Biodiversity Offsets

Effective design and implementation

POLICY HIGHLIGHTS

OECD

BETTER POLICIES FOR BETTER LIVES

Biodiversity loss is a major environmental challenge facing humankind. Biodiversity – and associated ecosystems – provide a range of invaluable services to society that underpin human health, well-being, security and economic growth. These services include food, clean water, flood protection and climate regulation. The ***OECD Environmental Outlook to 2050***, however, projects a further 10% loss in biodiversity between 2010 and 2050 under business-as-usual, threatening the provision of these services. The costs of inaction will, in many cases, be considerable. Biodiversity offsets, if well designed and implemented, is one policy instrument that can help mitigate these trends.

The publication ***Biodiversity Offsets: Effective Design and Implementation*** (OECD, 2016) examines the role of biodiversity offsets in the policy mix for biodiversity conservation and sustainable use. This brochure highlights some of the key findings from this publication, which draws on lessons and insights from more than 40 case studies worldwide and three in-depth reviews from the United States, Germany and Mexico.

The publication addresses the following questions:

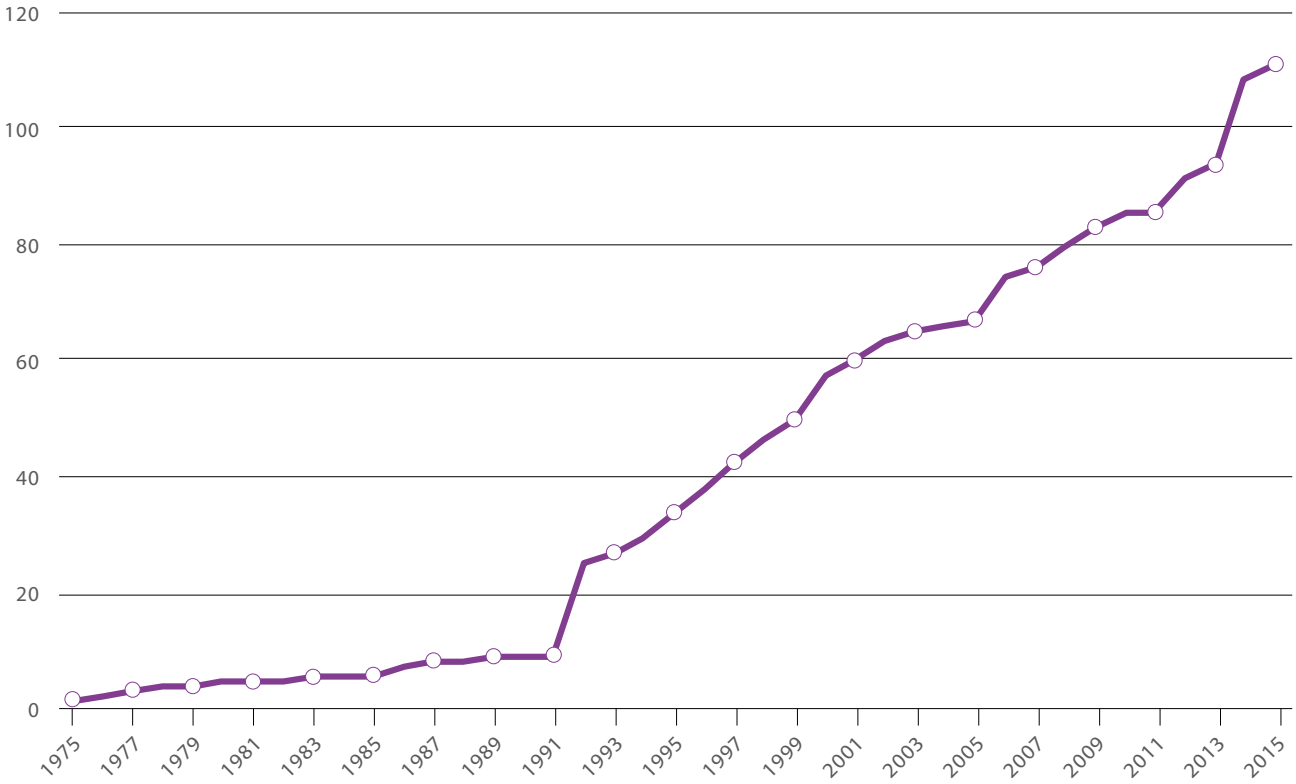
- **What are biodiversity offsets and how do they fit within the broader framework of no net loss and the mitigation hierarchy?**
- **What are the key design and implementation features that need to be considered to ensure that offsets are environmentally effective, economically efficient, and distributionally equitable?**
- **What lessons have been learned from existing biodiversity offset programmes and what are the good practice insights for their improvement**

1 The role of biodiversity offsets in biodiversity conservation and sustainable use

Biodiversity offsets are attracting increasing interest as governments and the private sector seek to address biodiversity loss that occurs through development projects and activities. First used in the United States in the 1970s to mitigate damage to wetlands, biodiversity offset programmes have more recently been introduced in a number of countries. More than 100 countries have laws or policies in place that require or enable the use of biodiversity offsets[1], or are currently considering their use. It is therefore timely to examine what has been learned from experience with biodiversity offsets programmes to date, and how they can be improved.

1. Including Australia, Brazil, Canada, China, Colombia, France, Germany, India, Mexico, New Zealand and South Africa.

Figure 1. **Number of countries that have, are developing, or are starting to discuss national government policies that require, encourage, guide, suggest, or enable the use of offsets.**



Source: TBC (2016) *Government policies on biodiversity offsets*. Industry Briefing Note of The Biodiversity Consultancy, Cambridge, UK. available at: http://www.thebiodiversityconsultancy.com/resources.

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Biodiversity offsets and how they fit within the broader framework of No Net Loss and the mitigation hierarchy

Biodiversity offsets are measurable conservation outcomes that result from actions designed to compensate for significant, residual biodiversity loss from development projects. They are intended to be implemented only after reasonable steps have been taken to avoid and minimise biodiversity loss at a development site. Biodiversity offsets are based on the premise that impacts from development can be compensated for if sufficient habitat can be protected, enhanced or established elsewhere. Biodiversity offsets are economic instruments and are based on the polluter pays approach. They aim to internalise the external costs of biodiversity loss from development projects by imposing a cost on the activities that cause adverse impacts to biodiversity. The most common objective adopted in offset programmes is to deliver No Net Loss (e.g., of a habitat, species, ecological status, ecosystem services), although several programmes have adopted a more ambitious goal of Net Gain (see Table 1).

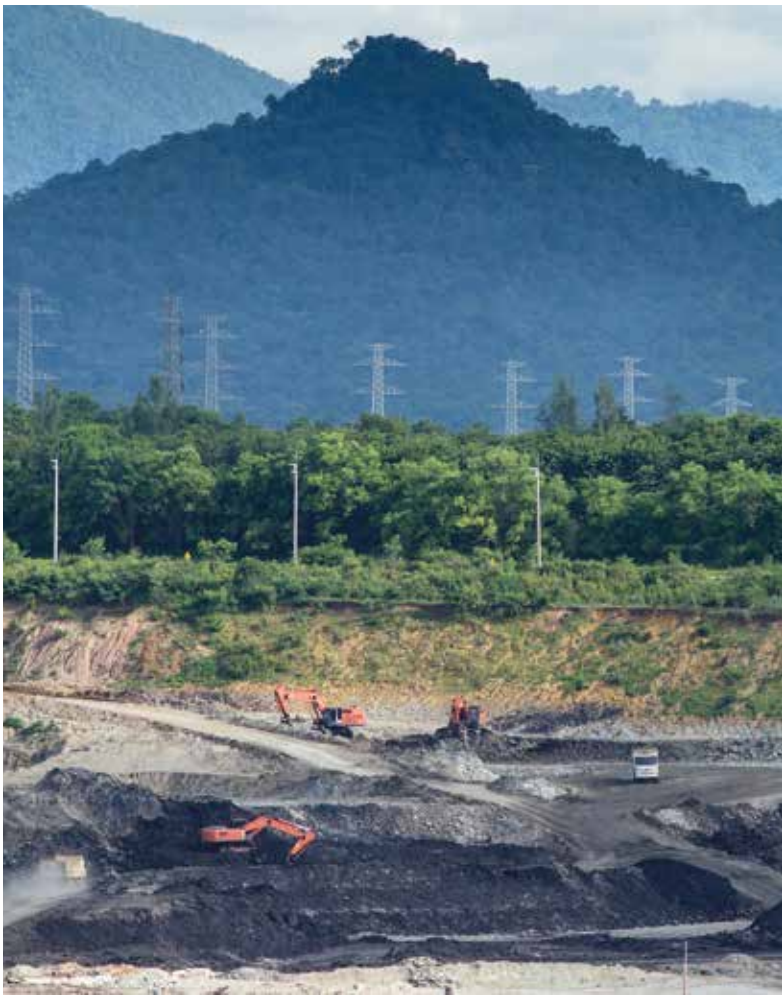


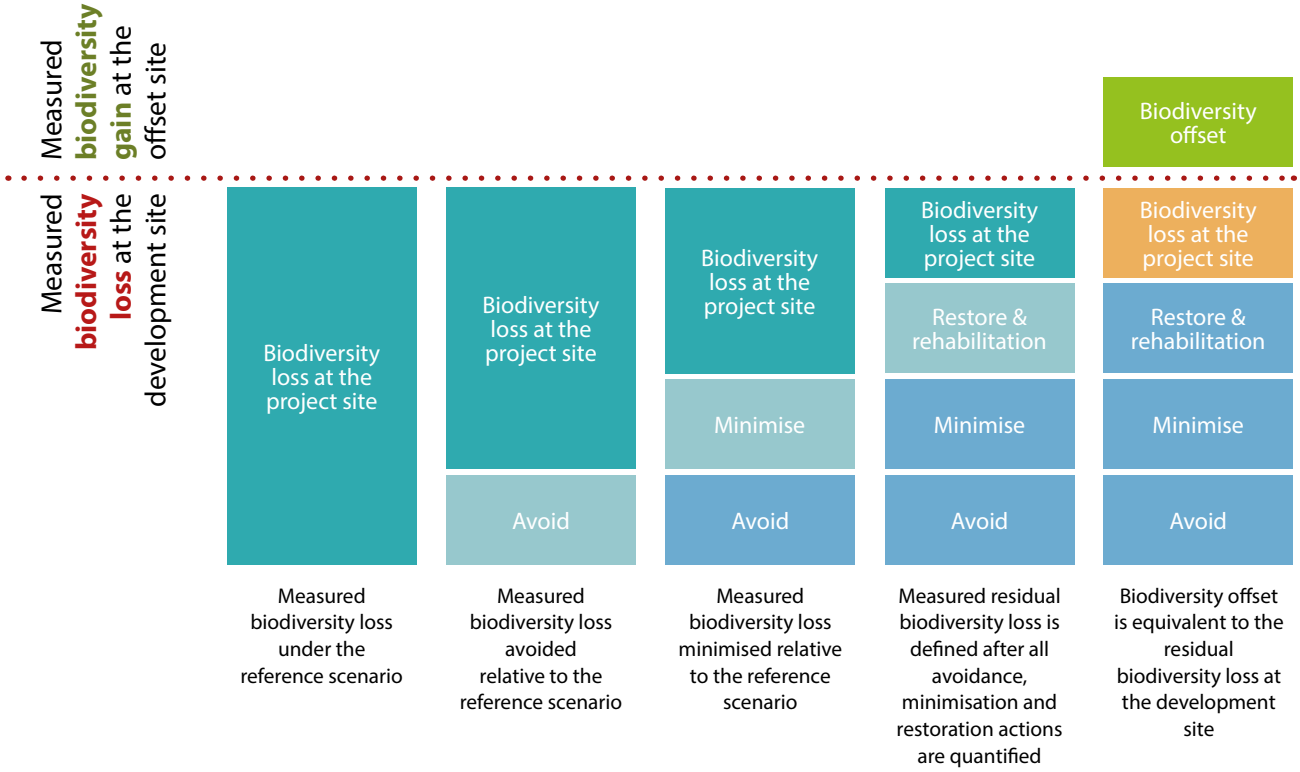
Table 1. **Examples of biodiversity objectives in offset programmes**

	Programme	Objective
African Development Bank	ADB Operational Safeguard 3	To deliver a net benefit or no net loss for residual biodiversity impacts on natural habitats
Alberta, Canada	Wetland Policy	To sustain the benefits wetlands provide to the environment, society and the economy
Asian Development Bank	AsDB Policy Principles and Requirement 8	To deliver at least a no net loss for residual biodiversity impacts on natural habitats and critical habitats
Australia	Environmental Offsets	To deliver an overall conservation outcome that improves or maintains the viability of the protected aspect of the environment
Canada	Policy for the Management of Fish Habitat	No net loss in the productive capacity of Canada's fisheries habitats
China	Forest Vegetation Restoration Fee	To restore a forest area no less than that taken up by the developer's operations
France	National doctrine on the mitigation hierarchy, and national guidelines on the mitigation hierarchy	No net loss, and ideally, net gain of natural habitats
Germany	Impact Mitigation Regulation	Preservation of the existing ecological situation
International Finance Corporation	IFC Performance Standard 6	To deliver no net loss for residual biodiversity impacts on natural habitats and net gains for critical habitats
Queensland, Australia	Supported Community Infrastructure Koala Conservation Policy	Net gain in bushland koala habitat
United States	Compensatory Wetlands Mitigation	No net loss of wetland acreage and function
United States	Conservation Banking	To offset adverse impacts to a species
Victoria, Australia	Native Vegetation Permitted Clearing Regulations	No net loss in the contribution that native vegetation makes to Victoria's biodiversity

Biodiversity offsets are intended to be carried out as the final step of the mitigation hierarchy — avoid, minimise, restore and offset — to help meet a scheme's environmental objectives. This implies they should only be applied to the residual project-specific impacts on biodiversity after appropriate efforts have been made first to avoid adverse impacts to biodiversity, then to minimise the unavoidable impacts, and finally to restore biodiversity on-site at the conclusion of a project (Figure 2). Once developers have demonstrated that all reasonable steps to avoid and minimise biodiversity loss have been incorporated into a project design, they may proceed to the final step of the mitigation hierarchy—offsetting—to meet the environmental objective of a scheme.

The mitigation hierarchy is a simplified ordering of project planning decisions that favours some land use decisions over others. Its implementation requires the definition of a reference scenario against which the steps of the mitigation hierarchy are measured, and decision guidelines to assist regulators determine what constitute reasonable efforts by developers to comply with each step.

Figure 2. **The mitigation hierarchy**



Source: Adapted from Rio Tinto (2012). *Rio Tinto and Biodiversity: Working Towards Net Positive Impact*, Rio Tinto PLC, London, UK, Rio Tinto Limited, Melbourne, Australia. Available at: www.riotinto.com/ourcommitment/features-2932_8529.aspx.

Biodiversity offsets are therefore akin to tradable permit schemes whereby a quantitative objective for biodiversity conservation is set (i.e., no net loss/net gain) and, on a project-by-project basis, developers are provided with flexibility to determine how to attain this target most cost-effectively — via a combination of avoidance, mitigation, restoration and/or offsetting elsewhere.

Offsetting itself is generally implemented using one of three approaches: one-off offsets; in-lieu fees; and biobanking (Box 1).

Box1. THREE TYPES OF BIODIVERSITY OFFSETS

One-off offsets: once (predicted) adverse impacts have been evaluated, the biodiversity offset is carried out by the developer or by a subcontractor (e.g. a conservation NGO). The developer assumes financial and legal liability. Verification is normally undertaken by a government agency or an accredited third party. One-off approaches are typically used in voluntary offsets and are common under regulatory programmes (e.g., vegetation management offsets in Queensland, Australia; Species Mitigation and Wetland Compensatory Mitigation in the United States; and Fish habitat Compensation in Canada).

In-lieu fees: a government agency stipulates a fee that a developer has to pay to a third party, to compensate for residual adverse biodiversity impacts. The third party (i.e. the offset provider) takes on the financial and legal responsibility for the offsets. In-lieu fee arrangements have been employed in the US Species Mitigation and Wetland Compensatory Mitigation, and in forest compensation schemes in India and Mexico.

Biobanking: once (predicted) adverse impacts are evaluated, the developer can purchase offsets directly from a public or private biobank. A biobank refers to a repository of existing offset credits, where each credit represents a quantified gain in biodiversity resulting from actions to restore, establish, enhance and/or preserve biodiversity (e.g. wetlands, stream, habitat, species). As under the in-lieu fee arrangement, financial and legal liability is transferred from the developer to the provider. Examples of biobanking include the US Wetland Compensatory Mitigation, the New South Wales Biobanking scheme in Australia, and compensation pools under the German Impact mitigation Regulation.

3 Key design and implementation features to enhance the effectiveness of biodiversity offset schemes

Compared to other instruments for biodiversity conservation and sustainable use, most biodiversity offset schemes are still fairly nascent in their application, and there is much to be learned from existing experience. The evidence available to date points to somewhat mixed results in terms of the environmental effectiveness of existing biodiversity offset schemes. This is due not to the instrument itself, however, but rather to how these schemes have been designed and implemented in practice. Biodiversity offset programmes have however mobilised between USD 2.4 and 4 billion in 2011 and have substantial potential to be scaled-up. Ensuring that these programmes are well-designed and implemented is therefore crucial.

Key design and implementation features that must be considered to ensure offset schemes are environmentally and cost effective, as well as distributional equitable include: thresholds and coverage; equivalence; additionality; permanence; monitoring, reporting and verification; transaction costs; and compliance and enforcement (Table 2). While many of these features are ones that also need to be addressed in other instruments for biodiversity conservation and sustainable use, a distinct issue for offsets is how to ensure equivalence between the biodiversity loss at the development site, and the biodiversity gain at the offset site.

In some cases, adverse impacts to biodiversity may not be able to be fully compensated. This is because: the affected biodiversity is irreplaceable or extremely vulnerable; there are no available offset sites; or there are no known conservation approaches to achieve the offset outcomes required. In such cases, offsets may not be a suitable instrument and other forms of intervention will be more appropriate (e.g., restrictions on access or use such as protected areas and buffer zones). Establishing thresholds for biodiversity impacts that are able to be offset is therefore a fundamental environmental safeguard for both voluntary and mandatory biodiversity offset programmes.

Table 2. **Key design and implementation features of biodiversity offset programmes**

Design and implementation feature	Description
Thresholds and coverage	Biodiversity offsets will not always be able to deliver equivalent outcomes because biodiversity may be of exceptional high value, irreplaceable, or vulnerable. Establishing thresholds for what can and cannot be offset is therefore key. Coverage refers to the type of biodiversity intended to be addressed (e.g. habitats, species, ecosystem services) and the sectors that are included in the programme (e.g. mining, windpower, hydropower, property development, agriculture)
Equivalence	As no two sites are ecologically identical, designing offsets requires assessment of how to achieve biodiversity benefits at the offset site that are ecologically equivalent to losses at the impact site. Determining ecological equivalence necessitates a comparison of the biodiversity loss and offset sites in three dimensions: biodiversity type, location and time.
Additionality	The biodiversity improvements at offset sites should provide new contributions to biodiversity conservation over and above the existing levels. A reference scenario is therefore needed. Biodiversity offsets variously consider protection, restoration, recreation and enhancement measures as additional.
Permanence	Biodiversity offsets should deliver conservation outcomes for at least as long as the biodiversity loss persists at the development site. Land tenure, financial sustainability and appropriate incentives for land management are important components of delivering permanence.
Monitoring, reporting and verification (MRV)	Robust MRV methodologies that are able to assess progress toward an offset's objectives are critical. This includes adequate documentation of management plans, regular monitoring including on-site checks, clear and transparent reporting, and verification by a third party.
Transaction costs	Transaction costs in offset programmes include costs associated with identifying, creating and securing an offset; applying for development permission, and undertaking MRV and enforcement. Reducing these administrative and time costs will increase the efficiency of an offset programme. Biobanks, for example, reduce the search costs of finding appropriate offset sites for developers.
Compliance and enforcement	MRV frameworks must be supported by appropriate compliance and enforcement measures to create the incentives necessary for offset suppliers to deliver conservation outcomes over time.

Did you know?

Biodiversity offsets mobilised between USD 2.4 and 4 billion in 2011

4 Lessons learned and good practice insights to improve biodiversity offset programmes

- Setting **clear objectives** of an offset programme is important. These should be set in such a way so as to be measurable and monitorable. Objectives of existing programmes aim to address adverse impacts to habitats, species, ecological status, and/or ecosystem services. Whichever type of objective is selected, appropriate indicators must be available so as to enable performance assessment over time.

- Clear guidance on how an offset programme fits into the **mitigation hierarchy for a country or region** is needed. Experience to date suggests several programmes are struggling with how to determine whether sufficient avoidance and minimisation has taken place prior to an offset project being implemented. Guidance material on mechanisms for avoidance and mitigation - such as with respect to location, means and timing of development activity – and requiring developers to demonstrate how avoidance and minimisation has been addressed, can help in this regard.

- Robust **monitoring, reporting and verification** is a critical element in ensuring environmentally effective offset programmes, and a feature that a number of programmes need to improve upon. Sufficient technical capacity and human resources to undertake adequate monitoring and enforcement, including on-site checks, is an important element of this.

- The use of **on-line databases** to track information on the types and numbers of offset sites, associated documents, mitigation credit availability (in the case of biobanking), among other information have proved to be very helpful in some offset programmes. Such tracking systems are currently being used in the U.S. Wetland Compensation Programmes (i.e. RIBITS – Regulatory In-Lieu Fee and Banking Information Tracking System) and in Germany (i.e. NATUREG). While fully populating the database in the US was a costly challenge, RIBITS has helped credit buyers more efficiently find credit buyers (thereby reducing transaction costs), improved regulators' ability to track credit transactions (e.g. credit releases and debits), improve bank oversight and monitoring, and share information with the public creating a more accountable and transparent offset programme.

- Across the three possible offset approaches, **one-off, in-lieu fees, and biobanking, each offer different advantages** and benefits, which can also depend on the specific socio-economic characteristics of the region in which they are introduced. With biobanking for example, the risk that biodiversity objectives are not met are largely mitigated, as the offset has already been created prior to the adverse impact at the development site. Biobanking however may not thrive in situations where the demand for offsets is too low (such as in sparsely-populated areas). In-lieu fee arrangements, whereby developers must pay a third party to undertake offsets, can offer advantages over one-off offset arrangements, if the third party can more strategically invest in offset sites (such as by taking a landscape approach, and identifying priority areas – including corridors – for offset sites).

- **Regular programme evaluations** are critical and should ideally be undertaken by both internal and external reviewers. Allowing and enabling adaptive management of the offset programme, so as to improve it over time, is a natural follow-on step.

Did you know?

Developers generally undertake offsets for one of three reasons: to comply with a jurisdiction's legislation, as a condition of project lending approval, or as part of a voluntary corporate risk management policy.

Biodiversity offsets are being increasingly used in a wide range of sectors as a mechanism to help compensate for the adverse effects caused by development projects in a variety of ecosystems. Based on the polluter pays approach, they are normally undertaken within an overall objective of no net loss of biodiversity. Their design and implementation features are critical to determining their environmental and cost effectiveness, as well as their distributional implications.

The OECD (2016) publication *Biodiversity Offsets: Effective Design and Implementation* examines the opportunities and challenges associated with biodiversity offset programmes and provides policy makers and practitioners with good practice insights on their design and implementation so as to ensure more effective outcomes. It draws on lessons and insights from more than 40 case studies worldwide and three in-depth reviews from the United States, Germany and Mexico.

For further reading on biodiversity offsets see the following report on which these Policy Highlights are based:

OECD (2016), *Biodiversity Offsets: Effective Design and Implementation*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264222519-en

Other reading:

OECD (forthcoming), *Marine Protected Areas: Economics, Management and Effective Policy Mixes*, OECD Publishing, Paris.

OECD (2013), *Scaling Up Finance Mechanisms for Biodiversity,* OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264193833-en

OECD (2010), *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264090279-en

For more information

www.oecd.org/environment/resources/biodiversity.htm
www.oecd.org/environment/resources/biodiversity-offsets-workshop.htm

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