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Ecosystem Services

journal homepage: www.elsevier.com/locate/ecoser

Classifying market-based instruments for ecosystem services: A guide to the literature jungle

Romain Pirard^{a,*}, Renaud Lapeyre^b

^a Center for International Forestry Research (CIFOR), Indonesia

^b Institute for Sustainable Development and International Relations (IDDRI), 41 Rue du Four, 75006 Paris, France

ARTICLE INFO

Article history:

Received 4 October 2013

Received in revised form

2 June 2014

Accepted 18 June 2014

Keywords:

Market-based instruments

Incentives

Biodiversity

Ecosystem services

Typology

Payments for environmental services

ABSTRACT

The definition and underpinning economic theory of market-based instruments (MBIs) for ecosystem services (ES) are yet unsettled matters. A refinement of their scope and a careful use of terms might facilitate communication among stakeholders and policy-makers. This article thus answers the research question: “How are MBIs for ecosystem services defined, reflected and assessed?”.

We analyse a sample of 106 peer-reviewed articles, which is representative of the scientific literature. The sample is distributed in the categories of a published typology to map existing instruments; yet their multidimensionality is challenging. We further find that a great diversity of research methods and evaluation criteria, as well as terms, is used in the literature. It is also observed that a large number of articles does not use scientific methods with new data, but resort to mere advocacy instead. This lack of a common theoretical and empirical framework, as well as consensus or comparative studies that would strengthen their conclusions, makes it difficult for practitioners to draw robust policy-relevant results. Interestingly, the articles presenting positive, negative, and mixed results were in almost similar proportions in our review. Therefore the application of harmonized assessment methods to better defined categories of MBIs with key shared characteristics might support evidence-based policies. For instance funding, incentive and allocation instruments should be more consistently differentiated.

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1. Introduction

While the public budget crisis in OECD countries prevents any major increase in Overseas Development Assistance (ODA) flows, the 10th Conference of the Parties (CoP10) to the Convention for Biological Diversity (CBD) in Nagoya in 2010 adopted a set of 20 targets to address biodiversity loss (Aichi targets)¹. To achieve these a Strategy for Resource Mobilization was adopted (Lapeyre et al., 2012), whose article 8 stipulates a commitment to ‘substantially increasing resources (financial, human and technical) from all sources, including innovative financial mechanisms’ (Decision X/3). This commitment has been quantified at the CoP11 in 2012: international financial

flows for biodiversity conservation and its sustainable management have to be doubled by 2015, using as reference level the average annual biodiversity funding for the years 2006–2010. Hence the necessity to mobilize ‘innovative financial mechanisms’ in a context of decreasing ODA was reiterated (decision XI/4, paragraph 21).

There is a clear trend in the conservation world in favour of market-based instruments (MBIs) (Pattanayak et al., 2010, Pesche, 2013)², and the ecosystem services³ discourse is widely promoted (Armsworth et al., 2007, Jeanneaux et al., 2012)⁴. However the

* Corresponding author. Tel.: +62 251 8622 622.

E-mail addresses: r.pirard@cgiar.org (R. Pirard),

renaud.lapeyre@iddri.org (R. Lapeyre).

¹ Included in the Strategic Plan for Biodiversity 2011–2020, the Aichi Biodiversity Targets are twenty headline targets guided by five strategic goals. The Targets reflect a strong political commitment and provide an incentive for global action as well as a flexible framework for implementation at the national and regional levels according to national circumstances and priorities. As a matter of illustration, Target 5 stipulates: “By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced”.

² Pesche (2013), undertaking a bibliometric analysis of the scientific literature with the Scopus search engine, finds a significant acceleration since 2005 of the use of the term “market-based instrument” in scientific articles dealing with environmental policies. While 30 articles citing MBI were published in 2006, approximately 100 were published in 2011. Similarly, while the term “economic incentive” was used in 155 scientific articles about environmental policies published in 2005, this term was used within 400 articles published in 2010.

³ In this article we mention ecosystem services but also include biodiversity. These concepts are closely related and our analysis intends to cover both as far as policy instruments are concerned.

⁴ Jeanneaux et al., 2012 use the Web of Science search engine and find, that up to 2009, 2 751 published scientific articles include either the term ‘environmental service’, ‘ecological service’ or ‘ecosystem service’. Interestingly, the authors observe a significant acceleration after 2006. While 200 articles citing the terms were published in 2005, after 2008 more than 500 articles on annual average cited these terms.

scope of applicability of MBIs remains debated (Muradian et al., 2010), and their differences with other types of policy instruments are not obvious in all cases. The use of the term 'markets' is promoted by a number of initiatives, e.g. the prominent project 'The Economics of Ecosystem & Biodiversity' (TEEB, 2009); yet it actually faces contrasted understandings. The term commonly suggests that the role of law – associated with regulations – disappears in the process, and tends to reinforce the statement by Ruhl et al. (2007): 'the component that is least developed in the literature on ecosystem services is the law' (p. xviii).

The debate on the use of these instruments is lively and important. For instance, Europe is very strong in its support for these instruments as is reflected in key documents: the EU Biodiversity Strategy to 2020 states that '[Europe] will promote the development and use of innovative financing mechanisms, including market-based instruments' (EC, 2011, p. 9). Yet, contrasting positions are to be found in other parts of the world, where 'there remains much doubt, particularly in the Southern Hemisphere, about the ultimate desirability of markets' (Wunder and Vargas, 2005, p. 1). By way of illustration, negotiations on climate change in the framework of the UNFCCC (Climate Convention) have experienced great resistance from a group of countries led by Bolivia; this group fiercely opposed any reference to carbon markets for the implementation of the REDD+⁵ mechanism.

As discussed by Pirard (2012), the range of MBIs presented as such in the literature is very broad and includes a diverse array of policies. Just to name a few, this previous research describes fiscal policies with taxation or subsidies (e.g. carbon taxes or Agri-environmental Measures (AEM) within the Common Agricultural Policy), Payments for Environmental Services more or less related to the classical definition by Wunder (2005)⁶ and including prominent schemes such as the Costa Rican *Pago por servicios ambientales* (Sanchez-Azofeifa et al., 2007), certification schemes referred to as non-state market-driven governance systems by Cashore et al. (2004), or tradable rights or permits such as cap-and-trade systems for greenhouse gas emissions or Individual Transfer Quotas for fisheries.

With all these elements in mind, we argue that a clarification exercise is critical for several reasons. Firstly, theoretical confusion has led to lengthy discussions in international arenas resulting in delayed implementation of policies (Lapeyre and Pirard, 2013). As stated at the dialogue seminar on 'Scaling up Biodiversity Finance' organized by the Secretariat of the CBD in Quito in 2012, 'the issue of innovative financial mechanisms for biodiversity proved more difficult [at Cop10 in Nagoya] and was dropped, allowing agreement on the other issues (...)' (Farooqui and Schultz, 2012, p. 6). At the Rio+20 Conference, Presidents Evo Morales of Bolivia, Rafael Correa of Ecuador, and Jose Mujica of Uruguay denounced the 'new colonialism' of nature commodification through market mechanisms.⁷ This eventually leads for instance to opposition by ALBA countries⁸ to the development of

payments for environmental services (PES) commonly presented as novel and efficient instruments relying on markets. This is counterproductive and ironic, as most PES experiments have little to do with markets. Hence, 'the terminology might be important for the further development of [lessons learnt on scaling-up finance for biodiversity]. Likewise, many felt the expression 'markets for biodiversity' should be avoided as this general concept includes a broad range of schemes [...] and that in any discussion of markets, it is important to be clear about what kind of market is being discussed' (Farooqui and Schultz, 2012, p. 3). Our research also aims at reducing the side effects of such market rhetoric.

Secondly, dialogue and communication are at the basis of well-informed and appropriate policies. It is thus ineffective and even potentially damaging to lack agreed definitions and understanding as far as policy making is concerned. As stated by Landell-Mills and Porras (2002), 'policy-makers' enthusiasm for market development [for ecosystem services] is not matched by practical understanding' (p. i). The unsettled rhetoric of markets could probably divert funds from efficient traditional programs towards so-called novel market approaches, not necessarily preferable. Maintaining a certain level of illusion regarding the content, nature and scope of MBIs will do no good in the longer term to environmental management. And it might also generate backlash effects when many come to realize that in fact the rolling-back of the State with MBIs is largely a myth.

Thirdly, we assume that this confusion is not only the result of an excitement around new instruments, but also quite a conscious movement in favour of some approaches that lost popularity. Mostly, it refers to these policy instruments that heavily involve State interventions, and taxes and subsidies are a perfect illustration. Promoting these with new names might enable their enhanced implementation: the PES programme in Costa Rica, which is the emblematic example of the development of new market approaches to conservation, has been named a subsidy in disguise recently by Fletcher and Breitling (2012): 'While the program [...] is commonly considered a paradigmatically neoliberal 'market-based' conservation mechanism, its actual operation to date has deviated substantially from this description' (p. 402). Yet, can such attempts to promote public policies with misleading terms and concepts globally improve policy making and the comparative evaluation of public policies that should prevail for optimal long term results?

For all these reasons, this article aims (a) at classifying market-based instruments, as described in the scientific literature, into several homogeneous categories based on the economic characteristics of these policy instruments; and further (b) at reporting how these scientific articles evaluate and describe MBIs. These steps are intended to answer the research question: "How are MBIs for ecosystem services defined, reflected and assessed in the scientific literature?"

The article is structured as follows. In the method section, we acknowledge previous attempts to define MBIs, propose a clarification of their scope and nature with the presentation of a recently published typology, and detail the process to gather a representative sample of the scientific literature in this field with 106 references (Section 2). Thereafter we undertake an analysis of this corpus in light of the typology in order to explore the diversity of MBIs, their economic features, their proposed justifications and the evaluation criteria and methodologies applied in the literature (Section 3). In the conclusive section, we discuss the multi-dimensional nature of these policy instruments and provide recommendations to move the research agenda forward and make it as relevant as possible to policy-makers (Section 4).

⁵ REDD+ stands for Reducing Emissions from Deforestation and Degradation, and the role of Sustainable Management of Forests and Enhancement of Forest carbon stocks in Developing Countries. This mechanism is supposed to financially support the fight against deforestation in developing countries. The debate on the scope of "market-based instruments" as mentioned in Decision 2/CP.17 for the climate COP17 in Durban in 2011 is all but obvious (Pirard et al., 2012)

⁶ According to Wunder (2005), payments for environmental services can be defined as a voluntary transaction where a well-defined environmental service (ES) is being 'bought' by a (minimum one) ES buyer from a (minimum one) ES provider if and only if the ES provider secures ES provision.

⁷ Proposal of the Plurinational State of Bolivia for the United Nations Conference on Sustainable Development (Rio+20): 'The Rights of Nature'.

⁸ The Bolivarian Alliance for the Peoples of Our America, bringing together the countries of Latin America and the Caribbean led by socialist governments.

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