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Using social data in strategic environmental assessment to conserve biodiversity

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ABSTRACT

Strategic Environmental Assessment (SEA) is increasingly used to assess land use plans in a way that is broader in spatial, temporal and conceptual scope than traditional Environmental Impact Assessment (EIA). Meanwhile, conservation scientists have recognised that successful biodiversity conservation outcomes rely on information about both biological priorities and the feasibility of undertaking conservation actions. SEA provides a framework for integrating information on the social determinants of conservation feasibility with supporting environmental legislation in order to achieve enhanced conservation outcomes. In this paper we argue that data on the social context of land use plans are vital to ensure effective biodiversity conservation outcomes that result from SEAs. We explore the Australian *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act) as a case example of how the integration of these data can be practically achieved within an existing legal process. While a range of social data is relevant to this type of assessment, we focus on the use of spatially-referenced social data in the context of land use planning. When applied to the design and implementation of land use plans, this type of information can improve the acceptability of conservation actions, enhance environmental stewardship, and minimise land use conflict through taking stock of the values and attitudes (precursors to behaviour) that are relevant to proposed land use change and conservation action. Through exploring the integration of these data into each of the stages of SEA under the EPBC Act, we show that opportunities exist to strengthen the effectiveness of SEA in delivering conservation outcomes without altering existing legal processes. Yet, for this to be done effectively, practitioners need to be cognisant of a range of theoretical and methodological challenges related to the generation and interpretation of these data, as well as the socio-political context in which they are applied.

Introduction

Assessing the environmental impacts of land use is a standard policy approach of jurisdictions around the world. Environmental Impact Assessment (EIA) is the earliest form of this and is today a tenet of environmental regulation. Since the 1990s, however, Strategic Environmental Assessment (SEA) has increased in prominence (Fundingsland Tetlow and Hanusch, 2012). SEA extends the scope of EIA, moving beyond a focus on isolated actions to also include policies, plans or programs (Partidário, 2000, 1996) and shifts the assessment of impacts to higher orders of decision-making (Fundingsland Tetlow and Hanusch, 2012). For these reasons, SEA has been praised for its ability to consider multiple impacts over much longer time periods and influence the choice of alternative development options rather than simply documenting expected environmental decline (Partidário, 2000, 1996). This is particularly important for biodiversity conservation, as traditional

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individual project assessments have been criticised for their inability to account for cumulative impacts within a larger socio-political context (Partidário, 2000; Slootweg et al., 2001). In contrast to EIA, SEA can "identify threats and opportunities for biodiversity at an earlier stage in the decision-making process" (Treweek et al., 2005, p. 175). Many jurisdictions around the world have therefore adopted elements of SEA as a means of protecting species and environments of national significance that are threatened by large-scale human actions, such as regional plans for urban development or resource extraction (Ng and Obbard, 2005; Uprety, 2005).

Since the 1990s, the field of conservation science has also increased in prominence. This field explores the ecological and socio-economic factors associated with conserving wild nature (Kareiva and Marvier, 2012). Recent conservation science literature has recognised that good outcomes often depend more on favourable social conditions that enable implementation of actions (including human values, attitudes, behaviours and political conditions), than on accurate ecological information (Ban et al., 2013; Carpenter et al., 2009; Knight et al., 2008, 2010, 2006; Knight and Cowling, 2007; Pretty and Smith, 2004; Raymond and Brown, 2011). Much of this research has focused on conservation planning (the identification and prioritisation of areas for conservation) and direct community actions, but has not been used as evidence to support SEA decision making. There is a need therefore to explore how insights from previous research can assist SEA policy officers to make more informed decisions on the social determinants of those outcomes.

Although social and economic factors are increasingly considered within SEA (Morrison-Saunders and Fischer, 2006; Vanclay, 2004), when it comes to evaluating biodiversity impacts, SEA applications around the world remain focused on the physical determinants of environmental damage with little consideration of how social factors might influence conservation outcomes. Treweek et al. (2005) (p. 193) stress that biodiversity impacts "may be influenced by social, economic and political factors" and that these "must be taken into account". This same sentiment was expressed by the International Association for Impact Assessment (2002), which held that SEA should address the interrelationships between biophysical, social and economic impacts rather than focusing on environmental impacts alone. Relevant data on socio-demographic changes, stakeholder values and behaviour or land use conflicts could help decision-makers identify both opportunities for conservation gains within landscapes, and potential threats that may impede conservation efforts (see Brown and Raymond, 2014).

The widespread use, breadth and inherent flexibility of SEA approaches make for an ideal opportunity to analyse how social data can be systematically considered alongside biophysical data in land use policy. At present there are no standard guidelines regarding the methods that should be used in SEA; each assessment should apply techniques appropriate to the context (Noble et al., 2012). This flexibility is a strength of SEA, yet it can also mean that practitioners are unsure how to gather and implement appropriate social data (Noble et al., 2012). Conservation feasibility refers to the likelihood that an action will be taken that will lead to an effective and sustained conservation outcome (Mills et al., 2013). It is a concept that is increasingly referenced in the conservation literature (Knight et al., 2010; Mills et al., 2013). However, there is currently no guidance on how social data on conservation might be included within impact assessment (Rauschmayer and Risse, 2005). This has implications for the assessment of the social acceptability and feasibility of land-use policies that aim to mitigate or offset the environmental impacts of new developments. We demonstrate here how quantitative measures of social determinants of conservation outcomes can be incorporated into existing methods for SEA, thereby addressing the "need for more systematic methodologies with guidance on methods selection at different SEA tiers and in different contexts" (Noble et al., 2012; p. 145).

In this article, we draw upon the Australian strategic assessment legislation (under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*) as a case study of how integrating social data within a statutory SEA approach can enhance conservation outcomes. Since SEAs have been most frequently and successfully applied to land use plans (Fundingsland Tetlow and Hanusch, 2012), we focus our discussion on spatial land use planning assessment, considering in particular how the mapping of social values might enhance SEA in this context. Although the social impacts of plans are important on social justice and democratic grounds (Vanclay, 2003), our concern is specifically how social dynamics might affect conservation outcomes. The emphasis of this article is thus on how to improve the 'substantive effectiveness' of SEA (see Chanchitpricha and Bond, 2013), measured by tangible biological outcomes rather than the procedural or transactive outcomes (e.g. improvement of policy process) that have been addressed by other authors (e.g. Sadler, 1996). We begin by reviewing the international literature on the social dimensions of SEA theory and practice. Using the Australian SEA process as a case study, we develop general principles for considering conservation-relevant social data in SEA. We finish by discussing the key lessons from this application and discuss general principles for considering social data in SEA.

Current use of social data in strategic environmental assessment

The definition of SEA is broad and assessment practice varies in form and quality. While SEA in Europe is regulated by the European Union (EU) Directive for SEA (Directive 2001/42/EC), many other jurisdictions around the world lack prescriptive guidance as to how SEA should be conducted. This lack of guidance extends to how the values, attitudes, opinions and behaviours of key stakeholders and the general public should be elicited and incorporated into the SEA process.

Existing methods used in SEAs that explicitly account for social data tend to focus on shared decision-making through participatory approaches (e.g. focus groups) (Gauthier et al., 2011; Rauschmayer and Risse, 2005), which may also contribute to Social Impact Assessment (Vanclay, 2003). Indeed, public participation is widely recognized as vital to effective SEA (Rauschmayer and Risse, 2005), since it provides "transparency and accountability in [the] assessment process" (Noble, 2009; p. 67). Participatory approaches have been applied to conservation issues. For example, collective bargaining of the location of protected areas (e.g. Game et al., 2011) may be an effective way of ensuring successful implementation. However, the focus of these approaches is on the decision-making process and building relationships rather than quantifying social values or preferences for development and conservation for affected communities. This type of participatory planning may not be realistic for large planning regions where there are a large number and diverse range of stakeholders making consensus difficult to negotiate.

We propose that applying quantitative (and often spatially-referenced) social data in an SEA process will enhance biodiversity conservation outcomes in many instances. These types of data can inform the likelihood that biodiversity matters will be threatened as a result of a proposed plan (for example wildlife populations under pressure from increasing nearby urban populations) (Guerrero et al., 2010), or the feasibility of undertaking conservation actions on the landscape (such as establishing a biodiversity offset reserve). Noble et al. (2012), (p. 144) note that although qualitative-based methods of gathering and processing information are often necessary when constrained by short time frames, "[t]here are instances where more quantitative-based methods