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Integrating cumulative impacts into strategic environmental decision-making: Tourism development in Belek, Turkey

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ABSTRACT

This paper focuses on the cumulative impacts of strategic proposals and projects, and searches how cumulative impact assessment (CIA) can be integrated into strategic decision-making. It reviews the CIA literature to address the shortcomings of impact assessments at both strategic and project levels. Subsequently, it suggests a synthesized approach bringing disturbance ecology and adaptive ecosystem approaches together to identify and predict impacts even in challenging data contexts. To illustrate how the synthesized approach can be utilized in CIA integration, it provides a case study from Turkey. The Belek tourism development plan is investigated by using the soft system methodology. Comparison of the actual and hypothetical situations of the case illustrates the possible and desirable changes to improve strategic decision-making. Accordingly, the paper addresses the key role of decision makers' mindsets and approaches to utilizing experience-based and science-based knowledges in considering cumulative impacts at the strategic level.

Introduction

The growing emphasis on the degradation of natural systems has precipitated a need to rethink how these systems can be taken into account. In practice, a systematic integration of environmental sustainability into spatial planning and policy projects has been introduced by environmental impact assessment (EIA) (US NEPA, 1969; EEC, 1985; WCED, 1987; UNCED, 1992). Nevertheless, the quality of science in EIA has often been criticized with regard to the accuracy of its impact predictions (Glasson et al., 2005; Wood et al., 2006; Snell and Cowell, 2006; Middle and Middle, 2010). Although the value of EIA as a public information tool is not in doubt (Buckley, 1987), most EIA documents do not consider future human activities beyond the project in question and make few testable predictions (Treweek, 1996; Bukley, 1995 in Warnken and Buckley, 1998). In addition, EIA deals only with the impacts on a given project area; hence it cannot provide an assessment of the cumulative impacts on larger areas caused by multiple projects (Therivel and Ross, 2007).

To overcome the limitations of EIA, a systematic assessment tool to measure the impact of strategic proposals (policies, plans and programmes), strategic environmental assessment (SEA), has been promoted (Dalal-Clayton and Sadler, 2005). One advantage of SEA is related to the stage at which EIA enters the decision-making process, which is considered too late to affect the final decision in a meaningful way (Arts et al., 2005; Sanchez and Silva-Sanchez, 2008). SEA plays a significant role in enhancing the integration of environmental concerns in policy, programme and planning processes (Therivel et al., 1999, p. 9). In some contexts, it is applied as an instrument for considering the economic, social and ecological aspects of sustainability (Eggenberger and Partidario, 2000; Koernoev and Thissen, 2000). Although SEA allows for better consideration of both sustainability aspects and cumulative impacts than EIA (Fischer, 2002; Therivel, 2004), its shortcomings are in responding to the principles of ecological sustainability and the findings of environmental impact assessment (Fischer and Seaton, 2002; Gachechiladze-Bozhesku and Fisher, 2012; Fischer, 2012). Ecological sustainability requires consideration of the interaction of multiple strategic initiatives over large areas and long time periods rather than of the restricted space and time of an individual plan (Therivel and Ross, 2007; Lemos et al., 2012).

The sustainability appraisal (SA), another assessment tool for strategic proposals, broadens SEA to address economic and social impacts as well as environmental impacts, and therefore encompasses three dimensions of sustainability (Fisher, 2007 in Gazzola et al., 2011). However, SA has clear parallels with SEA in responding to precautionary principles and assessment findings (Cooper and Sheate, 2004). Although both SEA and SA aim to identify and evaluate the cumulative, secondary and indirect effects, they do not address the principles such as 'irreversibility, uncertainty, present versus future perceptions of value, or the precautionary principle' (Wilson et al., 2006, p. 139). Hence, there is a need to enhance the ability of these tools in identifying and managing cumulative impacts for better environmental protection.

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In this respect, spatial planners have started to use appropriate appraisal (AA) as a complementary tool to SEA and SA in protecting special areas of conservation. AA differs from SEA and SA in that it requires material decisions to be based on assessment findings (Wilson et al., 2006). If the assessment establishes that a plan or project, alone or in combination with other plans or projects, will adversely affect the ecological sustainability of the site, the plan or project cannot be permitted (RSPB Guide, 2007). However, Article 6(3) of the Habitats Directive (92/43/EEC) designates AA as an obligation only for the Natura 2000 sites that are included in the European ecological network, not for all sensitive sites (Wilson et al., 2006).

Recognizing the shortcomings of the impact assessment tools, this paper regards cumulative impact assessment (CIA) as one continuous process and searches how the CIA of multiple strategic proposals and projects on a given environment can be integrated into strategic decision-making (i.e. in regional spatial strategies, policy, plans and programmes). It also recognizes lack of information, uncertainty and limited knowledge about the complexity of natural and social systems as the key challenges to the integration of CIA. Having considered difficulties with CIA in challenging contexts, this paper suggests an approach that synthesizes adaptive ecosystem and disturbance ecology approaches. It then applies this approach to a completed plan, the Belek (Turkey) tourism development plan, which was implemented with only individual project EIAs. In doing so, it aims to illustrate how CIA can be integrated into strategic decision-making in a challenging context. In the case study, systems thinking is adopted to deal with complexity in the conceptualization of the actual and hypothetical situations, and a practical framework offered by the soft system methodology (SSM) is used to develop and compare context diagrams. The following sections outline how the disturbance ecology and adaptive ecosystem approaches are synthesized, how systems thinking can be useful in drawing results from the comparison of actual and hypothetical situations, and how CIA can be integrated into strategic decision-making (illustrated by the case study).

Synthesizing disturbance ecology and adaptive ecosystem approaches

Anthropogenic disturbances can have extensive and dramatic effects on the symbiotic relations among elements of an environment (EPA, 1999). Humans do not only affect habitats and ecosystems directly, but they are also conducive in altering natural disturbance regimes (Johnson and Miyanishi, 2008). For example, rising global temperatures, driven largely by human activity, may increase the average intensity of hurricanes and tropical storms (Goldenberg et al., 2001; Webster et al., 2005).

Our capacity to work with natural systems, including disturbance, is only limited by our ability to understand their role at the temporal and spatial scales (Rogers, 1996). According to the most widely quoted definition, by White and Pickett (1985), ecological disturbance is 'any relatively discrete event in time that disrupts ecosystems, community or population structure and changes resources, substrate availability, or the physical environment'. The disturbance ecology approach is interdisciplinary and includes efforts from ecologists, biologists, geographers, historians, wildlife scientists, foresters, entomologists, pathologists, hydrologists and modellers. Greater understanding of multiple disturbance mechanisms and their interactions within nature requires scientific knowledge and data availability.

The adaptive ecosystem approach also involves identification of the ecosystems. It is based on the constantly monitoring of and responding to internal and external changes of the ecosystem and its social context. A vision of spatial planning as adaptive management is supported by non-equilibrium ecology, which results in a new appreciation of natural resources as dynamic, self-rejuvenating systems (Lenders et al., 1998 in De Groot and Lenders, 2006). Such a vision is a source of inspiration for stakeholders in the planning process and makes adaptive management less reactive and more anticipatory (De Groot and Lenders, 2006). The adaptive ecosystem approach considers stakeholder engagement as a fruitful source to formalize knowledge and meet the information requirements (Samhourt et al., 2011; Tallis et al., 2010).

Considering the need for data to understand complex ecological processes, disturbance mechanisms, interactions, cumulative effects and drivers, this study synthesizes disturbance ecology and the adaptive ecology approach, thus enabling the use of both science-based and experience-based data especially in contexts of poor data availability. Application of the synthesized approach in the case of tourism development in Belek requires data acquisition from a wide spectrum, from stakeholders to scientific documents.

Table 1
Elements of CATWOE analysis.

C	'Customers': the victims or beneficiaries of T
A	'Actors': those who would carry out T
T	'Transformation process': the conversion of input into output
W	'Weltanschauung': the world-view makes this T meaningful in context
O	'Owners': those who can stop T
E	'Environmental constraints': elements outside the system that it takes as given

Source: Checkland and Scholes (1990), p. 35

Methods

This research aims to illustrate how the CIA of multiple strategic proposals and projects on a given environment can be integrated into strategic decision-making. In order to achieve this, it has focused on the completed Belek (Turkey) tourism development plan and investigated how CIA can be considered at the strategic level in a challenging context with poor data availability. Since the Belek plan has been implemented with only individual project EIAs, the case study has involved both the hypothetical situation and simulated thinking. In building a hypothetical situation, insights gained from synthesizing the adaptive ecosystem and disturbance ecology approaches have been applied to the cumulative impact assessment of the case. Systems thinking has been adopted to understand and structure the actual situation in the Belek case. The soft systems methodology (SSM) has helped to deal with the complexity of the actual decision-making context and to design the case-study research. A practical, six-stage framework offered by the SSM has been used as a guide to develop and compare context diagrams for both the actual and hypothetical situations.

The CATWOE (customers, actors, transformation process, Weltanschauung/world view, owners, and environmental constraints) framework (see Table 1) offered by the SSM helps to simplify complexity in the decision-making system and to formulate root definitions related to strategic decision-making processes (Checkland, 1981, 2000; Checkland and Scholes, 1990).

This research is based on a qualitative understanding of the problem situation in Belek. A total of 30 interviews were conducted with officials from the Ministry of Culture and Tourism and the Ministry of Forestry and Environment, private sector entrepreneurs, environmental NGO representatives, other NGO representatives (from associations and chambers in the area), university members, and Belek residents. Care was taken to understand perceptions, expectations, conflicting views and positions of the key actors in relation to the problem situation.

The other data source comprised documents relevant to Belek's situation as well as the interviews. The Tourism Encouragement