

# Building Institutions to Trade Ecosystem Services: Marketing Forest Carbon in Mexico

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**Summary.** — This paper analyzes institutional design, organizational capacity, and interplay in markets for ecosystem services. It examines the development of a market-based mechanism to commercialize forest carbon in Mexico through the Clean Development Mechanism (CDM). This is compared with a State-run carbon forestry program aiming to provide emission rights to voluntary, retail-based, carbon markets. Marketing forest carbon is hampered by lack of organizational capacity in government and civil society, uncertainties in the international policy process, and the interplay with existing common property institutions in rural Mexico. The paper identifies theoretical and practical barriers to implementing institutional arrangements for forest carbon trading.  
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*Key words* — Latin America, Mexico, ecosystem services, institutions, carbon, forests

## 1. INTRODUCTION

Markets for ecosystem services have been advocated in international policy and development practice as a means to enhance environmental conservation and to improve human well-being. Proponents argue that the benefits provided by ecosystem services or the costs of degradation are not captured in conventional markets and thus no economic incentives exist for their conservation (Costanza *et al.*, 1997). Pricing nature's services and assigning property rights to them will provide conservation incentives to resource users and ecosystem managers (Swingland, 2002).

This assumption has translated into the development of projects marketing ecosystem services or an equivalent proxy in both industrialized and developing countries (Landell-Mills & Porras, 2002; Robertson, 2004). In these projects, users of an ecosystem service, such as carbon dioxide fixation, watershed protection, biodiversity conservation, or landscape beauty, reward resource managers for the conservation of such service. Individuals, companies, and the public sector play important but differentiated roles, either as service providers, buyers, intermediaries, or regulators. Service providers often include farmers, rural communities, and

NGOs, while buyers are private companies, state agencies, and individual citizens. Private consultancies provide ancillary services, such as investment risk assessments, monitoring, and certification services, while the public sector sets up the legal, financial, and institutional means to allow for project development.

*Markets commercializing emission rights generated through carbon dioxide fixation by forest ecosystems* (hereafter referred as forest carbon markets) stem primarily from international efforts to regulate global carbon dioxide emissions in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. These agreements

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highlight the role played by land-use activities in regulating the global carbon cycle, in particular the potential of forest management and conservation to store carbon dioxide and ameliorate climate change. However, markets for forest carbon are problematic. Firstly, there may be competing perceptions among social actors regarding the certainty and scale of the climate change problem. Secondly, these actors may challenge the rationale behind the idea of planting trees to offset emissions produced elsewhere. Thirdly, there may be competing views regarding the resource management practices which should be allowed in marketing frameworks. Finally, setting a price for carbon may be controversial.

This paper aims to advance understanding of how markets for forest carbon are designed, how institutional linkages are formed, and how forest carbon projects interact with existing institutions for resource management. We adopt an institutional approach, similar to Elinor Ostrom's Institutional Analysis and Development Framework (Ostrom, 2005), focusing on questions of institutional design, organizational capacity, and interplay as conceptualized by Young (2002) to analyze actors' perceptions of the implementation of forestry projects developed under the Clean Development Mechanism (CDM) of the Kyoto Protocol and other voluntary initiatives for marketing forest carbon. Our analysis contributes to emerging debates on cross-scale institutions for sustainable resource management as articulated by scholars such as Berkes (2002).

In the next section, we examine the institutional dimensions of markets for forest carbon. We highlight the importance that institutional design, organizational capacity, and institutional interplay play in shaping the likely outcomes of these arrangements. In Section 3, we justify why we chose Mexico as a case study, present the research questions, and the data collection techniques. In Section 4, we describe the present status of markets for forest carbon in Mexico and we analyze stakeholders' interests and perceptions on the future development of CDM forestry projects. We do not undertake an evaluation of these projects because at the time of the research there was only one voluntary offset project located in the state of Chiapas and neither the CDM nor the State-based program had generated any project. Section 5 discusses our findings in the light of our institutional theoretical framework before drawing conclusions in Section 6.

## 2. AN INSTITUTIONAL APPROACH TO MARKETS FOR ECOSYSTEM SERVICES

Institutions shape the way in which humans relate to their environment. Some institutions exist or are created to mediate this relationship, and they constitute social practices in relation to the environment, assign roles to participants in these practices, and guide interactions among the actors (Dietz, Ostrom, & Stern, 2003; Young *et al.*, 1999). Institutions for environmental change can be designed and implemented at distinct levels of social organization, ranging from international regimes to national policies, or local rules of community resource management. They interact with other existing institutions, which in turn can be either formal (e.g., national laws) or informal (e.g., social habits and traditions), and such interaction can impinge on the institution in question.

We argue that markets for ecosystem services are evolving institutions which attempt to enhance or change natural resource managers' behavior in relation to ecosystem management through the provision of economic incentives. In theory, at least, these incentives should be generated by a self-sustained market in which consumers of ecosystem services channel financial resources to ecosystem managers. In reality, however, most projects trading ecosystem services have so far been negotiated on a bilateral basis, with no competition between service buyers, and the commodity has not been further exchanged or transacted. Landell-Mills and Porras (2002) emphasize that the creation of a well-functioning market-based institution for an ecosystem service requires of a well-defined trading commodity for the service in question; the existence of both demand and supply flows for the service; and an enabling legislative and institutional framework which outlines the rules for commodity trading and for the contractual relationship between supply and demand.

### (a) *Organizational capacity and institutional interplay*

We suggest that Landell-Mills and Porras' (2002) recommendations are not sufficient to guarantee that markets for ecosystem services are implemented on the ground. Their actual implementation will also be influenced by *organizational capacity levels* (Murdiyarso, 2005) and *interactions with other existing formal and informal institutions* (Agrawal, 2002; Barrett,

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