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Wetland mitigation banking: Negotiations with stakeholders in a zone of ecological-economic viability

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ABSTRACT

Wetland mitigation banking (WMB) is an organizational form that attempts to balance the ecological goals of wetland conservation and the economic goals of development with the aim of improving the implementation of wetland offsetting. Given the resulting tension, it is important to understand how the way stakeholders employ the WMB regulatory framework affects the goal of No Net Loss of wetlands. In this study, we interviewed WMB stakeholders in Florida in the United States to identify their strategies during negotiations around different aspects of defining wetland mitigation credits (e.g. service areas, types of credit and credit release schedules). Using the approach of New Institutional Economics, we found that within a framework of well-defined rules that nonetheless allow flexibility, WMB enables a field of action for negotiating within a zone of ecological-economic viability – in part due to the stakeholders' interest in maintaining a good reputation in this field. Outside of this zone of viability a wetland mitigation bank proposal collapses for economic or ecological reasons.

1. Introduction

In order to address biodiversity loss, today many countries legally require developers to follow a mitigation hierarchy that includes steps to first avoid, then reduce, and finally to offset impacts on biodiversity (e.g. wetlands or endangered species). Biodiversity offsetting, whose aim is to allow development such as urbanization and infrastructure projects while ensuring No Net Loss of biodiversity through the ecological restoration of equivalent degraded natural habitat elsewhere, is thus present in various policies and scientific agendas worldwide (Gonçalves et al., 2015; Levrel et al., 2015; Madsen et al., 2011; McKenney and Kiesecker, 2009). The term 'biodiversity offsetting' (or 'compensatory mitigation') encompasses actions designed to offset impacts on natural systems such as wetlands, streams or rivers, or on endangered species.

In the United States, the standard method of biodiversity offsetting is for a specific development project to compensate for its impact. Known as Permittee-Responsible Mitigation (PRM), this approach determines mitigation on a case-by-case basis. However, reports from American scientific organizations (National Research Council, 2001) and the US Government Accountability Office (Government Accountability Office, 2005) have highlighted that PRM has not been effective in terms of ecological and economic outcomes. These organizations also report high rates of non-compliance.

To improve the efficacy of biodiversity offsetting, the organizational approach of mitigation banking was developed nearly three decades ago. Initially devised for aquatic resources (Hough and Robertson, 2009), it has since been adapted for endangered species (conservation banking). The principle of mitigation/conservation banking relies on a third party that anticipates and pools the biodiversity offset needs of developers by restoring or enhancing natural areas on a large scale prior to any impact. These areas are called 'mitigation banks' when wetlands, streams or rivers are impacted, and 'conservation banks' when endangered species are impacted. The regulator (e.g. the responsible government and/or state agency) releases credits to the mitigation/conservation bank based on an assessment of the ecological gains achieved by the restoration project. When developers need to compensate for an impact, they then buy credits from the mitigation/conservation bank. This regulation system has been generally perceived as more effective for three main reasons: (1) the offsetting actions are carried out prior to any impacts; (2) the mitigation/conservation banks are easier for regulatory agencies to monitor since they concentrate offsetting for many development projects in a few sites; and (3) the larger size of the restored habitats results in better ecological

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performance. In this study, we focused specifically on wetland mitigation banking (WMB).

Compared to PRM, in which a development project implements its own offsets or hires a specialist to do so, WMB – in which a third party implements the offset – is often mistaken for a market (Vaissière et al., 2017; Levrel et al., 2017). In fact, it is more accurate to consider WMB as a highly regulated approach that includes market features (Vaissière and Levrel, 2015). Nonetheless, it is still valid to pose the question if the development of WMB as an alternative offsetting organizational form that has market characteristics might jeopardize the goal of No Net Loss of wetlands (BenDor et al., 2011; Calvet et al., 2015). The New Institutional Economics (NIE) theory provides certain useful concepts that could help investigate this question by redefining it in other terms.

Among other things, the NIE theory analyzes the performance of organizational forms by their capacity to minimize transaction costs[1] (Coase, 1960; Williamson, 1985; Williamson, 1996; Ménard and Shirley, 2014). In the case of WMB, the question is whether this approach minimizes the costs of implementing wetland biodiversity offsetting (the 'transaction') compared to PRM. However, transaction costs are often difficult to assess directly (McCann et al., 2005). The NIE theory proposes that they can be assessed from three observable characteristics regarding the nature of the transaction: (1) its frequency (how often the transaction is repeated and how many stakeholder interactions it involves), (2) its uncertainty (the likelihood that the transaction will provide the expected results), and (3) its specificity (whether or not the specific knowledge and tools could be reused for another purpose). With regard to the WMB regulatory framework, it results in an increase in frequency (less agents responsible for the achievement of the offsets), a decrease in uncertainty (no temporal loss in wetlands as the ecological gain is already achieved when the impact occurs, and there is a better chance that a larger restored area will be conserved in the long term), and a decrease in specificity (a limited number of types of credits must cover the heterogeneity of wetlands) (Scemama and Levrel, 2014). More details are given in Section 4.2. Theoretically, these evolved transaction characteristics lead to a decrease in transaction costs (Saussier and Yvrande-Billon, 2007) and support the decision of policymakers to employ WMB. However, the issue of a decrease in asset specificity is important to consider. In the context of wetland offsetting, asset specificity is linked to ecological equivalence between the impacted and the restored area (in terms of equivalence in the type of wetland ecosystem, its location, and the temporal scale for achieving an ecological response from a restoration action). Therefore, a core issue is the maintenance of a high level of asset specificity to achieve the goal of No Net Loss of wetlands (Scemama and Levrel, 2014). However, if asset specificity is too high, this could lead to wetland offsets that are usable only for specific impacts; this is not compatible with the principle of WMB, which requires pooling offsetting measures from different projects. This results in tension between the development of WMB and its ability to achieve No Net Loss of wetlands.

The NIE theory also emphasizes the importance of analyzing organizational forms as dynamic objects that evolve through feedback loops of, for example, involved stakeholders (Ménard, 2012). So it is valuable to understand how the numerous stakeholders in WMB manage these tensions in practice and employ the WMB regulatory framework, in turn influencing how the transaction characteristics evolve. Additionally, as the literature cited above points out, it is important that researchers pay particular attention to the potential decrease in asset specificity.

The research question in this study was to analyze the relevance of using WMB by examining what levers the stakeholders involved use in practice, and how they negotiate trade-offs regarding economic efficiency (the profitability of a transaction) and ecological efficacy (the objective of No Net Loss of wetlands). The NIE theory was chosen as a tool to help identify if the behavior of WMB stakeholders tends to stray away or remain close to the objective of wetland offsetting by looking at two elements in particular: the characteristics of the transaction and the dynamic features of the organizational form. This study thus adds to the small amount of existing NIE literature in the field of biodiversity conservation from authors that have recently selected this framework to analyze biodiversity offsetting (Coggan et al., 2013a,b,c; Scemama and Levrel, 2014; Lapeyre et al., 2015; Vaissière and Levrel, 2015). We chose to study WMB in Florida, where a large surface area of wetlands has been destroyed over the last decades (Robertson, 2004; Robertson and Hayden, 2008; Hough and Robertson, 2009; Reiss et al., 2009; BenDor and Riggsbee, 2011), and which is also one of the first places in the world where WMB emerged three decades ago. We hope this study will contribute to helping policymakers in other countries to better anticipate the introduction of such innovative tools and to avoid stakeholders straying from the No Net Loss goal.

2. Materials and methods

With 11.4 million acres of wetlands and a relative wetland density of 20–35% of its total land area, Florida is one of the densest wetland regions in the United States (BenDor et al., 2011). In 2013, more of its surface area was covered by wetland mitigation banks (nearly 190,000 acres[2]) than in any other US state. For this field study on WMB, we visited 20 wetland mitigation banks around Florida and conducted 54 face-to-face semi-structured interviews in 2013. Each interview lasted half a day. Of the 54 individuals interviewed, 20 were environmental consultants, 28 were involved in a mitigation bank project, 7 worked for a regulatory agency, 4 were brokers, and 6 practiced other professions (e.g. lawyers, academics, NGO member/employees, developers/clients of a mitigation bank). Some individuals combined several roles: for instance, an environmental consultant might be hired as a wetland mitigation bank manager. The interviews gathered information on 71 out of the 91 approved or pending Florida wetland mitigation banks at the time the fieldwork was conducted (at the time of the study, there were about 1800 wetland mitigation banks in the United States). Of the 71 wetland mitigation banks studied, 58 were private commercial (i.e. the third party investing in the wetland mitigation bank was a private individual). The average surface area of a wetland mitigation bank in Florida is 8 km^2 (ranging from 0.2 km^2 to 98 km^2).

We asked the people interviewed to describe how WMB in Florida is supposed to work in theory, as well as to share their experience on how this organizational form functions in reality. We then analyzed this information using NIE theory, which was valuable in identifying the key elements on which the efficiency of the system relies.

3. What is wetland mitigation banking?

3.1. An overview

A *wetland mitigation bank* is a physical area where wetland restoration actions are carried out. It also refers to the juridical entity that receives *wetland mitigation credits*, whose type and quantity respectively correspond to the type of wetland to be restored and to the ecological improvements obtained from the restoration action. Developers then buy these credits as required to offset the impact of their development project. At least two rules regulate the sale/purchase of wetland mitigation credits. First, a wetland mitigation bank cannot sell all its credits at the outset of its creation; the regulators release the credits to be sold

[1] Transaction costs are all the costs linked to the organization of a transaction (such as the time spent to define public policy and regulations) and must be differentiated from production costs, which are the expenses related to the achievement of a transaction (such as the cost of ecological restoration works).

[2] RIBITS (Regulatory In-lieu fee and Bank Information Tracking System) database: https://ribits.usace.army.mil/ribits_apex/f?p=107:2 (accessed March 2013).