

## **SPECIAL PANEL:**

### **Assessing the performance of market-based policy instruments for reconciling environmental protection and rural development**

Coordinators: Roldan Muradian and Erik Gomez

**Corresponding coordinator:** Roldan Muradian - [R.Muradian@maw.ru.nl](mailto:R.Muradian@maw.ru.nl)

During the last decade we have experienced a radical shift in the policy agenda about how to reconcile environmental protection and rural development. Such shift consists in the decline of the “integrated conservation and development” and “command-and-control” (e.g., fence and forget) approaches and the thrive of voluntary and market-based incentive approaches. It is now time to appraise the extent to which market-based policy instruments (such as PES, carbon projects, biodiversity off-setting, etc.) are delivering what they promise in the fields of conservation and rural development.

The overarching questions that the special session will address are:

- Under what conditions can market-based approaches be superior to “integrated conservation and development” and “command-and-control” approaches in the quest of reconciling environmental protection and rural development goals?
- According to which criteria and what tools can be used to assess their performance?
- How does the analytical lens (e.g., academic field) adopted influence the interpretation of appraisal studies?
- Under which conditions can market-based instruments crowd out conservation motives and disrupt or enhance the effectiveness of important institutional fabric of local communities for the management of natural resources?
- To what extent are these policy tools contributing to create positive or perverse spill-over effects on rural economies in developing countries?

#### **“Implementing payments for ecosystem services in Brazil: lessons from the Oasis program”**

Carlos Eduardo Young<sup>1</sup>; Leonardo Barcellos de Bakker<sup>1</sup>; André Rocha Ferretti<sup>2</sup>; Carlos Kriek dos Santos<sup>2</sup>; Renato Atanazio<sup>2</sup>

<sup>1</sup>*UFRJ, Rio de Janeiro, Brazil;* <sup>2</sup>*FGBPN, Curitiba, Brazil.*

**Corresponding author:** Carlos Eduardo Young – [carloveduardoyoung@gmail.com](mailto:carloveduardoyoung@gmail.com)

#### **Abstract:**

This study examines the experience of the Oasis Program of payment for forest conservation associated with watershed protection in Brazil. The Oasis Program, sponsored by private and public donors and led by the Brazilian NGO “Fundação Grupo Boticário de Proteção à Natureza”, in association with municipal (local) governments, is already operating in three Brazilian municipalities (São Paulo/SP, Apucarana/PR and São Bento do Sul/SC) and it is in an advanced stage for implementation in municipalities other three states (Minas Gerais, Tocantins and Ceará). The results show that the Oasis Program is one of the most successful Brazilian experiences of Payment for Ecosystem Services aiming at forest conservation in rural

properties. Nevertheless, there are important problems and challenges yet to be solved, and this paper focuses on the lessons that can be learned from the Oasis Program.

In summary, the main difficulties faced by the Program are related to:

- (i) Involvement of local authorities with the Program;
- (ii) Acceptance by rural producers and landowners of the necessary changes in production practices and land use in order to fulfill the requirements to participate in the Program;
- (iii) Finding financial resources to support the Program;
- (iv) Defining the criteria to calculate the payments for each property;
- (v) Establishing the legal framework for consolidating the Payment for Ecosystem Services;
- (vi) Monitoring and evaluating the performance of Program.

An assessment of the experience of the Oasis Program so far has shown that:

- (i) It is necessary to establish a partnership with local authorities (municipal governments, water regulation agencies) before the launching of the Program. An active participation of the local governments is crucial to the success of the Program, especially in the management of the operations (payments, monitoring and other management issues).
- (ii) The presence of representatives of the rural producers in the executive board responsible for the execution of the Program is another component that increases the support for the Program.
- (iii) The identification of direct benefits of forest conservation (in this case, water supply and quality) is an important tool to convince companies associated to water resources (water supply, hydroelectricity, irrigation) to sponsor the Program and guarantee its financial sustainability. On the other hand, the risks of future funding problems where the sponsorship is made by donations or fiscal transfers dissociated from water services (for example, royalties from oil and gas exploitation).
- (iv) Payments should combine criteria for the opportunity cost of land and indicators of the quantity/quality of the ecosystem services guaranteed (such as area devoted to conservation, sustainable agricultural practices, presence of endangered or endemic species, etc.). Social criteria can also be considered in the distribution of the benefits.
- (v) The involvement of the Legislative power with the initiative is also important, since the effective implementation of the Program usually requires new laws, or the adaptation of existing legislation, to the situation of payment for ecosystem services, even if the source of the funding is private. For example, if not adjusted adequately, the tax regime to be applied to the payments may become an important obstacle to the initiative implementation.
- (vi) Performance monitoring and evaluation should be a concern since the inception of the Program. Not only the physical/environmental variables should be looked at (for example, forest area or water availability and quality), but also social and economic aspects should be examined (for example, changes in income and consumption patterns, housing conditions, health indicators, etc.). There should be a concern on the comparison between properties and households that are included in the initiative with those, in similar circumstances, who are not included. Finally, there should be an evaluation of "satisfaction" indicators (i.e. the perception of the participants about changes in their life quality before and after joining the program).

**“Payment for ecosystem services as a strategy for nature conservation and mediation of environmental conflicts - a proposed methodology to aggregate value for a program to be developed in Macaé de Cima protection area, Rio de Janeiro, Brazil”**

Maria Inês Paes Ferreira; Francisco Formagini Brant; Juliana Nunes Cristo Torres; Thais Gomes Dos Santos; Haydda Manolla Chaves da Hora (*IF Fluminense, Macaé, Rio de Janeiro, Brazil*)

**Corresponding author:** Maria Inês Paes Ferreira - [ines\\_paes@yahoo.com.br](mailto:ines_paes@yahoo.com.br)

**Abstract:**

This paper presents a possible solution for conflict mediation related to soil and water uses in the upper course of Macaé River Watershed, Rio de Janeiro, Brazil, applying environmental valuation method as a tool to aggregate values to a program involving payment for ecosystem services (PES) to small farms landowners who provide them. The values obtained helped to justify a differentiated practice in the management of water resources in this region, highly significant in the context of the attempts to change Brazilian Forest Code, with consequent amnesty to the noncompliance with obligations in implementation of Legal Reserve in rural properties, pointing means of financial compensation for the preservation of Atlantic Rain Forest biome that are based in voluntary adhesion to PSE Programs. For developing this proposal, a pretest of combined methods of valuation of environmental goods and services in the region under study was conducted, in order to depict the possibility of using mixed valuation methods that aggregate ecosystem and existence values for the combined environmental services related to water resources and biodiversity of the upper course of the Macaé River Watershed, focusing on Macaé de Cima Protection Area (APA Macaé de Cima), Rio de Janeiro, Brazil. The uncontrolled growth brought by petroleum industry in the lower course of the studied watershed, together with an increasing demand for livelihood, commercial and leisure activities, such as agriculture and tourism, directly implicates in the increase of environmental degradation in the eighth provincial hydrographic region of Rio de Janeiro State (RH-VIII), in which Macaé River Watershed is situated. The accelerated regional growth, in turn, is related to the activities of production and exploitation of oil and gas in the North of Rio de Janeiro State, highlighting the city of Macaé as a base for operations of petroleum producers. The regional population has experienced a deep transformation in traditional production chains because of growing demand for new job profiles and activities, which leads to disruption of original production systems originally, such as fishing and agriculture. Thus, the Macaé River is directly inserted in a scenario of sudden social and environmental changes. Historically facing human interventions in coastal environments of North of Rio de Janeiro State, the river has been sustaining various uses and services such as maintaining fish stocks, means of transport, and irrigation for agricultural production. Nowadays, as the main water body of the RH-VIII it has strategic importance for the country, being the source for water supply of more than 300,000 people, and also providing water for oil and gas production of Campos Basin. In the case of the mountain region of the Rio de Janeiro State, the use conflicts in environmental management of water resources is related to multiple uses regarding use and ownership of water and soil, among others. If mediation is not properly done, these problems can compromise water sources, erode river banks and cause pollution through the discharge of effluents into the water, influencing both quality and availability for the lower reaches of the watershed, featuring environmental conflicts. In the upper reaches of the basin, additional conflicts arose since the creation of APA Macaé de Cima, with consequent intensified enforcement of legal instruments for Permanent Preservation Areas established by Brazilian Forest Code, but historically managed by farmers, despite legal restrictions. In this context, we propose strategies to approach landowners and environmental managers, through implementation of PES programs, based on successful experiences that have been developed in various parts of the world, including Brazil, and specifically in Atlantic Rain Forest biome, where the APA in question is located. To appraise the environmental services of the upper watershed course, applying questionnaires that assessed willingness to pay for conservation of biodiversity and water resources with tourists and residents of the APA, and willingness to receive compensation with farmers, associated with the existence value of nature. The

value of recreational uses and services was estimated through a preliminary profile outlined by this study associated to the average travel costs and regional tourist flow, estimated by the present research. Considering comparisons among PSE Programs reported in literature, we suggest the implementation of a mixed type PSE program (counting on governmental and users resources), regarding the small spatial scale of interventions to be undertaken as well as the number of potential beneficiaries, to ensure the continuity of services provision.

## **“What explains the environmental performance of payments for watershed services? Results from a global meta-analysis of institutional-economic driving forces”**

Roy Brouwer; Abonesh Tesfaye; Pieter Pauw (*Institute For Environmental Studies, VU University, Amsterdam, Netherlands*)

**Corresponding author:** Roy Brouwer - [roy.brouwer@ivm.vu.nl](mailto:roy.brouwer@ivm.vu.nl)

### **Abstract:**

Payments for ecosystem services (PES) are a relatively new economic policy instrument, and the factors that drive and explain their environmental performance are poorly understood. Existing reviews of PES schemes and assessments of success and fail factors are mainly qualitative in nature. This includes, among others, special issues in the journals *Ecological Economics* (Engel et al. 2008; Farley and Costanza 2010), *Environment and Development Economics* (Bulte et al. 2008), and the *Journal of Sustainable Forestry* (Rebello 2009). The effectiveness of PES schemes may depend on several factors (Farley and Costanza 2010). Some of these factors relate to the clarity of the definition of the ecosystem services (ES) and a careful assessment of ES demand and supply, namely who are the beneficiaries who are willing to pay for the ES provision (Mayrand and Paquin 2004).

Here a meta-analysis of causal relationships between the institutional design and environmental performance of 47 payments for watershed services (PWS) schemes worldwide is presented. Due to the absence of reliable longer-term scientific data and adequate cross-evaluation of the additional effects of PWS on watershed service provision, there is limited evidence of the impacts of these schemes on sustainable levels of land-water management (Porrás et al. 2008; Tognetti et al. 2010). Moreover, the factors that contribute to the functioning of the schemes are not well understood. This paper addresses this knowledge gap through an assessment of the institutional economic factors that drive and explain the environmental performance of existing PWS schemes for which we were able to find sufficient information. Available secondary data and information about existing PWS schemes were collected from the Watershed Markets website, published and unpublished reports and articles, supplemented by a mail survey, and evaluated in a meta-analysis.

The results show a significant effect of the terms and conditions of scheme participation, including the selection of service providers, community participation, the existence and monitoring of quantifiable objectives, and the number of intermediaries between service providers and buyers on environmental achievement. Direct payments by downstream hydropower companies to upstream land owners for reduced sediment loads were identified as a successful PWS example. No other significant explanatory factors, such as specific type of watershed service, age or scale of implementation of the PWS scheme were detected.

The results are highly dependent on the reliability of the input variables, in particular the measurement of the environmental performance variable. Despite efforts to find quantitative information on the environmental performance of existing PWS schemes, such empirical evidence is lacking in many of the schemes studied. International monitoring guidelines are needed to facilitate comparisons, identify success factors and support the future design of cost-effective PWS schemes.

## **“Explaining the diversity of policy outcomes: institutional factors determining the performance of payments for ecosystem services”**

Erik Gomez-Baggethun<sup>1</sup>; Roldan Muradian<sup>2</sup>

<sup>1</sup> *Autonomous University of Barcelona, Spain;* <sup>2</sup> *Radboud University Nijmegen, Netherlands*

### **Abstract:**

The emerging evidence about the impacts of payments for ecosystem services (PES) already suggests that these policy instruments shed very diverse outcomes, both in terms of environmental and economic performance. Such diversity poses challenges to its proponents, since PES have been promoted precisely as more effective policy tools. From a Coasean perspective (approach that still dominates the conceptualization of PES), the directness of the payments and the relative simplicity of their institutional arrangements (based on the establishment of transactions) are expected to result in higher levels of social efficiency. From this point of view, the effectiveness of PES should depend basically on the allocation of property rights and the level of transaction costs. The diversity of outcomes constitutes nevertheless also a challenge to opponents of PES, who usually assume that the commodification of ecosystem services undermines other social mechanisms for environmental stewardship, and ultimately should result in the degradation of ecosystem functions by market forces. We argue however that, on one hand, the Coasean approach is not able to grasp the variety of institutional factors that determine the performance of PES, and, on the other hand, most opponents of market-based mechanisms for environmental protection overlook the fact that the outcomes of economic transactions are very dependent on local institutions. Using empirical findings reported in the literature about the implementation of PES in developing countries, in this paper we attempt to overcome this dichotomy by means of systematizing the institutional factors conditioning the performance of PES. The main objective of the paper is therefore to develop theoretical insights for understanding the relationship between the local institutional context and the performance of PES. Against the Coasean proposition that it would be sufficient to set the conditions for economic transactions between the concerned parties to solve environmental externalities, in this paper we argue that the outcomes of such transactions are highly dependent on a variety of institutional features. We identified the following institutional factors (a) the interaction between the promoted land use by the PES, local practices related to the use of natural resources and livelihoods; (b) the interaction between the PES schemes and other policies; (c) the role of intermediaries and the decision making structure; (d) the level of conflicts in the community and (d) the local distribution of access to resources. Our theoretical insights lead to conclude that generalizations about the virtues and limitations of market-based instruments for improving the management of ecosystems and contributing to rural development are more difficult than usually assumed.