, the periurban environments, the overactivated technogene environments are the most representative. That means that the ratio between the environment's potential and the exploitation of the environment is characterized by a conflict. In such circumstances, only by adjusting society's demands we can provide the system's functioning, but only on short term.

3. The regressivity state (alteration) represents the results of the acute conflicts that lead to critical environmental situations. That means that there are completely inadequate forms of environmental exploitation, requirements that overpass the resistance of the environment, and, therefore, the degradation aspects are coming out. The initial system, which has already entered the state of decline, is about to be replaced by another one, completely incompatible with society's demands. This manner in which environment is giving the answers, spatially materialized through transiency forms, becomes the priority objective in the process of researching and assessing the critical situations. Taking into consideration the specific genetic features and the concrete manner of manifestation of the transiency forms, the research and the assessment are widely differentiated among the specialists. For the environmentalist geographers, the most enlightened expression of the critical environmental manifestation is represented by the coming out of the new territorial forms (geomorphologic surfaces, the degrading lands, the abandoned habitats etc), which have not been yet aggregated

into an obvious system

The aim of the management plan was to achieve an effective and coherent management zoning taking into account the dynamic evolution of a landscape as well as its cultural and visual aspects, in order to ensure the conciliation of nature conservation and the presence of man.

The study was made possible through a methodological approach based on the concept of landscape as a resource, which enabled classification of the territory according to a hierarchical system with respect to its susceptibility to natural and human degradation. Recognising the importance of dynamic processes and inter-relations between components for the interpretation of the genesis and evolution of the landscape was crucial to understanding how the territory would react in different situations and to help decide on appropriate ways to intervene. The approach also allowed incorporating historical-cultural testimonies of human occupation of the territory as earmarks of the landscape, which, similar to the natural features, deserves protection.

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