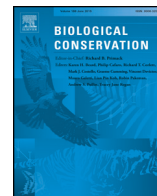




Contents lists available at ScienceDirect

Biological Conservation

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

Biodiversity offsetting: Clearing up misunderstandings between conservation and economics to take further action

Anne-Charlotte Vaissière^{a,*}, Harold Levrel^b, Pierre Scemama^c

^a UMR 5474 LAMETA CNRS, Université de Montpellier, Faculté d'économie, Avenue Raymond Dugrand, F-34960 Montpellier, France

^b UMR 8568 CIREN, AgroParisTech, Campus du Jardin Tropical, 45 bis, avenue de la Belle Gabrielle, F-94736 Nogent-sur-Marne, France

^c IFREMER, UMR 6308 AMURE, Rue Dumont d'Urville, F-29280 Plouzané, France

ARTICLE INFO

Article history:

Received 30 March 2016

Received in revised form 27 October 2016

Accepted 28 November 2016

Available online xxxxx

Keywords:

Biodiversity offsetting

Sustainability

Commodification

Marketization

Privatization

Ecological restoration

ABSTRACT

Biodiversity offsetting (BO) is increasingly adopted as a conservation tool by many countries while it has received several critics among which its possible links to several forms of Nature economicization. We believe that some of these concerns rest on misunderstandings generated by the difficulty to interpret economic principles from ecological viewpoints and the lack of a common language between conservationists and economists. Because this issue is vivid and the concepts not yet stabilized, key aspects of the potential advances and limits of BO to conservation practice must be clarified. This short communication (1) addresses the links between the BO concept and the central sustainability principle and (2) clarifies key assumptions regarding three potential Nature economicization roles recurrently attributed to BO. We show that the BO principle reflects a move from welfare equivalency mostly inherited from mainstream economic approach based on weak sustainability criteria toward an ecological economic approach based on strong sustainability criteria and the quest for ecological equivalence. However, the way the countries implement BO influences the possibility to reach strong sustainability. Although we show that BO could be linked to a certain acceptance of “commodification”, we suggest that BO can neither be considered as a “marketization” and nor generally as a “privatization” of Nature. We therefore argue that these conceptual misunderstandings should not hamper conservation objectives and that BO must be framed within interdisciplinary approaches combining ecology, economy and socio-political aspects. We conclude that conservation science has a major role to play in defining the boundaries of BO.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Biodiversity offsetting (BO) has received a surge of interest these last years by the academic, political and civil society spheres (Calvet et al., 2015). The principle of this public policy tool is to reach a no net loss (NNL) goal of biodiversity through the compensation of residual impacts of development projects on biodiversity by ecological restoration measures implemented offsite (i.e. out of the impacted site). In most of the countries where such a policy exists (45 countries already actively use BO, see Madsen et al. (2011) for a review), developers must follow a mitigation hierarchy including steps to first avoid, then reduce and, as a last resort, offset significant residual impacts on protected biodiversity. For us, and for many researchers and international organizations, “biodiversity offsetting” addresses endangered species but also various protected habitats and ecosystems such as wetlands.

In a recent special issue published in *Biological Conservation*, BO are said to represent both “the dream and the nightmare of conservation” (Devictor, 2015 p.484). Indeed, on the one hand, BO can be considered

in line with a main goal of biological conservation, as a promising tool to stop the erosion of biodiversity. On the other hand, however, some people find a structural incompatibility of BO with conservation since it starts with destruction. This new tool is thus regularly denounced as a way to facilitate development projects and as creating tensions and competition with existing conservation tools (Gordon et al., 2015; Ives and Bekessy, 2015; Walker et al., 2009). Beyond its very principle, a poor implementation of BO – caused by negligence or weak knowledge and practices – was showed to jeopardize its ability to get closer to the NNL goal (Mack and Micacchion, 2006; Matthews and Endress, 2008; Quigley and Harper, 2006). Overall, the current implementation of BO is not uniform worldwide and the very notion is not stabilized, including at the research level. It would be premature to pretend having a univocal opinion on this very active topic.

Many researchers in biological conservation and other disciplines are still working on the way to improve the knowledge and ecological performance of BO measures but also on the related socio-economic and organizational aspects. Although highlighting the limits of BO implementation is necessary, we believe that some of the most common critics of BO are not appropriate and might lead to interfere with the scientific discussions regarding the pros and cons of this policy tool with

* Corresponding author.

E-mail address: anne.charlotte.vaissiere@gmail.com (A.-C. Vaissière).

respect to biodiversity conservation objectives. Whether they focus on the very principle of BO or on the organizational and institutional innovations dedicated to it, we have noticed that such critics are often linked to a common concern regarding the use of “economic” logics or tools in the realm of nature conservation. Besides, [Calvet et al. \(2015\)](#) described an increasing use of the economic rhetoric within the BO context, although this rhetoric does not seem so new at the wider scale of public policies and other initiatives for nature conservation ([Levrel and Missemmer, 2016](#)). In particular, BO has been tied to several keywords including commodification, substitution, sustainability, equivalence, privatization and marketization of Nature hence generating vivid debates. Rather than ending up as deadlocks, we argue that these discussions should lead to improve – rather than mask – the current frequently unsatisfying implementation of BO.

In this short communication, we highlight two central misunderstandings regarding economic concepts linked to the notion of BO (note that many others could be considered, e.g. [Aubertin et al., 2016](#)). We believe they are mainly caused by the difficulty to interpret economic principles from ecological viewpoints and vice e versa.

We thus propose to clarify two of the most controversial issues in order to go beyond a theoretical block and highlight the possible advances or limits for nature conservation. The first is the strong/weak sustainability principle in which the concept of BO is anchored ([section 2](#)). The second deals with the supposedly link between BO and commodification, marketization and privatization of Nature ([section 3](#)). We will not fully address these two points but we propose some clarifying definitions along with illustrative examples and references. We finally conclude on the practical implications of these discussions for biodiversity conservation and advocate for a more interdisciplinary approach of BO in which conservation must help to set the boundaries of BO.

2. Is biodiversity offsetting aligned with the weak or strong sustainability principle from an economic point of view?

Among most regular critics of BO the potential connection between this tool and neoliberal economics is often stated (e.g. [Apostolopoulou and Adams, 2015](#); [Feydel and Bonneuil, 2015](#); [Ives and Bekessy, 2015](#); [Robertson, 2004](#); [Spash, 2015](#)). To understand what is at stake, however, it is necessary to emphasize the plurality of economic schools and their major assumptions related to the central idea of “sustainability”. The concept of sustainability does not have a unique and shared definition among disciplines and has different meanings depending on the context ([Brown et al., 1987](#)). The most popular definition of sustainability is associated with the concept of “development” (e.g., see the largely cited and used [IUCN \(1980\)](#) definition of “sustainable development”). In this case, the basic idea of sustainability is to consider numerous types of relations between humans and the environment. In the case of BO, sustainability has a more specific meaning and reflects the ways to manage the impacts of humans on Nature. From an economic perspective, sustainability can range from “weak” to “strong”. A weak sustainability corresponds to a situation where biodiversity can be replaced by non-natural elements considered to be equivalent. In contrast, assuming a strong sustainability prevents from genuine substitution of biodiversity by non-natural components. In other words, if the goal of BO is to reach the NNL of biodiversity, this tool will represent an interesting conceptual shift from usual weak sustainability to stronger a one.

More precisely, weak and strong sustainability are derived from the compensation principle, initially based on the theory of social utilitarianism within the perspective of welfare economics. Within the context of projects having impacts on biodiversity, this approach considers that human populations derive a utility from Nature. Thus, a destruction of some natural components (considered as belonging to a “natural capital”) is acceptable only if it is at least counterbalanced by the economic growth (considered as an increase of “physical capital”). This famous Kaldor-Hicks compensation criterion ([Hicks, 1939](#); [Kaldor, 1939](#))

requires calculating how much benefits a project provides for a human population and how much costs this project generates for another human population. If the benefits are higher than the costs, part of the benefit to the first human population will be devoted to compensate for the losses of the second human population. Such an ideal project will create a net positive impact for the whole human population. Note that regarding biodiversity the underlying assumption is that biodiversity is substitutable with physical capital once it creates economic wealth, and that it is possible to compensate the damages suffered by people who have been injured by these impacts. This first type of compensation, that can be named “monetary compensation” of economic and well-being losses, was the most common form of compensation used during the two last centuries ([Fressoz, 2013](#)). Indeed, this approach of the compensation principle only focuses on injuries to people. This is the reason why this criterion is considered to adopt a weak sustainability principle that underestimates the need for conserving biodiversity and dismisses the singularities of natural capital ([Pearce and Atkinson, 1993](#); [Ekins, 2003](#)).

During the 70s, however, the concept of “biodiversity offsetting” appeared both in Europe and the US ([Hough and Robertson, 2009](#); [Levrel et al., 2015](#)). The tenants of ecological economics advocated for a paradigm shift in considering that biodiversity must be compensated for itself. This economic school of thought, considered as “heterodox economics” compared to “mainstream” or “orthodox economics”, has built most of its theoretical framework around the concept of strong sustainability ([Costanza, 1991](#)). Strong sustainability is based on the idea that the different forms of capital are complementary but not substitutable. It means that it is important to maintain a certain level of natural capital even when its decrease could generate gains of well-being. In non-economic terms, this implies that it is no longer acceptable to substitute natural capital by manufactured capital and/or to compensate the injured people with money. From this angle, biodiversity offsets can be considered as a specific type of compensation that falls within a strong sustainability principle. In practice what a “certain level of natural capital” means must be carefully considered. In particular, the authorized level and conditions of substitutability, the decision rules to establish “ecological equivalence” or the difficulty to align the spatial and temporal dynamics of impacted and restored biodiversity represent major challenges.

Therefore, switching progressively from weak to strong sustainability as allowed by BO seems to represent a positive contribution to conservation at least as a setting of a more virtuous agenda. [Table 1](#) shows several possible levels of equivalence and associated types of sustainability from an economic point of view within the context of BO. Levels 2 to 4 are different levels of strong sustainability with a decreasing interchangeability of natural capital leading to an increasing level of strong sustainability. While the level 4 seems to be the most appropriate to reach a NNL of biodiversity, most of the countries with a BO policy still have practices corresponding to levels 2 and 3. Level 4 actually splits up in several sub levels linked to a gradient of practices with regard to the ecological equivalence aim. For instance, biodiversity offsets have been originally – and this is still the case in many countries – sized on a “surface” basis. In other words, the destruction of one hectare is for instance simply replaced by an amount of hectares sometimes with ratios to take into account the uncertainty of ecological restoration (this approach can be equated to a low criteria as it simplifies biodiversity to a surface). The most advanced BO policies, like those ongoing in the US, have rather adopted a more functional approach in accounting for the conservation status of the impacted and restored areas. The latter approach is thus adopting high criteria but the real baseline of these ecosystems is still rarely taken into account when sizing the BO ([Maron et al., 2015](#)). For instance, if the restored area was anyway in a dynamic of natural regeneration, its gains would be necessarily overestimated and hence, some authorized losses never offset. This gradient can be completed by the inclusion of more specific definitions of what is considered to stand for interchangeable species and habitat.

Download English Version:

<https://daneshyari.com/en/article/5743292>

Download Persian Version:

<https://daneshyari.com/article/5743292>

[Daneshyari.com](https://daneshyari.com)