Business and Biodiversity Offsets Programme (BBOP)

The Relationship between Biodiversity Offsets and Impact Assessment

A BBOP Resource Paper






BBOP
Business and Biodiversity Offsets Programme

Forest Trends, Conservation International and the Wildlife Conservation Society provided the Secretariat for BBOP during the first phase of the programme's work (2004 – 2008).

Publication Data

Business and Biodiversity Offsets Programme (BBOP). 2009. *The Relationship between Biodiversity Offsets and Impact Assessment: A BBOP Resource Paper*. BBOP, Washington, D.C.

Available from: **www.forest-trends.org/biodiversityoffsetprogram/guidelines/eia.pdf**

ISBN 978-1-932928-36-5 (PDF)

Cover and graphic design by Rima Design.

About this document

The Principles on Biodiversity Offsets and accompanying supporting materials[1] such as this resource paper on the relationship between biodiversity offsets and impact assessment[2] have been prepared by the Business and Biodiversity Offsets Programme (BBOP) to help developers, conservation groups, communities, governments and financial institutions that wish to consider and develop best practice related to biodiversity offsets. They were developed by members of the BBOP Secretariat and Advisory Committee[3] during the first phase of the programme's work (2004 – 2008), and have benefited from contributions and suggestions from many of the 200 people who registered on the BBOP consultation website and numerous others who have joined us for discussions in meetings.

The Advisory Committee members support the Principles and commend the other working documents to readers as a source of interim guidance on which to draw when considering, designing and implementing biodiversity offsets. Best practice in biodiversity offsets is still in its infancy, and the concepts and methodologies presented here need to be further discussed, developed, tested and refined based on more practical experience and broad debate within society.

All those involved in BBOP are grateful to the companies who volunteered pilot projects in this first phase of our work and for the support of the donors listed overleaf, who have enabled the Secretariat and Advisory Committee to prepare these documents.

BBOP is embarking on the next phase of its work, during which we hope to collaborate with more individuals and organisations around the world, to test and develop these and other approaches to biodiversity offsets more widely geographically and in more industry sectors. BBOP is a collaborative programme, and we welcome your involvement. To learn more about the programme and how to get involved please:

See: **www.forest-trends.org/biodiversityoffsetprogram/**

Contact: **bbop@forest-trends.org**

---

1 The BBOP Principles, interim guidance and resource documents, including a glossary, can be found at **www.forest-trends.org/biodiversityoffsetprogram/guidelines/**. To assist readers, a selection of terms with an entry in the BBOP Glossary has been highlighted thus: BIODIVERSITY OFFSETS. Users of the Web or CD-ROM version of this document can move their cursors over a glossary term to see the definition.

2 This document was prepared by Jo Treweek and Kerry ten Kate with input from Susie Brownlie, and reflecting comments received during the public consultation period.

3 The BBOP Advisory Committee currently comprises representatives from: Anglo American; Biodiversity Neutral Initiative; BirdLife International; Botanical Society of South Africa; Brazilian Biodiversity Fund (FUNBIO); Centre for Research-Information-Action for Development in Africa; City of Bainbridge Island, Washington; Conservation International; Department of Conservation New Zealand; Department of Sustainability & Environment, Government of Victoria, Australia; Ecoagriculture Partners; Fauna and Flora International; Forest Trends; Insight Investment; International Finance Corporation; International Institute of Environment and Development; IUCN, The International Union for the Conservation of Nature; KfW Bankengruppe; Ministry of Ecology, Energy, Sustainable Development, and Spatial Planning, France; Ministry of Housing, Spatial Planning and the Environment, The Netherlands; National Ecology Institute, Mexico; National Environmental Management Authority, Uganda; Newmont Mining Corporation; Private Agencies Collaborating Together (Pact); Rio Tinto; Royal Botanic Gardens, Kew; Shell International; Sherritt International Corporation; Sierra Gorda Biosphere Reserve, Mexico; Solid Energy, New Zealand; South African National Biodiversity Institute; Southern Rift Landowners Association, Kenya; The Nature Conservancy; Tulalip Tribes; United Nations Development Programme (Footprint Neutral Initiative); United States Fish and Wildlife Service; Wildlife Conservation Society; Wildlands, Inc.; WWF; Zoological Society of London; and the following independent consultants: Susie Brownlie; Jonathan Ekstrom; David Richards; Marc Stalmans; and Jo Treweek.

During Phase 1 of BBOP, the BBOP Secretariat was served by Forest Trends, Conservation International and the Wildlife Conservation Society.

We thank those organisations that have provided financial support for BBOP's work[4]: the Alcoa Foundation; Anglo American; City of Bainbridge Island, Washington, USA; Conservation International; Department for International Development, United Kingdom; Department of the Environment, Water, Heritage and the Arts, Australia; Forest Trends; International Finance Corporation; KfW Bankengruppe; Ministry of Housing, Spatial Planning and the Environment, The Netherlands; Newmont Mining Corporation; the Richard and Rhoda Goldman Fund; Rio Tinto; Shell International; Sherritt International Corporation; Solid Energy New Zealand; the Surdna Foundation; the United Nations Development Programme/Global Environment Facility; United States Agency for International Development[5]; and Wildlife Conservation Society.

4 Endorsement of some or all of the BBOP documents is not implied by financial support for BBOP's work.

5 This document is made possible in part by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Forest Trends, Conservation International and the Wildlife Conservation Society and do not necessarily reflect the views of USAID or the United States Government.

Contents

This resource paper offers information on how to integrate BIODIVERSITY OFFSETS with impact assessment, including STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) for policies, plans and programmes and ENVIRONMENTAL IMPACT ASSESSMENT (EIA) for proposed projects.

Table of contents

1. Introduction

This paper considers whether and how the process of designing and delivering biodiversity offsets should be integrated with impact assessment. The introduction outlines the Business and Biodiversity Offsets Programme (BBOP), and then explains briefly why impact assessment might be considered as a suitable 'vehicle' for biodiversity offsets and outlines its possible role. It introduces ENVIRONMENTAL IMPACT ASSESSMENT (EIA) and STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA) and gives a brief explanation of how they inter-relate in planning systems. It also explains how many businesses integrate their environmental and social impact assessment processes in ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) and embed these in overall Social and Environmental Management Systems.

The paper then outlines key issues to consider when deciding whether and how to incorporate biodiversity offsets. There are differing opinions concerning the extent to which biodiversity offsets should be integrated with impact assessment, due to the risk that, if biodiversity offsets are considered a part of impact assessment from the outset, they might be seen as a means of short-circuiting requirements for MITIGATION, thereby reducing efforts to avoid adverse impacts at source through project re-design.

Some key issues to explore are therefore:

- Whether biodiversity offsets should be included in ESIA and SEA or whether they should be developed independently (considered in Section 1).
- If a biodiversity offset is planned through ESIA or SEA, how this can best be done (Sections 2 and 3 respectively).
- Whether the BASELINE biodiversity and other information gathered for the purposes of an ESIA or SEA is likely to be adequate for the planning of a biodiversity offset (Sections 2 and 3 respectively).

This paper does not set out to provide detailed explanations of the impact assessment process as there are several comprehensive explanations and technical guides available elsewhere.

Some sources of further information and guidance are listed in Appendix A.

1.1 Introduction to BBOP

The Business and Biodiversity Offsets Programme (BBOP) is a partnership between companies, governments, conservation experts and financial institutions that aim to explore whether, in the right circumstances, biodiversity offsets can help achieve better and more cost effective CONSERVATION OUTCOMES than normally occur in infrastructure development, while at the same time helping companies manage their risks, liabilities and costs. BBOP has been researching and developing BEST PRACTICE on biodiversity offsets and beginning to test it through a portfolio of pilot projects in a range of contexts and industry sectors, aiming to demonstrate improved and additional conservation and business outcomes. BBOP envisages a future in which biodiversity offsets are applied worldwide to achieve NO NET LOSS and preferably a NET GAIN of biodiversity relative to development impacts.

The principles on biodiversity offsets (see Appendix B) and accompanying supporting materials such as this resource document have been prepared by BBOP to help DEVELOPERS, conservation groups, communities, governments and financial institutions that wish to consider and develop best practice biodiversity offsets.

They were developed by members of the BBOP Secretariat and Advisory Committee during the first phase of the programme's work (from November 2004 – December 2008). They reflect discussion by members of the BBOP Advisory Committee, some practical experience through trials at the BBOP PILOT PROJECT sites, and have also benefited from contributions and suggestions from many of the 200 people who registered on the BBOP consultation site and numerous others who have participated in workshops and meetings.

1.2 Background

The goal of biodiversity offsets is to achieve no net loss, or preferably a net gain, of biodiversity on the ground. A working definition for biodiversity offsets is set out in Box 1. BBOP's approach to biodiversity offsets is driven by a set of principles that provide a sound basis for ensuring high quality biodiversity offsets. These principles and their relationship to impact assessment are described in Appendix B.

Box 1: The BBOP definition of biodiversity offsets

Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, HABITAT STRUCTURE, ECOSYSTEM FUNCTION and people's use and CULTURAL VALUEs associated with biodiversity.

Impact assessment is a formalised procedure for identifying and predicting the effects of a proposal on different aspects of the environment (**www.iaia.org**). It includes Environmental Impact Assessment (EIA) carried out for individual project proposals and Strategic Environmental Assessment (SEA) carried out for higher level policies and plans.

Box 2: Definition of impact assessment

Impact assessment is the process of identifying the future consequences of a current or proposed action. It is used to ensure that policies, plans, programmes and projects are economically viable, socially equitable and environmentally sustainable.

As a widely used tool for environmental planning and decision making, impact assessment is an obvious 'vehicle' for integrating biodiversity offsets into existing corporate procedures and management systems, where appropriate, including those relating to stakeholder engagement and PARTICIPATION and risk management. It is endorsed by several international conventions and agreements on biodiversity and is widely promoted as a tool for corporate social responsibility.

Environmental Impact Assessment (EIA) is 'project-level impact assessment', widely used to identify likely significant adverse effects of individual project proposals, and to suggest ways in which these can be avoided or otherwise minimised, or reduced to acceptable levels. It is now mandatory in much of the world and is required by many international donor and financial institutions as part of their loan approval processes. EIA

which explicitly incorporates Social Impact Assessment is sometimes referred to as Environmental and Social Impact Assessment (ESIA).

Box 3: Definition of EIA

Environmental Impact Assessment (EIA) is a formalised procedure for ensuring that the likely effects of new development on the environment are fully understood and taken into account before a proposed project is given development consent.

When applied at a strategic level, impact assessment can help mainstream biodiversity as a key development issue, build important constituencies of STAKEHOLDERS and provide a framework for participation, as well as generate information required to review risks and opportunities for biodiversity at a landscape scale.

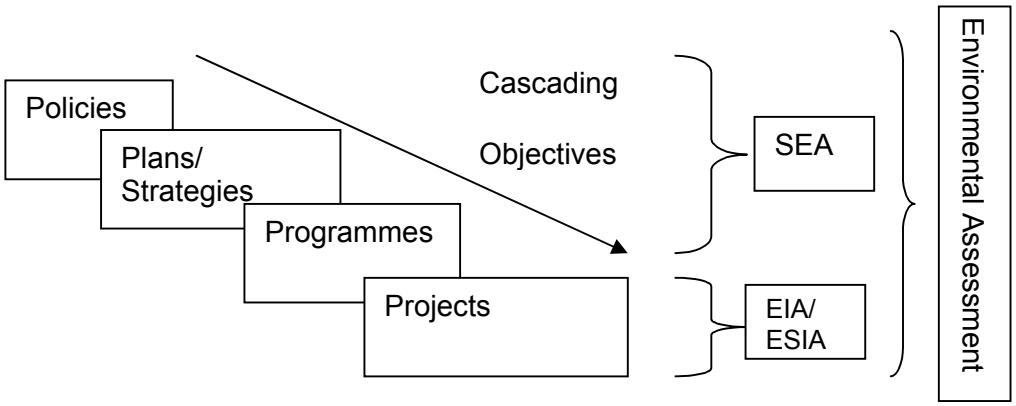
Box 4: Definition of SEA

Strategic Environmental Assessment (SEA) is 'plan-level impact assessment'. Its purpose is to ensure that the environmental consequences of a proposed policy, plan or programme are appropriately addressed at earlier stages or higher tiers of planning and decision-making than would take place for a project through EIA.

Use of Strategic Environmental Assessment (SEA) is increasing, whether required by law or carried out on a voluntary basis, because SEA has been shown to enhance the sustainability of plans and the efficiency of the planning process, both for governments and for developers. One of the ways it can do this is by establishing an analytical framework for assessment of individual project proposals through EIA. This hierarchical model assumes that objectives set through policy making and planning, and used in SEA to assess alternative development options, cascade down to the level of project planning and EIA (see Figure 1). SEA may thus draw on results of other landscape level planning initiatives which might clarify biodiversity and conservation objectives and provide a platform for comparing alternative development scenarios and their compatibility with these objectives[6]. Individual projects can then be designed to meet policy goals and plan objectives established at an earlier stage and at a higher level in the planning process. When planning for biodiversity offsets, a tiered system like this, especially if backed up by comprehensive spatial data on the distribution and CONDITION of biodiversity, makes it much easier to determine how biodiversity offsets might complement policies and make a contribution to national or regional conservation objectives. This hierarchical approach relies on well established spatial planning or regulatory systems and may not be straightforward to apply in practice.

6 See the Offset Design Handbook Step 6: **www.forest-trends.org/biodiversityoffsetprogram/guidelines/odh.pdf**.

Figure 1: Schematic showing how SEA and EIA can be tiered



SEA can be distinguished from other forms of strategic or wide scale review in that it is applied to a particular plan-proposal and used to determine whether or not it is fit for purpose and acceptable. When results of SEAs are available for relevant sectors or areas, they have sometimes been used to review the BUSINESS CASE for investment in a country or sector and to review biodiversity risks and opportunities for alternative development scenarios at the pre-feasibility stage. To maintain an objective approach, it is preferable for SEA to be initiated by government and not by business, though business can play an important supportive role.

However, the application of SEA outside OECD countries is currently limited. Within the OECD and EU, the practice of SEA to date has often taken the form of 'scaled up' ESIA and has not necessarily reflected the increasing need for approaches that integrate stakeholder perspectives and considered the implications of plans for provision of ECOSYSTEM SERVICES.

Many companies regularly carry out strategic risk assessments as a tool for internal risk management, whether these are regulatory requirements or not, and these typically take place well before formal EIA is conducted for specific proposals. Such assessments are rarely as detailed as SEA, although they are usually regional or national in scale. They tend not to be as inclusive in terms of participation, may lack external expert inputs and are often constrained by issues of commercial confidentiality. Thus they are no substitute for government-led SEAs, but do provide a vehicle for considering biodiversity among other risks early in the consideration of a project's feasibility, particularly in the absence of an SEA, and sometimes result in the company deciding not to proceed.

In situations where there has been no strategic level assessment, it is nevertheless important to consider the part that offsets might play in a wider context. To some extent this perspective can be gained through EIAs or ESIAs which include rigorous assessments of CUMULATIVE EFFECTS.

1.3 The role of impact assessment in the planning of biodiversity offsets

Impact assessment incorporates well established procedures for collecting and interpreting information on biodiversity and ecosystem services, and can be used to provide a 'before and after' picture of the distribution, status and condition of biodiversity affected by a proposed plan or project. Early consideration of possible requirements for biodiversity offsets and their integration with impact assessment can help to avoid duplication of effort in the collection of data.

The fact that impact assessment provides widely established, relatively efficient and well developed procedures means that it can provide useful data to serve as the basis for the design of biodiversity offsets and facilitate their implementation in countries where the planning system is relatively poorly established. In such a setting, if biodiversity offsets are not planned within the EIA process, there may be no 'trigger' or motivation for developers to consider them at all. When integrated with environmental management systems and plans, impact assessment offers a potential delivery mechanism for offsets and a basis for ongoing monitoring and ADAPTIVE MANAGEMENT which can be aligned with corporate policies on biodiversity. The IFC Performance Standards and EQUATOR PRINCIPLES advocate a strongly integrated approach in which the ESIA process is embedded in an overall Social and Environmental Management System which might consist of ESIA, environmental management procedures, capacity development and training, monitoring and reporting. Planning, design and delivery of biodiversity offsets can therefore be fully integrated with corporate environmental management systems such that the need for an offset might be identified through ESIA, and its practical delivery is managed through associated ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS.

At the same time, biodiversity offsets can make an important contribution to the conservation and sustainable use of biodiversity and help strengthen impact assessments as a tool for sustainable development by incorporating the concept of 'no net loss'. This helps deliver a more outcome-oriented approach and provides a robust rationale for biodiversity offsets through application of a MITIGATION HIERARCHY (widely regarded as 'good practice') in which efforts are made first to enhance positive impacts on biodiversity, then to prevent or avoid, minimise or reduce, and / or repair or restore adverse effects. After these steps (i.e. after mitigation), ways are sought to compensate for, or offset significant residual effects which remain in order to achieve 'no net loss'.

The main ways in which impact assessment can contribute to the effective design and implementation of biodiversity offsets are summarised in Box 5.

Box 5: How impact assessment can contribute to the design and implementation of biodiversity offsets

a. Providing a structured approach to the collection of information on biodiversity including important ecosystem services that may be affected.
b. Quantifying potential losses of biodiversity associated with a proposal.
c. Providing information needed to determine whether 'no net loss' of biodiversity can be achieved
d. Interpreting the significance of impacts on biodiversity / BIODIVERSITY LOSSES.
e. Identifying biodiversity impacts which require mitigation, and residual adverse impacts remaining after mitigation which could be offset.
f. Generating information on biodiversity distribution and status which is needed to interpret impact significance for different geographical contexts.
g. Generating contextual information on biodiversity distribution and status which is needed for planning the design of offsets and for the selection of suitable offset locations.
h. Through ESIA stakeholder engagement processes, providing a framework for understanding diverse stakeholder perspectives and identifying issues, impacts, concerns and opportunities that should be reflected in any consideration of offset need, role, design and implementation.
i. Providing a standardised and widely used approach.

The extent to which planning for offsets should be fully incorporated as an integral part of the EIA process may vary depending on the extent to which offsets are required or voluntary. It is also open to debate due to the perceived risk that complete integration of biodiversity offsets with EIA after considering mitigation can potentially

overload the EIA process. It may be impractical to incorporate offset design into EIA in instances where a company invests in projects after a conventional EIA process has been completed, or if the project is taking place in a country where prescriptive regulations constrain issues that can be considered during the EIA.

The aim of EIA is to demonstrate that impacts on biodiversity have been reduced to an acceptable level, such that development consent can be given to a proposal. In cases where a significant residual adverse impact on biodiversity will remain following implementation of proposed mitigation, there are different possible approaches to further integration of offsets into the process. In one possible approach, the EIA might identify the need for a biodiversity offset, but not include it in addition to the 'mitigation package' for the proposal. The planning of the offset would be pursued and accounted for separately. Alternatively there may be situations where offsets are required through the planning or regulatory framework. In these cases, the developer may be required, within the EIA submission, to demonstrate how a proposed biodiversity offset will contribute to MITIGATION and COMPENSATION requirements and ensure that residual adverse effects are removed or reduced to an acceptable level.

Table 1: Different approaches to referring to biodiversity offsets in EIAs

Offsets fully integrated with EIA	Offsets referred to in EIA but developed separately
EIA identifies and quantifies significant adverse impacts	EIA identifies and quantifies significant adverse impacts.
EIA recommends mitigation measures	EIA recommends mitigation measures.
EIA identifies and quantifies residual adverse effects remaining after mitigation	EIA identifies and quantifies residual adverse effects remaining after mitigation.
EIA includes offset design and demonstrates how offsets would be designed and implemented	EIA identifies need for offsets to reduce residual effects to an acceptable level, shows which impacts would be offset and provides relevant information. Planning of biodiversity offsets is pursued through a separate process which may run concurrently with the EIA process or be initiated following an ENVIRONMENTAL IMPACT STATEMENT (EIS) submission.
EIA shows how offsets could remove or reduce residual effects to an acceptable level	Environmental Statement or report is submitted as part of the application for development consent, which sets out proposed mitigation measures and identifies the need for biodiversity offsets to remove or reduce residual effects to an acceptable level.
EIA concludes no significant adverse effects remaining following implementation of mitigation and offsets	An Environmental Management Plan (EMP) and Biodiversity Offset Planning Document are produced setting out practical steps to be taken. These show how success would be evaluated as a basis for any ongoing monitoring.
EMP sets out practical steps to be taken and shows how success would be evaluated as a basis for any ongoing monitoring	
EIS and documents submitted to apply for development consent (may include EMP as appendix to EIS) include mitigation and offset recommendations	

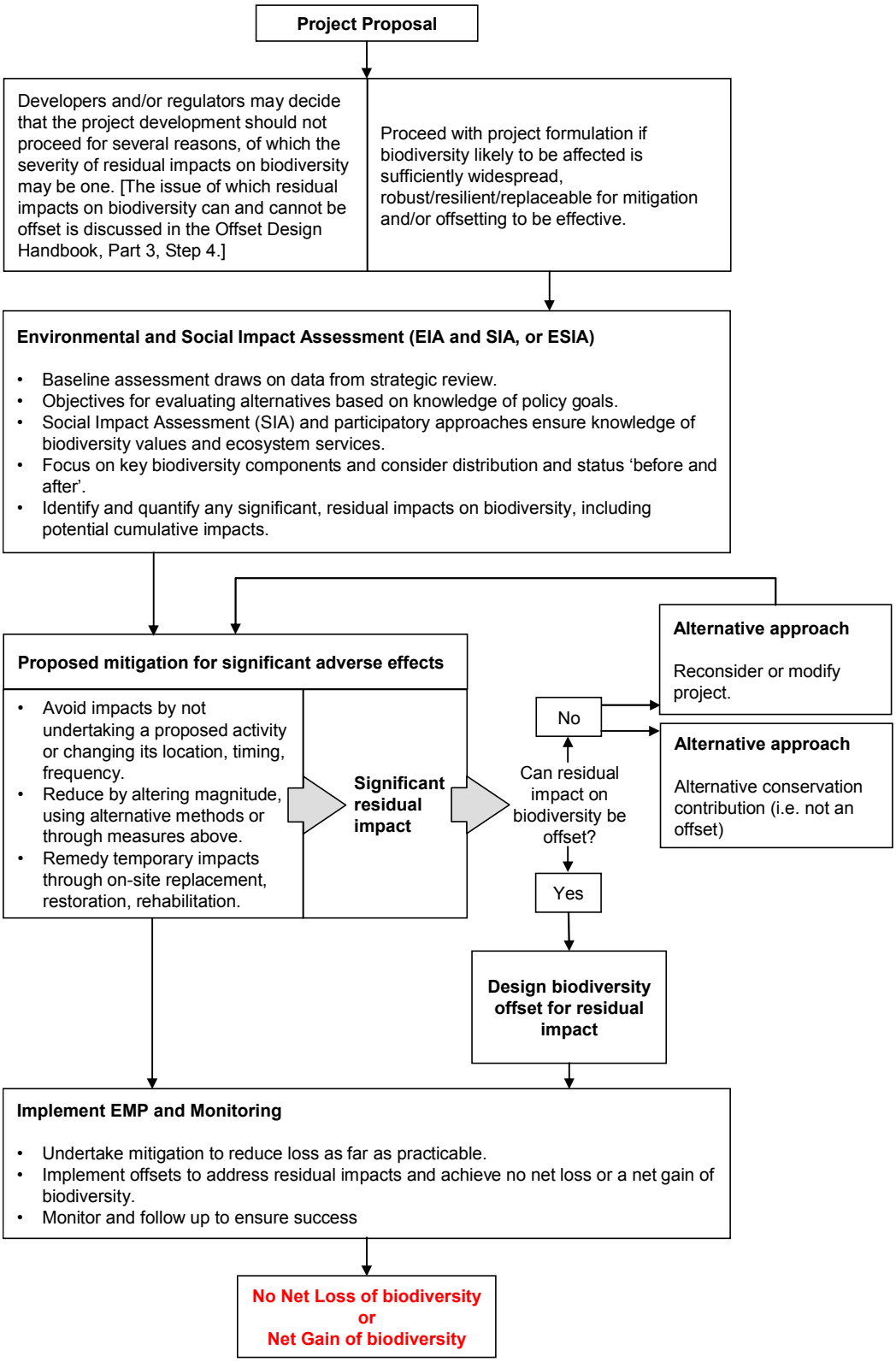
1.4 Integrating impact assessment with biodiversity offsets

Assessment of impacts on biodiversity is a pre-requisite to understanding whether a biodiversity offset is necessary, appropriate or possible. There are several possible avenues and entry points for this assessment to be carried out, from an early or strategic planning stage down to detailed design for a specific project

proposal. There are also several different ways in which planning for offsets can be integrated with the planning and environmental assessment of proposed development.

Figure 2, shows how biodiversity offsets can be included as part of the EIA mitigation hierarchy.

Figure 2: Biodiversity offsets within the mitigation hierarchy



Subsequent sections explore alternative integration models. Section 2 sets out generic stages in EIA and shows how biodiversity offsets might be integrated with these, or alternatively pursued independently from the EIA process, including in situations where no EIA is carried out. Section 3 provides a brief introduction to SEA and shows how planning and implementation of biodiversity offsets might be pursued at a more strategic level. Finally Section 4 provides some guidance on good practice for EIA to incorporate biodiversity offsets effectively.

2. Integrating Biodiversity Offsets with EIA

Generic stages in EIA are widely recognised as set out in Table 2.

Table 2: Stages in EIA

Stage	Description
SCREENING	Does the project require EIA?
SCOPING	What issues and impacts should the EIA address?
BASELINE STUDIES	Establish the current environmental setting of the project and provide sufficient data for analysis of impacts. Establish baseline trends in the absence of the proposal.
Impact assessment	Forecast and interpret impacts.
Mitigation	Identify measures to avoid or alleviate negative impacts.
Environmental Statement	Document the findings.
Monitoring, follow-up	Monitor impacts, follow-up on implementation of mitigation.

In practice, EIA tends to be a more cyclical and iterative process than the simple table above might suggest, with considerable interactions and overlap between the various steps. For example, monitoring might be structured around the objectives established in the initial project and baseline descriptions. Public participation and / or stakeholder involvement may or may not be an integral part of the EIA process and may be limited to discrete events (opportunity to review an Environmental Impact Statement) or carried out throughout the process.

Key steps and recommendations for integrating biodiversity offsets within the EIA process are set out in Table 3.

Table 3: Key steps and recommendations for integrating biodiversity offsets with EIA

Purpose of stage in EIA process	Key considerations with respect to biodiversity offsets
Screening	
Determine whether an EIA is required EIA may be required by law or because corporate standards and procedures require it	The prospect of impacts on important biodiversity can trigger the need for a formal EIA. At this early stage it can be beneficial to consider whether biodiversity risks are such that a 'no go' decision might be appropriate. At the same time it is useful to ask whether possible project impacts would be likely to be capable of being offset.
Scoping	
Set Terms of Reference for the EIA	At this stage, terms of reference for EIA consultants can be reviewed to determine whether they will generate the data needed for offset design, or whether they need to be amended in order to do so. There may be differences in the data needed for the EIA and for offset planning and these need to be considered at this stage. It is also important to consider whether the design of offsets might need specific skill sets, over and above those of the EIA consultants.
Outline methods to be used	Consider the resource requirements for designing offsets in addition to the EIA. Offset planning may require additional work and a longer timeframe than might normally be allocated for EIA. It may also require a more participatory approach.
Confirm study area, based on review of proposed project activities (their type, location / range, timing, frequency and magnitude) and on range / distribution and sensitivity of environmental receptors	At this stage it is necessary to consider the required spatial and temporal scope of the EIA in relation to requirements for offset planning. The study area may need to be extended to include potential BENCHMARK / offset locations, for example. It is also important to ensure that the geographic scale of assessment will lend itself to an understanding of the significance of the impact for biodiversity and to design of offsets that assure that PERSISTENCE and viability of KEY BIODIVERSITY COMPONENTS. (Within the BBOP OFFSET DESIGN HANDBOOK, the preparation of the Key Biodiversity Components Matrix can support this assessment.)
Baseline assessment	
Baseline surveys to establish how the environment would develop in the absence of the proposed development	Review and define baseline population conditions for key biodiversity components, including those for which an offset might be provided. Whereas an EIA can use a limited subset of biodiversity components to give an idea of background trends, offset planning might require more detailed information about fluctuations in populations, use of habitat by different species and the distributions and status of all TAXA included in the reference / benchmark.
Assess main potential impacts	
Identify and assess the impacts which might be generated under the main project ALTERNATIVES. Specify type, magnitude, location / range, frequency, duration…	For the purposes of designing biodiversity offsets it is necessary for biodiversity losses due to a project proposal to be clearly identified and quantified. For effective offset planning it is also necessary to quantify implications of losses caused by a project proposal in terms of remaining biodiversity: is a relatively large proportion of habitat for a particular species affected or only an insignificant part? Will remaining habitat be viable? Will the project remove key breeding areas or reduce breeding success to the point where population viability is threatened? A good EIA should address these questions and, as such, provide a

Purpose of stage in EIA process	Key considerations with respect to biodiversity offsets
	good basis for offset design. Possible METRICS for this are discussed in the Offset Design Handbook[7]. Offsets demand a more rigorous assessment of biodiversity distribution and status than might normally be carried out for purposes of EIA, so that CONSERVATION GAIN can be clearly demonstrated.
Recommend mitigation	
Consider alternative locations, designs, methods, timeframes to avoid or minimise adverse effects	Following the MITIGATION HIERARCHY, good practice is to make recommendations for mitigation that aim to ensure 'NO NET LOSS' of biodiversity. Residual adverse impacts should be identified and quantified in such a way that any additional mitigation required, can be specified and the need for offsets considered. Assessment of RESIDUAL IMPACTS thus needs to be explicit. Offset planning is likely to require a more rigorous and quantitative approach to mitigation than might normally be followed in EIA.
Produce Environmental Impact Statement	
Document the results of the EIA process in a report to be submitted to the regulator	The process of planning biodiversity offsets may require independent reporting, partly because of the complexity of the process and the level of detail required to demonstrate that 'no net loss' has been achieved. However the results can be clearly presented as part of the overall mitigation 'package' for a project.
Follow up, monitor, review and take remedial actions as necessary	
Produce and implement an environmental management plan (Optional)	If Environmental Management Plans (EMPs) are produced, they should consider the results of the EIA and explain how mitigation will be implemented. The EMP can also be used as a 'vehicle' to implement biodiversity offsets, setting out a rationale for their design and describing actions to be taken to ensure delivery in line with EIA recommendations. This may be done through a specific Biodiversity Action Plan (see for example IPIECA / OGP 2005). EMPs provide a delivery mechanism for implementing offsets and following up on their success. They also provide a means of demonstrating how offsets have complemented other mitigation measures as part of an overall 'package'. Otherwise a separate offset planning document may be produced. The EMP and offset planning document (if produced) should be used as the basis for designing or scoping any monitoring programme.

2.1 How to build offset design into EIA scope and content

How biodiversity offsets are integrated with EIA varies depending on whether:

1. The potential use of offsets is contemplated at an early stage in project inception / planning and its design is integrated into the EIA process from the beginning.
2. The process of offset design is independent from the EIA process.
3. The offset is planned for a project for which EIA is not required and will not be carried out.

This section reviews the advantages and disadvantages of these different approaches.

7 See **www.forest-trends.org/biodiversityoffsetprogram/guidelines/odh.pdf**.

2.1.1 Offsets integrated with EIA

In this scenario, EIA is the main mechanism by which information is obtained to plan offsets. Effective integration requires an iterative approach in which the potential use of offsets is considered at an early stage (during scoping or sooner). The EIA process may be informed by results of strategic assessments carried out by a developer or by the government of a country in which the proposed development will take place, whether as part of a system of spatial planning or through SEA for a particular plan or programme of developments (see Table 4), or alternatively as part of the cumulative impact assessment.

The main advantages of having offset design fully integrated with EIA are:

- EIA can provide a rationale for the offset by identifying and quantifying impacts on biodiversity.
- Through application of the mitigation hierarchy, EIA demonstrates which impacts can be avoided and which can't, in order to identify unavoidable significant adverse residual impacts for which an offset might be appropriate.
- EIA provides the information needed to calculate losses and GAINS in biodiversity in order to determine how 'no net loss' can be achieved through an offset.
- Through the Environmental Statement, EIA can provide a documented biodiversity 'loss / gain account' to demonstrate how offsets have been calculated.
- Using EIA to collect the information needed to design and implement offsets keeps costs down.
- Decision-makers can evaluate reliably the net outcome of the development taking into account planned mitigation and offsets, and include offset conditions as part of the consent for development.
- The implementation of offsets in practice may well require land purchase or complex management agreements with landowners or communities. Integrating offset design with the EIA process may help to identify possible budget requirements early. This only applies if sufficient time is allocated to the EIA process however.

Table 4: Integrating offset planning with development planning and assessment

Stage in planning of development	Stage in assessment	Information required for offset planning
During business case development / pre-feasibility	Strategic review (through SEA or existing national data)	Gain understanding of: • Biodiversity risks and opportunities biodiversity policy and goals. • Background trends in threats and rate of loss of biodiversity associated with this type of activity, e.g. level of CUMULATIVE IMPACT. • Key partners and capacity. • Potential role of offsets and availability of implementation frameworks, e.g. to meet policy goals.
During inception phase for project proposal	Possible baseline assessment or preliminary risk assessment	Review location-specific risks and opportunities, STAKEHOLDERS who should be involved and level of involvement required for key stakeholders.
Project development or design	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) / EIA screening	Presence of biodiversity triggers for EIA may also suggest possible need for offsets (risks to valued biodiversity).

Stage in planning of development	Stage in assessment	Information required for offset planning
Project feasibility or design	ESIA / EIA SCOPING	Possibility of offsets informs scope (see Table 3). Stakeholder engagement is a key component for offset planning. Consider possible needs for finances to support offsets as well as possible need for land procurement of negotiations with landowners.
Detailed design	Assessment of impacts within the ESIA / EIA	Impact assessment must quantify losses (as per Table 3).
Detailed design	Identification of mitigation measures within the ESIA / EIA	Include identification of need for offsets in cases where residual adverse effects remain after mitigation hierarchy is followed. Plan offsets to achieve 'no net loss'. Possible gains through offsets need to be quantified to demonstrate this.
Project development / construction	EMP implementation and follow up	Implement offsets and monitor their success / effectiveness. A balance sheet showing losses and gains may need to be produced so that the contribution made by the offset is clear.

Integration of biodiversity offsets with EIA may also have the benefit of enhancing the credibility and authority of biodiversity offsets in wider society. This is partly because EIA (if well practiced) is operated as a transparent and consultative process with stakeholder involvement. It is also explicitly designed to make well-informed trade offs between potentially conflicting development, social, economic and ecological objectives.

Finally, pursuing offsets outside the EIA process could mean that opportunities for offsets and associated offset gains might be missed because DEVELOPERS and governments may be reluctant to revisit critical biodiversity related aspects after consent or approval has been given.

2.1.2 Offset design process independent from EIA

Possible reasons for keeping the process of offset design separate from the EIA process include:

- To achieve an independent or transparent process.
- The need for longer lead times than might be commonly allocated for EIA (see above, offset planning may require land purchase and lengthy negotiations which need more time than is usually allowed for EIA).
- The need for different or more detailed data.
- The need for different consultants with specialist skills.
- The need for a wider spatial frame of reference / study area than might be necessary just to assess impacts.
- An investment may take place after a conventional EIA process has been completed without detailed consideration of biodiversity, so that a biodiversity offset can only be considered later.
- Prescriptive regulations in some places may preclude consideration of a biodiversity offset within the EIA.
- The project concerned does not require an EIA, so an independent process would be the only way to consider a biodiversity offset.

Guaranteeing that offsets will be provided as an integral part of required COMPENSATION for residual adverse effects may be difficult using this approach unless there is a robust legal framework in place to ensure that offsets are delivered and that the necessary checks and balances are in place.

There are other reasons why it may be necessary in practice to separate EIA from offset design at least to some extent. EIA is a decision-making tool, intended to identify the likely consequences of a proposed project and provide the information necessary for a regulator or planner to decide whether or not it should be given consent. In many systems, the EIA process ends at the point where a decision is made concerning development consent. Proponents may be required to recommend suitable mitigation measures, but not necessarily to implement them, or to provide any evidence that mitigation measures have been implemented or successful. As practiced in most countries, EIA may not be sufficiently outcome-oriented to provide a good framework for OFFSET IMPLEMENTATION.

It may also be possible for offsets to be considered necessary only in retrospect, after an EIA has been completed and confirmed a significant residual adverse effect. Even in this scenario, information obtained through EIA would be used as a key source of data for offset design, but additional data and information may prove necessary, requiring repeat surveys.

Finally, EIA may not provide the level of detail needed to support effective offset planning and further, independent assessment may be required.

2.1.3 Offset planned for project for which there will be no EIA

There may be circumstances in which no EIA is carried out, whether because planning permission is already in place (and important impacts on biodiversity have emerged since); because there are permitted development rights or because a proposal falls below the thresholds required to trigger a formal EIA. There are also circumstances in which national requirements do not demand EIA and the project is not of a type which would require a company to undertake EIA to comply with its own requirements or standards.

In most cases where there are EIA laws in place, risk of adverse impacts on important biodiversity would trigger the EIA process. However it is possible for significant impacts on biodiversity to occur as a result of cumulative impacts due to several proposals which fall below screening thresholds for EIA but which have a significant effect when considered collectively.

In this scenario the BIODIVERSITY OFFSET PLANNER must carry out an independent assessment of BIODIVERSITY LOSSES, though the LOGICAL FRAMEWORK provided by EIA could still be used, especially if it incorporates cumulative effects assessment. The BBOP Guidance does provide tools which could be used in this situation to identify and quantify impacts and to identify suitable offset locations. These include the Key Biodiversity Components Matrix, which can be used to identify important or valued biodiversity which might be affected and advice on how to select a BENCHMARK in terms of its location, ATTRIBUTES and WEIGHTING.

3. Integrating Biodiversity Offsets with SEA

This section outlines how biodiversity offsets could be integrated into SEA, whether this is a formal process, for example responding to a legal requirement, or whether it is an informal assessment being undertaken on a voluntary basis. It includes a consideration of the need for a landscape scale approach in order to integrate offsets effectively. The roles of different participants in the process is outlined, in particular the different roles of governments and companies in developing offsets through SEA.

In the context of offsets, SEA can help by identifying any fundamental conflicts between biodiversity policy and economic development priorities. It can also reinforce the need for reliable biodiversity data to strengthen biodiversity policy.

SEA can be undertaken across the hierarchy of strategic decision-making from policy-level to plan and programme level as shown in Figure 1. There are relatively few examples of SEAs carried out for policy, but many have been done for plans and programmes.

Table 5: Examples of policies, plans and programmes

Policy	• National Transport Policy • International Trade Policy / Agreements
Plan / strategy	• Regional Development Strategy • Catchment Management Plan • Municipal Plan • Land Use Plan • Regional Transport Plan
Programme	• Programme of improvements in the transport sector • Programme of flood defence projects

SEA is a rapidly evolving field with numerous definitions and interpretations in theory, in regulations and in practice. There is not a single, fixed and prescriptive approach and SEA may draw on a range of analytical and participatory tools. Consequently approaches to SEA vary widely and their steps are less formalised than that of EIA. Recent guidance issued by OECD (2006) summarises general principles for how SEA should be applied and provides some case studies (**http://www.oecd.org/dataoecd/28/12/36451340.pdf**). Other sources of guidance are listed in Appendix A.

Increasingly, legislation or regulations are being introduced which require SEA in some form, sometimes through existing EIA laws and sometimes in natural resource laws and regulations. How SEA is practiced varies according to legal and planning requirements. It is also often undertaken voluntarily in the absence of such requirements because of the benefits it can bring. Because SEA is applied at a higher level in the planning hierarchy, it supports more effective consideration of fundamental issues, such as the need for

development and what form is appropriate, rather than addressing only how individual projects should be developed. Importantly it provides an opportunity to incorporate the outputs of biodiversity and nature conservation policy-making into the planning of infrastructure development when there are still plenty of viable alternative options for design and delivery.

The potential for biodiversity gain is much higher with SEA than with EIA and hence the Convention on Biological Diversity encourages its use (Article 6b, Article 14)[8].

SEA can help to:

- Provide opportunities to consider a wider range of alternatives and options compared with the project stage.
- Provide influence over the type and location of development that takes place in a sector or region, rather than just the design or siting of an individual project.
- Enhance capability to address cumulative and large-scale effects within the time and space boundaries of plans and programmes as opposed to the project level.
- Facilitate the delivery of sustainable development by addressing the consistency of plan and programme objectives and options with those of relevant strategies, policies and commitments.
- Provide a mechanism for identification of regional offset opportunities, including options for aggregating offsets to achieve greater biodiversity benefit.
- Increase transparency of decision-making and provide structured frameworks for securing stakeholder input.
- Streamline and strengthen project EIA by 'TIERING' it with SEA, thereby avoiding questions (e.g. whether, where and what type of development should take place) that have already been decided and taken into account with environmental issues.
- Clarify biodiversity policy and highlight potential areas of conflict with the proposed plan.
- Provide a mechanism to review availability of biodiversity data or to obtain available data at national / regional level.
- Provide a mechanism to identify main threats and opportunities for biodiversity likely to be affected.
- Provide a formal opportunity to consult with stakeholders about biodiversity.
- Build institutional capacity with respect to biodiversity concerns.
- Identify monitoring and information requirements for effective assessment at 'lower tiers' of planning and decision-making.
- Incorporate understanding of biodiversity threat, viability and conservation priority into planning.

Potential applications of SEA or a strategic approach include:

- Early screening for new ventures and exploration potential to obtain an overview of risks to biodiversity (see recent work by UNEP-WCMC and IHS to map existing and proposed oil and gas concessions in relation to important marine biodiversity: **http://energy.ihs.com/Products/Biodiversity/industry.htm**).
- Early stakeholder engagement in sensitive areas where activities of the proposed type could adversely impact local communities.

8 See Decision VIII/28 of the Conference of the Parties to the Convention on Biological Diversity on Impact assessment: Voluntary guidelines on biodiversity-inclusive impact assessment. (Includes paragraphs on SEA) **http://www.cbd.int/decisions/cop8/?m=COP-08&id=11042&lg=0**.

- Early identification of potential impacts and offset requirements / opportunities including potential interactions between important biodiversity areas and operations of the type proposed.

Ways in which biodiversity offsets and SEA can be integrated are considered in more detail in Table 6, which is adapted (CEA 2006)[9] and from (Tucker and Treweek 2008) and shows how consideration of offsets can be built into the different components of SEA. These should not necessarily be seen as sequential stages.

Table 6: Key steps and recommendations for integrating biodiversity offsets with SEA

Purpose of stage in SEA process	Key considerations with respect to biodiversity offsets
Screening: determine whether proposed plan should be subject to SEA	
Determining whether SEA is formally required for this plan. There may be legal or formal requirements to undertake SEA for certain types of plan (e.g. under the SEA Directive). Possible effects on protected areas are sometimes included as a screening criterion.	Establish whether there are possible impacts on protected sites or threatened species that may 'trigger' the need for formal SEA and for which offsets might be necessary to achieve 'NO NET LOSS' for this type of plan (e.g. because the proposed types of activity already represent a significant threat).
Considering whether voluntary SEA should be undertaken because it might improve the sustainability of the plan. It may be advisable in cases where significant effects are possible or where undertaking SEA might result in a better or more sustainable plan.	It may be helpful to engage in voluntary SEA if important biodiversity may be affected and there is a possible role for offsets. Engaging in voluntary SEA can be useful in contexts where there is limited awareness of the potential role of biodiversity offsets and it would be helpful to raise awareness of the potential role of offsets or to build capacity to understand and deal with offsets. Entering into SEA may provide opportunities for consideration of offsets at an early stage, and this may bring additional flexibility in terms of development options.
Considering whether voluntary SEA might help build institutions and capacity required for effective assessment of impacts on biodiversity and for incorporating offsets into national biodiversity policies / laws.	In countries where there is limited biodiversity information and little systematic planning for conservation, engaging in voluntary SEA in partnership with government stakeholders can help generate data to support spatial planning.
Scoping. set context and focus for the assessment and decide what methods and approaches will be used and who should be involved	
To set context and focus. It may help to produce a conceptual framework and use this to help identify appropriate stakeholders, methods and timeframes for undertaking the assessment. If possible set criteria / objectives which will be used to assess effects and compare alternative options.	At the scoping stage it is helpful to check the plan in relation to obligations under international and national biodiversity conventions and legislation, for example in order to confirm whether there is a 'no net loss' target enshrined in policies or laws. Review availability of information required for the assessment. Is there any systematic biodiversity or conservation planning in place which can be used as a framework for offsets, for example by assigning levels of threat to different BIOTOPES / species? This can help establish which impacts require offsets, which impacts cannot be offset, which impacts need 'LIKE-FOR-LIKE' offsets and which could be better addressed through 'OUT-OF-KIND' offsets that 'trade up'. Clarify the objectives / outcomes which will form the basis for the assessment.

9 Commission for Environmental Assessment. 2006. Biodiversity in EIA and SEA. Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment.

Purpose of stage in SEA process	Key considerations with respect to biodiversity offsets
Consider whether the objectives of the plan are in line with those in existing policies / plans, including environmental objectives (policy appraisal / consistency analysis). NB: SEA applied at the policy level requires a particular focus on the political, institutional and GOVERNANCE issues underlying decision-making processes (OECD / DAC).	Consider whether there is a role for offsets in delivering policy objectives.
Consider the spatial context of the plan, activities likely to be involved and possible effects.	Are the activities in this plan known to represent a threat to biodiversity? What proportion of overall ranges, distributions could potentially be affected?
Identify the main organisations which should be involved and ensure that there are mechanisms for involvement and / or consultation. Facilitate development of a shared vision on problems, objectives and alternative actions to achieve them.	Ensure that relevant biodiversity stakeholders are identified and involved.
(Optional) Produce a scoping report to identify main issues and concerns for consultation and (also optional) hold a scoping workshop to allow stakeholders an opportunity for input.	Ensure biodiversity issues are taken into account if necessary. Include an assessment of the potential role of offsets, particularly for biotopes / species which are a) threatened; b) declining; c) have a diminishing stock of potential locations for occurrence; d) require long lead times for establishment.
Baseline data and information	
Maybe collected during scoping or as part of the main assessment.	Baseline data collection should include landscape level assessment of threats and opportunities to biodiversity, including scope for offsets. This may require a wider geographical perspective than might otherwise be assumed.
Undertake the assessment	
Develop and compare ALTERNATIVES. Identify main drivers and outcomes under alternative scenarios. Use information from consultation and other sources to confirm cases where the proposed plan might exacerbate existing adverse trends or alternatively provide opportunities for ENHANCEMENT.	Compare the impacts of alternatives on biodiversity. Focus on the main direct and indirect drivers affecting biodiversity already and in relation to the alternatives under consideration. Is the plan likely to be a significant factor in causing the conservation status of a species to decline or the integrity of key sites to be adversely affected?
Assess likely impacts against biodiversity objectives.	Identify the possible effects of the plan for KEY BIODIVERSITY COMPONENTS and consider whether they constitute important direct or indirect drivers of change with implications for biodiversity or associated ECOSYSTEM SERVICES. The Millennium Assessment Framework is recommended for this purpose by the CBD in its guidance on impact assessment. Consider the possible impacts and whether they could exacerbate any known adverse trends.
Suggest alternatives which will minimise adverse effects and maximise opportunities for enhancement or improvement.	If necessary, try to identify alternatives that avoid impacts on important sites or which will have a negative effect on the conservation status of species or communities. Look for opportunities to contribute to biodiversity policy / objectives.

Purpose of stage in SEA process	Key considerations with respect to biodiversity offsets
Produce a report summarising key findings and provide justification for main recommendations.	SEA report should identify any key risks to biodiversity and suggest ways in which these can be avoided. Usually the report would be issued for consultation and review to determine whether or not the plan should be given consent to proceed.
Use information in decision making	
Review SEA results. Consider how to incorporate them in the plan or how to improve the plan in the light of the results.	Ensure biodiversity and associated ecosystem services are taken into account and reflect the findings of the previous steps.
For transparency explain results and approach taken to act on them. E.g. one of the responses to an SEA might be to plan mitigation or offsets in advance of future development.	Explain how 'no net loss' has been achieved for key biodiversity components. Present a final account for offsets, showing how they have contributed to the 'no net loss' outcome.
Implement policy, plan or programme; monitoring, follow up and remedial action	
Allow for monitoring, based on criteria identified at the scoping stage and used to assess suitability of alternatives.	Ensure that biodiversity INDICATORS are included if there is a risk that they may subject to significant impacts.
Review the plan at appropriate intervals to allow for any changes required to enhance the plan or reduce any unforeseen adverse consequences.	Ensure that appropriate biodiversity monitoring results are available and taken into account in within the review process.

4. Good Practice Impact Assessment for Biodiversity Offsets

There are several sources of guidance on good practice for impact assessment with respect to biodiversity. These are listed in the References and include:

- IAIA Best Practice Principles for Biodiversity in Impact Assessment.
- IAIA / CBBIA toolkit.
- (Tucker and Treweek 2008) Draft Guidelines for AEWA.
- CBD Guidance.
- Ramsar Guidance.
- World Bank Sourcebook.
- ICMM Good Practice Guidance for Mining and Biodiversity. International Council on Mining and Metals.

This section considers the implications of available guidance and principles for good practice in designing and implementing impact assessment so that biodiversity offsets can be effectively incorporated.

Box 6: Some recommendations for good practice in impact assessment and related biodiversity work

Structure the impact assessment around achievement of 'no net loss' in terms of the PERSISTENCE and viability of biodiversity at different geographic scales.

Use a geographic frame of reference which makes it possible to interpret impacts on biodiversity at a wider / landscape scale in terms of persistence, viability, levels of threat.

Losses in biodiversity due to a proposal should be identified for all activities and for all areas that could be affected, whether or not they are within the immediate 'FOOTPRINT', including cumulative effects.

The impact assessment should consider alternatives which would avoid or minimise BIODIVERSITY LOSS, including the 'do nothing' option.

Recognise that biodiversity offsets may be used to address significant adverse impacts on biodiversity as identified through the MITIGATION HIERARCHY. Proposed mitigation should be proven and shown to be effective. Mechanisms for delivery should be set out and included in an EMP.

Information / data should be obtained which make it possible to determine whether or not 'no net loss' has been achieved. This may require a level of detail not normally obtained for ESIA. It may also require a wider study area.

A precautionary approach should be taken where risks to valued biodiversity and levels of uncertainty are high.

4.1 Guidance on EIA for effective offset planning

BBOP has developed ten principles (see Appendix B) which have implications for how EIA should be structured. Regardless of how EIA and offsets are integrated, the EIA should identify and if possible quantify impacts on biodiversity, confirm the need for MITIGATION and set out the mitigation required as a result of the projected impacts.

The MITIGATION HIERARCHY should be followed as set out in Table 7. At each level in the hierarchy, possible alternatives should be considered with respect to the categories outlined in Box 7.

Table 7: The mitigation hierarchy

Enhance	As a general principle seek opportunities to benefit biodiversity and make it more resilient to loss or damage (possibly pre-project proposal).
Avoid or prevent	Try to prevent significant effects on biodiversity from happening in the first place, e.g. change type of development proposed or location of development.
Reduce or minimise	Reduce the impact to the point where there is no longer a risk of an adverse effect, e.g. include vegetation buffer zones to reduce disturbance to waterbirds on a wetland. Also includes on-site efforts to remedy effects of short-term damage.
Restore or rehabilitate	For temporary and reversible impacts, suggest measures to restore habitats or ecosystems or ensure recovery of ecological communities, species populations or ecosystem productivity.
Compensate, including offsets	If an adverse effect cannot be ruled out or reduced to acceptable levels through the measures outlined above and residual adverse effects on biodiversity will remain, consider whether compensatory measures or offsets may be a possible mechanism for achieving 'no net loss'. Confirm residual adverse effects which need to be offset and commence an offset design / planning process, including identification of potential offset locations.

Box 7: Alternatives

Need or demand: what are the broad alternatives for achieving economic or social objectives? Is the proposed activity necessary or essential?

Mode or process: which mode of development will be most effective in meeting demand (e.g. for the energy sector, nuclear vs. hydro-electric generation)? Which mode would have least impact on biodiversity?

Location: what are the main options for siting? Can sensitive locations be avoided?

Timing: can sensitive periods be avoided? Are there critical ecological phases such as breeding season, nesting season, moulting etc.

Development plans and projects can have many impacts on biodiversity and these differ between development sectors. However key underlying drivers for biodiversity loss are:

- Loss of habitable area for an individual or a species population.
- Changes in configuration of habitable area.
- Thinning of populations due to reduced abundance or density.

Information required to build these considerations into impact assessment is summarised in Box 8.

Box 8: Information requirements for offset design

For areas affected:

- Inventory of species and BIOTOPES.
- Status and area occupied by each species / biotope.
- As possible, an assessment of trends in biodiversity.

For the wider region:

- Current status and area occupied by each species and biotope.
- Potential (historic) area occupied by each species and biotope.
- Existing potential threats to biodiversity.

For proposed offset sites:

- Target area to be occupied by each species and biotope.
- Target status (within the target area) for each species and biotope.

5. References and Other Sources of Information

5.1 References

Canadian Environmental Assessment Agency. 1996. *A Guide on Biodiversity and Environmental Assessment.* Biodiversity Convention Office, Hull, Québec.

Commission for Environmental Assessment. 2006. *Biodiversity in EIA and SEA. Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment.*

IPIECA / OGP. 2005. *A Guide to Developing Biodiversity Action Plans for the Oil and Gas Sector.*

Johnson, S.J. 2006. *Good Practice Guidance for Mining and Biodiversity*. International Council on Mining & Metals.

Millennium Ecosystem Assessment. 2005. *Ecosystems and human well-being: Biodiversity synthesis*. World Resources Institute, Washington, D.C.

OECD. 2006. *Applying Strategic Environmental Assessment. Good Practice Guidance for Development Cooperation.* DAC Guidelines and Reference Series.

Slootweg, R. and Kolhoff, A. 2003. A generic approach to integrate biodiversity considerations in screening and scoping in EIA. *Environmental Impact Assessment Review 23:657-681*.

Tucker, G. and Treweek, J. 2005. The PRECAUTIONARY PRINCIPLE in impact assessment: an international review. Pages 73-93 in R. Cooney, and B. Dickson, editors. *Biodiversity and the precautionary principle. Risk and uncertainty in conservation and sustainable use*. Earthscan Publications, London.

Tucker, G. and Treweek, J. 2008. *Guidelines on how to avoid, minimise or mitigate the impact of infrastructure developments and related disturbance affecting waterbirds.* AEWA Conservation Guidelines No. 11.

US Council on Environmental Quality. 1993. *Incorporating Biodiversity Considerations into Environmental Impact Analysis under the National Environmental Policy Act*. Executive Office of the President, Washington, DC, USA.

5.2 Other sources of information and guidance

The Cement Sustainability Initiative
Environmental and social impact assessment guidelines for the cement industry, available via the World Business Council for Sustainable Development:
http://www.wbcsd.org/web/publications/cement_esia_guidelines.pdf.

Convention on Biological Diversity
Voluntary Guidelines on Biodiversity-inclusive Impact Assessment. Available through the CBD website: (**http://www.cbd.int/doc/meetings/cop/cop-08/official/cop-08-27-add2-en.pdf**). Information on impact assessment and the CBD available on: **http://www.cbd.int/impact/**.

European Union (**http://europa.eu.int/comm/environment/eia/home.htm**)
This Web site provides information on environmental assessment and the European SEA Directive, policies, integration, funding, resources, news and development.

International Association for Impact Assessment (**www.iaia.org**)
The site provides information on the IAIA, conferences, activities and special projects, resources, publications and reference materials (including SEA performance criteria, principles of BEST PRACTICE for biodiversity in impact assessment and key citations for EA topics, including biodiversity). Follow links to the CBBIA (capacity building for biodiversity and impact assessment) project for a toolkit on biodiversity and impact assessment.

International Council on Mining and Metals (**http://www.icmm.com/**)
ICMM represents many of the world's leading mining and metals companies as well as regional, national and commodity associations. ICMM members are committed to the responsible production of minerals and metals and ICMM provides guidance on environmental assessment, management and biodiversity.

Netherlands Commission for Environmental Impact Assessment (NCEIA) (**www.eia.nl**)
The Web site provides advisory services and related training activities to support the development of SEA in a country as well as advice on the terms of reference for SEA. The NCEIA is developing an SEA database which includes case studies and examples.

OECD DAC Task Team Web site (**www.seataskteam.net**)
This is the dedicated Web site of the OECD DAC Task Team on SEA. It gives information on working groups, resources, tools, biographies and includes provision for on-line discussions.

The Ramsar Convention
'toolkit' for the conservation and wise use of wetlands Handbook 13: Impact Assessment Guidelines for incorporating biodiversity related issues into environmental impact assessment legislation and / or processes and in strategic environmental assessment. The Handbooks can be downloaded in PDF format from **www.ramsar.org/lib/lib_handbooks2006_e.htm**.

World Bank Biodiversity and Environmental Assessment Toolkit
http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000094946_02082204120010.

Appendix A: Conventions and Legislation Requiring Impact Assessments with Related Guidance[10]

The importance of Impact Assessment tools for mainstreaming biodiversity into the planning and implementation of development has been recognised by a number of international biodiversity related conventions, including the Convention on Migratory Species (CMS), the Convention on Biological Diversity (CBD), the UNECE Convention on EIA in a Transboundary Context (the Espoo Convention) and the Ramsar Convention. These Conventions consider biodiversity to be a key issue to be addressed in environmental impact assessment carried out for individual projects (EIA) and in the strategic environmental assessment of policies, plans and programmes (SEA). Various resolutions and decisions by these conventions require parties to undertake impact assessments and guidance has been developed on their application for the benefit of biodiversity[11].

The Convention on Biological Diversity (CBD)

The CBD directly requests Parties to carry out EIA for projects, programmes and policies likely to have a significant adverse impact on biodiversity (Article 14). It also requires Parties to integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans and programmes and SEA is an obvious tool for meeting this requirement.

There have been a series of decisions by the CBD-COP on information exchange and the development of guidelines for impact assessment. These have resulted in the production of voluntary guidelines on biodiversity-inclusive impact assessment (see Section 5.2). These were approved under COP decision VIII/28 (adopted March 2006) and Parties are encouraged to test and implement this. Key features include an emphasis on the Millennium Assessment Framework, encouraging a focus on the main direct and indirect drivers of change associated with development and on how these affect biodiversity and ecosystem services.

http://www.biodiv.org/decisions/default.aspx?m=COP-08&id=11042&lg=0.

CBD Ecosystem Approach

http://www.cbd.int/programmes/cross-cutting/ecosystem/.

10 From Tucker and Treweek (2008).

11 e.g. **http://www.cbd.int/impact/** for links to guidelines on biodiversity considerations in impact assessment (decisions VI/7-A and VIII/28).

The Ramsar Convention

The Ramsar Convention promotes SEA and EIA as tools. Ramsar's Article 3.2 requests EIA for developments affecting wetlands particularly at Ramsar sites. Ramsar guidance on impact assessment has recently been reviewed and re-issued.

http://www.ramsar.org/sc/37/key_sc37_doc22.pdf.

The Convention on Migratory Species (CMS)

Resolution 7.2 (Impact Assessment and Migratory Species) calls for Parties to ensure that EIA and SEA include due consideration of potential impacts on migratory species, including transboundary effects. It also emphasises the importance of good quality environmental impact assessment and strategic environmental assessment as tools for implementing other Articles on protection of migratory species and species in the various Appendices to the Convention. In particular the CMS urges Parties to include consideration of possible impacts on migration, migratory ranges or migratory patterns in EIA and SEA.

http://www.wcmc.org.uk/cms/COP/cop7/proceedings/pdf/en/part_I/Res_Rec/RES_7_02_Impact_Assessment.pdf.

UNECE Convention on Environmental Impact Assessment in a Transboundary Context

An international agreement dealing with transboundary effects in the Espoo Convention (UNECE Convention on EIA in a Transboundary Context), agreed in Kiev in May 2003. The Espoo Convention Protocol includes a separate article encouraging the use of SEA in the context of policies and legislation. It will become effective once ratified by at least 16 countries.

Protocol on Strategic Environmental Assessment (Kiev 2003) to the Espoo Transboundary EIA Convention – **www.unece.org/env/eia/sea_protocol.htm**.

EU Directive 97/11/EC amending Directive 85/337/EEC on assessment of the effects of certain public and private projects on the environment

The European Commission (2001) has produced '*Guidance on EIA. EIS Review*', which consists of three guidance documents which cover the stages of screening, scoping and EIS review. The intention is to offer practical guidance and help to those involved with EIA. Guidance has been designed to assist in better decision-making (screening, scoping documents) and to help production in higher quality EIS and better assessment of them (EIS review).

http://ec.europa.eu/environment/eia/eia-guidelines/g-review-full-text.pdf.

European Union Directive (2001/42/EC) on the Assessment of the Effects of Certain Plans and Programmes on the Environment

Known as the SEA Directive, it came into effect in 2004 and applies to all 25 member states of the European Union. It requires an environmental assessment for certain plans and programmes at various levels (national, regional and local) that are likely to have significant effects on the environment.

Available guidance includes:

Manual on Strategic Environmental Assessment of Transport Infrastructure Plans (European Commission, DG Energy and Transport 2005).

Commission's Guidance on the implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Commission).

Handbook on Environmental Assessment on Regional Development Plans and EU Structural Funds programmes (European Commission 1998).

http://ec.europa.eu/environment/archives/eia/sea-support.htm.

Appendix B: Principles for Good Practice

BBOP has developed ten principles for good practice in designing and implementing biodiversity offsets[12] and principles for biodiversity-inclusive impact assessment have been developed by the International Association for Impact Assessment (available on **www.iaia.org**). IAIA's principles emphasise the need for:

- A focus on achieving NO NET LOSS of biodiversity.
- A precautionary approach.
- An ecosystem approach.

The following table summarises the implications of BBOP's principles for impact assessment practice.

BBOP principle	Approach to impact assessment
1. ***No net loss.*** A biodiversity offset should be designed and implemented to achieve *in situ*, measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a NET GAIN of biodiversity.	An impact assessment can be structured around the principle of 'no net loss'. Key biodiversity components can be identified and used as the basis for any assessment objectives. The impact assessment process can generate information to show how impacts can be avoided at source, or reduced through MITIGATION, to ensure that 'no net loss' is achieved (also refer to (2) mitigation hierarchy). If it is not possible to achieve 'no net loss' through AVOIDANCE or mitigation, the impact assessment process provides an opportunity to consider whether offsets can be used to achieve 'no net loss'.
2. ***Additional conservation outcomes.*** A biodiversity offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place. Offset design and implementation should avoid displacing activities harmful to biodiversity to other locations.	The main purpose of this principle is to ensure that the OFFSET ACTIVITIES result in conservation outcomes that are additional to those that would have happened without the offset. This has implications for impact assessment, since there is a danger that offset activities could simply displace biodiversity damaging activities to other locations (so-called 'LEAKAGE'). Typical examples would be increased hunting pressure in remaining areas of forest if access to traditional hunting grounds is lost, or the need to convert land for farming following strict protection of an area for offset purposes. It is important to consider the possibility that such effects might occur at the scoping stage of EIA to ensure that the information required to assess them is available to support offset design.

12 The principles and additional supporting text can be found on the BBOP website at: **www.forest-trends.org/biodiversityoffsetprogram/guidelines/overview.pdf**.

BBOP principle	Approach to impact assessment
3. ***Adherence to the mitigation hierarchy.*** A biodiversity offset is a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance, minimisation and on-site REHABILITATION measures have been taken according to the MITIGATION HIERARCHY.	EIA can play a fundamental part in identifying and quantifying significant adverse impacts for which mitigation is required. EIA should establish what, if any, RESIDUAL IMPACTS are likely to remain after appropriate actions have been taken to avoid or reduce impacts or to rehabilitate biodiversity. An EIA should provide the information needed to commence offset design by establishing the nature and significance of residual impacts. The next step is to consider whether these impacts can in fact be offset. Analysis of the likely need for and effectiveness of mitigation is important for the EIA process, and should be undertaken as early as possible during the design of a project proposal, to avoid unnecessary cost.
4. ***Limits to what can be offset.*** There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the IRREPLACEABILITY or VULNERABILITY of the biodiversity affected.	It is important to consider whether there may be impacts which are not offsetable as early as possible. Some biodiversity is so irreplaceable, threatened or vulnerable to further impact that no further loss or damage could be offset. It should be possible to obtain the information needed to consider this as part of the BASELINE biodiversity surveys or assessments carried out for EIA before impacts are assessed or quantified. This is likely to be at or shortly after the scoping stage, but limits to what can be offset should be reconsidered following the impact assessment as there may be situations where it is the nature or magnitude of the impacts which result in a conclusion that an offset is not appropriate or possible.
5. ***Landscape context.*** A biodiversity offset should be designed and implemented in a LANDSCAPE CONTEXT to achieve the expected measurable conservation outcomes taking into account available information on the full range of biological, social and CULTURAL VALUES of biodiversity and supporting an ecosystem approach.	SEA can be used for plans and programmes affecting biodiversity at the landscape scale. SEA can be used to confirm policy goals and biodiversity objectives, for example those established through NBSAP or similar processes. Even if an EIA is being conducted without the benefit of a broader, strategic assessment such as an SEA, the EIA will need to look outside the project boundaries in order to determine the significance of the impact on biodiversity (for instance, to assess whether certain biodiversity components are well represented in the region where the project will take place, or whether they are ENDEMIC to the project site). This kind of regional assessment can help the project planners assess the significance of the impact, the extent to which the residual impacts can be offset, and whether an offset should be 'LIKE-FOR-LIKE' (conserving a very similar mix of species and assemblages as are found in the area affected by the project) or could be 'out-of-kind' (conserving species and assemblages of higher conservation value than those affected by the project). If no strategic review or SEA has been carried out, it is nevertheless essential to consider how the status, PERSISTENCE and levels of occupancy of key biodiversity components will be affected by a proposal, at different geographic scales of representation.
6. ***Stakeholder participation.*** In areas affected by the project and by the offset, the full and effective PARTICIPATION of STAKEHOLDERS should be ensured in all phases of decision-making about biodiversity offsets, including their evaluation, selection, design implementation and monitoring.	SEA as applied in many countries includes an explicit requirement for stakeholder involvement and / or public participation. SEA of policies, plans and programmes can help engage stakeholders. A participatory and transparent approach is also seen as good practice for EIA and can help both to assess impacts on biodiversity and to identify suitable offset locations.

BBOP principle	Approach to impact assessment
7. ***Equity.*** A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a project and offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration should be given to respecting both internationally and nationally recognised rights of indigenous peoples and local communities.	Increasingly it is seen as good practice for impact assessments to consider the equitable sharing of the benefits of biodiversity, including ecosystem services based on diverse, functioning ecosystems and to ensure that information is obtained to identify (and if possible quantify) important biodiversity values.
8. ***Long-term outcomes.*** The design and implementation of a biodiversity offset should be based on an ADAPTIVE MANAGEMENT approach, incorporating MONITORING AND EVALUATION, with the objective of securing outcomes that last at least as long as the project's impacts and preferably in PERPETUITY.	Impact assessment is not outcome-oriented: it identifies and flags consequences of a proposal for biodiversity but does not guarantee that the best option for biodiversity will be selected. Unless it is combined with rigorous environmental management procedures and monitoring requirements, it does not ensure long term success for any measures that are taken, including offsets. Ensuring long-term success requires significant changes to the ways in which Impact Assessment is practiced, e.g. through the introduction of rigorous finance mechanisms to support maintenance in perpetuity.
9. ***Transparency.*** The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner.	It is good practice for SEA and EIA to be applied in a transparent manner with involvement of stakeholders.
10. ***Science and traditional knowledge.*** The design and implementation of a biodiversity offset should be a documented process informed by sound science, including an appropriate consideration of traditional knowledge.	The same applies to EIA.

To learn more about the BBOP principles, guidelines and optional methodologies, go to:

www.forest-trends.org/biodiversityoffsetprogram/guidelines