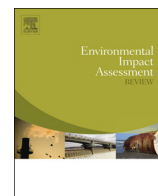




Contents lists available at ScienceDirect

Environmental Impact Assessment Review

journal homepage: www.elsevier.com/locate/eiar

Multi-actor involvement for integrating ecosystem services in strategic environmental assessment of spatial plans

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ARTICLE INFO

Article history:

Received 1 June 2016

Accepted 8 September 2016

Available online xxxxx

Keywords:

Multi-actor involvement

Ecosystem services

Strategic environmental assessment

Spatial planning

ABSTRACT

Integrating the ecosystem services (ES) approach into the strategic environmental assessment (SEA) of spatial plans is seen as a suitable option for considering the value of nature in decision making and policy processes. However, there is increasing concern about the institutional context and a lack of a common understanding of SEA and ecosystem services for adopting them as an integrated framework. This paper addresses this concern by analyzing the current understanding and network relations in a multi-actor arrangement as a first step for moving towards a successful integration of ES in SEA and spatial planning.

We based our analysis on a case study in Chile, where we applied a questionnaire survey aimed at the principal actors behind the planning process. The questionnaire focused on issues such as network relations among actors and on conceptual understanding, perceptions and challenges for integrating ES in SEA and spatial planning, knowledge on methodological approaches, and the connections and gaps in science-policy. The main findings suggest that a common understanding of SEA and especially of ES is still in an initial stage in Chile when we consider the context of multiple actors. Additionally, the lack of institutional guidelines and methodological support is considered the main challenge for integration. We conclude that preconditions exist in Chile for integrating ES in SEA and the spatial planning practice, but they strongly depend on an appropriate governance scheme which encourages a close interaction science-policy as well as collaborative work and learning.

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1. Introduction

Integrating the principles of sustainability in the elaboration of policies, plans and programs (PPP) is recognized as a key issue in achieving the UN development goals (UN, 2014; UNDP, 2010). However, this integration requires the alignment of a multi-actor arrangement of different sectors and institutions under a country's specific scheme in terms of planning and decision-making structures (Ahmed and Sánchez-Triana, 2008; UN, 2012). In this context, spatial planning aims at ensuring a harmonized allocation of physical space, land uses and their interactions by integrating economic, social and environmental objectives across sectoral policies (Fürst et al., 2013a; UN, 2008). Consequently, spatial planning potentially generates a range of impacts on the land system by driving changes in the quality, quantity and spatial distribution of ecosystem services (ES), which support human activities and well-being (Geneletti, 2011).

Worldwide, many countries have adopted strategic environmental assessment (SEA) as an instrument for integrating environmental and sustainability objectives into PPP (OECD, 2006; UNEP, 2004). Particularly in spatial planning, SEA plays a fundamental role by strategically addressing impacts on biophysical, institutional, social and economic settings (Partidario, 2012). The concept of ES is increasingly being recognized as a suitable framework for communicating and mainstreaming the value of nature in decision-making and policy processes. Making use of ES in SEA for spatial planning provides a number of benefits for a more efficient planning process and a more reliable consensus building considering existing advantages: 1) the legal status of SEA as a policy instrument in most of the countries allows a formal integration of ES into the planning process; 2) ES and SEA both consider an integrated approach beyond only biophysical components; 3) the indicator and model-based assessment of ES fits well into the analytical framework of SEA; 4) the information provided by ES analysis can be highly beneficial for enhancing the quality of SEA (Geneletti, 2011; Kumar et al., 2013). Fig. 1 illustrates the interrelations among ES, SEA and spatial planning, starting with the premise of developing a strategic and long-term vision in spatial planning, which in the end requires a collective understanding and consensus building among the multiple actors

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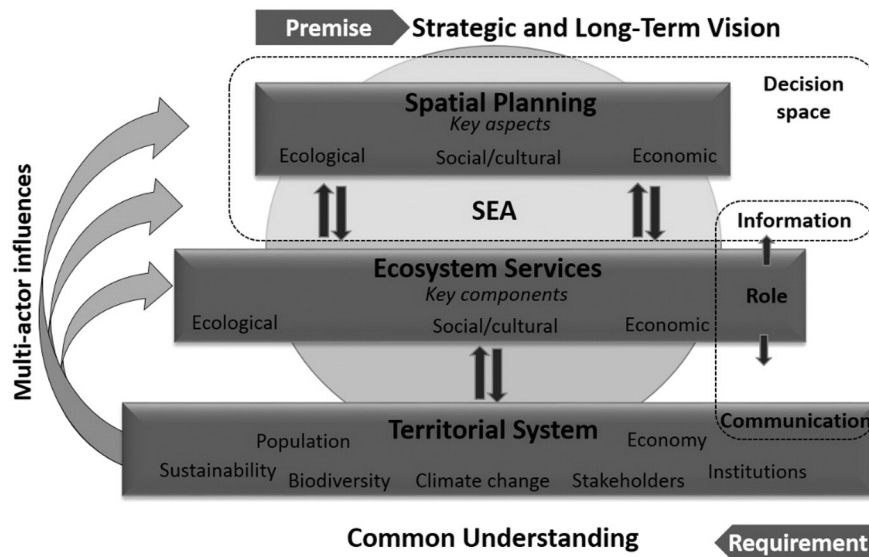


Fig. 1. Conceptual model for integrating ES in spatial planning through SEA.

involved. SEA provides a legal and institutional frame for translating the ES approach as a valuable information source into the decisional space and as a communication strategy into the territorial system. Finally, multi-actor arrangements, which are specific for each territorial system, influence the definition of key ES and their relevance for development as well as for shaping the decisional processes behind SEA and spatial planning.

Some examples of the use of ES in decision-making are provided by Balvanera et al. (2012) in Latin America, where the most common applications have been through public or private programs of payment for ecosystem services. In North America, a similar situation is described based on the research made by Goldstein et al. (2012) where the focus is on the economic implications of alternative scenarios of planning. In the case of Europe, Fürst et al. (2013a) consider an integrated analysis for supporting regional planning which goes beyond only economic components. Finally, as an illustration from Australia, Raymond et al. (2008) used the approach of community values for mapping ES in order to inform planning for conservation and environmental management. Thus, at present there are a number of applications on ES available in the literature, but many of them consider only one specific target, in some cases with a single focus on either economic, biophysical or social aspects, or even with a missing link between purpose and procedures as described by Nahuelhual et al. (2015). At this point, mainstreaming the ES approach in SEA offers the advantage of a more holistic and integrated consideration of the socio-ecological system as well as an effective framework of communication for promoting sustainability and informing PPP (Geneletti, 2015). Additionally, this process is framed under a strategic analysis which is decision centred and tailor-made in terms of flexibility and adaptation to the context and objectives of each decision-making scheme (Partidario, 2012).

Despite the increasing amount of research on this integrated framework, practical applications are still limited, and moving from theory to real-life decisions is recognized as an urgent need (Geneletti, 2011). However, in this transition towards real-life applications, there is a critical concern about the institutional context and the lack of collective grounds on key conceptual elements of ES and SEA among the different actors related to the planning process (Acharibasam and Noble, 2014; Nahlik et al., 2012; Noble et al., 2012). Consequently, it is fundamental to connect institutional structures and knowledge systems in order to facilitate and promote informed decisions in policy making and to evolve in a sustainable natural resource governance (Daily et al., 2009). At present, a shift from government as a single actor towards a multi-actor and community-based governance can be observed in

spatial planning. In this emerging paradigm, an appropriate flow of information and collective understanding might enhance the possibilities for collaborative planning and decision-making as well as social network relations (Opdam et al., 2015). The ES approach is particularly suitable for this purpose through bridging differences in sectoral philosophies on how to assess social-ecological impacts of adapted land use as well as on strengthening network relations among scientists, decision makers and stakeholders for improving the credibility and legitimacy in spatial planning (Ruckelshaus et al., 2015).

The aim of this research is to analyze the current understanding and network relations in a multi-actor arrangement as a first step towards a successful integration of ES in SEA and spatial planning. We consider the following research questions: 1) Who are the key actors to be included to enable the implementation of ES in spatial planning through the SEA process, and which are the current network relations based on their associated conceptual understanding? 2) How is the integration of ES in SEA and spatial planning perceived by the different actors, and which challenges are recognized? 3) Which methodological approaches are identified for SEA, and which are considered as shared between SEA and ES? 4) Which are the critical connections and gaps in the relation science-policy, and which channels of communication/information are used by the actors for their knowledge and understanding of ES and SEA?

In addressing these questions, we present results from a case study in Chile, a Latin American country which in 2014 started a pilot program of Experimental Ecosystem Accounting conducted by UNEP. Under this program, the concept of ES has progressively been introduced into the political discourse. Currently, the Ministry of Environment (MMA) has included for the first time the ES idea in national guidelines for sustainable spatial planning (MMA, 2015). Besides, SEA has been legally required since 2010 as a policy instrument for assessing the effects on the environment of spatial plans (Rozas-Vásquez et al., 2014). Therefore, given the window of opportunity that opens this new perspective in the country, we consider Chile as an interesting case for exploring the current state of understanding, network relations and challenges for integrating ES in SEA and spatial planning.

2. Methodology

2.1. Case study region

Chile (Fig. 5) is characterized by highly centralized decision-making structures in spatial planning that still result in economic, social, cultural

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