



# Compensating Environmental Losses Versus Creating Environmental Gains: Implications for Biodiversity Offsets<sup>☆</sup>



Philippe Le Coent<sup>\*</sup>, Raphaële Préget, Sophie Thoyer

LAMETA, Univ. Montpellier, CNRS, INRA, Montpellier SupAgro, Univ. Paul Valéry, Montpellier, France

## ARTICLE INFO

### Article history:

Received 27 July 2016

Received in revised form 28 February 2017

Accepted 10 June 2017

Available online 28 June 2017

### JEL Classification:

Q15

Q18

Q57

### Keywords:

Biodiversity offsets

Agri-environmental contracts

Choice experiments

Behaviour

## ABSTRACT

In the economic literature on the motivations underlying voluntary contributions to environmental public goods, little attention is granted to the way the overall objective of the environmental program is framed. A program which contributes to an increase of environmental quality to its original level, after it was damaged by human intervention. How does it impact participation rates and contribution levels? This paper addresses this issue in the context of agri-environmental schemes for biodiversity conservation. It compares farmers' willingness to participate in two contracts, one being framed as part of a biodiversity offset program, the other one as part of a biodiversity conservation program. We demonstrate with a discrete choice experiment that biodiversity-offsets programs need to offer a higher payment to enroll farmers compared to biodiversity conservation programs. This result is essentially driven by farmers who declare to have organic practices.

© 2017 Elsevier B.V. All rights reserved.

## 1. Introduction

Legislation in an increasing number of countries imposes that unavoidable biodiversity losses resulting from infrastructure development (road, railway line, new buildings etc. ...), be compensated by the creation of equivalent biodiversity gains, the so-called Biodiversity Offsets (BO). [McKenney and Kiesecker \(2010\)](#) indeed review a set of offset policy frameworks—US wetlands mitigation, US conservation banking, Australian offset policies in New South Wales, Victoria, and Western Australia, and Brazilian industrial and forest offsets. In the French context, BO requirements have been mainly fulfilled so far through the acquisition of agricultural or degraded land by developers, followed by their ecological restoration.

However, this solution faces land availability constraints and can be very costly in terms of initial investments. Also it is not well accepted by farmers who consider it as an additional source of competition on the land market, driving prices up. An alternative solution, based on the

payment for environmental services principle, is emerging in France. Developers finance agri-environmental biodiversity offset schemes (henceforth ABOS) in which they offer contracts to farmers settled in the area where the offset must be supplied ([Calvet et al., 2017](#)). Enrolled farmers accept to adopt farm management, land use and farming practices for a given period (5 years usually) in return for a payment, in order to create “equivalent” favorable habitats for species affected by development. Of course, without farmers' participation, the ABOS option cannot be successful.

In practice, ABOS are very similar to existing Agri-Environmental Schemes (AES) financed by the European Union to implement measures of biodiversity conservation on farmland. Indeed, it is often the case that the type of habitat that must be created to offset biodiversity losses are also habitats that the European Union seeks to preserve in protected areas. Thus, technical requirements, in terms of prescribed farming practices and land management, are often identical for ABOS contracts and AES contracts when proposed in the same farming area. However ABOS and AES contracts, although similar in their technical requirements and overall design, differ systematically in specific features which do not change monetary cost-benefit ratio for farmers but may have an impact on their subjective perceptions of the contracts and therefore on their willingness to participate. First, contract purposes are presented in a very different way: ABOS are presented to farmers as contracts aiming at compensating biodiversity damages generated by a development project, while AES are advertised as contracts aiming at the conservation or the improvement of biodiversity in response to

<sup>☆</sup> This research was co-funded by the ONEMA in the framework of the 2011 call for research projects “Changer les pratiques agricoles pour préserver les services écosystémiques”, supporting the implementation of the French National Action plan Ecophyto 2018 under grant agreement 1073/2012 ‘Coud’Pouce’ and the European Union’s Seventh Framework Programme (FP7/2007–2013) under grant agreement 308393 ‘OPERAS’.

<sup>\*</sup> Corresponding author at: Montpellier Supagro, Bat 26, 2 Place Viala, 34060 Montpellier Cedex 1, France.

E-mail address: [philippe.le-coent@supagro.fr](mailto:philippe.le-coent@supagro.fr) (P. Le Coent).

societal demand. As a direct consequence of this first feature, farmers are aware that ABOS are offered and funded by the private sector while AES are traditionally designed and financed by the public sector, usually at national or European levels.

The objective of this article is to determine whether these differences, all other things considered equal, have an impact on farmers' participation in agri-environmental contracts for biodiversity offsets. Standard economic theory predicts that if the same payment is offered in ABOS and AES, then farmers should be indifferent between the two types of contracts. Indeed since technical prescriptions are identical, expected compliance costs are the same. However, insights from behavioural economics and previous empirical findings on farmers' motivations when joining agri-environmental schemes indicate that the contract framing may change farmers' willingness to accept. It is well known that farmers' participation in AES is influenced by several behavioural factors such as the attitude towards the environment (Vanslebrouck et al., 2002a; Delvaux et al., 1999) or social norms (Le Coent et al., 2016). Contract framing may therefore trigger these behavioural factors and influence farmers' participation. A program financed by public money and presented as a contribution to environmental improvement or conservation can be perceived differently from a program financed by a "polluter" compelled by law to create environmental services in order to compensate the damages he has created elsewhere.

Since offsetting programmes are growing rapidly throughout the world (Madsen et al., 2011) including in France (Regnery et al., 2013), it is crucial for public authorities to anticipate whether ABOS is a relevant mechanism to help developers to fulfill their legal obligation in terms of offset volumes. Developers also need to measure the acceptability of such mechanism, i.e. the impact of the specific features of ABOS on farmers' willingness to participate and on the payment they will request to join the scheme and provide adequate offsets. Finally, it should be underlined that ABOS and AES aiming at biodiversity conservation are likely to be activated in the same protected areas. There is therefore a risk of competition between these two types of contracts. If ABOS are preferred by farmers, this may lead to their reduced participation in conservation AES, leading to a substitution of conservation efforts by compensation efforts, and possibly entailing reduced additionality. Understanding the relative preference of farmers for the characteristics of these two contracts will therefore also help to estimate this risk.

Literature on biodiversity offsets has primarily focused on issues related to the calculation of biodiversity equivalence and uncertainties (Quétiér et al., 2014; Bull et al., 2013). Economic contributions are more recent and concern the evaluation of offset efficiency for various program designs (McKenney and Kiesecker, 2010). There is also some literature on social acceptance of offsetting. Bougherara et al. (2013) compare consumers' willingness to pay for products whose induced pollution is either abated by the producing firm itself or compensated by offset purchases. Burton et al. (2016) analyze the social acceptance at the community level of the attributes of a biodiversity offset programme. Our contribution does not deal with the acceptance of biodiversity offsets by the general public but rather with the acceptance of biodiversity offset contracts by the potential adopters of these contracts: the farmers. Using a choice experiment method, we compare farmers' relative preferences for compensation contracts (ABOS) as compared to classic conservation contracts (AES).

The survey was conducted in the South-East of France, in a region where a vast biodiversity offset program has been carried out since 2011 following the construction of an 80 km railway bypass for a high-speed train (more specifically in the *Gard* department, between Nîmes and Montpellier). This railway project strongly affects habitats of an endangered bird species, the Little Bustard, *Tetrax tetrax*. The construction and maintenance (25 years) of this project, including the responsibility for offsetting the project's impacts on biodiversity, is managed by a private company named "Oc'Via", henceforth referred to as "the developer". The developer was required by law to implement

a BO program on about 1800 ha for the next 25 years. To this end, the developer has acquired land for specific management purposes but has also chosen to propose an ABOS scheme to farmers. Contracts were signed on about 1100 ha of private farmland since 2011 (CEN-LR, 2013).

It was decided to carry out the choice experiment in this location because most farmers had a chance to be introduced to both ABOS contracts and AES for biodiversity conservation. They are therefore familiar with both types of programs.

Section 2 provides a literature review of the behavioural factors that may influence farmers' willingness to accept for enrolling into biodiversity enhancing contracts. Section 3 describes the choice modeling methodology used in this research. Section 4 presents the results in terms of preference for the alternative contracts proposed and factors that may explain these preferences. Section 5 discusses these results and concludes with policy implications.

## 2. Why Would Farmers Prefer Compensation or Conservation Contracts?

In order to measure farmers' relative preference for ABOS and AES, we have conducted a choice experiment in which the two types of contracts were presented in one single attribute with two levels as follows:

- Level 1 – Conservation (AES) contracts: they are proposed and funded by the **public sector** with the objective to **create or maintain** favorable habitats for threatened species
- Level 2 – Compensation (ABOS) contracts: they are proposed and paid by a **private developer**, compelled to **compensate** the degradation of favorable habitats for threatened species induced by its infrastructure project, by creating elsewhere on the territory equivalent favorable habitats.

The purpose of the contract (compensation vs conservation) and the contracting partner (private vs public) are logically linked. The private developer who is responsible for the degradation pays for the restoration with his own private fund. The society, demanding that biodiversity be conserved or improved, pays for this service with public money. Presenting them as two separable attributes would have been perceived as highly unrealistic by farmers. Indeed it would have led to a choice design in which conservation contracts benefitting the whole society are financed by private funds or conversely compensation requirements are paid for by public funds. In order to ensure a full understanding of the two types of contracts by respondents, we therefore decided to keep the two information merged in the same attribute.

Several behavioural drivers are susceptible to influence farmers' preferences for ABOS versus AES. Beyond the impact of contract purpose, which is at the center of our study, we also analyze how the notion of responsibility for damages and losses, and trust between contracting parties could influence preferences.

### 2.1. Purpose Difference: Compensation vs Conservation

The first main difference between the two alternatives lies in the contract purpose: compensating the degradation of habitats vs creating or maintaining habitats. It can be considered a goal framing issue (Levin et al., 1998). Goal framing is about presenting the consequence of a choice or an action either as positive (it provides a benefit or gain) or as negative (it prevents or avoids a loss). Goal framing is thus associated with a change in the reference point of a decision. Several experimental studies examine the effect of goal framing in the context of public good provision (Brewer and Kramer, 1986; Fleishman, 1988; Sonnemans et al., 1998; Andreoni, 1995). The positive frame consists in giving to a public good fund, whereas in the negative frame subjects take from the public good fund to purchase private goods. There is no clear

Download English Version:

<https://daneshyari.com/en/article/5048540>

Download Persian Version:

<https://daneshyari.com/article/5048540>

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