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Appraising offsets as a tool for integrated environmental planning and management

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ABSTRACT

The steady growth in major development projects suggests that firms will increasingly need to respond to more stringent environmental determinations and project approvals. Accordingly, this article positions offsets as a mechanism for integrated environmental planning and management in response to development impacts. The study uses a stakeholder analysis methodology to identify and explicate the environmental planning and management practices that can be delivered by offsets, while demonstrating how firms and governments may use offsets as a tool to plan and manage environmental conservation and protection. However, despite our positive expectations, the research found that the current framework of offsets rules, regulations and supporting infrastructure requires changes if effective planning and management of the environment is to be facilitated through the offsets mechanism.

1. Introduction

Early studies identified that Integrated Environmental Planning and Management (IEPM) practices must take account of technical and socio-political factors, multiple layers of government, and interdependent environmental policies and programs (Petak, 1980; Armour, 1990; Guo et al., 2001). At that time, the failure to see multiple environment stakeholder views; apply scientific and business disciplines to problem solving; and utilize sufficient resources, were identified as shortcomings (Petak, 1980). In sum, the linking of ecological, technical, and business resources for IEPM was considered critical if the environmental conservation goals associated with proposed developments were to be met (Margerum, 1997, 1999a). Thus, we have defined IEPM as 'the co-ordinated planning and management of land, water and other resources within a region, with the objectives of conserving or rehabilitating the resources and environment, ensuring biodiversity, minimizing degradation, and achieving specified and agreed land and water management and social objectives' (adapted from Hooper et al., 1999).

In contemporary business, the pipeline of large scale developments in Australia suggests that firms will be faced with a growing number of environmental determinations and approval conditions (The Australian Trade Commission, 2014). Hence, developers will need to comply with project approvals granted by the Australian federal government under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 (Commonwealth of Australia, 2015). Note, the EPBC Act 1999 governs the regulation of impacts on a specific set of environmental values, also termed 'matters of national environmental significance' (Commonwealth of Australia, 2009; Maron et al., 2015a). Importantly, project approval conditions set out the scope of a coordinated program of conservation and/or restoration work required to address the project's residual impacts (Commonwealth of Australia, 2015; Maron et al., 2015a). Accordingly, this raises two important questions.

First, is there a high utility mechanism firms can use to effectively plan and manage their conservation program? The early IEPM literature suggests that it is extremely difficult with developers needing to integrate complex scientific, cultural and business knowledge with socio-political relationships and interorganizational connections, all under an umbrella of environmental regulation (Petak, 1980; Margerum, 1997; Guo et al., 2001; Hanna et al., 2007). Second, what key practices should the mechanism possess to deliver effective IEPM? Some IEPM related studies

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argue that the planning and management functions should be implemented using practices such as applying combinations of scientific and indigenous knowledge (Lane and McDonald, 2005), landscape level analyses (Ramírez-Sanz et al., 2000; Selman, 2004), and transparency in program designs (Born and Sonzogni, 1995; Selin and Chavez, 1995; Rydin and Pennington, 2000; Selman, 2004). Hence, identifying a construct that enables IEPM is an important theoretical and practical matter.

Accordingly, we argue that the development and implementation of environmental offsets provides firms with a viable vehicle to undertake successful IEPM (BBOP, 2012). In this study, environmental offsets are defined as 'the measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken' (for example, a firm can take biodiversity protection actions to compensate or offset the impacts of a development project) (BBOP, 2012; Bull et al., 2013). In commending the use of offsets, we acknowledge that this construct can suffer from various planning and management deficiencies including time lags and risks of failure (McKenney and Kiesecker, 2010; Burgin, 2011; Maron et al., 2012). In this respect, we consider it important that identified offsetting practices should work to reduce these weaknesses (Bull et al., 2013). Hence, understanding how we might best use offsets for IEPM provides important contributions in the environmental planning, management and policy disciplines (Born and Sonzogni, 1995; Margerum, 1997; Koski, 2007; Delmas and Young, 2009).

The balance of the article is as follows. First, the study will review some of the IEPM and offsets literature, and present a model of offsets enabled IEPM. Second, the article will provide background to the use of offsets in Australia and the research method. The article's third section will summarize the results using a planning and management flow diagram and discuss the key findings. The paper concludes with recommendations of how policymakers and regulators might assist offsets-driven IEPM.

2. Literature review

2.1. Theory of integrated environmental planning and management

Early studies identified IEPM as highly complex and requiring greater emphasis in environmental practice communities (Petak, 1980; Armour, 1990; Guo et al., 2001). Theorists and practitioners have identified several characteristics of IEPM practices that are important (Margerum, 1997), including being holistic, interconnected, goal-oriented, coordinative, and strategic (Born and Sonzogni, 1995; Margerum, 1997). Accordingly, IEPM must encapsulate the connections between environmental, development and societal policies and resources; common stakeholder goals; collaboration between public and private organizations; and, making best use of strategic resources (Margerum, 1997, 1999b; Margerum and Hooper, 2001). In aggregate, these IEPM characteristics offer enhanced decision-making for successful environmental outcomes.

Several studies outline crucial business processes and procedures that should be implemented. Potentially the most significant process was the facilitation of transparent community based environmental planning and consultations (Selin and Chavez, 1995; Margerum and Born, 2000; Selman, 2004; Lane and McDonald, 2005). In addition to sharing objectives, this approach enabled inclusive application of scientific, indigenous and cultural knowledge in IEPM (Scott Slocombe, 1993; Rydin and Pennington, 2000; Lane and McDonald, 2005). Experts opined that IEPM must be founded on rigorous governance processes that evaluate environmental program costs, benefits and risks, having regard to available resources (Armitage, 1995; Ramírez-Sanz et al., 2000). Hence, IEPM should lever sustained improvements in socially-acceptable development projects and environmental conservation while acknowledging competing business and investment priorities (Conacher, 1994; Hwang, 1996; Margerum, 1999b; Ramírez-Sanz et al., 2000).

In closing, we would highlight that IEPM should strengthen the links between environmental impact assessments and planning and management systems (Eccleston and Smythe, 2002; Hanna et al., 2007). This reinforces the importance of IEPM, specifically the accurate measurement of environmental impacts, and establishing risk profiles for proposed conservation measures (Armitage, 1995; Hooper et al., 1999; Eccleston and Smythe, 2002; Hanna et al., 2007).

2.2. Environmental offsets

Early studies considered offsets to be an important tool for the planning and delivery of environmental conservation measures (Cutright, 1996; Hardner et al., 2000); with this study positioning direct offsets and other compensatory measures (OCM, or 'indirect offsets' as denoted in the international literature) (BBOP, 2012) as a vehicle for IEPM (Margerum, 1997). However, while offsets might appear to be the ideal IEPM device (Burgin, 2010), some drawbacks are present in the technical literature (Bull et al., 2013). For ease of discussion, we have split the views into planning and management dimensions.

In environmental planning, some of the key issues include the valuation of impacts to be offset; assuring offsets equivalence; defining impact reversibility; and undertaking offsets risk planning. The precision of complex offsets valuations can present a challenge as they combine factors such as land area, comparable biodiversity condition, habitat quality, and management expertise, using composite estimates (Latimer and Hill, 2007; Norton, 2009; McKenney and Kiesecker, 2010; Sherren et al., 2012; Gardner et al., 2013). In addition, net present value calculations may apply discount rates that vary from 2 to 14% depending on program and risk factors (Overton et al., 2013; Alvarado-Quesada et al., 2014). The planning of offsets equivalence is also contentious, with differences of opinion arising over proposed in-kind or out-of-kind (for example, same or differing species), and direct offsets (for example, site based conservation) or OCM (for example, research funding, financial settlements) (Bekessy et al., 2010; Overton et al., 2013). In particular, equivalence determinations where the impact-offset couple vary in type (or species), geographic location, and contextual ecology are considered to be vexed (for example, trading flora loss for fauna gain) (Bekessy et al., 2010; Burgin, 2010; Bull et al., 2013). Also, offsets should be planned so that measures work to reverse the development impacts (Norton, 2009; Morrison-Saunders and Pope, 2013; Regnery et al., 2013). However, some studies suggest this rarely occurs in practice, resulting in irreversible environmental losses (Morrison-Saunders and Therivel, 2006; Bull et al., 2013). Hence, when combined with the requirement for risk planning (Gordon et al., 2011; Maron et al., 2012; Curran et al., 2014), these types of offsets shortcomings should be minimized.

In environmental management, several distinct difficulties emerge. One of the primary issues of concern in offsets management is the accurate and consistent accounting of environmental losses and gains (Brownlie and Botha, 2009; Virah-Sawmy et al., 2014). In particular, dynamically changing conditions means that net losses and gains must be carefully assessed against fixed or variable environmental baselines (factoring in background changes), limit losses, and comply with policy (Bull et al., 2014; Gordon et al., 2015; Maron et al., 2015a). Indeed, some experts