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Indicators for environmental conflict monitoring in Natura 2000 sites

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Abstract

The mission of the Natura 2000 network focuses on humans-nature relationships, recognizing that human activities are part of the ecosystem and they should not rival with the nature. However, the implementation of Natura 2000 network has triggered situations where the human interests came into conflict with those of plants and animals or where different political and social underlyings undermine its effective implementation. Therefore, we propose an ACR framework (anticipation-characterization-resolution) to select a set of indicators which can be used to assess the environmental conflicts from the Natura 2000 network. The selected indicators are relevant at European, national and Natura 2000 site scale and might be useful for the administrative process by providing information about stereotypic conflict situations. This could further help in the management of the Natura 2000 sites in order to contribute to the conservation of Europe's biodiversity.

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Keywords: monitoring, anticipation; characterization; resolution; environmental conflicts, Natura 2000

1. Introduction

Understanding the nature-society relations is an important challenge in the Natura 2000 network management, where the boundaries are dynamic, ambiguous, and constantly under pressure [1]. The Future We Want, a Rio+20 strategy, points out the priority of concentrating actions at global, regional and local scale, in order to improve the

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connection between the communities' needs and the environment's carrying capacity, inclusively inside protected areas [2]. This applies to the current protected areas for which is difficult to function as biodiversity *oases* in an increasing anthropic environment [3]. Due to the increasing pressure on natural resources in protected areas the need for social management solutions is becoming urgent [4].

The Natura 2000 network is considered a visionary and cooperation-generating project [1]. It was implemented in some very complicated conditions, such as the increased fragmentation of the EU territory's natural habitats, the growing urbanization which influence the lifestyle (74% of European population live in urban areas) [5], the high percentage of natural species and habitats under unfavorable and unknown conservation status (83%) as well as the failure of most of the environmental targets which are formulated in different EU policies for 2010 [6].

The gap between conservation, communities and economic activities stress due to: (a) rapid expansion of the Natura 2000 network based on predominantly scientific arguments, sometimes inconsistent, (b) frustrations related to the unilateral acceptance of the scientific arguments rather then socio-economic ones even on private lands, (c) the disputes related to the interpretation of the concepts that guide the functionality of the network (e.g. significant effect, favorable conservation status, ecological integrity), (d) the pressure on achieving the targets set by the EU in the environmental policies and (e) the increasing number of the public and private projects that are blocked because of conservation actions [7, 8, 9]. Such situations are common across most of the Member States, being ignited by the disinterest of the local officials regarding Natura 2000 network, the scarce public awareness of the networks' mission, the insufficient human resources to manage the sites, as well as the inadequate monitoring processes for a better understanding of the current environmental conditions [10]. Thus, even if the Birds and Habitats Directives promote an integrative approach, based on science and people inclusion [4], in practice, many problems related to the implementation of the network exist [3] and become visible through conflicts [1].

Within the Natura 2000 network, Young, Watt [11] consider three major categories of triggering events for environmental conflicts: (a) agricultural and forestry practices, (b) sectorial activities (e.g. industrial, commercial, and tourist activities) and (c) conservation policies (e.g. the designation or management of protected areas, protection of different species, and the management of invasive species). Bouwma, van Apeldoorn [12] consider two major categories of causes of conflict: (a) multiple conflicting uses of the sites due to management changes and (b) the management process, including the information, communication and implementation measures. Such conflicts occur at local and regional scale, although most of the time they engage actors that have roles/interests at upper scales.

When such conflicts have started to hinder the efficiency of the Natura 2000 network, the need to prevent and assess them has begun to flourish largely. Strategic Environmental Assessment, Appropriate Assessment of Significant Effects and the management process of the Natura 2000 sites are strong administrative processes which favor a participatory approach for the anticipation, assessment, management and/or resolution of environmental conflicts [13]. These processes, especially those at national and regional scale, need detailed information to efficiently manage and solve the environmental conflicts.

Several efforts have been devoted to this and several tools using qualitative and quantitative data have emerged in order to assess the environmental conflicts from the Natura 2000 sites. However, it is difficult to agree upon specific methods for conflict monitoring in Natura 2000 sites due to conflict' complexity and adjacent uncertainties.

Environmental indicators are tools used to monitor the current situation or to anticipate some changes [14]. After the implementation of Agenda 21, the environmental indicators have become a core instrument for monitoring the environmental policies performance [15]. Subsequently, Sustainable Development Solutions Network [16], and Millennium Development Goals [17] have promoted global, national, regional and thematic indicators to monitor different aspects related to sustainability [8]. The indicators' utility is defined by some key features. Thus, Maxwell, Milner-Gulland [18] consider that indicators have to be SMART (specific, measurable, ambitious, realistic, and time-bound), as well as credible, relevant (related to a target, a policy and applicable on an adequate scale) and legitimate [13, 14, 19, 20].

The high number of environmental indicators drove the need to structure them in different systems, such as the DPSIR model [21], Practice-Oriented Ecosystem Services Evaluation – PRESET framework [22], LUCCA [13], cumulative effect assessment [23] or Policy cycle [8]. The large scale applicability of these systems makes them useful for complex processes, phenomena or situations, such as conflict monitoring, which requires more in depth analysis, than isolated indicators.