

Biodiversity offsetting frameworks: overview and critical analysis of opportunities and risks.

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Abstract

Biodiversity offset is an expanding innovative tool with specific measures. First developed in the 1950's to respond to pressures caused by the implementation of infrastructure projects on the environment, this tool aims to complete traditional policy instruments such as taxes, quotas or standards for securing biodiversity preservation outcomes (ten Kate et al., 2004). Compensation shall be mobilized to internalize the negative externalities caused by infrastructure projects. This tool is part of a global mitigation process where biodiversity offset is used as last resort to achieve no net loss. Currently, offsetting is mostly used in a confused or unclear way.

How to define biodiversity offset in comparison with other forms of environmental stewardship? Which governance modes are underlying biodiversity offset? What are the opportunities and risks involved in the process of mitigation?

The objective of this paper is to clarify offset practices and to analyze the strengths and weaknesses of compensation from ecological and economic perspectives. We identified three offsetting schemes and built a comparative analysis highlighting their opportunities and risks.

By analyzing the differences in biodiversity offsetting frameworks, heterogeneity of measures quickly appears and requires specifying modes of governance. The key characteristics lead to distinguish three main types of compensation: in-kind, financial and banking biodiversity offset (UICN, 2011). In-Kind Compensation (IKC) aims at restoring, from the ecological point of view, the functions provided by ecosystems through four key features: restoration, rehabilitation, creation and/or preservation implemented to offset degradation of affected sites (Morandeau et al., 2012). IKC has specificities such as local scale (in-site compensation), proceedings (in-kind actions), ecological valuation (Habitat Ecological Analysis, Uniform Mitigation Assessment Methodology and Simplified Assessment Method (Bas et al., 2013)) and local authority actors. Financial Compensation (FC) is the second modality of compensation offered to master works. In this case, building owner chooses to pay a sum destined to actions for the environment as a whole. If this form of compensation is offered and chosen by the building owner, he hires experts (consultants, researchers...) to make monetary valuation of impacts (value-to-cost and value-to-value). Biodiversity Banks (BB) have established intermediate structures to help building owners to offset before developing their project by purchasing biodiversity units. This form of compensation is more innovative thanks to the number of assessments (ecological and economic) and their complexity, the multitude of actors, the ability to minimize the gap between the time of destruction and the offset measures, the integration in a global process and territory planning.

After having characterized biodiversity offsetting schemes from an institutional point of view, we analyzed the opportunities and risks of these schemes in a comparative way, using case studies. Our cross-analysis underlines a number of ecological and economic advantages that can result from the use of offsets for different stakeholders – such as the integration of biodiversity conservation into the investment plans of companies, the lifetime of the measures, the improvement of assessment methods building, some flexibility in applying measures, market share gains, etc. We also identified several limits to offsetting such as achievability of compensation theory, the importance of economic actors' interests, the lack of knowledge capitalization, etc.