

Biodiversity offsets:



Views, experience, and the business case

Executive Summary

The Executive Summary of this report is available at:
http://www.insightinvestment.com/Documents/responsibility/Executive_Summary_Biodiversity_Offsets_Report.pdf, and from IUCN at:
<http://biodiversityeconomics.org/offsets/execsum.htm>

Acknowledgements

This report was written by Kerry ten Kate, Director, Investor Responsibility, Insight Investment; Joshua Bishop, Senior Advisor, Economics and Environment, IUCN-The World Conservation Union; and Ricardo Bayon, an independent consultant. Caroline Barraclough of Insight Investment provided invaluable help in corresponding with all those involved and compiling their comments.

The report is based primarily on interviews and discussions with the individuals listed in Appendix 1 (see page 88) and the authors are extremely grateful to them for the information, views and insights that they shared and for their comments on the draft report. Interviewees were speaking in their personal capacity and their views may not be the official policy of the organisations for which they work. Many other individuals have kindly contributed information on particular boxes and information included in the report and the authors would like to thank them as well. The authors have made their best efforts to ensure the accuracy of the information contained in this report and apologise for any inadvertent errors.

Publication details

The designation of geographical entities in this report, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN or Insight Investment concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. The views expressed in this publication do not necessarily reflect those of IUCN or Insight Investment. This publication has been made possible in part by funding from Insight Investment.

Published by: IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK

Copyright: © 2004 International Union for Conservation of Nature and Natural Resources and Insight Investment Management (Global) Ltd, London, UK

Reproduction of this publication for educational or other non-commercial purposes is authorized without prior written permission from the copyright holder provided the source is fully acknowledged. Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission of the copyright holder.

Citation: ten Kate, K., Bishop, J., and Bayon, R. (2004). *Biodiversity offsets: Views, experience, and the business case*. IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK.

ISBN: 2-8317-0854-0

Available from: IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge CB3 0DL, UK
Tel: +44 1223 277894 Fax: +44 1223 277175 E-mail: info@books.iucn.org www.iucn.org/bookstore

And also: <http://biodiversityeconomics.org/offsets> and
http://www.insightinvestment.com/Documents/responsibility/Biodiversity_Offsets_Report.pdf

Table of contents

1	<i>Introduction</i>	6
1.1	Methodology	7
1.2	Structure of this report	8
2	<i>What is a biodiversity offset?</i>	9
	▪ Offset or mitigate?	9
	▪ Offset and the environmental mitigation hierarchy	9
	▪ Offset or compensate?	9
	▪ Onsite or offsite?	10
	▪ The value of biodiversity and conservation in the context of sustainable development	10
	▪ No net loss (or net positive impact)	11
	▪ Biodiversity offsets compared with carbon and other offsets	12
3	<i>Why biodiversity offsets? The conservation case</i>	14
3.1	More conservation	14
3.2	Better conservation	16
3.3	Cost effective conservation	18
3.4	Giving value to conservation: creating value for undeveloped land	20
4	<i>Why biodiversity offsets? The regulatory case</i>	21
4.1	Policy context	21
4.2	Law requiring offsets	22
	4.2.1 Wetland Banking in the US under the Clean Water Act	22
	4.2.2 Conservation Banking in the US, under the Endangered Species Act	25
	4.2.3 Habitats and Birds Directives and implementing regulations in the EU	28
	4.2.4 Offsets in Brazil under the Forest Regulation & National System of Conservation Units	29
	4.2.5 Federal Law for the Protection of Nature and Landscape in Switzerland	31
	4.2.6 No net loss of fisheries habitat in Canada under the Fisheries Act	31
4.3	Facilitating law that can trigger negotiations on offsets	32
	4.3.1 Environmental Impact Assessments	32
	4.3.2 Planning law	33
	4.3.3 Concession agreements	33
	4.3.4 Policy that builds on a number of legal provisions	34
4.4	Mandatory or voluntary systems?	36
5	<i>Why biodiversity offsets? The business case</i>	38
5.1	The business case	38
	5.1.1 License to operate, reputational risk, and regulatory goodwill	38
	5.1.2 Access to capital	40
	5.1.3 Lower costs of compliance	42
	5.1.4 New market opportunities	43
	5.1.5 First mover competitive advantage and the power to influence regulation	44
	5.1.6 Clean break	44
	5.1.7 Employee satisfaction and retention	45
5.2	Barriers to more voluntary offsets	45
	5.2.1 Suspicion of companies' motivations	45
	5.2.2 Increased scrutiny	46
	5.2.3 Unfulfilled promise	48
	5.2.4 Legal liabilities and new responsibilities	49
5.3	Implementation of biodiversity offsets by companies	49
	5.3.1 Signals of industry interest in biodiversity offsets	50
	5.3.2 Corporate policies	50
	▪ The case until now: purely aspirational goals	50
	▪ Ad hoc contributions by charismatic individuals	52
	▪ Moves towards the offset mindset: demonstrating net positive effect and transcending environment/development trade-offs	52

6	<i>How to offset: technical issues</i>	55
6.1	Measuring impacts and establishing “no net loss”	55
	6.1.1 Measuring impacts	56
	6.1.2 Establishing equivalence for offsets	57
	▪ Ecological proxies	57
	▪ Economic valuation	60
6.2	Optimising conservation benefits	61
6.3	Location	62
	6.3.1 Proximity to the site affected	62
	6.3.2 The bigger picture: offsets further afield	63
	6.3.3 International trade	65
	6.3.4 Should “no net loss” for companies be at the site or corporate level?	65
6.4	Timelines	66
	6.4.1 Duration of offsetting obligations	66
	6.4.2 Should offsets be implemented in anticipation of development projects?	67
6.5	What kind of activities count as legitimate “offsets”?	68
	6.5.1 Additionality	68
	6.5.2 Conservation or capacity building?	69
	6.5.3 Conservation or development?	71
7	<i>How to offset: stakeholder issues</i>	72
7.1	Who should be involved in designing an offset and who decides it is acceptable?	72
7.2	Who should implement a biodiversity offset?	73
7.3	National systems to define and administer biodiversity offsets	74
7.4	Who judges success?	75
8	<i>Conclusions</i>	77
8.1	Views on offset	77
	8.1.1 Growing momentum and interest in biodiversity offsets	77
	8.1.2 Possible advantages of biodiversity offsets	78
	8.1.3 Associated risks	79
	8.1.4 Lack of clear vision	80
8.2	Key conclusions	80
	8.2.1 The meaning of biodiversity offsets and the mitigation hierarchy	80
	8.2.2 The Offset Spectrum	81
	8.2.3 Flexibility	82
	8.2.4 Depends on stakeholders	83
	8.2.5 Offsets benefit from clear priorities	83
	8.2.6 Further work is needed	84
8.3	What would be needed to make it work?	84
	8.3.1 Encourage more dialogue and a shared vocabulary	84
	8.3.2 Ensure all stakeholders play their part	84
	8.3.3 Pilot projects and case studies to experiment and demonstrate net benefits	86
8.4	Next steps for Insight and IUCN	87
	<i>Appendix 1: Interviewees and other informants</i>	88
	<i>Appendix 2: Issues discussed during the interviews</i>	90
	<i>References</i>	92

List of boxes and tables

Box 1:	No net loss in Uganda	11
Box 2:	The definition of “biodiversity offset”	13
Box 3:	Ten newts and their £250,000 pond	17
Box 4:	Cost-effectiveness arguments in New South Wales	19
Box 5:	Legal requirements for biodiversity offsets and compensatory conservation activities	22
Box 6:	Growth of wetland mitigation banking in the USA	23
Box 7:	The Inland Sea Shorebird Reserve: a wetland offset to mitigate on-site habitat losses associated with Rio Tinto’s Kennecott Utah Copper mine	24
Box 8:	Potential benefits of conservation banks	26
Box 9:	International Paper and the Red-Cockaded Woodpecker	26
Box 10:	Conservation Banking in California	27
Box 11:	Using chapter 106 for biodiversity offsets in the UK	33
Box 12:	Summary of some recent policy on offsets in Australia	34
Box 13:	Principles for Green Offsets in New South Wales	35
Box 14:	The Equator Principles	40
Box 15:	IFC and offsets: From Safeguard Policies to Performance Standards	41
Box 16:	EBX: Making a Business out of Offsets	43
Box 17:	The Chad-Cameroon pipeline	46
Box 18:	The Heavy Crude Pipeline (OCP) in Ecuador	47
Box 19:	One approach to enforcement	49
Box 20:	Examples of voluntary corporate commitments related to offset	51
Box 21:	NAM Protocol for determining the extent of biodiversity compensation	56
Box 22:	Habitat Hectares as the basis for the State of Victoria’s “Net Gain Principle”	58
Box 23:	Brazilian “Units of Conservation”	64
Box 24:	Some company views on the prognosis for biodiversity offsets	77

1 Introduction

Biodiversity¹ offsets are conservation² activities intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects. Recent experience with regulatory regimes, such as wetland and conservation banking in the USA, tradable forest conservation obligations in Brazil and habitat compensation requirements in Australia, Canada and the EU, has been supplemented by growing interest in the potential of voluntary biodiversity offsets. This experience suggests that biodiversity offsets may be of value to business, government, local communities and conservation groups alike. For example:

Benefits to business: Biodiversity offsets can strengthen companies' license to operate by encouraging regulators to grant permission for new operations and by securing the support of local communities and non-governmental organisations. For companies, investment in biodiversity offsets can provide a cost effective means to demonstrate that society should continue to trust them with access to the land and sea needed for their operations.

Benefits to government: Biodiversity offsets offer regulators a mechanism to encourage companies to make significant contributions to conservation, in many cases without the need for new legislation and at less cost than alternative policies. Offsets can also help to ensure that development projects intended to meet growing demand for energy, minerals, metals, crops and transport are planned in the context of sustainable development, and accompanied by counterbalancing measures to secure the conservation of ecosystems and species affected by development.

Benefits to conservation groups: Conservation organisations can use and influence biodiversity offsets to secure more and better conservation and obtain additional funding for conservation, for instance, to establish properly financed ecological corridors or strengthen networks of protected areas. Offsets could also help ensure that national or regional conservation priorities are integrated into business planning.

Benefits to communities: Local communities can use biodiversity offsets to ensure functioning and productive ecosystems during and after development projects, not only with properly rehabilitated project sites, but with additional conservation outcomes outside the project's borders, to support livelihoods and amenity.

While the benefits of biodiversity offsets are potentially large, several significant hurdles need to be overcome to realise them. Chief among obstacles is the need for a shared vision of the meaning and standards required of offsets among companies, governments, communities and conservation NGOs. In addition, there is a need to secure consent and build trust among key stakeholders for the approach, to strengthen the business case needed to motivate companies and to establish the policy frameworks to underpin offsets. Some question the benefit of offsets to conservation and to business. Their views need to be taken seriously and they

¹ Biological diversity – or “biodiversity” for short – is a general term for the diversity of genes, species and ecosystems that constitute life on earth. It is defined in Article 2 of the Convention on Biological Diversity as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”

² According to Article 2 of the Convention on Biological Diversity, “In-situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.” The range of conservation activities that might be involved in a biodiversity offset is described in chapter 6.5 of this report.

should be involved in discussions on whether and how biodiversity offsets should be conducted.

This report is a joint effort by Insight Investment and IUCN-The World Conservation Union; both of which have an interest in exploring biodiversity offsets.

Insight Investment is a fund management company based in the City of London managing approximately £75 billion of assets (as at 30 September 2004) on behalf of some 300 institutional investors and millions of retail customers of the HBOS group. Insight has both a financial interest and a moral responsibility to engage with companies in which it is invested to encourage them to adopt high standards on, and manage risks related to, key social, environmental and ethical issues, of which biodiversity is one.

IUCN is a union of 77 nation states, 114 government agencies and over 800 non-governmental organisations dedicated to the vision of “a just world that values and conserves nature”. IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. As part of this effort, IUCN encourages dialogue with industry and debate among its membership to clarify the concepts and practices on issues such as biodiversity offsets.

The authors’ aim in conducting the interviews with companies, regulators and biodiversity experts that form the basis of this report was to explore the potential and limitations of biodiversity offsets: to consider the concepts involved, such as “net benefit” and “no net loss”, as well as why, where, when and by whom biodiversity offsets might be used, and what issues remain to be resolved.

In the report, we discuss these issues and draw preliminary conclusions regarding the potential and limitations of biodiversity offsets, and what steps are needed to develop the approach further.

1.1 Methodology

This report contains a synthesis and interpretation of a series of semi-structured interviews about biodiversity offsets conducted by the authors with 37 interviewees from around the world between March and August, 2004. The authors have also drawn on shorter discussions with some 20 other people. The report does *not* pretend to offer new empirical findings from the analysis of specific biodiversity offsets, nor to establish the balance of opinion in society for and against offsets. Nevertheless, many of the people interviewed for this research have carried out such analysis in the past, and the views expressed here are informed by their practical experience of designing, implementing or evaluating biodiversity offsets in a range of contexts.

The main steps involved in carrying out this research were:

- Agree Terms of Reference
- Develop questions and guidelines for conducting interviews
- Identify interviewees (listed in Appendix 1)
- Conduct interviews including follow-up with additional interviewees identified in the course of the interviews
- Supplement interview data with selective review of literature

- Analysis of interview notes
- Synthesis of results and drafting of report
- Peer review

1.2 Structure of the report

This report comprises eight chapters. Following this introduction, chapter 2 reviews the different ways that people define biodiversity offsets, including the role of offsets in the environmental mitigation hierarchy and their relevance to wider aspirations for sustainable development. The report continues, in chapters 3, 4 and 5, to examine the reasons why different stakeholder groups are motivated to undertake biodiversity offsets. Chapters 6 and 7 explore the challenges of implementing offsets, including technical issues as well as consideration of who needs to be involved. Finally, chapter 8 offers brief conclusions and describes the next steps required to move forward, including activities planned by Insight Investment and IUCN.

2 What is a biodiversity offset?

Our interviews revealed a number of interpretations of the term “biodiversity offset”, partly because “offset” is a particular mechanism in other contexts such as carbon trading and perhaps because terms such as “mitigation” have different meanings in Europe and North America. Compared with other forms of offsets, the limited experience with the relatively new concept of biodiversity offsets has grown in different contexts around the world with little co-ordination, comparative analysis or international debate, so a consistent, globally accepted terminology has yet to emerge.

This chapter will look at the different interpretations of the terms “biodiversity offset”, “mitigation” and “no net loss” and “net benefit”, touch briefly on their use in regulatory regimes around the world, and conclude (see Box 2 on page 13) by setting out the definition of biodiversity offsets that we will use for the purpose of this report.

▪ *Offset or mitigate?*

In some contexts – particularly in Europe– the term “mitigate” means to minimise harm or to make it less severe, whereas in the US, it is often used to refer to activities designed to compensate for unavoidable environmental damage. In the US, therefore, it is generally interchangeable with, and often preferred to, the term “offset”. The relationship between offset and the linked issues of “no net loss” and “net benefit” is described below.

▪ *Offset and the environmental mitigation hierarchy*

Definitions of biodiversity offsets are often couched in terms of existing principles of environmental management. Sachin Kapila of Shell, for instance, describes offsets as a complement to (and not a substitute for) the traditional environmental impact mitigation hierarchy of “avoid, minimise, mitigate.” Although different meanings are ascribed to the terms used here, we understand “minimise” in this context to mean designing a project in such a way as to reduce harm, and “mitigate” to mean alleviating the residual harm, to the extent possible. “Offset” is thus interpreted as an activity to compensate for residual, unavoidable harm.

Similarly, Chris Spray of Northumbrian Water notes that the first priority is to minimise environmental damage. He describes offsets as a supplementary means to address the residual environmental impact of projects. Understood as firmly within the context of this mitigation hierarchy, biodiversity offsets cannot be used to reduce a developer’s obligation to avoid, minimise and mitigate harm.

Moreover, biodiversity offsets are not appropriate in circumstances where development should not proceed in the first place. More detailed consideration of the controversial issue of “no go” criteria is beyond the scope of this report. However, it is an issue on which further dialogue between conservation groups, government and companies is urgently needed.

▪ *Offset or compensate?*

The term “offset” is often used interchangeably with “compensate”. “Compensation” itself has several meanings, however. It can mean financial payment for damage, often associated with legal liability and damages, or it can mean activity designed to counteract harm. As this report concerns agreed activities designed to counteract the harm to biodiversity caused by development activities, and does not focus on judgements and payments, whether voluntary

or associated with legal liabilities, we use the term “compensate” in the sense of concrete conservation actions rather than the simple transfer of funds. We also recognise, however, that the actions involved in a biodiversity offset may be conducted by organisations or individuals who are paid to do so.

■ *Onsite or offsite?*

Does “offset” refer to conservation activity undertaken on the development site itself, or elsewhere? “Offset” can be distinguished from “set-aside” or “rehabilitation”, which refer to avoidance and mitigation, respectively. In general, the term “offset” is understood to refer to conservation activity that takes place outside the geographic boundaries of a development site in order to compensate for unavoidable harm, in addition to any mitigation or rehabilitation that may take place on that site. However, some developers may own large plots of land and in some circumstances, it could be appropriate for biodiversity offsets to be undertaken on land that would not otherwise be conserved within a plot, as a way of offsetting development activity on another part of the plot. These and other issues relating to the most appropriate location of biodiversity offsets are discussed in chapter 6.3.

■ *The value of biodiversity and conservation in the context of sustainable development*

The principle of compensating residual damage to natural habitat implies that biodiversity is valuable and needs to be conserved, a proposition we take for granted in this report. The need for conservation was re-emphasised by the world’s heads of state in their commitment at the World Summit on Sustainable Development in Johannesburg in 2002 to the “achievement by 2010 of a significant reduction in the current rate of loss of biological diversity”.³ It is also enshrined in several international treaties such as the Convention on Biological Diversity and in national law and policy around the world.⁴

It is well known that biodiversity loss results mainly from habitat conversion and disturbance, often caused by activities associated with economic development.⁵ However, just as the international community supports the conservation of biodiversity, international law and policy equally allude to the need for sustainable development and poverty alleviation. This implies that further conversion and disturbance of natural habitat is probably inevitable, due to population growth and economic development. Still, while habitat loss cannot be avoided entirely, the effects of development on biodiversity may be offset through the mitigation hierarchy as well as compensating efforts to protect, restore and enhance natural ecosystems.

Many of those interviewed for this study appealed to broader principles and the context of sustainable development as they spoke of biodiversity offsets. They referred to the notion of a “social contract” between business and society, according to which companies are allowed to operate in sensitive areas if they can demonstrate a commitment to “best practice” including

³ United Nations, 2002. Page 39, paragraph 44.

⁴ One hundred and eighty-seven countries and the European Union have ratified the Convention on Biological Diversity. At the Johannesburg World Summit in August 2002, biodiversity was identified as one of five key issues and a global target was set of significantly reducing its loss by 2010. See http://www.unep-wcmc.org/gbc/press_release.htm. For treaties related to biological diversity, see <http://www.biodiv.org/convention/partners-websites.asp>.

⁵ Biodiversity is generally considered to be declining worldwide, due to loss of habitat, pollution, the spread of invasive alien or “exotic” species, and adoption of an increasingly narrow range of crop and animal varieties for human use (see: IUCN, 2000, Biodiversity is life, <http://www.iucn.org/bil/bioloss.html>; SCBD, 2000, <http://www.biodiv.org/doc/publications/cbd-sustain-en.pdf>; IUCN, 2002, Red List, Major threats, http://www.redlist.org/info/major_threats.html; Global Biodiversity Outlook, Chapter 1, Status and Trends of Global Biodiversity, <http://www.biodiv.org/gbo/chap-01/chap-01.asp>).

the concept of “no net loss” and the need to find “win-win” solutions that can provide net benefits for biodiversity and people.

- *No net loss (or net positive impact)*

What is the goal of biodiversity offsets? How much conservation is enough? The principle of offsetting unavoidable harm naturally raises questions about the desired outcome of the compensatory conservation measures, discussed briefly here, as well as questions about measurement and equivalence, discussed in chapter 6.

The aim of biodiversity offsets is described in some legal systems and expressed by many of our interviewees as “no net loss”. Sometimes, this principle is enshrined in law, as discussed in chapter 4.2. Sometimes, it is voluntarily adopted by companies, as chapter 5.3 shows. An example of the former is the policy of “no net loss” of wetlands formalised by the US federal government in an attempt to reconcile the requirements of the Clean Water Act with continuing pressures to drain and fill wetlands for economic uses (see chapter 4.2).

Box 1: No net loss in Uganda

According to Alice Ruhweza of Uganda’s National Environment Management Authority, NEMA sees biodiversity offsets as a means of ensuring “no net loss” of habitat, while until recently, development projects in the country resulted in loss of biodiversity. Projects were established in sensitive wetlands or other gazetted areas but little was done to address impacts on biodiversity. In such cases, even when mitigation measures were included in the project agreements, Environmental Impact Assessment Condition of Approval Certificates and the Environmental Compliance Agreements between government and the developer, the relevant clauses did not explicitly require the purchase of land or support for a protected area as a form of compensation. (See section 4.3.1 of this report.) As she explains, “Today, for the first time, NEMA is more actively pursuing alternative restoration measures than the traditional on-site mitigation of the past. NEMA is basically saying that you can’t have a project without trying to do compensation. Now, when NEMA gives out concessions, there are conditions. For example, telling developers that they need to buy land and plant trees or gazette land as a Protected Area or take some other action to compensate for the damage caused to biodiversity by the development project. That’s the new part. NGOs involved in environmental advocacy have also played a huge role in raising awareness of the dangers of unquestioning commitment to huge projects, without taking into consideration the effects on the environment or setting up adequate alternative restoration or compensation measures.”

The precise meaning of “no net loss” in the context of American wetlands continues to be a subject of considerable scientific effort and some legal dispute. The effectiveness of the system to deliver “no net loss” has been broadly questioned (National Research Council, 2001). Indeed, some observers have argued that, far from ensuring “no net loss” of wetlands, the system may have unintentionally led to the destruction of some important wetlands. These criticisms are considered later in the report (see chapters 3 and 4.2). While the implementation of “no net loss” will inevitably be complex, the concept is intuitively simple. In the context of US law governing wetlands, it implies that development can proceed only if a total “amount” of wetland habitat is maintained. What results is a form of “cap-and-trade” system for wetland acreage.

“The no-net-loss approach is a good one. It can be challenging, but is more widely applicable to more companies than first meets the eye. It is a good goal to aim for.”

Leah Haygood, Environmental Consultant and former employee of Waste Management.

Some companies and many conservation groups aim to achieve a net positive outcome, in terms of biodiversity quality, rather than simply restoring the *status quo ante*. In this context, offsets may be seen as a means to achieve net improvements to biodiversity quantity and quality, going beyond the notion of no net loss. For instance, BP’s CEO has committed to having “a real, measurable and positive impact on the biodiversity of the world” and in the realm of public policy President George W. Bush recently advocated moving from a “no net loss” approach to wetland conservation, to one based on “net gain” of wetlands (Coyne, 2004).

Before assuming that offsets can indeed achieve a net positive impact, it is important to note that many conservation organisations and scientists have argued that wetland banking and trading in the US has not resulted in “no net loss” of wetlands, and that, far from net gain, wetlands are still being lost. They are therefore sceptical about the likelihood of success of President Bush’s “net gain” policy (Julie Sibbing, personal communication).

With respect to whether the goal for offsets should be “no net loss” or “net gain”, Robert Goodland’s sourcebook for the World Bank’s Extractive Industry Review supports the proposition that any compensation for biodiversity loss should leave the environment “better off” than before the project. This implies “informed agreement of stakeholders that the proposed offset is more extensive in area, greater in environmental value (less disturbed, less damaged, more biodiversity, greater environmental service value), and under a more secure level of protection, such as by financing in perpetuity” (Goodland, 2003). The Energy and Biodiversity Initiative also discussed positive contributions to biodiversity beyond the “minimum requirement” of biodiversity offsets (EBI, 2003).

▪ *Biodiversity offsets compared with carbon and other offsets*

Many interviewees associated the term “offset” with “carbon offsets”, since the term has been used widely in the context of greenhouse gas trading and negotiations to reduce emissions of carbon dioxide. Davis (2000) and others point out, “The term ‘carbon offsets’, though often used as a term of art, has no uniformly accepted meaning.” However, offsets used in the context of carbon trading are usually taken to refer to mechanisms “by which the impact of emitting a ton of CO₂ can be negated or diminished by avoiding the release of a ton elsewhere, or absorbing a ton of CO₂ from the air that otherwise would have remained in the atmosphere” (Janson-Smith, personal communication). Although there are similarities between carbon and biodiversity offsets in their conception and intent – equal and opposite activity to address harm – there are many differences. Greenhouse gases are a more uniform (and therefore internationally tradable) commodity than biodiversity (see chapter 6.1). Carbon offsets are also part of an intergovernmental framework, whereas biodiversity offsets are generally implemented domestically and voluntarily (see chapter 6.3).

Beyond carbon, there are also a number of other contexts in which the concept of offsets has been put to use. For instance, one of the first emissions trading regimes to be instituted at the

national level was the sulphur dioxide (SO₂) trading scheme in the US. As with carbon, this is a cap-and-trade scheme that sets limits on emissions and requires those who emit more than their share to buy allowances from those who emit less.⁶ Similarly, a number of water pollution trading regimes are emerging around the world.⁷ These, too, use concepts similar to those involved in biodiversity offsets, but their number and variety place them beyond the scope of this report.

Box 2: The definition of “biodiversity offset”

For the purposes of this report, we define biodiversity offsets as conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity. Before developers contemplate offsets, they should have first sought to avoid and minimise harm to biodiversity.

⁶ For more information on the US SO₂ market see <http://www.epa.gov/airmarkets/arp/>.

⁷ See <http://www.ecosystemmarketplace.com/news/article.feat.020.php>.

3 Why biodiversity offsets? The conservation case

Having understood offsets as activities designed to compensate or counteract any unavoidable harm to biodiversity that may result from development activities, the question then becomes: what benefits might biodiversity offsets deliver, particularly for conservation? Companies, governments, NGOs and communities may envisage a number of different reasons for undertaking biodiversity offsets. In this chapter, we will explore the strongest arguments that our interviewees made in favour of the conservation potential of biodiversity offsets and outline some of the associated risks or arguments against them. In addition to these arguments, which focus mainly on advantages for conservation, a number of benefits for companies – the business case for biodiversity offsets – are discussed in chapter 5.

3.1 More conservation

If we accept that some development activity will and should take place within the context of sustainable development, that government regulates on behalf of society whether, when and how this should happen, and that it is often the private sector that undertakes this development work, the question then arises as to how to minimise the social and environmental damage to which development activities give rise and to optimise the conservation outcomes.

Interest in biodiversity offsets is sometimes spurred by their potential to trigger more and better conservation outcomes than would otherwise arise when development projects take place. Alice Ruhweza describes how, in the past, development projects sometimes went ahead in Uganda in wetlands and gazetted areas without any specific restoration or compensation measures (see Box 1). Now, Uganda’s National Environment Management Authority is requiring developers to go beyond basic environmental compliance clauses in concession agreements and is granting concessions for development projects subject to conditions requiring compensatory conservation activities. “Offsets can deliver biodiversity conservation that simply didn’t take place in the past”, she says.

Rich Mogensen, Director at Earthmark, and Jason Coccia, Mitigation Program Manager at the Conservation Fund, a US-based environmental non-profit, point out that –in the US at least– law that requires mitigation (or offsets) has led to the creation of thousands of acres of wetlands and protected sites and considerable biodiversity protection, that would not have existed had the law not required developers to offset their impacts on wetlands in this way. Jessica Fox, a researcher at the Electric Power Research Institute (EPRI) in California, has conducted a study on the overall impact of conservation banking across the US.⁸ “What we found,” she says, “is that there are about 40,000 acres [a little over 16,000 hectares] of conservation banks across the US.” Her research also indicates that 75% or more of this land area would likely have been developed if it had not been for conservation banking. “In many cases,” she points out; “the developer has actually become the conservation banker.” In addition, legislation may require offsetting activities to be larger in scale than the areas

⁸ The term “banking” is used in the US to refer to the way offsets are created and approved prior to development. The resulting conservation benefits are “banked” with the regulator and later sold as mitigation credits to future development projects. One of the aims of banking is to avoid any temporal loss of ecosystem benefits (see section 6.4).

damaged by development. Laws on wetland mitigation in the USA (see section 4.2.1 below), for instance, often state that developers who damage one acre of wetlands need to protect or restore a multiple of that area of similar wetlands (sometimes as much as three acres protected for every one acre destroyed).

While biodiversity offsets do offer the prospect of achieving more conservation outcomes than typical with development projects hitherto, they are no panacea and the argument that they can produce more conservation results masks a number of assumptions. There is considerable debate within the US, for example, as to whether development in certain wetlands should have been allowed at all and whether the mitigation has genuinely offset the impacts of developments in them.

Some observers have argued that, in practice, wetland mitigation in the US has come nowhere near achieving the goal of “no net loss”. For instance, Julie Sibbing, of the National Wildlife Federation in the US, states that figures which show a gain of three acres of wetlands for every acre destroyed are “wholly misleading”. She points out that the database on which some of these figures are based “includes in the ‘mitigated’ column, not just wetlands restoration and creation but even acres of wetlands [destruction] avoided by projects, preservation of existing wetlands and preservation of upland buffers around wetlands.” She believes that, as a result, the database does not adequately match an acre of wetland destroyed with an equal acre of wetland created. Additionally, she claims that “the Corps [the US Army Corps of Engineers, which oversees the development of wetlands in the US] does not even keep meaningful figures on mitigation that enable one to tell if they are achieving a real “no net loss”, although they are bringing a new database online this year that may begin to allow them to do this.” Sibbing also cites an article (Turner et al, 2001) which, she feels, shows that “America’s top wetland restoration scientists believe that about 80% of the wetlands built for mitigation in this country [the US] do not succeed in becoming fully functional.”

The significance of the contribution made by conservation banking in the US can also be questioned. The additional area of 40,000 acres conserved by conservation banking in the US is very modest, when compared to the overall area affected by development. In other countries, too, the question arises as to whether paying more attention to biodiversity conservation by building biodiversity offsets into the project approval process –as is now customary in Uganda– will indeed lead to genuine conservation outcomes greater than those achieved by normal environmental impact assessment processes in the past. After all, concession agreements in countries such as Uganda have contained environmental clauses for decades and these may not have achieved adequate results for biodiversity conservation for a range of reasons. For instance, biodiversity as a specific sustainable development issue may have been overlooked compared to other “environmental” issues such as emissions to air and water. Or environmental requirements may not have been specific about the intended biodiversity results and public and private sector representatives may not have had sufficient skills in the field of biodiversity to do it justice. Or companies may not have placed sufficient emphasis on ensuring biodiversity outcomes and governments may not have enforced legislation and environmental clauses in concession agreements. In addition, monitoring and follow-up has often been inadequate. Even if biodiversity conservation measures generally or offsets specifically were stipulated, structures have rarely been put in place to check whether such provisions were implemented.

Clearly, biodiversity offsets will only achieve results for conservation if they are adequately designed, implemented and enforced.

3.2 Better conservation

Another common argument for offsets is that they help conserve areas of higher biodiversity value than those being lost. For instance, if a company wants to develop an area of relatively minor biodiversity value, the offset it undertakes could create or protect an area of greater biodiversity value. Whether this can be achieved in practice will depend, among other things, on how flexibly offsets are interpreted and on whether all relevant stakeholders agree that what is being gained is of equal or greater value than what is lost.

One observer with experience in conservation and mitigation banking in the US says that offsets can, and often do, create opportunities for “trading small blocks of degraded ecosystems for large chunks of functioning ecosystems.” With the wetland mitigation laws in the US, and with the conservation banking that takes place there, others believe that these sorts of biodiversity “trade-ups” are happening all the time. Michael Bean, a senior attorney at Environmental Defense, a US-based conservation non-profit, explains that he has seen at first hand how the judicious use of biodiversity offsets can help achieve better conservation, at least as concerns one endangered bird species: the red cockaded woodpecker. In order to thrive, he explains, these birds need specific types of habitat: 70-80 year old pine trees that are regularly ravaged by fire to clear out the under-story, and between 75 and 150 acres of land on which to feed. Currently, red-cockaded woodpeckers survive in a few large populations in the southeast of the US together with a large number of smaller, more fragmented populations on very degraded habitats. Over time, these small, isolated populations are unlikely to survive. Faced with this threat, coalitions of private companies, independent landowners, the government and conservation groups have used offsets to trade smaller, unmanaged habitat for larger, managed habitat that can support larger bird populations. Similarly, wetland mitigation banks often sell credits to numerous customers, some of whom may be harming relatively small areas, enabling the banks to create larger, consolidated conservation areas, rather than large numbers of highly fragmented, isolated habitats that may not be able to ensure long-lasting conservation results.

The geographic flexibility offered by offsets could also enable conservation efforts to be focused on areas where long-term conservation benefits are more likely. There are cases where a restored mine site, for instance, appears as a small oasis in highly degraded surrounding area. A specialist in the area argues that “protecting 2 acres of wetland surrounded by highways has very little ecological value.” Involving local communities and biodiversity experts in a dialogue with the company and government at the outset of the project could foster agreement on the best use of the money. According to Geoff Burton of Environment Australia, “the concept of offset is invaluable because it allows the community to achieve the best possible biodiversity outcome.”

A number of interviewees highlighted the opportunity for biodiversity offsets to contribute to ecological corridors as a significant factor in achieving better conservation. “A lot of people are talking about conservation corridors,” observed Chris Herlugson from BP, and this was borne out from other interviews. “In Mexico, we intend to target projects in biological corridors”, said José Carlos Fernandez. In the less biologically diverse environment of the UK, Northumbrian Water is looking for the best conservation opportunities, and is guided by government and NGO strategy. “In the UK, there is not much land that remains unaffected by development,” explains Chris Spray. “Our biggest advantage is that we have the opportunity to create ecosystems that are more biologically diverse than the heavily modified land where we operate. We can see the national priorities in the UK Biodiversity Strategy and the accompanying suite of habitat and species action plans. We talk to government to establish the best options to focus on the most useful conservation outcomes”.

Biodiversity offsets could also contribute to better conservation by extending the kind of conservation activities companies undertake from the realm of good management on their own plot to contributing to biodiversity conservation outside it. They could raise the threshold so that companies' conservation activities go beyond on-site restoration, to compensate for the residual damage caused by companies that remains after their basic mitigation activities.

For the argument of better conservation to be sound, a number of things are necessary. The policy framework must be sufficiently flexible to enable offsets to result in additional, prioritised conservation. In this regard, some legal requirements, such as the Habitats Directive in the EU, have been criticised for offering relatively little room for flexibility and requiring developers to recreate exactly the same habitat as that destroyed. (See Box 3) Others, such as the UK law on Sites of Special Scientific Interest (SSSIs), allow more room for flexibility and the possibility that conservation budgets are spent to best effect.

It must also be clear that the priority biodiversity to be conserved would indeed have been lost otherwise (as discussed in chapter 6.5 on "additionality"), and of course society must deem the loss of the "less valuable" biodiversity acceptable as part of the compromise inherent in sustainable development. NWF's Julie Sibbing adds that, while preserving existing, intact ecosystems as mitigation may lead to some areas being protected, it does have pitfalls. These, she says, include: (1) the fact that this, in the end, does not support "no net loss" goals; (2) that it "may be used as an excuse to allow development of areas that could be avoided"; and (3) that governments may simply "use mitigation money to replace funds they would have otherwise spent on acquisition of key properties for biodiversity".

Box 3: Ten newts and their £250,000 pond

Great crested newts are protected under the EU Habitats Directive, although they are fairly common in many reconstructed water ecosystems. In the UK, companies could be fined up to £5000 per newt lost through development. When Northumbrian Water was upgrading its water treatment works in Darlington, it found that 10 great crested newts, which had not been present on the site before the waterworks were built, had moved into the concrete lagoons the company used to settle and drain sludge. In order to meet its legal obligations, Northumbrian Water built the newts an adjoining pond and, two years later, when this new ecosystem was ready, hired someone to collect each newt and transfer them to the new pond. The newts are now breeding happily in the new pond. The exercise cost the company £250,000. As Chris Spray, formerly Environmental Director at the company explains, "If I were to ask conservationists how they would like to spend £250,000 for biodiversity conservation, they would not say "on 10 newts". Conservationists would have had other priorities."

Finally, there must be a basis for establishing that biodiversity in one place is truly of higher value than in another, thus ensuring that the sacrifice results in net gain. In other words, there needs to be agreement on the basis for valuing biodiversity and clarity on conservation priorities. Some countries establish their conservation priorities in National Biodiversity Strategies and Action Plans, but in others, the situation is less clear. Conservation organisations with expertise in the field do not always agree, so it can be difficult for companies to find consistent advice on conservation priorities.

In fact, offset discussions can sometimes stimulate debate on conservation priorities, involving key stakeholders and can even help to rationalise conservation efforts. One of our interviewees who has explored these issues over many years argued that society at large needs to engage

in some discussion of what it wants conserved and at what cost. He added that if such discussions were held, “there could be cases when people are willing to say ‘These sites are doomed. Let’s protect somewhere else.’” The issues of conservation prioritisation and equivalence are discussed further in chapter 6.

3.3 Cost effective conservation

In addition to more or better conservation, offsets could help make the best possible use of money spent for conservation. For instance, some development projects already require on-site restoration activities. It is fairly common for a concession agreement between a government authority and an extractive company to contain a clause that obliges the company to restore and rehabilitate the land disturbed to a status as close as possible to that prior to the development. Indeed, a significant budget is often set aside by companies at the start of extractive projects to cover these restoration obligations when the activities cease. But the cost of restoring the ecology of the disturbed area to a “less than perfect” state, one that nonetheless delivers functioning ecosystem services and a landscape and species mixture similar to the pre-project state, is often considerably less than the investment needed to re-establish, on a species-by-species basis, a site that is, to all intents and purposes, indistinguishable from the original. This begs the question of whether society would prefer this money to be spent in aiming for “perfection” in the area disturbed, or whether it would rather see that budget used to protect more biodiversity or biodiversity of higher conservation value.

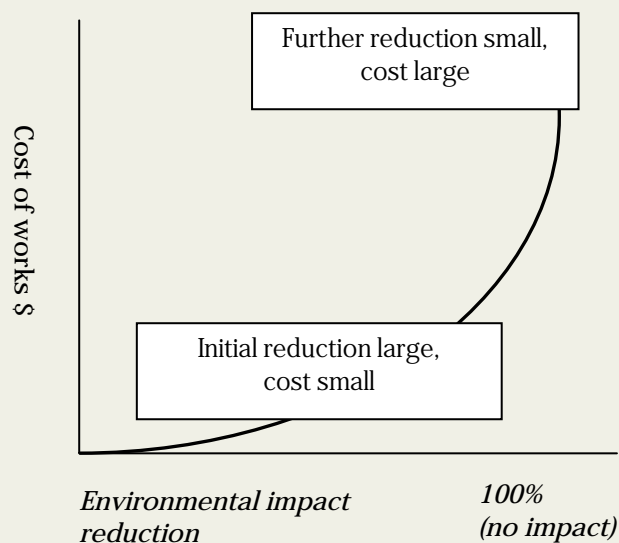
Defining the optimum conservation outcome may involve a review of the emphasis put on each stage of the mitigation hierarchy. As Geoff Burton of Environment Australia explains, “There is a trade-off between remediation obligations and the best biodiversity outcomes. You need a balance. It is important to ensure that, when a company has finished its activities, there are no lasting environmental effects. The purists feel remediation should be done down to the third decimal point, but I think we should optimise the results in the context of the surrounding landscape. What is the opportunity cost of sticking to 100% remediation on-site?” David Richards of Rio Tinto concurs. “Does the conservation community really want a company to chase the last decrement of restoration at the site if some of that money could be better spent on really significant conservation outcomes not a million miles outside the site?”

Under the Clean Water Act, US developers are obliged to offset any unavoidable damage they cause to wetlands. The opportunity cost of forgoing development in order to save or create wetlands varies enormously. It is considerably higher in an area where there is already development and strong pressure for further development than in comparative wilderness areas. Consequently, a market has arisen in which developers can seek to fulfil their offsetting obligations in the least expensive manner possible. Often this takes the form of buying “wetlands credits” from “wetlands mitigation banks”. (See chapter 4.2.)

A similar dynamic has developed in Brazil, where developers must set-aside a proportion of their land for conservation activities. This is inconvenient for certain planned land-uses where land values are high, so some developers have preferred to pay other landowners to conserve more than their share on another plot, enabling them to develop their entire plot. The area conserved may have at least as high biodiversity value but lower real estate value, being of less development potential. (See chapter 4.2.)

Box 4: Cost-effectiveness arguments in New South Wales

In its public consultation paper, “Green offsets for sustainable development”, the State of New South Wales government explains that “offsets can often achieve environmental improvements at lower costs than regulation alone. They allow resources to be used where they can achieve the greatest environmental improvement.... The cost of reducing environmental impact increases dramatically as we approach zero additional impact. The law of diminishing returns is at work. At some point, the cost of further on-site impact mitigation is greater than the value provided to the environment. Stricter controls can increase the cost of development dramatically but may only provide limited gains for the environment. However, worthwhile environmental gains can be made if the resources used for mitigation (or a fraction of them) are used to reduce environmental impact at other sources. That is, once all economically feasible on-site measures have been used to reduce environmental impact, further cost-effective impact reduction is still possible using offsets.”



Source: New South Wales Government, 2002.

There may be tensions between the interests of business and conservationists on cost-effectiveness. Saving money may be a key motivating factor for businesses, while some conservation organisations may want to ensure that companies dedicate all the money they are obliged to contribute to meet their on-site rehabilitation obligations. A solution to this apparent conflict may lie in conservationists agreeing to concede a marginal saving on the part of companies in order to secure more valuable conservation activities than on-site rehabilitation alone. And the business case for companies extends well beyond cost cutting. Some companies may be content to see the full sum they would commit for rehabilitation spent in the most effective way for conservation, even without cost savings. Another issue that must be faced when examining the potential cost-saving advantage of offsets is the fact that this argument often involves some trade-off between the standard (and thus cost) of rehabilitation and investment in offset. This weakens the mitigation hierarchy argument made earlier and, if taken too far, could lead to the perception of offsets as a “license to trash”.

Finally, there is a risk that companies may consider certain habitats to be particularly difficult and thus costly to offset, leading to a temptation to focus instead on less complex ecosystems that may be cheaper to conserve. This highlights the importance of considering the principle and basis of ecological equivalence; an issue we discuss in section 6.1.2.

3.4 Giving value to conservation: creating value for undeveloped land

Another benefit of offsets is their potential to address a negative and unintended consequence of conservation legislation. For instance, by making it illegal to harm endangered species, one effect of laws such as the Endangered Species Act in the US and similar legislation in Europe and elsewhere, has, from the perspective of some landowners, been to turn endangered species and biodiversity into potential financial liabilities. In these circumstances, the moment an endangered species (or protected biodiversity) is discovered on someone's land, their development options, and thus the value of their land, becomes limited. They may no longer be able to build houses, golf courses, or anything else on that land without satisfying processes that some consider cumbersome and expensive for securing the necessary permits from government agencies, and occasionally these permits are denied. In the US "perverse incentives" of this kind may have led to cases of landowners killing endangered species on their land before government agencies knew they were there. Others cite cases of landowners intentionally burning forests on their land for fear of attracting protected species. Conversely, the ability to sell endangered biodiversity as offsets gives it a value. The creation of a market for biodiversity offsets –as in the US– can turn a potential environmental liability into a financial asset that can be sold.

Additionally, biodiversity offsets might offer a mechanism for increasing the value of land under conservation. Candace Skarlatos, Senior Vice President of Environmental Initiatives at Bank of America, believes that conservation banking can offer an innovative way for society to put a value on conservation. "Every time that we look at a possible development", she says, "we need to decide whether to develop and mitigate or not to develop on that land. And if we decide not to develop, the landowner may need to be compensated for forgone development, depending on the circumstances." She believes that conservation banking and the sort of offsetting systems that exist in California can be a way of giving real value to biodiversity and conservation. "And," she adds, "the bottom line is that if it has a value it will be taken care of." An added benefit, she says, is that the offsetting approach can "create new business opportunities as developers out-source mitigation and thus create new companies." Skarlatos points out that, as with all real estate, land value will fluctuate based on demand and supply in the market. Conservation banks work best, she believes, when data is available to show the varying ecological values of different plots of land; when the developer can obtain credits from any of the approved conservation banks; and when, once the details of the conservation banking system have been established, the market is allowed to operate freely without interference.

The potential advantage of offsets in terms of increased value of land, like the other potential advantages, however, is subject to a number of caveats and risks. There are doubts about whether the economic benefits of forgoing development and conserving biodiversity would match the economic gains of developing the land. This problem is partly met, in the US, by a strict regulatory framework that prohibits the development of land without offsetting activity, thus making the economic exploitation of such land illegal. The opportunity cost for landowners to offer land for purely voluntary biodiversity offsets may not be acceptable, however. Second, in order for land to gain value from conservation and thus to create an economic incentive for landowners to offer it as an offset, there would need to be sufficient demand for biodiversity offsets. Another set of concerns surrounds the ability of markets to work for conservation and problems of market failure. While the issue of market failure lies beyond the scope of this report, it has been addressed in related literature. See, for example, Baumol and Oates (1988).

4 Why biodiversity offsets? The regulatory case

The preceding chapter discussed a number of potential advantages – mostly in terms of conservation outcomes – of biodiversity offsets; advantages which would only materialise if a number of pre-requisites were met and risks addressed.

This chapter will provide an overview of the development of policy related to biodiversity offsets over the last couple of decades, and then discuss one of the two key motivations for developers to undertake biodiversity offsets: legal compliance. In a few countries, there are legal requirements to offset while in many others, the law does not explicitly require biodiversity offsets, but facilitates them by providing a conducive policy framework. (The second main motivation is the business case for companies to undertake offsets on a purely voluntary basis and this is discussed in chapter 5.) Section 4.4 ends with some observations about the relative advantages and disadvantages of mandatory and voluntary policy frameworks for biodiversity offsets.

4.1 The policy context for biodiversity offsets

The idea of compensating for environmental damage has been around for a long time. (See, for example, Barbier et al. 1990.) Moreover, compensation forms the basis of one of the most well established instruments of environmental policy, namely tradable rights (Baumol and Oates 1971, 1988; Montgomery 1972; Tietenberg 1980). The rationale for both compensating projects and tradable rights is that by allowing firms to provide compensation for activities that damage the environment, or transfer their environmental obligations to third parties, it is possible to reduce the costs of achieving a given environmental target very significantly.

Tradable rights or tradable permits have been used successfully around the world, including for the control of industrial pollution as well as for the management of water resources and fisheries (OECD 1999; Stavins 2003; Tietenberg 2002; US EPA 2001). A similar approach is currently in use or under discussion in some countries to limit the loss of natural habitat due to land use change (Chomitz et al. 2003; Gardner 2003; Johnston and Madison 1997; Landell-Mills and Porras 2002; Pagiola et al. 2002; Weber 2003). Under the rubric of tradable development rights, compensatory mitigation or biodiversity offsets, the latter experience further suggests that significant financial resources can be generated from land developers for biodiversity conservation, while limiting habitat losses within a region. The use of tradable development rights or offsets to finance biodiversity conservation at an international level remains undeveloped, although there have been proposals along these lines (Cervigni 1993; Graßl et al. 2002; Panayotou 1994; Swanson 1995).

Policy guidance and practical experience of biodiversity offsets has emerged in different ways and in many different places around the world. Only recently have people begun to compare and contrast policies and experience across sectors and regions (Johnston and Madison 1997; NRC 2001; Wilkinson and Kennedy 2002). While the scale and scope of biodiversity offsets is difficult to ascertain, it seems clear that various forms of offset are being used in an increasing number of countries and sectors. This includes both mandatory offsets (i.e. those required by legislation) and voluntary ones. Legal precedents and triggers for biodiversity offsets are described in the following pages and a comparison of mandatory and voluntary approaches is provided in section 4.4.

4.2 Law requiring offsets

Legal provisions in a number of countries, outlined in Box 5, require the re-creation of habitats or *in situ* conservation to compensate for the damage to be caused by development activities.

Box 5: Legal requirements for biodiversity offsets and compensatory conservation activities

- *Wetland Banking in the US*
under the Clean Water Act 1972 Chapter 404(b)(1) and the US Army Corps of Engineers regulations (33 CFR 320.4(r))
(See Boxes 6 & 7)
- *Conservation Banking in the US*
under the Endangered Species Act 1973 and the Guidance on Establishment, Use and Operations of Conservation Banks (<http://endangered.fws.gov/policies/conservation-banking.pdf>)
(See Box 9)
- *Habitats and Birds Directives and implementing regulations in the EU*
under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora and Council Directive 79/409/EEC
(See Box 3)
- *Offsets in Brazil under the Forest Regulation and National System of Conservation Units*
under Lei N° 4771 of 1965; Lei N° 14.247 of 22/7/2002, Lei N° 9.985 of 18/7/2000, Decreto N°. 4.340 of 22/8/2002
- *Federal Law for the Protection of Nature and Landscape in Switzerland*
- *Offsets in Australia*
(see Box 12 in chapter 4.3)
- *No net loss of fisheries habitat in Canada under the Fisheries Act*
under R.S. 1985, c. F-14, Policy for the Management of Fish Habitat (1986), and the Habitat Conservation and Protection Guidelines, Second Edition (1998)
(See especially Subchapter 35(l) and Subchapter 35(2) of the Fisheries Act)

4.2.1 Wetland Banking in the US

Under the US Clean Water Act 1972 Chapter 404(b)(1) and the US Army Corps of Engineers regulations (33 CFR 320.4(r)), developers whose plans call for damage to wetlands need to obtain permits from the US Army Corps of Engineers. In granting these “wetland permits” the Corps follows a sequencing approach: First, developers must prove that the damage to the wetlands is “unavoidable”. If this is done, they must then seek to minimise any adverse impacts on those wetlands that cannot reasonably be avoided. Finally, they must provide “compensatory mitigation” (which is the closest analogue for the term “offset” in the US) for unavoidable adverse impacts that remain after all minimisation measures have been exercised.

A developer that has convinced the Corps that no reasonable alternative exists to the development of a wetland, and that the design minimises harm, must demonstrate that other wetlands, of “similar functions and values”, and in a specified “service area” (determined by the Army Corps of Engineers), have been “protected, enhanced, or restored” to compensate for those that will be damaged (compensatory mitigation). (See Salzman & Ruhl, 2002; Bayon, 2002; Bayon, 2004.) In theory, for every hectare of wetland destroyed, a hectare (and usually more) of comparable wetland must be restored or recreated within the defined “service area”.

The law and its attendant regulations further state that developers can fulfil their “compensatory mitigation” obligations themselves (usually at or near the development site), or they can pay third parties to do this in their stead. If they decide to pay someone else to do the work, they have several options: (1) They can buy “wetland credits” from a mitigation bank, a (usually) for-profit entity that “creates, enhances, or restores” a wetland and then is allowed by the Corps to sell credits for these wetlands –measured in acres– to needy developers; or (2) they can pay fees established by the Corps to public entities or private not-for-profit organisations that, in agreement with the Corps, use the money to “protect, enhance, or restore” wetlands (these are known as “in-lieu-fee” arrangements); or (3) They can pay a third party that is neither a mitigation bank nor an in-lieu fee provider to undertake the mitigation (these are referred to as “ad-hoc” arrangements). (See Bayon, 2004.)

	<i>1992/93</i>	<i>2001/02</i>
Approved banks	46	219
Wetlands restored	17,664 acres	139,896 acres
Participating states	18	40
Size of banks (% > 100 acres)	35%	57%
Private commercial banks	1	135

Source: Wilkinson and Kennedy (2002).

In the US, these laws have led to the creation of a whole new industry, with dozens of new businesses making a living by fulfilling the wetland mitigation obligations of developers. Indeed, recent studies show that wetland mitigation banking in particular has grown rapidly over the last decade (see Box 6). As we discussed in section 3.1, it is important to note that some organisations question these figures. There are many critics of wetlands trading and mitigation banking in the US. They believe that, not only has the policy failed to achieve its “no net loss” goal, but that it may be hiding a continued loss of these important ecosystems. NWF’s Julie Sibbing, for instance, points out that, while the US Clean Water Act requires developers to seek to “avoid and minimise” damage to wetlands before considering offsets, in practice “this is simply not happening and nor do I think it ever really will”. She also says that many wetlands regulators in the US will “readily admit that they allow wetlands to be destroyed that could have been avoided because they feel it is just easier to require mitigation than to say ‘no’.” In support of this, she states that, “currently, 99.9% of permits to fill wetlands are granted, proving that avoidance is not being applied. Yet all those wetlands are being destroyed with only 20% of the mitigation succeeding. How,” she asks, “is this a win for the environment?”

In terms of mitigation banks, Sibbing argues that “wetland mitigation banks have yet to be evaluated for ecological success, but there is absolutely no reason to think that they are any more successful ecologically than project-specific wetlands mitigation. They are typically providing different wetland types and are far from the impact project, making the chance that they are successfully compensating for project impacts extremely remote.” She is, however, quick to point out that her organisation, the National Wildlife Federation, “certainly does not oppose all offsets”, but rather believes it is important to recognise their many pitfalls.

Box 7: The Inland Sea Shorebird Reserve: a wetland offset to mitigate on-site habitat losses associated with Rio Tinto's Kennecott Utah Copper mine

Kennecott Utah Copper mine, a wholly owned subsidiary of Rio Tinto Plc, is North America's largest copper mine. Until the mid-1990s, Kennecott focused its efforts on producing copper, molybdenum, gold and silver from the Bingham Canyon Mine that lies 28 miles southwest of Salt Lake City, Utah. But at that point, the company needed additional storage capacity for “tailings” wastes: sand-sized mineral particles that are an uneconomical by-product from the milling of copper ores. After exploring a number of options, the company purchased an area of degraded salt pans and industrial land adjacent to its main tailings impoundment along the south shore of the Great Salt Lake. However, this property contained designated wetland habitat and, as described in Box 7, Kennecott was required by U.S. law to offset, or mitigate, the loss of wetlands by creation of an agreed number and value of habitat units. In the event, Kennecott Utah Copper Corporation went beyond its regulatory obligations to create a 2,500-acre (1,011-hectare) shorebird and waterfowl refuge.

A wetland mitigation plan was developed in coordination with a Technical Advisory Committee (TAC), comprising representatives from the Utah Division of Wildlife Resources, U.S. Fish and Wildlife Service, Environmental Protection Agency, the Nature Conservancy, National Audubon Society and the US Army Corps of Engineers. The plan established Kennecott's obligations for mitigation construction, operation, maintenance and monitoring. The TAC felt Habitat Evaluation Procedures (a modelling system developed by US Fish and Wildlife Service) would provide the basis for replacement of habitat function and value to wildlife. HEP results in Habitat Units (HU) as the currency for project/mitigation exchange. A one-to-one HU ratio was determined to be adequate for this site.

The mitigation plan was based upon providing similar or enhanced wetland habitats as compensation for impacts to wetlands covered by the Clean Water Act on the tailings impoundment project site. Nesting and migratory shorebirds and waterfowl were identified as the key elements requiring mitigation due to the project site's proximity to Great Salt Lake, which is part of the Western Hemispheric Shorebird Reserve Network.

Although 1,055 acres (427 hectare) of wetlands were impacted by the project and the regulator had settled on a one-to-one ratio, Kennecott decided on a larger voluntary offset, aiming to enhance and restore a landscape within which the wetlands would be more likely to succeed in conservation terms. The company initially identified and purchased 2,500 acres (1,011 hectares) for the wetlands mitigation less than a kilometre from the project site. The site's suitability was based upon the criteria of sufficient acreage, geographical and ecological similarity to the impacted area, water availability to sustain aquatic communities and adequacy of food support.

Construction of the wetland mitigation site started in May 1996 and was completed in January 1997. Water flowed into the mitigation site in February 1997 and the property officially became referred to as the Inland Sea Shorebird Reserve (ISSR). More than 100 species, including avocets, egrets, curlews, cinnamon teal and snowy plovers, a species that is becoming scarce, now use the wetlands that inundate a landscape that was formerly used for grazing and salt evaporation ponds. Results from a five-year monitoring against baseline data indicate that the mitigation plan has increased wildlife values substantially. Bird surveys point to a 1,000-fold increase in bird use over the baseline numbers for the same site.

In 1997, because of the initial success, the site was expanded from 2,500 acres (1,011 hectares) to more than 3,600 acres (1,460 hectares) and four ponds were added that will remain as a bird reserve in perpetuity as well as act as a wetland mitigation bank for impacts from other projects affecting wetlands in the same watershed. In 2004, Great Salt Lake-Gilbert Bay was identified as an Important Bird Area for National Audubon where the ISSR is a significant contribution to bird use. In the long-term, the company plans to hand the site over to National Audubon to become part of its large bird reserve and eight-mile (14-kilometre) contiguous shoreline habitat.

Sources: <http://biodiversityeconomics.org/business/handbook/hand-01-30.htm>, <http://www.audubon.org/bird/iba/utah/> and http://www.kennecott.com/library_reports_rpt7.htm; <http://www.manomet.org/WHSRN/viewsite.php?id=36>; and personal communication with Ann Neville Senior Environmental Specialist Kennecott Utah Copper Corporation and David Richards, Principal Advisor, Environment, Rio Tinto, August 2004.

4.2.2 Conservation Banking in the US, under the Endangered Species Act

Also in the US, at the level of species, a similar process is evolving as a result of certain provisions of the 1973 Endangered Species Act (ESA).

Under the ESA, it is illegal to undertake any development activity that will “take” (i.e., harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) a species listed as endangered or threatened under the ESA, without first obtaining “incidental take authorization” through section 7 or 10 of the ESA from the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS). Section 10 of the ESA requires the landowner to prepare a Habitat Conservation Plan that, among other things, must “minimize and mitigate the impacts” of the activity to receive an incidental take permit. Many of these project applicants seeking “take” through both section 7 and section 10, propose to mitigate the impacts of their activities through what are essentially biodiversity offsets. (Personal communication, Deblyn Mead, USFWS.)

Within this context, the system in the US allows developers that damage an endangered species to mitigate that damage by buying species-specific credits from what have become known as “conservation banks”. Like the wetland mitigation banks discussed above, conservation banks are essentially private (usually for-profit) entities that protect specific species with a view to selling species mitigation credits to needy developers in the future. These two have become profitable businesses.

Jessica Fox, a researcher at the Electric Power Research Institute (EPRI) in the US, estimates that there are now about 40,000 acres-worth (16,000 hectares) of conservation banks in the US, most of them in California, where enforcement of the ESA has been especially rigorous. What’s more, at the level of private businesses, many companies – including industry giants such as International Paper – are looking at how they can take advantage of these laws to make development possible at the same time that they create their own conservation banks. (See Box 8 on the potential benefits of conservation banks and Box 9 on International Paper and the Red Cockaded Woodpecker.)

Box 8: Potential benefits of conservation banks

Summarising many of the potential benefits of conservation banks (benefits that could apply to other forms of biodiversity offsets), Bauer, Fox, and Bean (2004) write that "Conservation banking has a number of potential advantages over traditional approaches to mitigation. By completing necessary mitigation prior to project impacts, banking assures that the mitigation is done and done properly. Further, in theory, banking allows mitigation on a larger scale, providing advance mitigation at a single large site for multiple future projects that would otherwise be mitigated at several smaller sites. In addition, banking creates the opportunity for some landowners to turn endangered species on their property, or restorable habitat for such species, into assets. That turns on its head the conventional wisdom of many landowners that endangered species are a liability to be avoided because of the land use restrictions that can accompany them. Finally, since the number of credits that some banks earn is a function of how successfully species or habitats are restored, bankers have a compelling economic incentive to do the best restoration job possible."

Box 9: International Paper and the Red-Cockaded Woodpecker

In the United States, the red-cockaded woodpecker (*Picoides borealis*) is listed as an endangered species under the federal Endangered Species Act. This means that any activities that might harm the birds are strictly regulated. If you are an environmentalist, this is a good thing. If you are a developer, on the other hand, this can be a problem. As a result of the bird's protected status, there are limited development options for any land blessed with woodpeckers, so they are something of a liability for landowners.

Without large stands of old-growth pine forest that is regularly cleared of understorey by fires, the woodpeckers do not multiply and may eventually disappear. Before the use of offsets, this dynamic was bad news for the woodpeckers. If you were a landowner with no woodpeckers but with good potential habitat for the birds, you had an incentive to get rid of that habitat as soon as possible before any troublesome birds arrived on your land. If, on the other hand, you already had woodpeckers on your land, your incentive was to leave the land alone, try to prevent fires and wait for the habitat to become unsuitable and the birds' numbers to dwindle. Finally, if there were woodpeckers on your land that nobody knew about, there was a strong financial incentive for you to get rid of the birds before anyone found out they were there. "The incentives and disincentives", says Michael Bean, a Senior Attorney at Environmental Defense, "were really skewed."

To address these perverse incentives, the US Fish and Wildlife Service set up a programme known as "Safe Harbour". This programme allowed landowners to work with the US government to determine the extent of endangered species on their land, to establish a Habitat Conservation Plan (HCP), and to reach an agreement with the government that would limit their liabilities as a result of endangered species to an established baseline. The Safe Harbour rules also set the stage for the creation and use of offsets and mitigation. Landowners who increase the number of woodpeckers on their land beyond their baseline can obtain credits that the government has decided can be sold or transferred to others falling below their baseline. What was once a potential liability had now become a potential asset.

In 1998, International Paper (IP), one of the world's largest pulp and paper companies and one of the largest private landholders in the US, took advantage of the Safe Harbour legislation and completed a Habitat Conservation Plan for red-cockaded woodpeckers on the company's land. They found that IP's timberlands across five states in the US Southeast were inhabited by 18 red-cockaded woodpecker (RCW) clusters (the common term used to measure the bird's populations since it nests in family groups). These populations were sometimes located in small, degraded and fragmented forests, making their long-term survival questionable. Through discussions with the US Fish and Wildlife Service, Environmental Defense and others, IP realised that it might be able to take advantage of

offsets to manage its woodpecker problems. If the company could somehow aggregate its 18 groups of woodpeckers onto one plot of land, it could free up some of its other woodpecker-inhabited lands for development. But moving woodpeckers is not an easy proposition (many birds don't survive the voyage or simply fly away once they have been re-settled) so IP decided that the best way to achieve its goals was to breed woodpeckers in a new location and use the new birds to offset any harm that might befall the other woodpeckers on its lands. IP therefore decided to look around for a suitable place to set up a "woodpecker conservation bank". It found the perfect spot in the Southlands Forest Preserve, southwest Georgia.

The Southlands Forest Preserve site comprises 5,300 acres of suitable woodpecker habitat, with large stands of 70-90-year-old longleaf pines and a relatively sparse under story that is kept clear by regular managed fires. The company has also built nesting cavities for woodpeckers and transplanted woodpeckers from government-owned nature reserves in Georgia and Florida. According to Environmental Defense, "The plan will benefit the woodpecker by proactively managing for a single large, viable RCW population at Southlands, and conserving the largest contiguous block of longleaf pine in the company's land base. Such expanses are increasingly uncommon: only about 3 million acres remain of the longleaf pine ecosystem that once covered 74-92 million acres across the southern coastal plain. IP's conservation bank also addresses another critical need of the RCW and the longleaf ecosystem: the survival of both requires active management by landowners in the form of prescribed fire or other means of hardwood control. Without some replacement for the wildfires that once swept the Southeast, the longleaf forest becomes overgrown and the woodpeckers abandon it."

In 1998, when IP began turning Southlands into a woodpecker conservation bank, there were only three birds on the property, all of them male and doomed to extinction. By the beginning of 2003, the number of woodpeckers on the property had increased to 42, in 11 viable "clusters". And in July 2001, the National Audubon Society's Atlanta chapter designated Southlands as an Important Bird Area, making IP the first industrial landowner in Georgia to be so recognised.

Since IP had 18 woodpecker clusters on company land before 1996, IP's target for Southlands is to have at least 18 clusters on the preserve. When this happens, it will be able to offset any damage that might be done to the other woodpeckers on its timberlands across the US Southeast. In fact, it has already used existing clusters at Southlands to offset damage it is causing to woodpeckers on some of its other lands. But beyond its legal responsibilities for offsetting, IP hopes one day to have more than 18 groups at Southlands. It believes the reserve can hold as many as 30 viable woodpecker clusters. If and when that happens, IP will be able to sell as many as 12 excess woodpecker credits to other individuals or companies. As woodpecker credits can be worth from US \$150,000 to US \$250,000 each, the red-cockaded woodpeckers at Southlands could generate from US \$1.8 million to US \$3 million dollars for IP. On top of that figure could be added the financial benefits the company will receive from its ability to develop its original sites where woodpeckers were found. A bird that was once considered a financial liability is now perceived as an opportunity.

Box 10: Conservation Banking in California

Conservation banking in the US was born in the early 1990's, when the state of California became concerned with the fate of one particular songbird, the coastal California gnatcatcher. Because of increased development on the bird's preferred habitat, coastal sage scrub, it was shortly to be placed on the state's endangered species list. Developers, meanwhile, were concerned that if this happened, their activities and a real estate boom would be curtailed, particularly around San Diego County, where coastal sage scrub is common. Environmentalists, on the other hand, were concerned that unless gnatcatchers were protected by conservation of the dwindling remnants of their habitat, the bird would disappear.

The State of California decided that the solution was to protect those areas of coastal sage scrub that, because of their size, location and ecology were particularly valuable for the gnatcatcher. The problem then became how to finance the acquisition of such land on the State's very limited budget, which would not stretch to cover all the areas identified as crucial. At the same time, local governments were prohibited by a state-wide provision from raising property taxes to pay for this sort of initiative. Californians needed to find creative ways of financing the conservation of gnatcatcher habitat.

In 1993, a number of coinciding events led to the innovation of conservation banking. The gnatcatcher was added to the state's endangered species list at the same time that Bank of America - one of the world's largest banks - foreclosed on a 263-acre site in San Diego County known as the "Carlsbad Highlands". This property was important habitat for the gnatcatcher and the bank found that its development options for the site (and therefore its ability to sell the land) were limited. If it wanted to build on the land, it would have to pay large sums to mitigate its damage to gnatcatchers. The return would not necessarily cover the bank's costs. So Bank of America decided to look for other ways of obtaining value from its land. Also at this time, the California Department of Transportation (CalTrans) found that it, too, had a problem with gnatcatchers. It was building a highway on prime gnatcatcher habitat and, given the bird's new endangered status, the agency was obliged to mitigate the damage its project might cause. The stage was set for a deal.

CalTrans agreed to pay Bank of America an undisclosed sum to put a conservation easement (so that the area would never be developed) on 83 acres of its property, in return for a number of gnatcatcher mitigation credits. By 1995, the Carlsbad Highlands became the state's first conservation bank. It has since sold all of its available mitigation credits (about 180) at between US\$10,000 and US\$15,000 a piece. Today, in San Diego County, similar mitigation credits sell for upwards of US\$25,000 each.

Since the creation of the Carlsbad Highlands Conservation Bank, Californians have created more than 40 conservation banks on a wide variety of species and habitats. There are even multi-million dollar businesses (for instance, a company called Wildlands Inc.) that specialise in the creation of conservation banks and the sale of mitigation credits.

Bank of America is happy with the outcome of this process. Candace Skarlatos, senior Vice President for Environmental Initiatives at Bank of America, says that, for the Bank, the experience was "a good one". They were finally able to re-coup the money they had lent to the original owners of the Carlsbad Highlands.

4.2.3 Habitats and Birds Directives and implementing regulations in the EU

(See Boxes 3 and 21)

Sources: Personal communication with James Marsden, John Finnie & David Harrison, English Nature, July-September 2004

The EC Habitats Directive requires EU Member States to introduce a range of measures, including protection of 623 species and 169 habitats listed in Annex I and II respectively, by means of an ecologically coherent network of "Sites of Community Importance" (SCIs) to be designated as "Special Areas of Conservation" (SACs). Together with Special Protection Areas (SPA) classified under the Birds Directive, these sites make up the Natura 2000 network of European sites. Following amendments to the EC Birds Directive, the provisions described below apply to SPAs as well as to SACs.

Where a developer wants to undertake an activity which may affect a Natura 2000 site, whether it is to be undertaken within or outside the site, the consenting authority, which, in the UK may be the local planning authority or, for important or controversial decisions, the Secretary of State, must decide whether the project "either alone or in combination with others" (thus allowing cumulative effect to be taken into consideration) is likely to have a "significant effect" on the Natura 2000 site. If so, a more detailed "appropriate assessment" is undertaken on the

implications for conservation of the features of European importance on the site. The consenting authority may agree to the plan only if it can ascertain that the development will not lead to “adverse effects on the integrity of the site”.

Where there will be no such adverse effect, the requirements of the Habitats Directive are satisfied, and the issue becomes one of national planning and conservation law. Permission for the project may yet be rejected on landscape grounds or for reasons unconnected to conservation. As described in Box 11, planning authorities and companies may agree biodiversity offsets as a form of “planning gain”.

Where the authority is unable to establish that the proposed development will not have an adverse effect on the integrity of the site, it must consider whether the project could be changed – for instance, through relocation, use of different materials or seasonal restrictions, so as to avoid adversely affecting the integrity of the site. The developer may also be able to show that, while the project site will be harmed, it will offset the harm by positive conservation measures elsewhere within the Natura 2000 site, so that it is possible to conclude that its integrity will not be adversely affected or there is a net positive effect. In this case, the Habitats Directive is satisfied.

However, if the developer cannot change its project through mitigation or an offset within the Natura 2000 site itself, thus avoiding an “adverse effects on the integrity of the site”, the project may proceed only in the (extremely rare) circumstances that there were no alternatives available and “imperative reasons of overriding public interest” why it should do so. In such cases, another form of offset is required by the Habitats Directive. In the UK, this inevitably involves a decision of the Secretary of State, who must secure compensatory measures to replace the habitat affected. The government expects the developer to bear the costs of these measures. The aim of the compensatory conservation measures is “to ensure that the overall coherence of the Natura 2000 is protected”.

The Directive is not explicit that the replacement habitat must be as near to the site from which the habitat is lost as possible or that it should be exactly the same in all respects as that lost. It does state that the measures must “ensure that the overall coherence of Natura 2000 is protected”. It would appear to be easier to satisfy this requirement if the replacement habitat is of the same type, equivalent in quality and quantity and as near as possible to the damaged site (coherence being judged not just by extent but by distribution). In the case of location, if it is not possible to find or secure a suitable location for the recreation of the habitat required in the immediate vicinity, there is nothing in the Directive to prevent those concerned from widening the search further, presumably even to other EU countries, subject to the “coherence” point. With respect to the similarity of the replacement habitat, the Directive does not appear to leave much scope in “ensuring overall coherence” for replacing ancient woodland with saltmarsh, for example.

4.2.4 Offsets in Brazil under the Forest Regulation and National System of Conservation Units

(Sources: Lei No 4771 of 1965; Lei No 14.247 of 22/7/2002, Lei No 9.985 of 18/7/2000, Decreto No. 4.340 of 22/8/2002, Brazil’s First national report for the Convention on Biological Diversity <http://www.mma.gov.br/biodiversidade/doc/> and personal communication, Juliana Rudich Rehfeld, Anglo American, Brazil)

Two Brazilian laws are particularly relevant to biodiversity offsets: trade in forest set-asides and industry contribution of a share of investment budgets to government, to support Conservation Units.

Trade in forest set-asides

The Brazilian Forest Code of 1965 (Law 4771) requires at least 20% of the native vegetation on each property larger than 50 hectares in the eastern, central-west and southern regions to be set aside and preserved as a Legal Forest Reserve, where only sustainable forestry practices are permitted. The law classed forests in the north and northern central-west (Amazonia) as “primitive”, where at least 50% (increased to 80% in 1996) of natural vegetation must be preserved in this way. The vegetation conserved must be representative of the area.

In the areas where the 20% rule applies, if a landowner does not wish to set aside the relevant proportion of the land within the property, the owner must buy similar land in the neighbourhood. If this offset area is outside the original “microregion” or “hydrographic basin”, the area that the landowner must acquire increases (in the first category of regions) to 30%. Detailed provisions at the state level encourage landowners in these cases to establish vegetation corridors.

Industry contribution to Conservation Units

A system of national and state laws, referred to as the “National System of Conservation Units” (SNUC) states that, where the competent environmental authority licensing a project proposed by an enterprise considers that the enterprise will have a significant environmental impact, the enterprise must compensate for the impacts of the project by supporting the SNUC. Enterprises must pay “no less than 0.5%” of the total anticipated investment costs. The exact sum will be fixed by the competent environmental authority, based on the degree of environmental impact the development project will cause. Case-by-case negotiations have discussed 2-3% of investments, and in rainforest areas, this proportion may be above 6%. The sum will be used at whichever Conservation Units within the category “Units of Complete Protection” the authority decides.

At the national level in Brazil, there are 45 million hectares of Conservation Units, in 31 Federal Environmental Protection Areas, 25 extractive reserves, 25 biological reserves, 29 ecological reserves, 60 National Forests, 19 Areas of Relevant Ecological Interest, 51 National Parks and 364 Special Reserves of Natural Patrimony (on private land) and 22 million hectares more of land in various kinds of Conservation Units at the State level.

Within the Goiás State law, for example, which establishes a State System of Conservation Units (SEUC), a “Unit of Conservation” (UC) is defined as land and its environmental resources, including water, legally instituted by the State with the objectives of conservation under a special administrative regime. UCs are of two kinds, various categories of “Units of Complete Protection” (including ecological stations and state parks, national monuments and forest refuges), are subject to various conditions and restrictions established in each UC’s management plan; and other categories of “Units of Sustainable Use”. The objectives of the State system include establishing criteria and rules for the creation, implementation and management of State UCs. The SEUC will be organised by rules that secure representative samples of ecologically significant different populations, habitats and ecosystems of state territory to safeguard the biological patrimony. Society is to be involved in policy development on UCs, with local populations and stakeholders and interested sectors of society involved in the implementation of UCs. The SEUC will seek the support and cooperation of NGOs and private organisations and individuals to develop studies, research, environmental education, ecotourism, monitoring and maintenance and other activities associated with managing UCs. Local communities and private organisations are encouraged to establish and run UCs within the state system. The State will seek to protect large areas of land by integrating together UCs of different categories that are nearby or contiguous and their respective buffer zones and ecological corridors, integrating different conservation activities with sustainable use of

natural resources, restoration and recuperation of ecosystem services and respecting property rights. When appropriate, ecological corridors will be established.

4.2.5 Federal Law for the Protection of Nature and Landscape in Switzerland

Sources: www.admin.ch/ch/f/rs/451/a18.html) and personal communication, Raymond Lebeau, Head of the Ecological Compensation chapter, Swiss Agency for Environment, Forests and Landscape, September 2004.

This law mandates “reconstitution” or “replacement” of protected biotopes where impacts are unavoidable. Article 18 concerns the protection of animal and plant species and provides that, if, having taking all factors into consideration, it is impossible to avoid harm to protected biotopes, the author of the harm must take special measures to assure the best protection possible, its reconstitution, or, if this is not possible, “adequate replacement”.

4.2.6 No net loss of fisheries habitat in Canada under the Fisheries Act

Source: http://www.dfo-mpo.gc.ca/canwaters-eauxcan/infocentre/guidelines-conseils/guides/fhmcons/fishac_e.asp

The Canadian Fisheries Act (1985) and associated policy guidelines prohibit the destruction of fish habitat, including spawning grounds and nursery, rearing, food supply and migration areas on which fish depend, directly or indirectly. However, the Act also recognises that harm to fish habitat cannot always be avoided or mitigated. Based on the principle of no net loss, the Canadian government has developed guidelines to allow development to take place while conserving and protecting fish habitat. These guidelines include the legal requirement for developers to specify mitigation and/or compensation measures proposed to alleviate potential impacts, and/or to compensate for any loss in the capacity of habitat to produce fish. A hierarchy of preferred options has been identified which includes (in descending order of preference):

- relocation - physically moving a project, or part of a project, to eliminate adverse impacts on fish habitat;
- redesign - so that a project no longer has negative impacts on fish habitat;
- mitigation - where relocation and redesign are not possible; and
- compensation - replacing damaged habitat with newly created habitat or improving the productive capacity of some other natural habit.

“Compensation” is the least preferred option. Moreover, there is a hierarchy of compensation options, which include (again, in descending order of preference):

- create similar habitat at or near the development site within the same ecological unit;
- create similar habitat in a different ecological unit that supports the same stock or species;
- increase the productive capacity of existing habitat at or near the development site and within the same ecological unit;
- increase the productive capacity of a different ecological unit that supports the same stock or species; and
- increase the productive capacity of existing habitat for a different stock or a different species of fish either on or off site.

4.3 Facilitating law and policy that can trigger negotiations on offsets

In addition to regulations that specifically require offsets, other laws and policy can trigger negotiations between developers and regulators that lead to compensatory conservation activities. This section will start by exploring how biodiversity offsets can arise from discussions associated with environmental impact assessments, planning law and negotiation of the terms and conditions in concession agreements between developers and host governments. It will then describe the likely scenario that policy-makers may draw on a range of enabling legal provisions to bring about biodiversity offsets. We illustrate this point with the example of Australia.

4.3.1 Environmental Impact Assessments

Many of our interviewees felt that Environmental Impact Assessments (EIA) provide ample room for negotiation of biodiversity offsets. As José Carlos Fernandez of the National Ecology Institute in Mexico explains, “EIA gives you lots of room to manoeuvre. It is generally used to negotiate compensation with developers in Mexico.”

In Uganda, there is a similar situation. The Investment Code requires all developers to carry out an EIA on proposed projects. The Uganda Investment Authority (UIA) puts developers in touch with registered practitioners who carry out the EIA and send it to the National Environment Management Authority (NEMA) for approval. NEMA and other relevant lead agencies review the report and decide whether or not to approve the project. Upon approval, the developer receives an EIA Certificate of Approval accompanied by an Environmental Compliance Agreement that stipulates the conditions of approval. According to Alice Ruhweza, “These are used to require on-site remediation. Now we require developers also to offset the harm that they cannot avoid by on-site remediation through off-site conservation measures. You don’t necessarily need a special law on offset. The policy framework for biodiversity offsets is there.”

From companies’ perspective, the detailed site environmental management plan is generally linked to issues that arise during the EIA. As Steven de Bie of Shell explains, “the rehabilitation activities that Shell undertakes depend on what was found in the EIA. That’s a good time to establish which compensation activities would work best.”

While there was general agreement that EIA can stimulate biodiversity offsets, several interviewees suggested that some basic conditions need to be in place for EIA to work as a trigger. They felt that supplementary guidelines would be helpful and raised some caveats. Firstly, the EIA system itself needs to be robust and transparent, so that biodiversity offset negotiations take place, and so that offsets are not seen as attempts to “buy-off” officials. Secondly, it would help for policy guidance to be available to provide a clear basis for offsets. This would not only clarify to regulators and companies what was expected of them, but also, as José Carlos Fernandez put it, “embed the concept in their thinking and make it real”.

Additionally, it was pointed out that EIAs are conducted on a timescale that frequently does not synchronise with the biodiversity being studied. For instance, it may take more than a year to understand potential seasonal impacts and to consider which aspects of a site’s biodiversity are priorities for conservation efforts. By contrast, EIAs are often completed within a period of six to nine months. Finally, some conservation organisations have expressed concerns that, since EIAs are usually paid for and approved by the companies causing the environmental damage, they may underestimate the damage caused or the offsets needed to compensate for said damage.

4.3.2 Planning law

In many countries, the planning process, with its formal system of applications and enquiries, offers another potential trigger for dialogue on biodiversity offsets between developers and regulators. Indeed, environmental and social conditions are often required as a condition for planning approval, or as a form of “planning gain”. For instance, in the UK, section 106 of the Town and Country Planning Act has often been used by authorities to require developers to undertake compensatory conservation activities. (See Box 11).

Just as with EIAs, however, certain underlying conditions may be needed for this trigger to work. As one interviewee put it, “any weaknesses in the underlying systems would make a credible system of biodiversity offsets difficult”.

Box 11: Using chapter 106 for biodiversity offsets in the UK

A lake in perpetuity and £1m saved

Northumbrian Water wished to develop a new sewage treatment works for Newcastle on land that was not protected, but was of recognised conservation value, even though it was subsequently found to be contaminated with asbestos. In its planning application, the company showed survey works and proposed to create a wetland, including a 200m long lake with a bird hide and access arrangements enabling bird species to be monitored. It also planned to cap the asbestos with the clay that was excavated for the sewage works. Under chapter 106 of the Town and Country Planning Act, the planning authority wrote the creation of the lake into the planning permission, and has a seat on the management committee in perpetuity. The additional costs to the company of building the lake and bearing the costs for its maintenance in perpetuity were covered under the operational budget and were not particularly significant relative to the costs of the project as a whole. Indeed, the use of the clay to cap the asbestos saved the company over UK£1m, as it was not necessary to remove and dispose of 14,000 lorry loads of clay from the site.

Voles and grouse in the Pennines

Chapter 106 discussions have also led to off-site conservation measures. In the Pennines, Northumbrian Water hoped to build a water treatment works on land within one of the UK ‘s designated “Areas of Outstanding Natural Beauty” (AONB). English Nature, as the statutory compensation body, recognised that the conservation benefits that could be generated on-site were limited, so the parties agreed to conservation measures including the recreation of habitat for water voles on-site, and a £50,000 offset for the conservation of black grouse in the Pennines. English Nature were able to satisfy the authorities that the entire package being offered by the company merited planning permission, when this is rarely allowed in AONBs.

4.3.3 Concession agreements

In many countries, laws related to mining, energy and utilities require developers in these and other industry sectors to obtain permits and licenses from particular government departments. Going by a range of different names, “concession agreements”, “host government agreements” and “production sharing agreements” are contracts between governments and developers that predominantly address the scale of the operations and the financial benefits for the government, but that often address applicable environmental laws and standards. Biodiversity offsets can form part of such agreements. In many jurisdictions, mining concession agreements between host governments and companies require rehabilitation of mine sites to an ecological status close to that before the concession was granted. In some cases, companies agree to undertake conservation activities to offset or

compensate for the difference between the best possible rehabilitation and the pre-mine state (i.e. to offset any environmental damage that cannot be avoided, minimised and remediated). In other cases, companies have proposed to host country governments that funds earmarked for rehabilitating the mine-site to a 'pristine' state would better be dedicated to conservation of a larger area around the mine (e.g. supporting a national park), combined with less adequate but less stringent rehabilitation of the mine site itself. Similar agreements can (and have) been struck with companies extracting oil, gas, and timber. (See ten Kate, 2003.)

4.3.4 Policy that builds on a number of legal provisions

Policy-makers wishing to promote biodiversity offsets may not need to restrict themselves to just one policy or regulatory trigger for offset negotiations. Indeed, governments that wish to encourage developers to conduct biodiversity offsets without introducing a specific piece of legislation may draw on a range of legal and policy provisions, embracing environmental impact assessments, planning law, the law concerning concessions and conservation law. Box 12 describes how different Australian states are using this approach to promote biodiversity offsets. In Uganda, the National Environment Management Authority is using not only law and policy on investment and environmental impact assessment to promote biodiversity offsets (see section 4.3.1), but also provisions relating to the management and conservation of wetlands, land-use planning and protection of natural heritage sites within Uganda's 1995 National Environment Act (Ruhweza, personal communication).

Box 12: Summary of some recent policy on offsets in Australia

Commonwealth law

Various pieces of legislation in Australia (including the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999) that make provision for approval of activities that will result in damage to biodiversity (such as the clearing of vegetation or taking of specific species of fauna and flora) include conditions that relate to making good that damage which could be used as the basis for establishing biodiversity offsets.

New South Wales

A State-wide scheme of "Green offsets" to ensure net environmental improvement as a result of development for water and air pollution and for clearing native vegetation (taking into consideration the Native Vegetation Conservation Act 1997). In addition, the National Parks and Wildlife Service has been working with Planning-NSW to offset the impact of major government infrastructure projects such as highway and railway construction. And the NSW Fisheries has a policy of "no net loss" for developments that damage aquatic habitat. (See Box 13).

Victoria

Victoria's Minister for Environment and Conservation, Sherryl Garbutt MP, explains "We have adopted the policy of achieving a Net Gain in extent and quality of native vegetation" (Victorian Government, 2002). She goes on to explain that "a priority for implementing Net Gain is to avoid clearing. Where flexibility is required to support landholders as they move towards more sustainable land use and limited clearing is permitted, a rigorous process of ensuring achievement of the Net Gain principles must be pursued through strict application of the offset requirements." (See Box 22).

Western Australia

The recently amended Environmental Protection Act, relating to the clearing of native vegetation, makes specific reference to environmental offsets. Section 51H (1) states that "A clearing permit may be granted subject to such conditions as the CEO considers to be necessary or convenient for the purposes of preventing, controlling, abating or mitigating environmental harm or offsetting the loss of the cleared vegetation." The holder of a clearing permit may be required to take specific measures to "establish and maintain vegetation on land other than land cleared under the permit in order to offset the loss of the

cleared vegetation, or make monetary contributions to a fund maintained for the purpose of establishing or maintaining vegetation” (section 51 I (2)(b)). In July 2004, Western Australia released a Preliminary Position Statement (no.9) on Environmental Offsets, to provide advice to stakeholders about the intent and appropriate use of environmental offsets.

Southern Australia

The Native Vegetation Act 1991 states that the Native Vegetation Council (NVC) established by the Act may impose conditions when consenting to native vegetation clearance. If native vegetation is cleared, then a “set-aside” formula of 10 hectares for every hectare cleared is applied. The NVC may also grant consent and impose conditions in some circumstances only if it is “satisfied that the environmental benefits that will be provided by the vegetation significantly outweigh the environmental benefits provided by the vegetation to be cleared” (chapter 29(11)). In addition, the NVC has adopted a general policy that any consent given will be accompanied by conditions requiring action to significantly offset the effects of clearance. A “Point Scoring System” is applied to clearing assessments of scattered trees in order to establish the set-aside formula. (See Baird, 2003.)

Sources: www.dlwc.nsw.gov.au/acre/salinity/offsets.html; www.epa.nsw.gov.au/licensing/; www.epa.nsw.gov.au/air/actionforair/index.htm; www.dlwc.nsw.gov.au/care/water/sharing/; www.dlwc.nsw.gov.au/care/es_scheme.html; www.npws.nsw.gov.au/wildlife/biodiversity_defn.html; www.planning.nsw.gov.au/; http://www.epa.wa.gov.au/docs/1863_Offsets%20PS9.pdf;

New South Wales Government, 2002; New South Wales Government, 2001; Victorian Government, 2002; McCarthy et al, 2004; Parkes et al, 2004;

http://www.calm.wa.gov.au/biocon_act_pubsubs_summary.pdf

Personal communication with Ken Atkins, Department of Conservation and Land Management, Western Australia, Marc Carter, Department of the Environment and Heritage, Australia and Tony Baird, Western Power, Australia

Box 13: Principles for Green Offsets in New South Wales

Australia’s New South Wales government aims to harness market forces through economic instruments to promote sustainable development in the state. In 2002, the state government produced an information paper on “Green Offsets”, and introduced the first five Green Offset initiatives in the same year. Green offsets for water and air pollution and for clearing native vegetation are defined as “an action taken outside a development site (but near to it) that reduces pollution or environmental impacts. The developers either take the action themselves or pay for others to do it on their behalf”. The aim of the scheme is to ensure that there is a net environmental improvement as a result of development. Several criteria are described for Green Offsets:

Principles of offsets:

- Environmental impacts must be avoided first by using all cost-effective prevention and mitigation measures. Offsets are then only used to address remaining environmental impacts.
- All standard regulatory requirements must still be met.
- Offsets must never reward ongoing poor environmental performance.
- Offsets will complement other government programmes.
- Offsets must result in a net environmental improvement.

Offsets must be:

- Enduring – they must offset the impact of the development for the period that the impact occurs.
- Quantifiable – the impacts and benefits must be reliably estimated.

- Targeted – they must offset the impacts on a “like for like or better” basis.
- Located appropriately – they must offset the impact in the same area.
- Supplementary – beyond existing requirements and not already being funded under another scheme.
- Enforceable – through development consent conditions, licence conditions, covenants or a contract.

4.4 Mandatory or voluntary systems?

Our interviews revealed a range of views as to the viability of voluntary biodiversity offsets and the respective advantages and disadvantages of mandatory and voluntary policy frameworks.

Regulatory frameworks such as the Clean Water Act and the Endangered Species Act in the US are powerful incentives for offsetting behaviour and they have certain key advantages – as well as a few disadvantages – over a more voluntary approach to biodiversity offsets. The purported advantage of such laws is that developers are clear about the nature, scope, and sometimes even the cost, of their obligations. Likewise, developers and businesses know that these laws apply equally to all businesses and competitors, so that engaging in offsets need not put them at a competitive disadvantage. However, the prescriptive nature of some laws limits flexibility and may remove the chance for the parties involved to design offsets that are most beneficial for biodiversity. (See Box 3).

Several interviewees pointed out that a legal requirement for biodiversity offsets exist in so few countries that “the voluntary approach means [the company] can make a contribution with respect to a much larger area, in terms of hectares”, as Chris Herlugson of BP put it.

However, the US interviewees were almost unanimous in their scepticism that biodiversity offsets would work on a voluntary basis. Several felt that regulatory intervention was needed to trigger conservation banking and create a market. As Doug Lashley of Greenvest put it, “People stop at intersections only if there is a stop sign”. Bob Brumbaugh, of the Army Corps of Engineers, expands the point: “The system is predicated on demand. And that is only there because of government regulation”. David Brand of Hancock Natural Resources in Australia concurs. “In these areas, change will not happen voluntarily. It will be driven by government regulation. If there is no regulation, then there is no incentive to buy offsets”. Furthermore, clarity on policy helps create markets, as the wetlands example shows. Another knowledgeable observer explains that “on wetlands, there are federal laws, but in other areas, the legal regime is diffuse and not co-ordinated, with a bifurcation between federal and state governments. California has well-defined laws that create the infrastructure for species banking. Therefore it has fifty endangered species/habitat banks while the rest of country has ten.” Robert Bonnie of Environmental Defense spoke for several interviewees who felt that regulation was needed to create markets. “A lot of the voluntary mitigation is actually anticipating forthcoming regulatory regime. There are specific examples of this in carbon offset projects (e.g. those done in Mississippi by Entergy and AEP). Without any risk of future regulation, most of these would probably not have happened.”

Additionally, US interviewees felt that without regulation to back it up, offsetting activity is likely to be fickle, and the first thing to go in hard times. As Richard Herd, a consultant who used to work for Allegheny Power, explained, “When we were all making money, there was room for all of this [conservation]. Now, there is not. It is ‘back to basics’: survival. There is a dramatic difference between legal offsets and voluntary conservation. One is driven by regulation and to save money. The other is generally driven by Public Relations.” In the US, he

concludes, doing offsets has required having proper regulation, but, adds that “there may be a cultural difference [on this] between the US and Europe.”

A cultural difference may indeed explain the noticeable difference in approach between the US and other interviewees, who were generally more ready than their US counterparts to voice the business case for voluntary biodiversity offsets.

However, another explanation may be found in their areas of experience and thus vision for how biodiversity offsets might work in the future. Most of the US interviewees were representatives from companies involved in conservation banking, wetlands trading and carbon offsets, or regulators who have established and administer these systems. Their picture is one of “buying and selling offsets” and a formal system of trading at the state, federal or even international levels. They tend to view regulatory systems as linked to profit and voluntary initiatives as not-for-profit and linked to public relations. The interviewees from other parts of the world were mostly of two kinds. Some were policy-makers in jurisdictions without formal conservation or wetland banking and trading systems. Others were from multinational companies, whose operations have an impact on biodiversity and for whom license to operate – both formal concessions from governments and social license from communities – are key to business success. Their view of biodiversity offsets is that best practice on biodiversity – possibly including offsets, whether mandatory or voluntary – is important to access land, maintain reputation and operate efficiently, with motivated staff, shareholders satisfied that the business model is viable in the long term, and the avoidance of interference and disruption from NGOs and local communities.

5 Why biodiversity offsets? The business case

Chapter 2 outlined biodiversity offsets as activities designed to compensate for unavoidable harm to biodiversity that may result from development activities. Chapter 3 described some potential advantages of biodiversity offsets. Chapter 4 examined one of the two main motivations or triggers for organisations to undertake biodiversity offsetting activities: regulations that mandate offsets and law that facilitates but does not require them.

In the absence of a legal requirement to do so, what is the motivation for a company voluntarily to choose to offset its unavoidable impacts on biodiversity? After all, undertaking offsetting activities will involve time and money. In the absence of specific legislation, this cost may not be borne by companies who do not see the business case for getting involved. Volunteer companies could arguably find themselves at a potential competitive disadvantage. In addition, companies that undertake biodiversity offsets on a voluntary basis expose themselves to the difficulty of reaching agreement on a complex and novel issue and to the reputational risks associated with failure.

This chapter will explore the various components that make up this “business case” for biodiversity offsets and some of the barriers that prevent them from doing so more frequently. It also provides examples of current practice in this field by a variety of companies.

5.1 The business case

Companies may be motivated to offset the harm they cause to biodiversity on a purely voluntary basis, simply because it is good for business.

5.1.1 License to operate, reputational risk, and regulatory goodwill

The first component of the business case for biodiversity offsets is that they can contribute to a company’s license to operate, to regulatory goodwill, and to the company’s reputation.

Core to the success of any company that needs access to land – whether for extraction, to lay cables, farm or construct roads or buildings – is the need to gain permission from relevant authorities to conduct business. Additionally, they need consent from local communities that they will not disrupt the company’s activities and, sometimes, that they will be willing customers of the facilities in the future. As one BP spokesperson put it, “Whatever we do – whether it is something initiated at the local or corporate level – will impact our reputation in some way. Reputation is definitely related to strategic issues. The whole perception of what we are and how we do things is related to the success of the company. That’s the business we are in. We have to have access to exploration areas, access to people and access to markets. Reputation is a key issue”.

Steve Botts, a representative of Antamina, a multi-stakeholder mining project in Peru, expressed the same thought: “Reputation is important for new mining projects, to get state concessions. If you don’t have a good reputation, you won’t get concessions. You won’t get a foot in the door.”

“We have to have access to exploration areas, access to people and access to markets... Reputation is a key issue.”

Chris Herlugson, BP

But the issue goes beyond reputation. Botts explains that one of the primary drivers for his company to engage in offsets is maintaining his company’s social license to operate. “We need to keep stakeholders satisfied that they are deriving benefits,” he says, “or they could revoke our social license. They could write letters, stop work, or encourage NGOs to make negative publicity against us.”

Linked to the issue of building trust and enhancing a company’s reputation to facilitate future business is the whole concept of regulatory goodwill. Many interviewees noted that an important benefit of voluntarily undertaking conservation measures such as biodiversity offsets is that it builds trust with regulators and, in the long-run, helps the companies obtain permits more speedily. Steve Botts from Antamina explains: “If we do things right, this open doors elsewhere. The most important driver for us is to build relationships with countries. We want to show them we have a track record on the environment [in order to help secure future concessions].”

Northumbrian Water described how it built trust by showing good practice over time, working with the National Parks and the Broads Authority for several years. It is soon to sign a Memorandum of Understanding with English Nature on biodiversity conservation. As Chris Spray puts it, “We have a good relationship with the regulators and they know we’ll treat these issues seriously.”

Rich Mogensen of Earthmark in the US has had a similar experience. “Regulatory goodwill,” he says, “is an important factor [driving good environmental behaviour and offsets]. If we do good work and are perceived to be doing things right, we will have an easier time getting permits next time.” Leah Haygood, a consultant who used to work on these issues for Waste Management in the US, says that best practice on conservation improved Waste Management’s relations with regulators and helped them obtain the necessary permits. “It helped demonstrate to regulators that we did more than just minimum compliance. Obviously, we could never get permit writers to say this explicitly, but we received feedback from managers that our policy was very helpful in demonstrating goodwill [and in helping to secure future permits].”

All this adds up to huge potential savings for the companies concerned. By avoiding costly delays and legal expenses, and by speeding up the permit negotiation process, the companies save both time and money. For instance, if the regulator, conservation agencies and NGOs are familiar with a company’s good practice, public enquiries can be concluded far faster than if evidence is contested and the company’s reputation is in doubt. “It is much cheaper if the authorities say ‘we will work with you’, rather than fighting you tooth and nail”, says Chris Spray. The same goes for NGOs, local communities, and other stakeholders.

5.1.2 Access to capital

In addition to generating trust and increasing “regulatory goodwill”, offsets (coupled with a good track record on environmental issues) may also help companies gain access to the capital they need to finance their projects. In today’s world, where the World Bank, the IFC, the export credit agencies, and even a wide array of private banks (see box 14 on the Equator Principles) all pay attention to environmental issues when making financing decisions, a strong environmental track record can sometimes help in getting a loan in the quickest, easiest, and cheapest way possible.

Antamina’s Botts puts it another way: In the future, he says, those companies with the best technologies –and in this he includes social and environmental technologies– are the ones that will get the concessions and the financing. “I have no doubt,” he says, “that there will be a competitive advantage for companies in looking at these issues. When looking for financing,” he adds, “it is important to show the financiers what capabilities your company has to make the project happen.” A key part of this, he explains, is showing that the company has the ability to manage social and environmental issues. To back up his point, he cites the case of Camisea, a large natural gas project in Peru, where, he says, one of the major financiers, the US Export-Import Bank (US Ex-Im), is believed to have left the project in part for environmental reasons.

Box 14: The Equator Principles

The Equator Principles (“an industry approach for financial institutions in determining, assessing and managing environmental & social risk in project financing”) were drafted by ABN Amro, Barclays, Citigroup and WestLB in collaboration with the International Finance Corporation, the private-sector arm of the World Bank. Six other banks - Royal Bank of Scotland, Credit Lyonnais, Credit Suisse First Boston, Westpac, Rabobank and HVB - also adopted the principles in June 2003. In 2002, these ten banks together underwrote \$14.5bn in project finance. By August 2004, 27 financial institutions in over 14 countries have adopted the principles.

Banks that adopt the principles, which apply to projects with a total capital cost of \$50 million or more, undertake to review carefully all proposals for which customers request project financing and will not provide loans directly to projects where the borrower will not or is unable to comply with the principles’ environmental and social policies and processes.

Projects are assessed according to categories of risk. For projects which fall into categories A and B according to IFC guidelines for environmental and social screening criteria, the borrower must have completed an Environmental Assessment (EA), addressing to the lender’s satisfaction key environmental and social issues identified during the categorisation process. Among many such issues that must be addressed is “the protection of human health, cultural properties, and biodiversity, including endangered species and sensitive ecosystems”. The EA must have taken into account the applicable IFC Safeguard Policies (see Box 15). For all Category A projects, and when the lender considers appropriate for Category B projects, the borrower or a third party expert must have prepared an Environmental Management Plan (EMP) which draws on the conclusions of the EA, and this plan must address mitigation, action plans, monitoring, management of risk and schedules. The borrower covenants to comply with the EMP in the construction and operation of the project, provide regular reports on compliance and, where justified, decommission the facilities in accordance with an agreed Decommissioning Plan.

In circumstances where a borrower is not in compliance with its environmental and social covenants, such that any debt financing would be in default, the lender will engage the borrower to seek solutions to bring it back into compliance with its covenants.

Sources: <http://www.equator-principles.com/>; Demetri, 2003

He also believes that the Equator Principles (see Box 14) will only enhance this dynamic. “The Equator principles will play a big role,” he explains. “Companies will be forced to pay attention [to social and environmental issues], and these things will make a difference.” On the flip side, he adds, “If we do things right, we can use projects like Antamina to open doors for us elsewhere; as an example of how things can be done well.”

Box 15: IFC and offsets: From Safeguard Policies to Performance Standards

In order to ensure that projects financed by the International Finance Corporation (IFC, the private sector arm of the World Bank) are socially and environmentally appropriate, the IFC has established Safeguard Policies that, among other things, provide the framework under which to minimise and mitigate a project’s environmental and social risks. Based largely on the World Bank’s operational policies, IFC adopted the Safeguard Policies in 1998 to manage social and environmental issues surrounding private sector businesses in emerging markets.

In 2001, IFC management requested a review of the Safeguard Policies and they are currently being updated. The aim is for the policies to state clearly the IFC’s minimum requirements applicable to all IFC projects and to make sure that the policies are streamlined and easy to use. As a result, the current proposal is to move away from safeguard policies and focus instead on performance standards. Gaps in the scope of the existing safeguards are to be addressed and the revised standards are to emphasize private sector considerations while ensuring compatibility with World Bank policies. A draft of the proposed performance standards was made available in August of 2004 for public consultation prior to revision and submission.

The 10 original Safeguard Policies and the 9 proposed Performance Standards are as follows:

<i>1998 Safeguard Policies (10)</i>	<i>2004 draft Performance Standards (9)</i>
Environmental Assessment (OP 4.01, October 1998)	1. Social and Environmental Assessment
Natural Habitats (OP 4.04, November 1998)	6. Conservation of Biological Diversity and Sustainable Natural Resource
Pest Management (OP 4.09, November 1998)	
Forestry (OP 4.36, November 1998)	
Safety of Dams (OP 4.37, September 1996)	
International Waterways (OP 7.50, November 1998)	
Indigenous Peoples (OD 4.20, September 1991)	7. Indigenous Peoples and Natural Resource Dependent Communities
Involuntary Resettlement (OD 4.30, 8. Cultural Heritage June 1990)	5. Land Acquisition and Involuntary Resettlement
Cultural Property (OPN 11.03, September 1986)	8. Cultural Heritage
Child and Forced Labour Policy Statement (March 1998)	2. Labour and Working Conditions
	3. Pollution Prevention and Abatement
	4. Community Health and Safety
	9. Social and Environmental Management System

Provisions on project design and implementation in the 1998 Operational Policy on Natural Habitats include the following: “Wherever feasible, IFC financed projects are sited on lands already converted (excluding any lands that in IFC’s opinion were converted in anticipation of the project.) IFC does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to IFC. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. IFC accepts other forms of mitigation measures only when they are technically justified.”

The Annex on definitions notes that “appropriate conservation and mitigation measures remove or reduce adverse impacts on natural habitats or their functions, keeping such impacts within socially defined limits of acceptable environmental change. Specific measures depend on the ecological characteristics of the given site. They may include full site protection through project redesign; strategic habitat retention; restricted conversion or modification; reintroduction of species; mitigation measures to minimize the ecological damage; post-development restoration works; restoration of degraded habitats; and contiguity. Such measures should always include provision for monitoring and evaluation to provide feedback on conservation outcomes and to provide guidance for developing or refining appropriate corrective actions.”

The proposed “Performance Standard 6 - Conservation of Biological Diversity and Sustainable Natural Resource Management” explains that “This Performance Standard is designed to ensure that clients avoid or mitigate adverse impacts to biodiversity and natural resources throughout the life of the project and identify opportunities to protect and conserve biodiversity.” A “Requirement” on Natural Habitats states that “The client will not significantly convert or degrade natural habitats unless: there are no technically and economically feasible alternatives; the overall benefits of the project substantially outweigh the social and environmental costs; and any conversion is appropriately mitigated.” Interviews with IFC officials indicate that they understand “mitigation” to include offsets and other compensatory measures. A further requirement relates to critical habitats and other ecosystems. This states that the client will not (i) significantly convert or degrade critical natural habitats, including (a) legally protected areas; (b) areas officially proposed for protection; and (c) areas of known high conservation value; (ii) reduce populations of any recognised critically endangered or endangered species, or (iii) significantly reduce the ecological services provided by an ecosystem. Any lesser or non-significant impacts on critical natural habitats, ecosystems or other recognized threatened or near-threatened species, must be appropriately mitigated. In circumstances where the proposed project is located in a legally protected area, clients will, in addition to these requirements, “ensure that the proposed project use of the area is consistent with the national management or use criteria; consult protected area sponsors, local communities and key stakeholders on the proposed project; and implement programs designed to achieve net conservation improvement for the protected area as compared to the without-project scenario.”

Clearly, the IFC views offsets as a fundamental part of the way it does business.

Source: <http://www.ifc.org/ifcext/policyreview.nsf/content/home>

5.1.3 Lower costs of compliance

While many of the people interviewed cited increased trust, enhanced reputation and regulatory goodwill as the key components of the business case for offsets, there are other important factors that deserve mention. Foremost among these is the issue of the cost of compliance with environmental regulations. Depending on how offsets are established, managed and regulated, it may be possible to meet regulatory requirements for biodiversity

protection by offsetting damage in areas where real estate values are high but conservation values comparatively low. In some cases, this could help conserve unprotected areas where the opportunity cost of forgoing development is comparatively low.

This can work as follows: by giving companies some level of choice as to how they can meet their regulatory obligations vis-à-vis biodiversity, offsets could help them find the cheapest possible means of achieving (or even going beyond) a set biodiversity target. For instance, instead of re-introducing species lost as a result of a mining project in one particular location (which might be prohibitively expensive and stand little chance of long-term conservation success), a mining company could help protect the same number of individuals of the species or the same area of habitat (or indeed a multiple of the number of individuals of the species or several times the area) somewhere else where that protection might be much cheaper. This would not only reduce the cost of compliance for the company, but, if done correctly, could also maximise the biodiversity benefit obtained by the company's compliance.

Box 16: EBX: Making a Business out of Offsets

In the US, legislation requiring offsets for damage to wetlands and to endangered species has led to the creation of a number of new businesses. Some of these create wetland or species mitigation banks, some broker deals, some provide scientific advice and some do all of the above. The largest of these businesses have now become multi-million dollar service providers. One such is the Environmental Banc and Exchange, better known as EBX.

EBX was founded in 1998 with the goal of “using capital market mechanisms to achieve both meaningful environmental benefits and attractive economic returns for its shareholders.” To do this, the company operates through three distinct business units. According to George Kelly, a Principal at EBX, what is common to all of these units is “the creative use of capital market techniques to achieve meaningful environmental benefits.” The units are:

1. The Environmental Asset Management Division, which helps property owners to unlock the value of their property by “identifying, assessing and managing a very broad range of environmental assets.” These assets include wetland mitigation and other offset potentials;
2. The Resource Mitigation Division which “develops and manages wetland, stream, forest and habitat mitigation projects; water resource projects; renewable energy projects; and brownfield re-development projects, both for its own accounts and in partnership with landowners”; and
3. The Environmental Investment Banking Division which “invests in environmental technologies and projects and provides advisory services and management resources to companies” on environmental, offset and other issues.

After being created in 1998, EBX obtained its first major contract – a US\$7 million dollar, full-service wetland mitigation contract with the North Carolina Department of Transportation – in 2000. In 2002, that contract was increased to US\$11 million. By 2002, the company had become profitable, and by the end of 2004 it was projecting revenues of US\$5.7 million, net income of US\$0.5 million, and a contract backlog of US\$19 million. To date, the company has entered into contracts for US\$37 million, comprising 1,900 acres of wetland mitigation (essentially offsets) and 115,000 linear feet of stream restoration.

EBX, like several of its peers, such as Wildlands Inc., Greenvest and Land and Water Resources Inc., is occupying a new market niche based on offsets in the USA.

5.1.4 New market opportunities

Beyond cost-effective regulatory compliance, the use of offsets can also create new market opportunities for companies. For example, if a market for biodiversity offsets develops, landowners may find that land which was previously considered useless, or at least not very

financially productive, can now generate income through the sale of offsets and/or other long-term conservation measures. This, at least, has been the case through the use of conservation banking and wetlands mitigation in the US (see Box 9).

Dale Heydlauff, Senior Vice President for Environmental Affairs at American Electric Power (AEP), one of the largest utilities in the US, says that as a result of wetland mitigation banking, companies such as his with large land holdings have found that they have a business opportunity and a core capacity in a variety of new and emerging businesses.

5.1.5 First mover competitive advantage and the power to influence regulation

The use of offsets may also give a company that moves quickly a “first mover advantage”, as other, more reactive, companies find themselves dealing with high entry costs, unforeseen regulatory hurdles and fully developed and complex regulatory regimes.

Indeed, part of this “first mover advantage” comes from the very ability of early entrants to influence the emerging regulatory regime. Several interviewees felt experience with voluntary offsets would help them shape policy, and possibly legislation, in the future. Dave Richards of Rio Tinto says that his company “can gain experience and develop best practice fast in an evolutionary process, so that when regulation catches up, there are examples and case studies - and probably horror stories - to use to guide us in making choices.”

Chris Spray, of Northumbrian Water, pointed to an example where this had already happened. The company piloted the use of the government’s internet-based Biodiversity Action Reporting system, which is to be launched in 2004. AEP’s Heydlauff, meanwhile, explained that his company has become increasingly involved in carbon trading “partly because we want to inform the public policy debate [on greenhouse gas trading].” A similar dynamic may be developing on biodiversity offsets.

5.1.6 Clean break

Companies are regularly involved in mergers and acquisitions at the group level and may wish to dispose of particular assets and liabilities. As discrete, agreed packages, with project budgets paid up-front to cover implementation by third parties such as NGOs, biodiversity offsets may help companies hand over assets more cleanly. “They would offer a clean solution from which you can walk away, knowing the project and money are in place, implementation is underway, and the stakeholders are happy with the outcome,” says Chris Spray.

Experience with mitigation banking in the US has shown that developers often prefer to use conservation banks rather than conducting their own conservation activities, as this allows them to cleanly transfer liability to another, more specialised entity. John Ryan, the President of Land and Water Resources Inc., a US-based wetland mitigation bank, says that one reason that developers in the US like going to wetland banks such as his is that they transfer over a regulatory requirement – a liability – and then they can get on with doing what they do best. “They like the fact,” he says, “that they can just sign a cheque and know that their wetlands responsibilities will be taken care of, and done right. They have no liability and this is no longer one of their worries.” He also adds that it makes transferring the land that much cleaner and easier.

5.1.7 Employee satisfaction and retention

For several interviewees, a significant advantage of their companies' conservation activities and policies on biodiversity is the pride, satisfaction and allegiance to the company this engenders with employees. AEP's Heydlauff says that his company's employees love the fact that AEP is undertaking conservation projects and that they are concerned with issues of climate change and biodiversity. "Their feedback on all of this has been terrific," he says.

5.2 Barriers to more voluntary offsets

In chapter 3 we described the conservation benefits and above we have described the business and conservation benefits that could motivate companies, communities, NGOs and governments to establish biodiversity offsets. But, as with most business decisions, every potential reward carries with it some level of risk. Biodiversity offsets are no exception. This chapter will explore some of these risks, including: the risk that voluntary offset efforts will be unappreciated given the high levels of suspicion of companies' motives; the increased scrutiny that involvement in innovative projects of this kind is likely to generate; the risk of offset projects failing to meet their objectives; and a range of other potential liabilities.

5.2.1 Suspicion of companies' and governments' motivations

Among our interviewees, representatives from both companies and governments described how they have forgone opportunities to undertake biodiversity offsets for fear of criticism. As one policy-maker said, "I remember a case coming up in public debate. The extent and cost of the remediation by the company raised in the minds of government representatives whether it was the best thing to require the company to spend all that money for relatively limited biodiversity outcomes. Still, there was a lack of enthusiasm for flexibility at the time because of the objection anticipated from NGOs. They thought the NGOs would say that the focus should be on the quality of remediation and that offsets would be perceived as a ploy to get out of this."

As Geoff Burton puts it, "In an environment where there is distrust, the focus tends to be on making sure the company is seen to be fixing the damage it is doing, rather than on doing something genuinely more beneficial to biodiversity but which seems to involve some degree of false altruism." For this reason, many companies interviewed felt biodiversity offsets could only proceed as a powerful tool for conservation if the concept generated support from the conservation community, scientists and –most critically– local communities. "There's not much point in biodiversity offsets unless they are seen as credible and have the support of key stakeholders," says Ian Wood of BHP-Billiton. "If local stakeholders don't care and flatly want the original ground to be protected totally, there will be no room for the flexibility offset implies." This implies that some of the potential benefits of offsets may likewise be lost.

Many of our interviewees indicated that companies are ready to move forward with biodiversity offsets, provided they can have a reasonable level of confidence that they won't be shot down by too many critics for making the effort.

Public suspicion is not confined to companies. In some cases, there is a mistrust of government. Ismid Hadad of the Indonesia environmental NGO, Kehati, believes that public mistrust and suspicion in some resource-rich developing countries is related to the

fundamental problem of poor governance. In countries where there has been poor public and corporate governance, the lack of transparency, participation and accountability in the management of natural resources means that the public may not trust government and corporations in sectors such as forestry or mining. Hadad believes that good governance needs to be a pre-condition before concepts such as biodiversity offsets can be introduced in such countries, otherwise “only those who hold power and money will ultimately benefit from biodiversity offsets, while the poor public and the environment will remain losers”.

Some steps that could be taken to address these issues are described in chapter 8, below.

5.2.2 Increased Scrutiny

Linked to the issue of distrust, companies may not relish the additional scrutiny they are likely to attract as NGOs, the public and the media, begin to pay close attention to experimental and leadership projects such as biodiversity offsets. Why bother, they ask themselves, attracting more attention and criticism than strictly necessary by volunteering for involvement in a potentially controversial exercise when no one is forcing you to do so? Not only may such projects attract attention from those outside, but partnerships with NGOs, communities and government inevitably mean that these potential critics are on the inside, gaining an insight into the company’s goals, policies and practices. They may be stern judges of what they see.

Gone are the days when criticism arising from problems at a particular site could be contained. Rapid communication and global networks of organisations now mean that an incident in some remote location soon attracts attention all round the world. Such was the case of the OCP oil pipeline in Ecuador and the Chad-Cameroon pipeline mentioned below. (see boxes 17 and 18).

Box 17: The Chad-Cameroon pipeline

A 1,070 km (660 miles) pipeline from oil wells in landlocked Chad to the ports of Cameroon inspired a heated environmental controversy that has led to some interesting lessons in terms of offsets.

In order to mitigate the possible environmental damages of the US\$3.5 billion dollar project, particularly in Cameroon (where most of the pipeline was constructed), the project partners (ExxonMobil, Petronas, and Chevron), together with the World Bank, created an environmental foundation (known as the Foundation for Environment and Development in Cameroon, or FEDEC), two new national parks, and an “Indigenous Peoples Plan” to “provide long-term benefits to the Pygmy population that is affected by the project .” These three initiatives will be funded through a US\$3.5 million contribution from the Cameroon Oil Transport Corporation (COTCO), the joint venture created by the three companies and the government of Cameroon to construct and manage the operations of the pipeline and oil-loading facilities in that country. Of this money, US\$600,000 will go to the Indigenous Peoples Plan and related activities, US\$1.4 million for the creation and management of a national park in the Campo Reserve near Cameroon’s Atlantic Littoral forest area, and US\$1.5 million for the creation and management of a new national park in the Mbam Djerem area to the west of the Deng Deng forest.

The projects were designed to address the two main criticisms of the pipeline in mind: its contribution to environmental damage, particularly in Cameroon’s Atlantic Littoral forest; and the significant social impacts on the indigenous peoples of Cameroon, particularly the Bagyeli/Bakola people.

Acknowledging that the various funds and national parks were a form of compensation for the environmental and social damage caused by the pipeline, the World Bank web site related to the Chad-Cameroon project explicitly states: “A wide range of steps has been taken to minimize the social and environmental risks of pipeline construction and operation. In consultation with engineers, environmental experts and local people, the pipeline route was

altered to protect biodiversity, human settlements, indigenous peoples, and cultural heritage. The pipeline will be buried, rather than above-ground, and mainly follow existing infrastructure. Only a small area of tropical forest in Cameroon will be affected. To compensate for this, two large new national parks have been created in Cameroon.” There may not be a one-for-one calculation of damage caused and benefits created, but the concept of compensation for residual damage is clearly embedded in the design of this project.

World Bank Economist Robert Goodland felt the offsets undertaken to compensate for damage caused by the pipeline were more than sufficient (Goodland, 2003). He notes that the national parks created as a result of the pipeline were many times the size of the area it impacted. He writes: “The Presidentially decreed National Parks exceed 4000 sq. kms of essentially intact ecosystem, while the converted areas total less than 100 sq.kms, mainly following existing roads, hence disturbed.” He does, however, add a caveat: “In practice,” he says, “there have already been difficulties.” He notes that “A new road was fast constructed inside the main offset, namely the Campo-Ma’an National Park, contrary to agreements” and explains that there have been numerous other problems with the offsets and the project as a whole. Still, he concludes, “The important lesson is that even when best practice is sought, much can go wrong while new methodologies are being tested.”

From the point of view of the three companies, it is interesting to consider why COTCO agreed to contribute US\$3.5 million to the foundation. According to an article in Fortune magazine (April 15, 2002), “While Exxon hasn’t exactly gotten religion, it has gotten wise to the perils of what Harvard Business School professor Debora Spar has dubbed the ‘spotlight phenomenon.’ Using the Internet and mass media as cudgels, nongovernmental organizations (NGOs) such as Greenpeace, Human Rights Watch, and Friends of the Earth have grown increasingly adept at singling out multinationals for their misdeeds. And oil companies offer a particularly ripe target. They are big, which NGOs readily translate as ‘bad.’ They have highly visible brands, making them vulnerable to boycotts at the pump. They cannot choose where oil deposits are located, meaning they increasingly operate in countries with unsavory rulers, sensitive environments, and impoverished populations... Though the financial toll of these reputational assaults is hard to calculate, says Spar, it’s clearly no longer just a moral issue—it’s a bottom-line issue.”

If this analysis is correct, oil companies in particular may come to find that biodiversity offsets are an important tool in their environmental management arsenal.

Box 18: The Heavy Crude Pipeline (OCP) in Ecuador

In August of 2003, a consortium of oil and construction companies from around the world put the finishing touches to a 500-km oil pipeline stretching across Ecuador. Known as the Heavy Crude Pipeline (or, in Spanish, as Oleoducto de Crudos Pesados, OCP), the pipeline traverses the country from the Amazon rainforest in the east to the Pacific Ocean ports in the west. Although the consortium didn’t specifically seek to offset the damage it caused to the Ecuadorian environment, it took some interesting steps that were intended to serve as unofficial compensation for its environmental impact.

In addition to re-foresting the areas that were cleared to lay the pipeline, the consortium (comprising ENCANA, ENI, Repsol-YPF, Perenco, Occidental Petroleum, Perez Company and Techint) agreed to put US\$16.9 million dollars into an Ecuadorian environmental trust fund (known as Ecofondo) intended to finance environmental projects in the areas through which the pipeline passes. There have been major campaigns against the construction of the OCP in the US, Europe and Ecuador and some environmental NGOs were adamant that the projects should not be seen as mitigation or compensation for environmental damage. From the perspective of the consortium, the fund is intended to address some of the negative environmental publicity that the project has caused.

According to Yolanda Kakabadse, the President of IUCN and former Minister of Environment of Ecuador who brokered the negotiations surrounding Ecofondo, the idea was first proposed by OCP Ecuador (the Ecuadorian management company set up by the OCP

consortium) in 2001, largely as a result of the environmental controversy surrounding the project. “The first mention of this fund,” she says, “came in the environmental license granted to OCP by the government of Ecuador, but it was put in there at the request of OCP. It is the first time that Ecuador has required such a fund to be created when granting a license to an infrastructure project.”

“Initially,” says Kakabadse, “the company intended to give something like US\$1 or US\$2 million dollars for the fund, but very quickly it became clear that given the size of the OCP project [estimated at US\$1.4 billion], this was not sufficient.”

“The negotiation for EcoFondo,” says Reyna Oleas, a consultant who also was involved in the process, “took nearly two years and had two stages. First the NGOs got together to discuss the idea and to agree on what it is they wanted. Then the NGOs negotiated with OCP over the creation of the fund.” Finally, she explains, in September of 2003, the NGOs and OCP reached agreement on the size and nature of the trust fund: It would contain US\$16.9 million dollars, US\$10 million of which would be provided by Encana over ten years, and US\$6.9 million of which would be provided by the rest of the OCP consortium. It was also expected that the NGOs would raise money to contribute to the fund. The money would be used to finance conservation projects in areas surrounding the pipeline, while a small percentage would be set aside to address an agreed environmental issue of national importance to Ecuador. The money would be administered by National Environmental Fund (Fondo Ambiental Nacional) of Ecuador, a non-profit trust fund already established in Ecuador, and would not be used to pay for operating costs of the organizations submitting project proposals. When this report went to press, the agreement for the fund had been signed, but the money had not yet been transferred to an EcoFondo account.

Oleas is quick to point out, however, that the creation of this Eco-fondo was explicitly not about mitigation or offsets. “In the negotiations,” she says, “the NGOs were adamant about two key points: first, that the creation of this fund would in no way release OCP from its environmental liabilities – that it couldn’t just wash its hands of any environmental problems caused by the pipeline – and, second, that agreement on the fund would in no way force the NGOs to take OCP’s side if problems arose.” She adds that the concept of offsets and mitigation did not come up in the negotiations and she feels that, had it come up, it would have been soundly rejected by the NGOs. Kakabadse agrees. She says: “There was a strong feeling that the fund shouldn’t be seen as compensation for damage and that any compensation should come out of the ordinary budget for the project... The NGOs wanted this fund to be a way for the companies involved to put back into Ecuador some of the wealth generated by the pipeline.” Which goes to show that the environmental community does not always support the concept of offsets.

Why did the consortium agree to the fund? Kakabadse and Oleas believe there were two basic reasons. The concept of the fund was embedded in the document granting OCP a license to build its pipeline and, more importantly, the parties needed to strengthen their environmental image and thought the fund would help. So, even though the fund was explicitly not designed as a biodiversity offset, there are similarities in the business case. It is intended to boost the companies’ environmental image and thus support their license to operate.

5.2.3 Unfulfilled promise

Another risk that companies face is that, after investing much time and energy on offsets, these will not generate the conservation outcomes and associated good public relations or reputational benefits they hoped for. This risk, however, can be minimised by paying close attention to the offset design issues highlighted in chapter 4 and particularly to the process of engagement with stakeholders (chapter 7).

Beyond the risk that expected rewards won’t accrue, is the risk that relevant stakeholders begin to feel that the project is not achieving its goals or that one or more of the collaborators are not meeting their commitments. Again, this argues for careful planning and discussion of goals and motivations up front.

Box 19: One approach to enforcement

In Australia, the New South Wales Fisheries department has a policy of “no net loss” for developments that damage aquatic habitat. Developers can compensate for damage by transplanting seagrass or constructing fishways, or making payments into a Conservation Trust Fund used for strategic rehabilitation projects throughout NSW waters. As an incentive to developers to make good their commitments to offset, a monetary bond may be required as insurance against the offset action failing. For example, up to Aus \$250,000 is charged per hectare for seagrass and habitat compensation is calculated on a 2:1 basis for vulnerable habitats. Consent conditions require an annual progress report for the offset action.

See http://www.fisheries.nsw.gov.au/conservation/policies/policy_guide_content.htm and New South Wales Government, 2002

5.2.4 Legal liabilities and new responsibilities

Several of our interviewees said they had asked themselves “If you design or implement a biodiversity offset can that raise unforeseen legal liabilities?”. If so, do companies and their partners wish to incur these additional responsibilities? Shell illustrated the kind of considerations that a company will need to make. In Indonesia, one employee explained, Shell has a project whose primary objective is to sequester carbon dioxide. It happens that the area where the carbon is being sequestered is home to the orang-utang, a globally endangered species. This raises the question of whether or not Shell would be liable if the population of orang-utangs on the land suffered, for whatever reason, and if the species became even more endangered?

Another example given by an interviewee was a scenario where baseline studies for an offset – either on the land affected or on the site of the offset – turned up a hitherto unknown but highly endangered and economically valuable species or habitat. Would the company be expected to pay for the conservation costs associated with conservation? What are the responsibilities? Or what if a member of the local community was injured by an animal or falling tree on the site of an offset? Who, if anyone, should assume these new risks and liabilities?

5.3 Implementation of biodiversity offsets by companies

Some companies have weighed up the potential advantages and disadvantages and reached the conclusion that there is a strong business case for biodiversity offsets. Our research has revealed a modest, but growing, number of corporate initiatives to offset unavoidable harm to biodiversity on a voluntary basis. In most cases –with the most notable exception being wetland and conservation banking in the US– these activities are still conducted on an *ad hoc* basis, driven by the business case or personal enthusiasm of particular members of staff at the site level. Increasingly, they are linked to implementation of the company’s environment or sustainable development policy. This chapter explores corporate policies that could relate to biodiversity offsets and some aspects of practical experience of implementing offsets at the site level.

5.3.1 Signals of industry interest in biodiversity offsets

As far as we are aware, there have been no studies assessing the number and extent of voluntary biodiversity offsets. We were only able to conduct 37 interviews and collect anecdotal information, so it is impossible for us to quantify the growing interest in biodiversity offsets on the part of companies. Interviewees indicated in qualitative terms that governments and companies are increasingly using biodiversity offsets as a way of redressing the damage caused to biodiversity by corporate activities. In addition to the specific examples of biodiversity offsets described in this report, two groups of companies, one in the oil and gas sector, the other in mining and metals, have been exploring the concept.

The Energy and Biodiversity Initiative, a collaborative project involving BP, Chevron Texaco, Shell and Statoil, as well as Conservation International, Fauna and Flora International, The Nature Conservancy, The Smithsonian Institute and IUCN, recently released a report that discusses biodiversity offsets, among many other issues. (See <http://www.theebi.org/>.)

According to EBI: “The objective of an offset is that, by the end of a project, the status of biodiversity at a particular site is comparatively the same as before the project began. Use of offsets for this purpose should be the minimum standard by which all companies operate. If, after all measures are taken to mitigate impacts, there will still be a net loss of biodiversity, compensation in the form of offsets may be used to bridge the gap.”

In the mining sector, a meeting of IUCN and the International Council on Mining and Metals (ICMM), held in Switzerland in 2003, discussed the principles of “net biodiversity gain” and “no net loss of biodiversity”. One of the recommendations in the draft report of the meeting states that: “Offsets may present an option for addressing impacts which cannot be avoided, minimised or mitigated, but the process for deciding what constitutes appropriate offsets needs clarification.” ICMM is now producing a “White Paper” which examines the mining industry’s contribution to conservation. A review of the appropriateness and nature of offset use will be part of this. (Personal communication, Annelisa Grigg, September 2004)

5.3.2 Corporate policies

As Box 20 shows, a number of companies from a variety of sectors have made public commitments to environmentally sustainable development in general and to the conservation of biodiversity in particular. The question is, should these be regarded as purely aspirational statements that some might dismiss as “greenwash”, or are they backed up by clear strategies, targets and routine implementation at the site level?

Our interviews suggest that, to date, companies have regarded these policies as aspirational in nature, and have generally not asked, “How can we quantify this commitment and measure whether we are meeting it?”. However, there is a clear trend among leading companies to measure their impacts on biodiversity and to seek to demonstrate how their operations result in “no net loss”, or even a “positive impact” on biodiversity. This chapter will explore companies’ attitudes to these corporate commitments to date and the evolution of a new “offset mindset”.

▪ *The case until now: purely aspirational goals*

A comment by a representative of BHP Billiton nicely illustrates the kind of questions companies ask themselves. “What, if anything,” he asks, “are the implications of policies of zero harm, such as those of BP and BHP Billiton? How are they interpreted and operationalised? Those are good questions and we are having lots of discussions internally on them.” He adds that, “‘Minimising harm’ is too general; it sounds as though you can do whatever you like. If you go for zero harm through mitigation, that sets a clear goal you want

to achieve. You may never get there, but the fundamental objective is to continue to look for opportunities to get as close as possible.”

In addition to being mostly aspirational in nature, biodiversity offset experience to date has rarely linked the scale of the impact to the scale of the conservation measures undertaken. BP explains: “Typically, a business unit would put together a plan with NGOs to carry out some conservation work. Usually, this was not linked to the impact of a particular project. We didn’t get into ‘we have a one acre footprint here, so we’ll offset with 2 acres there’. For example, in Spain, our retail and marketing business identified lynx conservation as a priority we should be involved in. We supported and promoted the conservation activities. There were business benefits for us: sales promotions, customer loyalty and enhanced reputation; benefits for the conservation organisations involved – Fundación Doñana, Estación Biológica de Doñana and the Global Nature Fund – through support for their work and for a book on the lynx by WWF; and definitely benefits for the lynx, in terms of habitat protection.”

Box 20: Examples of voluntary corporate commitments related to offset

<i>Type of commitment, from most to least rigorous:</i>	<i>Illustrative company policy statements, from their websites and publicly available documents such as Annual Reports and Environmental or Corporate Social Responsibility Reports:</i>
<i>Net positive effect</i>	<ul style="list-style-type: none"> ▪ BP CEO: ‘We can have a real, measurable and positive impact on the biodiversity of the world. That is a high aspiration - but, like our other aspirations, we’re determined to show that we can deliver’. ▪ Rio Tinto: ‘net positive effect’
<i>‘No harm’</i>	<ul style="list-style-type: none"> ▪ BP: ‘Our goals are simply stated no accidents, no harm to people, and no damage to the environment.’ ▪ BHP Billiton: ‘Zero harm to people and the environment — our goal’
<i>‘No net loss’</i>	<ul style="list-style-type: none"> ▪ Waste Management: “The Company is committed to the conservation of nature. We will implement a policy of “no net loss” of wetlands or other biological diversity on the Company’s property.” (This policy was revoked after 1998 when the company’s ownership changed.)
<i>Offset</i>	<ul style="list-style-type: none"> ▪ Rio Tinto: ‘investigating options to offset any unavoidable adverse effects in project areas by conservation actions elsewhere.’ ▪ Rio Tinto: ‘Wherever possible we prevent, otherwise minimise, mitigate and remediate, harmful effects of the Group’s Operations on the environment’.
<i>Positive contribution to biodiversity conservation</i>	<ul style="list-style-type: none"> ▪ United Utilities: ‘As far as possible, we manage our 142,000 acres of catchment land in such a way as to produce a positive ecological impact, allow access for recreation and protect raw water quality’. ▪ Northumbrian Water: ‘[Essex and Suffolk Water is] committed to enhancing biodiversity in our region . . .and minimising the direct and indirect impact of our operational activities.’ ▪ RMC: ‘conserve and create habitats that support a diversity of plants and wildlife before, during and after our operations’. ▪ Shell: part of the company’s approach on biodiversity is to make a “positive contribution to conservation”.
<i>Maintaining ecosystems</i>	<ul style="list-style-type: none"> ▪ Shell: ‘Protect the environment’; ‘maintain ecosystems’.

In a similar fashion, other companies have indicated that they tend to design projects to compensate for their footprint, but that neither impact nor offset was ever really quantified. For instance, when Shell was designing its potential project in Camisea, Peru (a project which did not go ahead), the company was not looking for strict one-for-one offsets. Sachin Kapila explains it in this way: “We were looking for conservation opportunities either along the pipeline or in another area. We were not aiming for absolute like-for-like or absolute offset.” The same has been true for Rio Tinto, as Stuart Anstee explains: “What has been happening is that individual operations have been involved in conservation activities based on regional needs, but not with the mindset to balance the equation of impact and benefit.”

Steve Botts of Antamina, goes further. He explains that “It is hard to see impacts and offsets as a purely mathematical relationship.” He says that Antamina hasn’t really talked about direct offsets simply because “the term is just not part of our vocabulary yet.” He emphasises, however, that it is a useful concept, one that his company is likely to use more in the future.

In the case of the controversial OCP pipeline in Ecuador (see Box 18), NGOs argued against any quantitative relationship between impact and conservation measures supported by the company, concerned that “offsets” could be perceived as reducing the company’s responsibility to minimise the impact caused by the pipeline.

- *Ad hoc contributions by charismatic individuals*

Hitherto, voluntary biodiversity conservation projects have largely been *ad hoc*, driven by “individual personal passions”, as Kathryn Shanks of BP explains. “A lot of it is because somebody locally got excited. It might be one to two people. There was a wonderful Malay lady who got a turtle project going almost single-handed. In another huge project, employees in Trinidad turned a scrap yard into a nature reserve and educational centre.” Sachin Kapila of Shell describes two triggers for companies’ conservation activities: personal enthusiasm or case-by-case risk management: “Either there are individual champions, or there’s a real business risk that you need to manage, in our case through our early warning system and then the EIA process to identify risks. We can then turn risks to opportunities by designing conservation projects.”

- *Moves towards the offset mindset: demonstrating net positive effect and transcending environment/development trade-offs*

Increasingly, companies are looking to link conservation activities more closely to impact and exploring how they can demonstrate a net positive effect from their operations. “The Shell Biodiversity Standard is designed to minimise impact and make a positive contribution. It already supports a loose form of offset and now we’re looking more specifically at what ‘positive contribution’ means”, says Sachin Kapila.

“We need to get more innovative about a whole lot of things. We need to give biodiversity offsets and delivery of aspirational policies such as ‘no harm’ more thought.”

Ian Wood, BHP

Likewise, in April 2000, Lord John Browne, CEO of BP, said “We can have a real, measurable and positive impact on the biodiversity of the world. That is a high aspiration - but, like our other aspirations, we're determined to show that we can deliver”. That statement has set the tone for the company's current thinking on biodiversity. Moving on from the its top-down corporate policy of “no damage”, “we are now looking much more locally”, says Kathryn Shanks. “The ‘no damage’ policy and minimising impact was a good start. Now we need to look on a site-by-site basis to review the benefits and impacts of having a plant in a particular location. We are starting to think more about specific impacts and how we actually make measurable progress towards ‘no damage’. Can we quantify the benefits to people or to biodiversity or to the environment of our activities? What can the company do to create a positive benefit as well as to develop the particular project? You can't have oil and gas reserves without a certain level of impact. Our challenge now is to transcend the trade-off between the benefits of development and energy use, on the one hand, and environmental considerations, on the other. We want to go beyond that to deliver benefits to the environment.”

“Everyone's familiar with the nature of trade-offs. Traditionally, these operated by comparing, for example, job creation with environmental impact. The difference with biodiversity offsets is that the comparison is made between impacts and benefits within the same sphere: like for like. There are likely to be significant social and economic development benefits from mining projects, but we don't propose to claim these as offsets for unavoidable biodiversity impacts. Rather, we aim to demonstrate a net positive effect on biodiversity, in addition to the socio-economic development benefits.”

Dave Richards, Rio Tinto

Just as BP speaks of “transcending trade-offs”, so Rio Tinto also described an evolution in the company's thinking, away from the old assumption that damage to biodiversity could be “traded” for the development benefits of projects, towards a contemporary expectation that there will be biodiversity as well as economic benefits.

Dave Richards explains the context for this work. “If there's a mine, it's going to have some biodiversity impact. People across the Rio Tinto Group recognise the value of putting conservation activities in place to offset the damage we can't avoid. We refer in our corporate biodiversity guidance to how we want our businesses to approach biodiversity offset. The biodiversity strategy teams, including both an internal group and an external advisory panel, translated this into a position statement and principles, and these include a commitment to net positive effect on biodiversity through our activities. In making that statement, we started

talking about offsets. We need to do something creative to offset our impacts on biodiversity.” His colleague Stuart Anstee describes the company’s move towards a more quantified approach. “Conservation activity based on regional needs but without the mindset to balance the impact/benefit equation was the right thing at the right time. Now we are formalising the process and moving it on. The commitment to net positive effect on biodiversity needs offsets to deliver it. We have got to review the negatives and positives and convince people there is a net benefit.”

Some companies are reviewing their policies to include clearer statements about offset or developing internal guidance on the topic. Some intend to experiment with biodiversity offset projects and learn from these to develop and apply best practice. “There’s a level of understanding of the issues now and creative ideas for programmes are starting to mushroom. There won’t be one size that fits all. We need to try things out and learn what works well from the best programmes,” says Dave Richards.

It became apparent in the interviews that companies do not yet have methodologies to quantify the biodiversity impact of their operations and the biodiversity benefits of proposed offset projects, and that they hope for collaboration from NGOs, governments and experts on this. “We don’t yet have a suggested mechanism for doing the ‘net positive effect’ sum,” says Dave Richards. “Offset is a principle we want to embrace and use,” agrees Stuart Anstee, “but the mechanics and the framework are still lacking: the basis for comparing one site with another and determining a net benefit”. Similarly, Lord Browne’s challenge to deliver measurable and positive results for biodiversity was directed to BP’s individual businesses “to make the determination as to what is appropriate”, says Kathryn Shanks. “Our activities are tailored to the actual site and operation. One size will not fit all.”

6 How to offset: technical Issues

As we have seen in chapters 2-4, with the appropriate policy framework and willing participants, biodiversity offsets appear to offer both conservation and business benefits. However, to achieve this win-win scenario, many tricky issues and risks need to be properly addressed. If offsets are poorly thought through or attempted without adequate participation, expertise or commitment by the companies, governments and communities involved, they could fail to achieve conservation outcomes, business benefits will not materialise and those involved will be exposed to the risk of reputational damage. For this reason, the approach to designing offsets and the basis for doing so are extremely important. This chapter discusses a number of features of offsets: the challenge of measuring the impact of developments; of establishing “no net loss”; the potential goals (which may conflict) of ecological equivalence and optimising conservation benefits; the location of offsetting activities; their duration; the kind of activities that “count” as offsetting conservation activities; and some issues related to cost-effectiveness. Chapter 7 goes on to explore who decides the answer to these questions during the design of offsets, who implements them and who evaluates their success.

6.1 Measuring impacts and establishing “no net loss”

One of the many challenges of implementing biodiversity offsets is determining the type and scale of compensation required. How do you determine “no net loss”? To do so demands clarity not just about the impacts of land use on biodiversity, but also some measure (or “currency”) for the impact and for countervailing conservation activities.

Measuring the impacts of land use change on biodiversity is a far more daunting task than measuring certain other environmental impacts. For example, Kathryn Shanks of BP notes that her company knows with some degree of accuracy the extent of the carbon dioxide (CO₂) emissions they are responsible for, both directly, in terms of the company’s industrial and other operations, and indirectly, in terms of emissions associated with the use of their products. Also, one tonne of CO₂ emitted is equivalent to another tonne sequestered. The same does not apply to biodiversity.

One researcher we interviewed contrasted biodiversity offset schemes with the well-developed market for SO₂ (sulphur dioxide air pollution) emission allowances. Whereas an SO₂ emission allowance is “a uniform, well-defined commodity that is tradable across the country,” the same does not apply to wetland or conservation banking, where “what you have is service territories where trading can happen, which may be big or small.” He added that while SO₂ allowances can be traded without additional regulatory review, every wetland or endangered species offset requires detailed review by the environmental regulator, adding significantly to transaction costs. Finally, he concluded that “wetlands and endangered species will never really be ... as commoditized [as SO₂]. The reality is one wetland is not the same as another.”

Not all hectares are created equal. Given our imperfect knowledge of biodiversity and its complexity, it is difficult to measure impacts on biodiversity, to attribute them to individual development projects among many contributing factors and to measure the response of ecosystems to conservation measures.

This section will explore two issues: What do you need to measure? And what is the currency for biodiversity offsets?

6.1.1 Measuring impacts

As noted by Chris Spray of Northumbrian Water, there is a need for high quality ecological data before one can begin to consider the viability of an offset. Simply carrying out a baseline species inventory in a potential development site can cost more than £250,000 (over US\$400,000). Moreover, one may also need to undertake behavioural studies of how a particular site is used by different species, in order to assess what functions need to be replaced by an offset. Quantifying ecosystem services, the impacts on these of industrial activities and the response of “offset” ecosystems to positive conservation activities is even more complex.

Alice Ruhweza of Uganda’s National Environment Management Authority points out that one major complication is the fact that many of the impacts of land-use change are indirect. For example, a large development project can attract immigrants to an area; they in turn may undertake further changes in land use, resulting in negative impacts on local biodiversity outside the boundaries of the project site and beyond the control of the project implementers. A company is not wholly responsible for these indirect impacts, but companies increasingly acknowledge that they share responsibility with government. (See EBI, 2003.) Indirect impacts will need to be taken into consideration in assessing the impact to be offset. An example of how this has been done can be found in BP’s gas production facility in Tangguh, Indonesia. In this case, simply offsetting the direct impacts of the facility was considered insufficient, due to the high risk of environmental damage posed by people moving to the area (including company employees, their families and others attracted by the increased economic activity). Hence BP and its project partners are undertaking a broader programme of land use planning and environmental training in an attempt to address threats to biodiversity outside the project site.

Box 21: NAM Protocol for determining the extent of biodiversity compensation

The Dutch company NAM, part of the Shell family, has a policy of avoiding harm to the environment to the extent possible. To translate this into practical guidelines concerning biodiversity, NAM has prepared a protocol that applies to every activity that places new demands on species and habitats. Its intended objective is “prevention of a negative impact on biodiversity, or aiming for an average neutral or positive result. The assessment should be carried out at the local level.”

The protocol sets out a methodology providing a basis for calculating the extent of harm to biodiversity on the development site and for determining the correct form of compensation. It consists of a chain of choices to be made in any individual setting, which are described in the Environmental Impact Report (i.e. NAM’s internal EIA Report, as opposed to the final, official EIA) and which involve mitigating measures such as avoiding work in certain seasons and determining restrictions to lighting, transport and noise. The protocol focuses on “compensation of remaining loss of ecological values”. “The rule of thumb”, it explains, is that “that part of the activity is compensated that can be shown to cause an actual disruption which cannot be removed through mitigation. It is preferable that compensation is carried out locally. This would be the fairest for the involved parties (social component) and is in accordance with the requirements of the Habitat and Birds Directives.”

Its principles are:

- First mitigation, and only then compensation.
- Only what is actually disrupted is compensated.
- Compensation is sought in the direct vicinity.
- Use is made of existing structures and “management contracts” on a voluntary basis.
- Anticipation allows compensation in advance.

The protocol lays out the basis for calculating the harm caused to biodiversity through the use of space and emissions of light and noise:

- Physical use of space: calculation of the area involving elements foreign to the landscape, including the area within the company's fence, the entrance road and buffer area.
- Noise: combination of area within the noise contour and decibel level conversions for permanent and temporary installations in woodland, meadow and salt marsh areas.
- Lighting: basis for calculating the habitat area to be compensated, using the value corresponding to the physical area of the installation and buffer zone, the value related to noise disruption around the installation and of lighting permanently on during the breeding season and the value linked to the entrance route. Compensation takes place during the life of the installation.

The protocol refers NAM staff to existing management systems for determining the correct form and package of compensation (as described on the website of LNV (Agriculture, Nature and Food Chain Quality: www.minlnv.nl)). For compensation, "an equivalent area of land is sought for which a management contract is arranged on a voluntary basis, in accordance with the conditions that are also employed by LNV. In general terms this comes to a compensation of approx. 250 euros per year per ha (e.g. meadow bird grassland rich in species) for which particular – well described – efforts must be made. An average location therefore comes to 2 – 6 hectares and drilling operations to over 30 hectares".

The protocol suggests that the arrangements should be made in consultation with associations of farmers, landowners and land-users that are directly involved or with working groups at the time the activities are established. It recommends that the arrangements should be checked by local environmental groups with local farmers and that the users of the land surrounding the installation would need to be willing to participate on a voluntary basis.

Compensation that extends beyond the calculations described here would fall under a sponsorship and donations policy, for which there is a separate corporate policy.

Source: Pers.communication, Sachin Kapila and Steven de Bie, Shell.

6.1.2 Establishing equivalence for offsets

Even where both the direct and the indirect impacts of a project on biodiversity can be identified, there remains the thorny question of whether development is appropriate (and thus the question of an offset legitimately arises – see chapter 2), and, if it is, then of determining an appropriate offset. Perhaps the fundamental challenge of biodiversity offsets is establishing the basis for determining "no net loss" when no two hectares are ecologically identical. This chapter will look at two contrasting methodologies: establishing ecological proxies as currency to determine equivalence (the main method used to design offsets); and economic valuation (which has largely been used retrospectively in other contexts to assess liability for damage to ecosystems, but which could offer useful tools for offset design).

▪ *Ecological proxies*

As Salzman & Ruhl (2002) put it, "whether we can confidently trade x for y depends on what we are trying to maximise and our standard of measurement, both of which turn on the currency of exchange. Put simply, unless the currency captures what we care about, we can end up trading the wrong things." They point out that this begs the questions of what the relevant values are, how we measure them and how we reflect them in a conveniently traded currency. The two main types of currency "traded" to date are hectares and habitat functions. Since "not all hectares are created equal", the currency of one hectare conserved as an offset for one hectare harmed through development is the most crude of currencies. Habitat or

ecosystem functions are barely less crude. The authors note that, in the context of s.404 wetland permits, the US Corps of Engineers has given its local field offices wide discretion in selecting the method of wetland accounting. Roughly 40 different assessment methods have been developed, categorised as:

- indices derived from easily observed characteristics that serve as surrogate indicators of ecological functions (e.g. percentage cover of aquatic vegetation);
- narrow systems that measure particular wetland services such as wildlife habitat (e.g. percentage duck habitat); and
- broader systems covering a range of wetland functions covering a number of observable characteristics.

Salzman & Ruhl note that explicit measures of service values remain beyond the reach of virtually all assessment methods in use and that assessment methods have advanced little from the beginning of the wetland banking programme some twenty years ago. Crude currencies such as hectares and habitat function fail to capture complex differences in wetlands. One result has been that mitigation banking programs are reluctant to stray far from strict, in-kind policies. They believe this problem will be endemic to habitat trading programmes in general, until ecologists can deliver cheaply calculated, refined currency for habitat values. They say even the most developed habitat assessment methods are ill prepared to produce reliable, inexpensive and ready measurements of a habitat's environmental and service values. "These measurements require far more money and time to produce on a site-specific basis than developers, habitat bankers and the government seem prepared to allocate."

Box 22: Habitat Hectares as the basis for the State of Victoria's "Net Gain Principle"

In order to implement the Net Gain principle, the Victorian State Government has developed an approach that assesses both the quantity and quality of vegetation. Vegetation/habitat quality is assessed based on a simple equation based on two primary determinants: inherent site conditions and viability of the patch of vegetation in the landscape context. This statewide, standardised approach estimates vegetation/habitat quality on a scale from zero (complete loss) to one (complete retention of natural quality as described by benchmark characteristics)(see Parkes et al 2002). The quality measure is combined with a measure of area to create a measure for the offsets called "Habitat hectares" (habitat score x area). The number of Habitat hectares needed for a given offset depends upon the conservation significance of the area to be affected. The habitat hectares approach is an explicit, quantitative method for assessing the quality of vegetation by adding scores that are assigned to 10 habitat attributes. The government has prepared a table describing circumstances in which clearing is or is not permitted, the Habitat Hectares required, guidance on "Like-for-like", the location of the offset and timing within which offsets must be initiated. (see Victorian Government, 2002, Appendix 4)

Source: Victorian Government, 2002.

Several of our interviewees reflected these challenges and described how it is easier to be satisfied of equivalence if the offset is conducted in a similar ecosystem to that damaged. A common, if rather crude, method used to ensure that an offset is adequate compensation for the habitat lost in development, is to select habitat that is ecologically similar and to conserve an area of the same size or a multiple of the area damaged. Baselines studies may help establish the similarity of the ecosystems, but, fundamentally, area is being used as proxy for

biodiversity. This can be the case even where the legal framework specifies a particular species to be conserved and “offset”.

For instance, in the US, wetland and conservation banking programmes typically use the area of a particular type of habitat as a proxy for particular endangered species or ecological functions and services that environmental regulators seek to conserve. As one interviewee put it, in the US, “we don’t trade species; we trade habitats”.

In many existing biodiversity offset programmes in the US, there is a strong preference for any habitat lost to development to be offset through restoration or rehabilitation of similar habitat as close as possible to the impact site. As noted by Robert Bonnie of the US conservation group, Environmental Defense, such “like-for-like” offsets are “easier for the public to understand and for conservationists to measure.” Bonnie’s colleague Michael Bean agrees. Whereas like-for-like offsets are readily understood by the public, “the more dissimilar the resource being protected ... to the resource being damaged, the more explaining that will be necessary.” Moreover, even relatively straight-forward offsets, involving like-for-like compensation, entail substantial scientific inputs and sometimes third party validation to ensure their credibility. The efforts involved with dissimilar ecosystems could make any assessment of no net loss extremely difficult, if not meaningless.

“We need compensation that clearly relates to impact to ensure that habitat function and species are truly preserved. Trading should be like-for-like. This is our priority but it is not always possible.”

Tina Bartlett of California Department of Fish and Game

Even if an offset is conducted in a similar ecosystem to that affected by development, the development may affect relatively “mature” habitat, while offsets may involve rehabilitating or restoring habitat on comparatively degraded lands. In such scenarios, more biodiversity will be lost per hectare in the site developed than conserved in the site offset, so many offset programmes seek to ensure that the offset area is larger or ecologically “richer” than the area lost to development. Acknowledging that area is a very crude proxy for biodiversity, even in similar ecosystems, multiples are commonly used to ensure a sufficient margin to say with confidence that the offsetting activities more than compensate for the losses on the area developed. This approach has been used in the US wetlands system to allow a “margin of safety” (Salzman & Ruhl (2002); Bishop (2003)). But, as described in chapter 3, critics of the US wetlands trading system, such as NWF’s Julie Sibbing, argue that these targets and multipliers are, in practice, not being met.

In mandatory offset programmes the ratio of offset to damaged area is often prescribed, but in voluntary schemes the ratio used (if any) is subject to negotiation and varies on a case-by-case basis. As noted by Bob Watson and Habiba Gitay of the World Bank, “what is a fair offset is part of the negotiation. [Nevertheless,] people normally go for a much bigger offset than the original area damaged.” Chris Herlugson of BP describes ratios of 1.5:1 or 2:1 as fairly typical, but adds that there are no “hard and fast rules.” In most cases the resulting offset is whatever is considered by all concerned to be “most appropriate for the conditions.” In Mexico,

according to José Carlos Fernandez, the ratio is varied depending on the proximity of the offset to the damaged site. Thus, for example, if the offset takes place on adjacent land the ratio may be one-to-one, whereas for a more distant offset a ratio of 2:1 or higher may be required.

“Experience suggests that having the geographical area of the offset project be a small multiple of the size of the area originally developed or degraded helps overcome any residual doubts that the offset is an adequate compensation for the original damage. A useful approach to dealing with uncertainty is [thus] to take a simple multiple of the area damaged.”

Geoff Burton, Environment Australia

However scientific the basis for assessing the biodiversity affected and offset, there is likely to be a strong subjective element involved. This highlights the importance of the question of who decides what is a satisfactory offset, which is the subject of Chapter 7. As Dave Richards of Rio Tinto puts it, “Given the problems of measuring and quantifying biodiversity, we’re going to have to start by making the case for net positive benefit through being transparent. At present, we can’t prove in factual measures that it’s a net positive benefit, because the methods are not yet accepted and proven. Initially, we expect to base our reporting on what we believe is reasonable, and we will involve our external partners in that process”, he says. “If it is not patently fair, people will take against it.”

▪ *Economic valuation*

While most existing biodiversity offset initiatives aim to achieve ecological equivalence, as described above, few make any effort to determine the economic value of habitat gained or lost. The application of economic valuation methods to biodiversity offsets remains relatively undeveloped. As noted by Sachin Kapila of Shell, “there’s lots of debate going on [but] few, if any, are looking at value.”

Given the challenges of establishing an ecological currency for biodiversity offsets, and the strong subjective element of people’s preferences for conservation of different habitats, an alternative approach is to use a monetary currency. Economic valuation techniques can be used to assess people’s preferences for different types of habitat in different locations, and thus help determine what type of offset will compensate for the loss of welfare that people feel when existing natural habitat is damaged due to development.

Recent legal precedents in North America suggest that economic valuation may become more widely used as a means of determining appropriate compensation for environmental losses. In the case of the Exxon Valdez oil spill, for instance, US courts accepted the use of valuation methods to estimate environmental damage claims, including non-use or “existence” values held by people who were not directly affected by the spill. More recently, in 2003, the National Ecology Institute organised a seminar for members of the US and Mexican Supreme Courts to share experiences on environmental fines (e.g. for failure to comply with environmental

regulations) and compensation (e.g. valuing claims against companies for environmental damages).

A weakness of economic valuation is that most methods generate piecemeal estimates of specific values (e.g. recreation, landscape, existence value), rather than a holistic view of an entire ecosystem. Moreover, economists continue to debate the validity of valuation methods, undermining public confidence in their findings. According to José Carlos Fernandez, until economic valuation becomes routine and reliable, the courts and others will continue to rely on existing methods such as habitat equivalence and multiples.

6.2 Optimising conservation benefits

While offsets involving land similar and close to that developed may be preferred because they are easier to judge and measure, in some cases it is neither possible nor appropriate to seek perfect ecological equivalence. As noted by Geoff Burton of Environment Australia, it is often “best to aim for conservation of complex systems [rather than] direct equivalence.” He gives the example of a mine site where the original ecosystem was “relatively sparse,” in terms of species diversity. While the proposed offset was not identical, the potential increase in species richness that would result from remediation efforts was judged more important than achieving ecological equivalence. He adds, however, that direct equivalence may be appropriate where unique habitats or endangered species are concerned.

The question of what constitutes an appropriate offset is a subject of much debate in the US. Referring to a recent report on wetland banking by the National Academy of Sciences, Palmer Hough of US Environmental Protection Agency (EPA) notes that the preference for ecological similarity and offsets close to the site damaged within the same ecosystem “may be contradictory to a watershed or ecosystem approach.” Bob Brumbaugh of US Army Corps of Engineers agrees and adds that focussing strictly on mitigation of similar ecosystems close to the site damaged has been problematic in the US. He suggests that we should try to imagine “what would the watershed want?” In many cases, he adds, environmental goods and services “could be better provided by going off-site or out-of-kind”.

Rich Mogensen of Earthmark describes more acceptance of out-of-kind mitigation, focused less on strict ecological equivalence in the US, based on growing recognition that a more flexible approach could achieve more effective conservation. Thus, for example, instead of “creating the same kind of wetlands somewhere else”, there may be cases where “restoring water flow upstream could do more for the environment and the watershed.”

Another interviewee argued that while ecological equivalence of an offset is to be favoured, allowing a degree more flexibility enables small, isolated blocks of degraded ecosystem to be exchanged for much larger chunks of functioning ecosystems, with far greater conservation benefits. Jason Coccia of the US-based Conservation Fund agrees that what is important is “to create greater biodiversity value and, if possible, enhance it.”

Michael Bean argues that in either case, whether an offset attempts to provide an equivalent ecosystem or something completely different, “the key issue is clearly expressing the link between what is being offset and what is being lost.” Looking further ahead, David Brand suggests that out-of-kind offsets could become routine “when markets [for biodiversity] are liquid and deep.”

However, arguments in favour of departures from ecological equivalence in order to prefer the conservation of other, more worthwhile conservation targets rest on such conservation priorities having been identified and agreed. As Chris Spray of Northumbrian Water notes,

there is all too often a lack of consensus and clarity about conservation priorities within the environmental community, which makes it difficult to determine an appropriate offset. Northumbrian Water has been able to refer to UK government priorities, set out in the UK Biodiversity Strategy, but such clear prioritisation may be lacking in other countries.

6.3 Location

The issue of where conservation activities to offset unavoidable harm should take place is linked to consideration of the kind of ecosystems and species to be conserved (see sections 6.1 and 6.2), but also raises some additional questions. If the goal of offset is to conserve equivalent biodiversity to that damaged by the development, the location of the offsetting activity is likely to be influenced by where similar ecosystems that could be conserved may be found. But if suitable ecosystems occur in many locations, or if the objective of the offset is defined more in terms of conservation priorities and values than specific ecological equivalence to the site affected, questions will arise as to how close to the site of impact the offsetting activities should be conducted. In the end, issues such as fairness, social license to operate and the sense of ownership by local communities needed to guarantee conservation results are just as likely to shape an acceptable outcome as the ecological value of the site.

This section will discuss factors other than ecological equivalence that might affect the selection of areas to be conserved through biodiversity offsets. It will address arguments for implementing offsets as locally as possible to the site impacted; arguments for more flexibility allowing offsetting activities to be conducted further afield in order to meet conservation priorities; questions as to whether companies should ensure “no net loss” at the site- or corporate- level; and whether there would be advantages in an internationally tradable system of offsets or conservation credits, analogous to the international trade in carbon credits.

6.3.1 Proximity to the site affected

The majority of interviewees argued for implementing offsets as locally as possible to the site impacted, principally because they felt that public acceptance would be more likely when local communities can see benefits. As Geoff Burton of Environment Australia put it, “To achieve the community support on which the whole thing stands or falls, it is best to have sufficient propinquity between the site of the offset and the mining site, so people can feel there is a clear connection. The further away the offset is from the original site, the more tenuous is the connection and the less support there would be from the community - whether you're speaking of the 'community' at the local, regional or state level. If the offset were in an adjacent wetland, that would be OK, but if it were outside state territory, there would be little ownership by the local community and their representatives, local govt and stakeholders. Ian Wood, from BHP-Billiton agrees. “A tonne of carbon is the same anywhere in the world and people don't care where it came from, but so many conservation issues are local that the offset needs to be seen in the local context. People would not be happy if their local protected area was impacted and the conservation benefit was way away in Malaysia.”

Chris Spray of Northumbrian Water adds that “You could get the reverse of ‘NIMBY’ [‘Not-in-my-backyard’] if locals lose out. It wouldn't do to say ‘you're ruining this patch but mending one far away’. I suspect what is needed is a short distance between the impacted and the offset sites, so locals benefit.” Alice Ruhweza from Uganda's National Environment Management Authority says that in Uganda “Local people have to see the benefit of the offset. In some circumstances, they can also manage the offset project.” Chris Herlugson explains

that BP has had the same experience. “You’re looking at what’s appropriate in your area or region. We feel our mitigation projects should be where the impact occurs.”

As well as the advantage of securing the consent and motivation of local communities, decentralisation of government – and thus the likelihood of having to deal with different government authorities in the area affected and the area where the offset takes place – offers another reason for considering offsets close to the site impacted. Alice Ruhweza described how Uganda has decentralised environmental management to the district level, and thus how it would be more manageable to arrange offsets within this level of jurisdiction.

Again, this will have to be dealt with on a case-by-case basis, since there are instances where an ecosystem being damaged provides benefits and services to people and environments thousands of miles away. Rick Herd, a consultant who used to work on these issues for Allegheny Power, a major US utility, says determining the scale and level of work is an “age old problem.” He argues that, to a large extent, it needs to depend on the level of impact. He gives the example of river pollution, where he says certain pollutants such as iron and aluminium have limited impacts, and therefore can be offset locally at the level of rivers and watersheds, whereas other forms of damage – for instance nutrient pollution – have wider impacts and therefore have to be considered at a much broader scale. By way of example he notes, “Nutrient pollution in West Virginia has an impact all the way down to the Gulf of Mexico. So offsetting is more difficult.”

6.3.2 The bigger picture: offsets further afield

Despite the inherent appeal of establishing the offset close to the area damaged, as was suggested earlier, there are arguments for allowing offsetting activities to be conducted further afield in order to focus on conservation priorities. There may be other, more valuable and critically endangered ecosystems and species that need to be protected elsewhere. At the same time, resources may be scarce and the investment in conservation generated by offsets may be an important (or even the only) mechanism for securing their future. Or, the development project may occur in an ecosystem that is of comparatively low biodiversity value. In all these cases, it may make more sense for the offsetting activities – and financial resources – to be focused on securing a more representative national or regional system of conservation areas, even if these are distant from the site damaged.

It is important to take account of wider national and regional priorities and broader ecoregional considerations. Candace Skarlatos of Bank of America believes that what is needed is landscape-level planning that involves all stakeholders in determining conservation priorities. “We need more studies on what needs to be protected,” she explains. “It is pointless conserving small plots that will fail when development happens all around them. We must look at how protection fits into the overall system. When we are starting the process, we need to know where we can go ahead and build and where, regionally, we shouldn’t build at all.”

According to Bob Brumbaugh of the US Army Corps of Engineers, “We need a structured approach to prioritising conservation, with logic involving watershed, ecosystem and landscape perspectives”. David Brand of Hancock Natural Resources Group agrees that broader spatial planning is the trend for the future. “In the longer term,” he says, “I would like to see a more regional, ecosystemic approach, where ecosystems are treated as pools of biodiversity. If you create, protect, develop, or enhance them, then you get credit; if you destroy them, that’s a debit.”

Some policy-makers who are well aware of the need to deliver benefits to local stakeholders are already thinking of how to reconcile these needs with such ecoregional considerations.

“We are talking about how to break through the distance barrier,” says José Carlos Fernandez. “From the public opinion perspective, distance matters. The closer the offsetting activity, the easier is public acceptance. The worry is that the most effective conservation may not have any benefits to the local community. So maybe we need to think of a limit, a top percentage, of offsets that can be bought elsewhere. Secondly, we need to be aware that some things are simply not ‘offsetable’ or tradable. We should think about a critical threshold. You need to qualify which type of damage is ‘offsetable’ and which is not. For instance, if a project involves harm to endemic species or very rare ecosystems, development may not be appropriate. If development can safely go ahead, you should ensure that the offset supports the conservation of those same species and ecosystems. If you are talking about more standard ecosystems, it may be fine to conserve something different instead.”

Within the aim of securing the maximum conservation value through the offsetting activities, there is a range of options, from offsets that conserve whichever area is top of a country’s conservation priorities (even ecosystems completely dissimilar to those damaged and very distant from the development), to offsets that protect ecosystems similar to those damaged, but which may not be on the doorstep of the development project.

At one extreme, the pure logic of focussing offset activities on the country’s conservation priorities suggests that the offsetting activities could be decoupled altogether from the nature of the ecosystem affected by development, and focus on dissimilar ecosystems, anywhere in the country. As argued by Geoff Burton of Environment Australia, “The biodiversity outcome is more important than ensuring equivalence of the actual ecosystem damaged or the conservation of the immediate habitat, provided the ecosystem functions and visual aspect of the development site were properly restored.”

Box 23: Brazilian “Units of Conservation”

The Brazilian National System of Conservation Units described in Box 23 converts the damage inflicted by the development project, based on the scale of the investment, into “units” to be spent on conservation by the government anywhere within the jurisdiction concerned, while aiming to achieve the optimum conservation results. The system is administered at the federal level by IBAMA, but IBAMA delegates the function to state agencies. Most of the Conservation Units created through offsets to compensate for private investment fall under state jurisdiction, so are created within the state’s boundary. However, where a project lies on a state or national boundary, IBAMA may create Conservation Units in any of the States involved.

Source: personal communication, Juliana Rehfeld, Anglo American Brazil.

6.3.3 International trade

Could there be conservation and economic arguments that support an internationally tradable system of biodiversity offsets or conservation credits, analogous to the international trade in carbon credits?

Several of our interviewees have been involved in international carbon markets, but few felt it was credible to suggest that an international market in biodiversity credits would develop, certainly not in the short- to medium-term. In their view, this was mostly because the political will for offsets would rest on national and even local stakeholders deriving palpable benefits from the offsetting activities. “I don't get any sense that the stakeholders we work with would support a system that traded conservation in Indonesia for damage in Ireland”, says Ian Wood of BHP-Billiton.

In addition, the further afield the offset is from the site damaged, the harder it is to establish ecological equivalence and demonstrate “no net loss”. As David Brand, of Hancock Natural Resources Group explains, “You can't trade jaguars for tigers.” Brand, however, does believe that eventually, “when markets are liquid and deep” such trades might be possible, but that they will take the form of financial transactions, and that such a system is “far in the future”.

Despite this, some companies are looking forward to the possibility of savings that could be made in the future by banking conservation credits or trading them internationally. “If biodiversity offsets emerge as a market mechanism,” says Sachin Kapila of Shell, “it may be interesting to see how we could be more cost-efficient through banking conservation activities, getting credits and trading them. Perhaps biodiversity credits could be purchased from developing countries, where conservation activities may be more cost effective than in developed areas where most of the biodiversity has already gone.”

Kapila, however, cautions that such a system will be difficult to achieve. “You'd need any international system to be very transparent at the local level and very participatory,” he says. “You will probably need a central clearing mechanism to support international trade: a sort of central bank clearing-house that traded in credits that were market instruments, just like others. I do believe one day we will be able to trade biodiversity offsets. It just needs very clever leaders. Give it five or ten years.”

6.3.4 Should “no net loss” for companies be at the site or corporate level?

Another important issue that will affect the location and scale of offsetting activities is whether “no net loss” is to be calculated at the site or corporate level. Dave Richards of Rio Tinto explains the dilemma. “We've been discussing whether to offset on a case-by-case basis, or on the basis of ensuring a net positive contribution for the Group as a whole. If we say we are going to have a net positive effect, we could add up our 100 or so operations in 24 countries and add in our corporate biodiversity programmes. There would be a difference between this approach and the result if we said we would make a net positive effect at a smaller scale – at a national level or even site or regional level. We've come to the conclusion that people will increasingly expect us to demonstrate a net positive effect on the ground, and to be accounting at a lower level than the global level.” Martin Hollands of Fauna and Flora International concurs. “I agree there is probably a legitimate ethical case for “no net loss” at the group level, but that alone isn't what stakeholders such as communities or regulators are going to find acceptable. So, for business, the tactic has to be to show “no net loss” at the local level as well as at the group level.

If, then, the principle of offsets should apply at business unit rather than corporate level, does that mean that companies should offset the biodiversity impact of each and every operation? BP argues for room to ensure that “no net loss” is calculated at a more macro level. In the conclusions chapter, we suggest a two-part strategy for companies; offsetting at the business unit to demonstrate no net loss at sites of high biodiversity value (and thus business risk) and making broader contributions at the group level to conservation for the cumulative impact of the rest of the company’s operations on biodiversity.

6.4 Timelines

When designing biodiversity offsets it is important to pay attention to two main issues of timing. One relates to the duration of the offsetting project and the other to when the damage is done compared to when the offsetting activities take place.

6.4.1 Duration of offsetting obligations

While many environmental organisations argue that the offsetting projects should be implemented “in perpetuity”, in practice this can often be very difficult to achieve. As one observer put it, “perpetuity is an awfully long time.”

Bob Brumbaugh, of the US Army Corps of Engineers argues that the duration of the offsetting project should relate closely to the duration of the expected impact. “In some cases,” he says, “permanence doesn’t make sense. Sometimes impacts aren’t permanent; they disappear. Still, in no case should the mitigation last less than the expected impacts.” He believes that focusing too doggedly on getting offsets to last “in perpetuity” may in the long run be counter-productive. He says he would rather mimic natural systems and focus on the sustainability of the offset. Having said that, he recognises that terms like “in perpetuity” are easy to understand and that they satisfy government representatives and other stakeholders that make the offsets (and the behaviours being offset) possible.

Along similar lines, José Carlos Fernandez of Mexico’s National Ecology Institute adds that impact assessment, as an input to the design of offsets, needs to account for the duration and reversibility of ecological damage. For example, “where something is irreversibly transformed so that it is economically and physically irreversible,” it may be appropriate to create an offset in the form of a permanent nature reserve with sufficient funds held in trust to ensure management in perpetuity. In other situations, the damage from development may be long lasting but reversible, in which case an offset might aim to replace the loss of ecological services during the period of restoration or recovery. A third category of offset, for relatively low-priority sites, could involve little more than charging the developer the full cost of clean up and rehabilitation.

In the US, there are some interesting examples of how companies attempt to deal with the duration and viability of offsets. For instance, conservation banks in California require not only that the development rights to the land be set aside in perpetuity in the form of conservation easements held by qualified non-profit organisations or one of the regulating resource agencies, but also that financial mechanisms (e.g. trust funds and endowments) be created that can help finance the management of these areas in perpetuity. Tina Bartlett, who is the Conservation Banking Co-ordinator at the California Department of Fish and Game, acknowledges that these sorts of financial and legal requirements are necessary to ensure permanence and longevity, while they may involve some practical difficulties.

In addition to helping ensure that any damage is well and truly offset, mechanisms such as easements and trust funds may also help appease stakeholders, thus allowing the project to go ahead and limiting some of the reputational risks associated with projects that damage biodiversity. In fact, according to Burton and others, when designing offsets, it is important to bear in mind not just how long the damage to biodiversity might last, but also the duration of the benefits the company can accrue from the offsets. “The greatest value to a company [of an offset],” says Burton, “is if the offset’s benefits (through visibility of actions, etc.) continue after the company ceases mining. In other words, the duration of the harmful project is less relevant [than the duration of the offset’s reputational benefits].”

The issue of legal liability and the public perception of corporate responsibility (which can often outlast it) are also important when considering the duration of offset projects. In the US, for instance, legal liability for damaging a wetland can be passed on to a wetlands mitigation bank. In fact, this transfer of liability is one of the biggest selling points for mitigation banks (see section 5.1.6 above).

While legal liabilities can sometimes be transferred or sold, reputational liabilities are often harder to shift. One company told a powerful anecdote that argues strongly in favour of ensuring that liabilities and long-term projects like biodiversity offsets are fully funded and properly transferred if certain interests are sold. The company concerned owned a refinery which had designated an area onsite for the disposal of heavy oil. Before the site was due for remediation, the company sold the refinery and passed on the obligations to clean up the heavy oil to the government of the country concerned, which in turn hired a national oil company to conduct the remediation. In the event, the remediation was not carried out. Although the original company had sold the site and the obligation to remediate, it was still blamed for the damage. “We paid for it in the reputational sense”, the company representative said. “And we may still come away suffering.”

The moral of this story is that while legal liabilities may have limited lifespans, reputational liabilities can last much longer. Companies need to bear this in mind when designing biodiversity offsets and ensure that these are properly administered and funded to deliver the results planned over the lifetime of the project, which may well outlive the company’s direct control.

6.4.2 Should offsets be implemented in anticipation of development projects?

Some argue that damage to biodiversity should only take place once the offsetting activities are operational and have proven themselves, so there is no net loss at any period of time, and the risk of the project failing to deliver the desired conservation outcomes is reduced. In the US, this is the standard against which wetlands mitigation banks are judged. By law, mitigation banks cannot get their credits approved –and therefore cannot sell credits to developers– until and unless the wetland they are purchasing as an offset has already been restored or protected.

While this imposes substantial up-front costs for mitigation bankers (and saddles them with many of the risks inherent in creating a mitigation bank), NGOs and others have argued that having the offsetting project operational before the damage is done is essential to the viability of the model. One study (National Research Council, 2001) found that “Compensatory mitigation should be in place concurrent with, and preferably before, permitted activity.” This, they argued, would give the greatest assurances that what was being damaged was effectively offset.

However, biodiversity offsets cover a far broader range of ecosystems and locations than wetlands in the US, and they are intended to offset the unavoidable harm in the specific context of each development project, tailored to the particular case and designed with the involvement of the communities who will be affected by the development project. The appropriate offset and the relevant stakeholders are likely to be foreseeable only when the project itself is being designed, so that the anticipatory approach adopted in the case of US wetlands is unlikely to work for all biodiversity offsets.

6.5 What kind of activities count as legitimate “offsets”?

Biodiversity offsets are usually defined in terms of ecological equivalence and “no-net-loss” of habitat, as described above. In addition to the challenge of measuring the impacts on the site affected and the equivalence or superior conservation value of the site proposed for the offset, two other questions go to the heart of whether activities can be regarded as offsets that result in no net loss. One is whether the offsetting activity represents a genuinely new contribution to conservation or whether the project would have taken place anyway: an issue sometimes referred to as “additionality”. The other question is whether broader activities relevant to conservation, such as taxonomy or capacity-building “count” as biodiversity offsets, or whether *in situ* conservation of biodiversity alone will satisfy the “no net loss” approach. This chapter will explore each issue in turn.

6.5.1 Additionality

What counts as equal and opposite conservation activity to the negative impacts caused to habitats by development projects? Do the offsetting projects or activities truly add value? Are they new and additional or would the projects have taken place anyway, with or without the biodiversity offsets? A range of possibilities exists for activities that create additional conservation benefits. Three examples are as follows:

- **Foregone losses:** Ensuring the future conservation of an area which would itself otherwise have been degraded through development. In the field of carbon offsets, “avoided deforestation” is currently not credited for carbon sequestration under the Kyoto protocol. Some Parties to the treaty were concerned about the problems of proving that the habitat would indeed have been lost and some found it unpalatable to be in a position where supposedly doomed habitats could effectively be ransomed. However, the importance of finding a biodiversity offset that makes the most significant contribution to conservation was stressed by many of our interviewees. If all the stakeholders in a given case could satisfy themselves that a given area was of conservation value and was truly under threat, conserving it through a biodiversity offset may be a viable option.
- **Meeting the costs of existing conservation:** This could entail contributing funds to support conservation work on protected areas, which may nonetheless be threatened by lack of resources. If an area has already been designated as protected, could contributions to its conservation count as a biodiversity offset? The resulting conservation would not be additional in the sense of contributing a new piece of habitat for conservation. But in many countries, the protected area systems are significantly underfunded to such a degree that the long-term viability of the area is genuinely threatened. A common example is where illegal logging is making incursions into protected area, but the authorities have insufficient financial resources to enforce the

security of the park. It may be argued that financial contributions to park budgets in such a context could create additional conservation outcomes in an area that the country has already deemed a conservation priority.

Our interviewees pointed out that the more that a company can prove that the conservation project it is undertaking is “new and additional”, the better. Both Bob Watson and Habiba Gitay of the World Bank have noted that a project can only be considered an offset if the area conserved was potentially under threat. “You have to be confident,” says Ian Wood of BHP Billiton, “that, if the offset had not been done, the area would have been trashed. Otherwise it is not ‘no net loss.’”

Having said that, a number of the companies interviewed expressed some concern about a rigid interpretation of the principle of additionality. They asked whether, in the interests of conservation, it might not be better in some instances for offsets to provide “new and additional” support to existing conservation activities. Should the concept of “new and additional,” they asked, only apply to the areas being conserved, or might it, in some cases, apply to the support and resources being provided? After all, they argued, existing projects may have a higher likelihood of success (and presumably already have some level of community/government support) than projects that have to be started from scratch.

Geoff Burton of Environment Australia pointed out that, in some cases, there might be a slight tension between gaining community support for an offset project and ensuring that the project accomplishes something “new and additional” for biodiversity. “From a practical point of view,” he says, “if you buy into something with existing community support, it is better than a new project for which you have to build support anew. But that raises the question ‘is that OK for biodiversity’? There may be tension between capitalising on existing community support for a project and providing additionality for biodiversity.” What’s more, Burton believes that public affairs staff within companies may well prefer to buy into existing conservation projects, which may be seen as more credible than new ones.

In the end, as with so many of the issues surrounding biodiversity offsets, the people interviewed concluded that the issue of additionality could only be resolved on a case-by-case basis. In some cases, support for existing projects might accomplish more for biodiversity than creating new projects, while in other cases, creating new projects would appear to make more sense.

6.5.2 Conservation or capacity building?

Offsets generally take the form of investments in habitat restoration or conservation, even if it is far removed from the site of development impacts. But what about other forms of compensation? There may be situations where local stakeholders give higher priority to investments in building the capacity of conservation agencies, or environmental education, than to restoration or conservation of natural habitat. Going even further “out of kind”, some communities and governments may prefer compensation for environmental damages in the form of investments that have nothing whatsoever to do with conservation, such as improved public services or local economic development.

As chapter 7 will discuss, the challenge of achieving a viable biodiversity offset is to reconcile the different (and sometimes conflicting) priorities of different stakeholders, while taking account of local opportunities and constraints. Chris Herlugson of BP notes that in some countries it may not be feasible to provide an offset by designating new and additional protected area or demarcating land for conservation purposes. In such cases, other types of investments may be the best or only option for offsetting environmental damage. He cites examples such as support for environmental research, capacity building, environmental

education, training and awareness raising. Chris' colleague Kathryn Shanks describes such a situation in Indonesia, where BP worked with others to identify the root causes of biodiversity loss and design an appropriate response. They concluded that the physical "footprint" of BP's gas facility was a less significant threat to biodiversity than the lack of conservation capacity in the area, prompting the company to invest in an environmental training centre that had been abandoned due to lack of support. (BP also provided a more conventional offset in the form of ecosystem restoration.)

Dave Richards of Rio Tinto likewise asks whether biodiversity offsets must always be limited to land or habitat "swaps." Citing the example of a World Heritage Site that is at risk, he suggests that the presence of a large mine next door may be less of a threat than the lack of management planning and capacity. In such cases, "would it not be better, instead of always securing bits of land, to look at where the greatest difference can be made, for example by building capacity to manage conservation sites that are under threat."

Sachin Kapila of Shell notes that out-of-kind offsets could also provide opportunities for activities that have little or no direct impact on biodiversity. "What are the opportunities," he asks, "to look at supply chain issues in retail petrol stations?" In his view, companies should be able to choose from a range of options to deliver offsets, depending on the type of operation concerned. In the case of a pipeline, for example, a direct "habitat for habitat" approach may be appropriate. In other cases, offsets might take the form of support for conservation more generally, including policy changes, awareness raising, research and capacity building. Kapila acknowledges, however, that it will not be easy to show how such activities offset environmental damage.

It is likely that capacity-building will be important to secure the success of biodiversity offsets. Some interviewees felt it would be necessary to build the capacity of some stakeholders to engage in offsetting negotiations. As one put it, "We pay for some of our NGOs to get advice because we want them to be able to have a logical conversation with us. In a lot of cases, it would be very advantageous to us to build stakeholders' capacity to engage in discussion, particularly in least developed countries."

According to this argument, capacity-building is vital for companies to secure license to operate, but it should be seen as a separate activity from the conservation involved in biodiversity offsets. Several referred to the "cynicism" stakeholders and observers would feel if companies presented training and scientific research in lieu of damaged ecosystems. As one interviewee put it, "local people would not be willing to trade habitat for education. Education is not always a direct conservation benefit". Martin Hollands of Fauna and Flora International adds, "It is great in principle to say 'we wish to balance negative impacts on habitat with investment in the development of capacity for conservation'. But how do you quantify the impact of that? You would need a very strong case to demonstrate the impact of capacity-building measures in terms of solid conservation outcomes."

According to José Carlos Fernandez of Mexico's National Ecology Institute, "I don't think broader concepts for what counts as offset are appealing. It is difficult to argue that you are compensating for irreversible loss of habitat by having a few workshops! If you could show the work was credibly related to lowering threats of further irreversible dangers, just possibly you might have an argument. Or you could enter into an agreement with the local community for alternative development opportunities by contracting the community to carry out the conservation. It's a question of credibility."

Chris Spray of Northumbrian Water suggests that one solution might be to invest a percentage of the budget for the offset activities into capacity-building to secure the long-term success of the offsetting conservation activities.

6.5.3 Conservation or development?

An extension of the issue of what range of conservation-related activities would satisfy stakeholders as a biodiversity offset is the question as to whether pure economic and development benefits represent satisfactory compensation for biodiversity losses. Hitherto, economic benefits such as employment opportunities and contribution to GDP were regarded as adequate trade-offs for the environmental impacts. At the level of sustainable development strategy, it falls to government to determine major issues of policy such as this. However, companies may have to tackle these issues at the site level when they are raised during stakeholder consultations. One company described an experience with one of its operations in Brazil, when a Town Mayor felt the company need not bother with conservation benefits for the project, but should focus instead on community development. As our interviewees suggest (see chapter 5.3.2), companies increasingly believe a development project should deliver both environmental and developmental benefits, rather than trading one off against the other. Several interviewees described the benefits of dialogue with government in order to reach a conclusion on some of the value judgements inevitably involved in these decisions. As Chris Spray of Northumbrian Water puts it, “We have no way of saying if a Site of Special Scientific Interest is more important than a village shop. Hence we need to accept that there will always be an element of value judgement.”

7 How to offset: stakeholder issues

Chapter 6 explored a number of the components of biodiversity offsets that deserve careful consideration if they are to deliver both conservation and business benefits, such as: Where should the offsetting activities take place? How long should they last? And what kind of conservation activities provide a satisfactory offset that adequately compensates for the impacts of development projects? This chapter turns to perhaps the most important question of all: Who decides? People often value natural habitat differently, depending on their personal circumstances as well as the characteristics of the habitat in question. If the design, implementation and evaluation of offsets are carried out without adequate participation, expertise or commitment by the companies, governments and communities involved, they could fail to achieve conservation outcomes, business benefits will not materialise and stakeholders and observers may well criticise the outcome. This chapter explores who is involved in the design of offsets, who implements them and who evaluates their success.

7.1 Who is involved in designing an offset and who decides whether it is acceptable?

Just as fundamental to offset as issues of currency and location is the question of who determines what is fair and acceptable. During our interviews, it was evident that government is seen as a key – if not the determinant – partner in the decision, even if the offset is a purely voluntary initiative. Several company representatives pointed out that corporations are not biodiversity experts and should not be the ones to decide whether a biodiversity offset is acceptable and whether it is appropriately conceived. BP spoke for many, saying “it is very difficult for a company, even one as big as BP, to decide what space should you invest in to conserve biodiversity for the long term. We need a lot of help to make long term decisions for the right outcome. We try and participate in a process to work with regulators and conservation organisations to see how we can contribute what’s appropriate.” Many interviewees stressed how helpful it is when government makes its priorities for the conservation of biodiversity clear through law or policy, such as national biodiversity strategies and action plans, and also through involvement in case-by-case negotiations. “Biodiversity is a useful paradigm for business in the UK, as the UK has biodiversity targets and costed programmes with agreed measures of success: something the conservation movement never had before,” says Chris Spray of Northumbrian Water. “We can work within that. Business does not need to answer the question: “What is the conservation priority here?” We can use the government’s priorities. We simply accept that conserving the Gurney’s Pitta is key, if that is what the authorities and experts tell us.”

“The absolute ideal would be if there was agreement by the governments within a region on conservation priorities and how impacts should be offset, and a transparent process and sound scientific basis for designing offsets was established. Local governments would have established a mechanism to decide these priorities. And, ideally, there would be agreement in the conservation world on how to manage an area for prioritised conservation outcomes, with zoning, as appropriate, for development. A regional plan would be developed transparently, based on a democratic process and informed consent, in consultation with local and indigenous communities, central and local government and with business. Several companies working within the same area would participate together. Funding would be secured for 20 – 30 years to ensure the long-term conservation of the region. That would be a constructive

programme. Without a scientific basis or transparent process, you just get into tit-for-tat arguments about whether a multiple of 1.5 or 2 times the damaged area is appropriate,” says Kathryn Shanks of BP.

Several interviewees referred to “increasing frustration that the conservation community can’t decide what to do, where, when and why”. They made a strong plea for a more planned and united input from the conservation community, which could help by communicating a clearer and shared vision on conservation priorities. They described a growing tendency for companies to turn to environmental or conservation groups to help in these areas and to participate in planning projects such as biodiversity offsets.

Our impression from the interviews is that some companies seeking to move forward on this issue are not finding the clarity and support from governments and the conservation community that they feel is needed to make biodiversity offsets work. As David Richards of Rio Tinto put it, “We’re willing and committed to biodiversity offsets, but at the moment we don’t see much agreement in conservation policy and science about how to go about this. There is a lot of uncertainty about whether offsets are an acceptable device and how they should be constructed. This is true right down to how you quantify the minus and plus parts of what’s essentially a sum so that you can demonstrate a net positive effect. More progress on these aspects is needed in the conservation community.” Martin Hollands, from the conservation NGO community, acknowledges this. “We NGOs are already being strongly challenged by the major donors on biodiversity to quantify our impact on conservation. Companies are now throwing down another challenge. How to develop methodologies on measuring and balancing, as the basis for designing biodiversity offsets.”

A further challenge is that it will not always be easy to reach consensus among the parties involved on what is the most appropriate biodiversity offset project. Just as with any other multistakeholder discussion, those involved may hold strongly opposing views. In some cases, government will be the ultimate arbiter, as it grants the permissions and licenses for development projects. However, particularly in the case of voluntary offsets, a company would be unlikely to proceed unless it felt the project was workable and enjoyed sufficient support to succeed. This may depend on the capacity and level of involvement of local communities and NGOs.

7.2 Who implements a biodiversity offset?

Government, local communities, NGOs and the companies planning a commercial development may agree on a biodiversity offset project, but who is to carry it out? Should the company maintain sole responsibility or residual involvement in implementation, or should government, local communities or a third party such as an NGO be responsible for conducting the conservation activities involved?

Just as companies are not best qualified to design a biodiversity offset project, they may not be the most appropriate organisations to implement conservation activities in the field beyond their own fence. Most interviewees were comfortable with the idea of the implementation being outsourced to a third party organisation with appropriate interest and qualifications in conservation.

Several companies have experience of agreements with individuals and conservation groups to undertake conservation activities. For instance, Northumbrian Water has six environmental partnerships where independent third parties based in conservation organisations work on conservation projects on the company’s reservoirs. The institutional affiliation of the person

concerned is the conservation organisation, but the company pays for their time on the project. This can help both parties. The company gains expertise and someone with the time and motivation to implement good conservation activities. The company also benefits from additional leverage, as the conservation organisations can often obtain matched funding from foundations or other sources that increase the scale and impact of the conservation work. The conservation organisation can carry out more conservation activities and generates a new source of funding. In one example that Chris Spray gives, “We gave land to the local Wildlife Trust to work on a UK Biodiversity Action Plan key habitat and together developed 7 acres of reed beds and 11 acres of wetlands. We invested a further £50,000 and our partners were able to raise a further £400,000, including from the heritage lottery fund. For the land and the modest sum, we and our partners were able to generate a considerable sum for conservation and phenomenal PR.”

Local communities have implemented long-term conservation projects with success in some areas, although this may depend on their experience. According to José Carlos Fernandez, such agreements have only worked with a few communities historically. In Oaxaca, communities in the North are already involved in selling carbon offsets, provide FSC certified wood, sell organic coffee and have designed their own bioprospecting project. He believes that, if you were to attempt to find local groups to implement offsets in less well-organised communities elsewhere, particularly in a conflict region or somewhere with no track record of meeting contractual obligations, there is a heavy risk that the project’s objectives would not be met consistently.

When deciding who should take on conservation duties, BP says “talk to the experts”. In common with many other companies, BP works with The Nature Conservancy, Conservation International, Fauna and Flora International, WWF and many other local partners around the world, ranging from local environmental NGOs and schools to local government and other public agencies and institutions.

“Delegation” or outsourcing the conservation implementation to a third party is the basis of the wetland banking system in the US, where several benefits have arisen from this approach. Certain organisations are involved in many mitigation projects, leading to consolidation of the areas protected. This can support the effectiveness of conservation outcomes and make it easier to monitor the results. The group of “experts” in mitigation that has emerged can help new projects succeed, by drawing on the experience of having run similar ones in the past.

Despite these potential benefits of outsourcing biodiversity offsets, companies may wish to maintain some involvement in the conservation implementation activities. They may feel there is more to gain from a closer, working relationship with NGO and community partners and may be better able to influence the outcomes.

7.3 National systems to define and administer biodiversity offsets

Governments with policy requiring or supporting offsets will generally establish an institutional framework for considering offset project proposals, applying guidelines to aim for consistency and building experience on factors that contribute to the success of offset design and implementation. In the highly regulated context of the UK, for instance, the Secretary of State for the Environment is responsible for developing regulations, guidelines and for implementing the compensatory component of the Habitats and Birds Directives.

In Uganda, where a range of law provides the framework for biodiversity offsets (see chapter 4.3), a Technical Committee is preparing a broad policy framework on various issues including biodiversity conservation and carbon offsets. The committee involves representatives from the National Environment Management Authority and from other government departments and agencies, including the fisheries department. NEMA is working in partnership with Makerere University's Institute of Environment and Natural Resources to build a database showing the national distribution of biodiversity. The objectives are to accumulate quantitative and qualitative data on the location, use and distribution of various groups of fauna and flora in Uganda, so that the impact of development projects and offsetting conservation activities can be prioritised.

7.4 Who judges success?

A biodiversity offset project is likely to be judged both formally and informally. Formally, the undertakings made by the company involved may be audited by government for compliance with permits and licenses, and by parties to the offset activities for consistency with the agreement defining the project. Companies may audit biodiversity offset projects just as with other aspects of corporate policy, strategy and management. They may do so internally, through audit and assurance processes, or, preferably, externally, through independent monitoring and verification. Some of the companies interviewed were explicit that they do not wish to take responsibility for certifying and authenticating biodiversity offsets. "This needs to be done by an independent clearing house. Companies can't take that on board themselves," says Sachin Kapila of Shell. Michael Bean of Environmental Defense agrees. He argues that "independent external third party verification will ultimately be very important to ensure the environmental benefits. You can't use your own stable of experts. Independent verification could help assuage fears of greenwashing."

In addition to regulatory and contractual compliance checks and corporate auditing and verification, biodiversity offsets are likely to attract interest and be judged by local communities, NGOs and the media. These reasons simply add to the inevitable desire on the part of project participants to monitor and evaluate how successful the project is in achieving its goals. "People will want to form clear objectives and indicators for success so they can return later and say 'did it work?' And get an answer," says Geoff Burton of Environment Australia.

Several companies that Insight has interviewed for other biodiversity projects have described how difficult it is for them to find individuals from the usual auditing and verification organisations who are sufficiently competent on biodiversity to audit this aspect of their policies and activities (Grigg and ten Kate, 2004). In these circumstances, NGOs involved in a biodiversity offset project may be able to help. Independent third party organisations with specific biodiversity expertise may also offer verification as a service. "The local Wildlife Trust was involved in gauging whether our biodiversity projects were successful," says Chris Spray of Northumbrian Water.

Experience with wetlands mitigation and conservation banking in the US offers some insights into monitoring and evaluation that may help those designing biodiversity offsets in the future. Palmer Hough of the US Environmental Protection Agency (EPA) looks back at the US experience and feels that a shortcoming has been a lack of adequate funding to monitor and follow-up on mitigation projects. Tina Bartlett from the California Department of Fish and Game agrees. "We can always do better. We are trying to achieve 'no net loss' and the full mitigation standards of California. To do this, we are developing a mitigation banking database to track impact and compensation. Currently, we must rely on existing information and on reporting by bank operators. In the near future, we must refine the baseline monitoring

information and success criteria on both the impacting side and the mitigating side. It would be helpful for public and NGOs to get involved to make it better.”

The design of SMART⁹ targets and key performance indicators for biodiversity offset projects raises the abiding challenge for people working on biodiversity: establishing measurable and meaningful indicators of conservation outcomes, rather than just procedures followed. Given the scant knowledge of biodiversity, the lack of baseline data and the expense of gathering it, it is particularly difficult to measure rates of change in biodiversity and establish to what they are attributable. As Michael Bean of Environmental Defense explains, “One difficulty will be establishing metrics to evaluate results. It is useful to be systematic about this and important to clearly articulate the goal and then establish a metric for it.” Difficult as it this is, it will be very important for participants in biodiversity offset projects to clarify early in the design phase what exactly are the project’s objectives, and then to design and refine indicators of performance.

⁹ Specific, Measurable, Achievable, Relevant and Time-bound.

8 Conclusions

8.1 Views on offset

8.1.1 Growing momentum and interest in biodiversity offsets

Our evidence, while based on only 37 interviews, suggests that the use of biodiversity offsets as part of development projects is increasingly accepted as best practice by governments, companies and NGOs. At the same time, the number of biodiversity offset projects is growing. On the governmental side, authorities are investigating how they can use existing legal frameworks or introduce new policy to facilitate the negotiation of biodiversity offsets as part of existing project approval processes. Meanwhile, a number of companies are developing technical expertise, building institutional support and making the business case for voluntary offsets. They are moving towards quantified approaches that can demonstrate “no net loss” or even “net benefit” to biodiversity, experimenting with implementation of biodiversity offsets, and calling for help in designing methodologies to assess both sides of the offset equation: their impact and actions to benefit to biodiversity. Leadership groups of companies such as the International Council of Mining and Metals (ICMM) and multi-stakeholder partnerships such as the Energy and Biodiversity Initiative (EBI), to name but two, have also been working on the issue.

Conversations with our interviewees revealed a range of interpretations and opinions on the new and rapidly evolving practice of biodiversity offsets, but the large majority of our interviewees voiced the opinion that, in the appropriate context, offsets have much to offer and should be further explored. As Geoff Burton of Environment Australia put it, “The concept of offset is invaluable because it allows the community to achieve the best possible biodiversity outcome.” Sachin Kapila from Shell adds that “We would miss out by seeing biodiversity offset just as risk management. It’s an opportunity”.

Box 24: Some company views on the prognosis for biodiversity offsets

“My feeling is that offsets are a very logical approach and I’ve spoken to people in conservation groups who are very positive about it, although they acknowledge that politically the concept may be difficult to sell to some in their constituency. The concept has obvious potential for win-win outcomes.” (Ian Wood, BHP Billiton)

“I think biodiversity offsets are exciting and should be explored. I see a time when offsets just become a market mechanism. I believe one day we will be able to trade biodiversity offsets. It just needs clever leaders. Give it 5 or 10 years.” (Sachin Kapila, Shell)

“Both ecosystem services and biodiversity offsets are growing areas. We need to keep close and contribute to what evolves over the next couple of years.” (David Richard, Rio Tinto)

Despite this growing interest, we recognise that, in some circumstances, development projects are simply not appropriate and should not go ahead, so the whole question of offsets should not arise.

In addition, any attempt to undertake biodiversity offsets in settings where there are serious failures of public and corporate governance and a lack of transparency, participation and accountability in the management of natural resources will almost inevitably fail. Basic practices by states related to the rule of law, compliance and enforcement and by corporations related to governance and probity, are a pre-requisite for biodiversity offsets, as they are for other approaches to sustainable development.

8.1.2 Possible advantages of biodiversity offsets

Interviewees identified a number of benefits that can result from the use of offsets. These include:

For organisations devoted to the conservation of biodiversity:

- The possibility of more *in situ* conservation activity than would occur if developers were not encouraged to offset their impacts on biodiversity;
- A way to ensure better conservation outcomes by offsetting degradation of natural habitat of relatively low biodiversity value for conservation or restoration of high biodiversity value habitat (e.g. focusing on ecological corridors and priority sites) and by trading small, highly compromised sites for larger areas of habitat where conservation outcomes are more secure;
- A mechanism to integrate conservation into development planning at a time of growing pressure for resource development; to internalise environmental “externalities”; and to integrate biodiversity conservation into the investment plans of companies;
- The possibility that offsets will give greater economic value to biodiversity, natural habitat and the restoration of degraded ecosystems; and
- A significant new source of finance for biodiversity conservation.

For companies, developers and investors:

- The ability to undertake projects that might not otherwise be possible;
- Better relationships with local communities, government regulators, environmental groups and other important stakeholders;
- An enhanced reputation and therefore “social license to operate”;
- Increased “regulatory goodwill” which could lead to faster permitting;
- Easier access to capital and associated competitive advantages;
- A practical tool for managing social and environmental risks and liabilities;
- The possibility of influencing emerging environmental regulation and policy;
- Reduced costs of compliance with environmental regulations;
- “First mover” advantage for innovative companies; and
- Strategic opportunities in the new markets and businesses that emerge as biodiversity offsets become more widespread.

For communities affected by development projects:

- A means to ensure that developers leave a legacy not only of properly rehabilitated project sites, but also additional conservation benefits in the surrounding area; a legacy that could support livelihoods and amenity values;
- The opportunity to negotiate optimal environmental, economic and social outcomes at a community or landscape scale; and
- A means to identify pre-project biodiversity and ecosystem benefits and to ensure that important ecosystems remain functioning and productive both during and after development projects.

For environmental regulators and policy makers:

- A mechanism to encourage companies to make increased contributions to biodiversity conservation, without necessarily requiring elaborate new rules;
- A means to ensure that development projects required to meet the growing demand for energy, minerals, food, fibre and transport are nonetheless planned in the context of sustainable development; and
- Better balancing of the costs and benefits of biodiversity conservation and economic development.

8.1.3 Associated risks

Despite the potential advantages of biodiversity offsets identified by many of our interviewees, this report has shown that they offer no panacea or simple solution for the many biodiversity issues associated with development. Indeed, biodiversity offsets are only likely to succeed in a conducive policy atmosphere, if they meet the needs of all the key stakeholders who should be involved in their design. Designing a biodiversity offset requires the resolution of a number of complex challenges against a background of incomplete information.

Even when properly designed, offsets are likely to be controversial and the subject of disagreement. For instance, some conservation organisations oppose the entire concept of offsets, preferring to lobby for an outright ban on habitat conversion (NCC, 2001; PENGO, 2002). Others are less critical of the concept of offsets in theory, but feel that the way they are being put into practice leaves much to be desired. Conversely, some developers oppose biodiversity offsets on the grounds that such compensation will cost more than they can bear (Property Council of Australia, 2002). The public, meanwhile, may be sceptical that offsets deliver true net benefits. And local communities may not feel that they stand to gain, particularly if the conservation activities are not undertaken very close to the original development, or if companies trade off conservation benefits against socio-economic ones, rather than delivering both.

There is a risk that the mechanism could be perceived as a “license to trash” for companies. And any strong backlash could stifle interest in exploring voluntary offsets, particularly on the part of companies, as it would counter one of the strongest elements of the business case (i.e. reputational advantages and license to operate).

In some circumstances, such as where the damage to biodiversity is irreversible or occurs on unique sites of global significance, many people would agree that development is simply not appropriate, so the whole question of offsets should not arise. This perspective is reflected, for example, in a 2002 IUCN recommendation calling on states to prohibit mining in protected areas management categories I to IV and to strictly limit mining in protected areas falling in

categories V and VI.¹⁰ If governments and companies nonetheless go ahead with development in such cases, the public is unlikely to perceive the outcome as acceptable, even there is an attempt to offset the harm caused to biodiversity. Offsets in such circumstances would be likely to undermine public acceptability of the concept in general.

Together, these risks point to the need for credible and transparent standards, methodologies and guidelines for biodiversity offsets, if the approach is to be adopted more widely.

8.1.4 Lack of clear vision

Despite the growing interest in biodiversity offsets, a number of obstacles currently hamper progress. First, our research has shown that the different terminology and contexts for “biodiversity offsets” and the lack of a shared vocabulary on the subject hinders dialogue and the pooling of experience and expertise. Additionally, there is little regulatory requirement for biodiversity offsets around the world and no intergovernmental discussion of the issue (with some notable exceptions discussed in chapter 4.2). This means that most experience worldwide has emerged *ad hoc*, from mitigation banking in the USA or from environmental impact assessments and planning processes, as well as the voluntary enthusiasm of particular individuals. In short, experience is developing from the bottom-up, with little exchange of information and no co-ordination. Likewise, not much is known of existing practice and current experiments with biodiversity offsets. Indeed, this is among the first studies on the subject of which we are aware. Although several leading companies have recently announced commitments related to “net positive effect” on biodiversity, none has published a clear strategy on how it intends to accomplish this.

All this suggests that biodiversity offsets are at a turning point: There may be considerable interest and growing practical experience, but there is insufficient dialogue. There appears to be broad acknowledgement of the need to test the political acceptability of the approach, but there is a need to develop guidelines and tools to help those involved to clarify their objectives and demonstrate their success or failure. Against this background, we offer some initial conclusions, based on our interviews and research.

8.2 Key conclusions

8.2.1 The meaning of biodiversity offsets and the mitigation hierarchy

Our first conclusion is that any discussion of biodiversity offsets needs to clarify the participants’ understanding of the concept at the outset. The use of offset vocabulary varies around the world, as does the assumption as to the context within which offsetting activities take place. For instance, in the US, the term “mitigate” (or “compensatory mitigation”) is often preferred to “offset”. This refers to activities designed to compensate for unavoidable environmental damage, generally in the context of a regulatory framework that mandates offsetting activities and that has created a market in which biodiversity and wetland credits can be traded. In Europe the term “mitigate” means to minimise harm or to make it less severe, so offset is seen as a distinct activity that compensates for unavoidable harm once this mitigation has taken place. In addition to complying with regulations that require offsets in some

¹⁰World Conservation Congress 2002 REC No. 082 “Protection and conservation of biological diversity of protected areas from the negative impacts of mining and exploration.”

contexts, European companies (like their North American counterparts) sometimes carry out biodiversity offsets in their operations around the world on a voluntary basis, motivated by the business case for doing so.

To clarify the concept that forms the basis for our research, in this report we have defined biodiversity offsets as conservation activities conducted to compensate for the residual harm to biodiversity caused by development projects in such a way as to ensure no net loss of biodiversity. We strongly emphasise, however, that before reaching this point, projects must have first sought to avoid and minimise such harm.

In other words, for us, integral to the concept of biodiversity offsets is their proper placement within the “mitigation hierarchy”: developers should first seek to avoid, minimise and mitigate the harm their projects cause to biodiversity (where “minimise” means to design a project in such a way as to reduce harm, and “mitigate” means to alleviate the residual harm, to the extent possible). Only then should they offset the residual, unavoidable impact of the project on biodiversity. We believe that offsets, if they are firmly anchored within the context of this mitigation hierarchy, do not provide a “license to trash” the environment.

Moreover, biodiversity offsets are no substitute for forgoing development projects that should not have taken place in the first place. Finally, companies, industry associations and commentators such as Goodland (2003) are increasingly suggesting that the appropriate goal for offsets is to go beyond “no net loss” and seek to achieve “net benefit”.

8.2.2 The Offset Spectrum

One interesting observation from our work is that offsets fall within a very broad spectrum that ranges from one-off voluntary offsets designed to compensate for the residual damage of one particular project, through more regular voluntary offsets that are required by company policy, all the way to legally mandated compulsory offsets that could eventually be part of an emerging market in tradable “offset credits”. And there are other hybrid approaches in between these various points on the spectrum.

At one end of the spectrum, law and policy in the US, Europe, Brazil and elsewhere require offsetting activities for damage caused by development projects to certain watersheds, species and ecosystems. And in many other countries, legal processes for environmental impact assessment, planning and negotiation of the terms and conditions of concession agreements offer the context for discussions between regulators and companies to establish biodiversity offsets. Similarly, companies seeking to raise capital for development projects are likely to face requirements to establish mitigation measures – some of which include off-site biodiversity offsets – in loan agreements from the IFC, and, since the advent of the Equator Principles, from a number of private banks.

It is important to note that all parts of this spectrum have their advantages and disadvantages. Some of these are explored in chapter 4.4. US interviewees were almost unanimous in their scepticism that biodiversity offsets would achieve the necessary scale and effectiveness in the long-term if they were only conducted on a voluntary basis. Regulatory regimes, they argued, create legal certainty, clarify the expectations of companies on the design of biodiversity offsets, help ensure a level playing-field, and may help establish new markets.

On the other hand, several interviewees pointed out that specific legal requirements for biodiversity offsets exist in so few countries that the voluntary approach would lead to a far greater contribution to global conservation than if developers were to wait for mandatory requirements. Furthermore, existing regulatory regimes that require offsets are sometimes too prescriptive to allow for flexibility in the design of offsets in such a way as to ensure that

they make the best contribution to conservation. Voluntary approaches sometimes give room for more flexibility and creativity.

As with so many other things in this report, the right place in the spectrum will vary case by case, depending on a number of variables such as a country's legal context, the nature of real-estate markets, and even the specific circumstances of a given project. In other words, where offsets should fall in this spectrum can only make sense when judged on a case-by-case basis.

We recognise that, while there may be benefits to legally mandated and tradable offsets (such as those that are emerging in the USA), these will probably not be feasible in the short to medium-term in most of the countries that hold the majority of the world's biodiversity. For this reason, we believe that, among offsets, those that are voluntary (preferably those called for by clear company policies) and those that emerge from concession agreements or as result of existing regulation (e.g. EIA laws) will have a particularly important role to play in conserving a large part of the world's biological resources.

8.2.3 Flexibility

Regardless of where offsets fall on the voluntary-to-mandatory spectrum, Leah Haygood – an environmental consultant who has worked on mitigation for Waste Management and other companies – voiced the view of many when she said that what is important is not to seek an unrealistic “one-size-fits-all” solution, but rather to develop a process that “will allow you to come up with site-specific solutions”. Many other interviewees likewise stressed the importance of flexibility and case-by-case, site-specific responses to biodiversity impact as a pre-requisite for appropriate offsets. The ground-rules for biodiversity offsets, many argued, need to be sufficiently flexible to allow site-specific solutions that find the best results and ensure that the relevant stakeholders are involved and satisfied.

Notwithstanding the need for flexibility and a process-based approach, it is still possible to elicit some basic principles that we suggest could be applied in individual cases. Several of these principles interact and some may conflict so as to require a degree of trade-off. Drawing on the interviews and other sources, we arrive at the following general conclusions about designing offsets to achieve no net loss or net benefit to biodiversity:

- ***Measuring “no net loss” is a challenge but not an insuperable barrier:*** Limits to the current knowledge of biodiversity and its complexity mean that it is extremely difficult to establish a “currency” to measure both loss of biodiversity caused at a development site and the conservation that is needed to offset it elsewhere, so as to be confident that there is “no net loss”. Much more work is needed in this area to develop socially acceptable and workable methodologies to measure both biodiversity loss and gain. Developing such a “currency” may be a challenge, but some ecologists have indicated that it should be possible to identify measures that give a reliable indicator for no net loss. Such approaches can also help show when a net benefit has been achieved.
- ***Ecological equivalence and conservation priorities need to be balanced:*** Given the difficulties inherent in measuring biodiversity, establishing equivalence between the affected and offset sites –sometimes referred to as trading “like for like”– appears to be a good basis for ensuring no net loss of biodiversity. However, this bias toward equivalence should be tempered with sufficient flexibility to allow offsets to focus on agreed conservation priorities, whether informed by national strategies and international expertise or by local needs. There is, nonetheless, an important caveat: the more the biodiversity involved in the offset differs from that affected by the development project, the harder it is likely to be to demonstrate “no net loss” and to secure stakeholder buy-in.

- ***Local benefits and conservation priorities need to be balanced:*** In order to meet the needs of local stakeholders, offsets are normally implemented at a location that is sufficiently close to those who are most affected, so that they can, in turn, benefit from their outcome. In some cases, however, flexibility may be needed to allow for the selection of locations that will make a greater contribution to biodiversity conservation, even if that means conducting offsets further afield. In such cases, the consent of local people is essential.
- ***Offsets should demonstrate real in situ conservation outcomes:*** While financial support for taxonomic and other research and for capacity-building and training can make an important contribution to biodiversity, the conservation outcomes of activities such as training are often hard to demonstrate. And when it comes to biodiversity offsets, these mechanisms are only likely to deliver the business benefits of risk management and license to operate if they can demonstrate practical conservation outcomes in the field.
- ***Successful offsets require agreement among stakeholders:*** As expanded below, the most fundamental determinant of the design of biodiversity offsets must be the satisfaction of key stakeholders such as local communities, government authorities and the companies involved.

8.2.4 Depends on stakeholders

The successful design and implementation of biodiversity offsets depends on satisfying key stakeholders including local communities, government authorities, environmental groups and the companies involved in a development project. The support of local communities is of prime importance. They may, for instance, reject a project that contributes to the country's top conservation priority if they do not see any obvious benefits given the distant location of the offsetting project. Or they may reject a project next door to the development site if it is of no conservation value. Ideally, the stakeholders will, together, weigh up the various factors discussed in this report in order to select offset activities that optimise and balance a mixture of considerations. In practice, it is not always easy to identify who has a legitimate place at the table. Dialogue can be time consuming and expensive and stakeholders are not always able to reach consensus. Notwithstanding these challenges, stakeholder involvement is vital.

8.2.5 Offsets benefit from clear priorities

Offsets, at their heart, involve a trade-off. They are predicated on the notion that biodiversity in one place may be damaged (or even destroyed) in return for biodiversity protected and conserved elsewhere. In order to make such trade-offs, however, it is essential to reach broad agreement on conservation priorities; to assign values that allow a determination of what can be damaged, what needs to be protected; and what can be traded for what.

Given this fundamental nature of offsets, interviewees, time and again, stressed the need for those designing specific offset projects to inform themselves of the priorities for conservation in the country concerned; and to plan offsets with a view to making contributions at the ecosystemic, landscape or ecoregional levels. Familiarity with national biodiversity strategies and action plans and contact with relevant authorities and experts can help make offsets more successful. Companies interviewed frequently stated that they would like guidance on conservation priorities and described lack of clarity on this as a significant constraint in the use of offsets.

8.2.6 Further work is needed

Many interviewees identified the need for further work to articulate the concepts involved in biodiversity offsets and to develop guidelines and methodologies, particularly on the issue of “currency”: the basis for measuring the loss of biodiversity caused at a development site and the conservation outcomes needed to offset it elsewhere. Some specific areas where further work is called for are described in the following section.

8.3 What is needed for better biodiversity offsets?

Our interviewees identified a number of issues that need to be resolved if biodiversity offsets are to be used more widely. These include the need to:

8.3.1 Encourage more dialogue and develop a shared vocabulary

Biodiversity offsets raise many scientific, social, political, legal and economic questions, to which there are no easy answers. More open and informed debate is needed to develop a shared vocabulary on biodiversity offsets and to explore its various aspects. Dialogue is also needed to articulate the concept, to share information and experience and to assess its political, scientific and commercial feasibility. This would help to address the evident suspicion and distrust among some stakeholders that could become a barrier to further development of the approach. The debate should involve those who are sceptical about biodiversity offsets, and those who have simply not given it much thought, as well as the more ardent supporters of offsets.

8.3.2 Ensure all stakeholders play their part

If they are to succeed, biodiversity offsets will need support from companies, governments, NGOs and local communities; first in exploring the general approach of “no net loss”, and then in the design of specific offset projects. It has become clear through our research and interviews that, for any significant progress to be made on the issue, certain steps on the part of each of the main stakeholder groups are needed. Some of these steps are outlined below:

For Companies

For companies, biodiversity represents both a business risk and an opportunity (Grigg and ten Kate, 2004). Biodiversity offsets are but one tool they can use to manage this risk and capitalise on the opportunity. In doing so, companies should:

- Clarify to external audiences and to staff and contractors their policy commitment on biodiversity, including reference to the mitigation hierarchy and to biodiversity offsets.
- Communicate a clear strategy for how they plan to implement their policy commitments, preferably including specific, time-bound targets. As part of this strategy, companies should set out how they propose to achieve any commitments to “no net loss” or “positive impacts on biodiversity”. We recommend that this aspect should comprise two main elements: (a) biodiversity offsets to be a routine part of project design for new projects in areas of high biodiversity value, where permitted by local authorities; and (b) group-level

contributions to conservation. The latter might include capacity-building and research and would have the broad aim of offsetting the cumulative effect of the company's other impacts on biodiversity, for instance in urban or other sites of lower biodiversity value.

- Communicate their experience of designing and implementing biodiversity offsets.
- Look for opportunities to participate in pilot projects to design and implement biodiversity offsets, working in collaboration with representatives from local communities and government and drawing on appropriate expertise.
- Work with NGOs and other experts to develop guidelines and methodologies and consistent and transparent indicators for achieving “no net loss” that can satisfy the needs of stakeholders and be workable in practice.
- Encourage governments, communities, NGOs and others to identify clear biodiversity, ecosystemic, and other conservation priorities needed to make offsets possible.

Governments

As described above, biodiversity offsets may be used in a variety of policy contexts, from the highly prescriptive regulatory regime of the US Clean Water Act to the more basic setting of environmental and planning law found in many parts of the world. Governments seeking to test or encourage biodiversity offsets should:

- Provide an enabling policy framework. This will not necessarily require the introduction of new law mandating biodiversity offsets. On the other hand, offsets are unlikely to succeed without effective law and policy on conservation; environmental impact assessment and mitigation; land use planning and zoning; conditions for extractive and other industrial developments with biodiversity impacts; and clear national sustainable development goals and priorities with associated national biodiversity strategies and action plans.
- Communicate clearly their national and local conservation priorities.
- Collaborate with other stakeholders to develop guidelines on best practice on biodiversity offsets.
- Engage, where appropriate, at the national or local level, in site-specific negotiations on the most appropriate design for biodiversity offsets.
- Work with other government parties to the Convention on Biological Diversity to discuss biodiversity offsets under the auspices of the CBD under a suitable agenda item, such as implementation of Article 11 (Economic incentives) or as part of an endeavour to engage the business community in securing the objectives of the treaty.

NGOs & conservation experts

Many of our interviewees stressed the important role that conservation groups and experts in the natural and social sciences and in law and economics can play in developing the concept of biodiversity offsets, including the design of ground-rules and methodologies needed to move forward. For companies, the support of members of the NGO community is critical to their motivation to implement biodiversity offsets voluntarily. Several company representatives interviewed for this report posed a specific challenge to NGOs to co-ordinate their views and engage in discussions with government and companies to prioritise conservation efforts. NGOs and conservation experts prepared to engage constructively in this debate should:

- Foster and contribute to dialogue on biodiversity offsets to explore their potential advantages and disadvantages.

- Contribute their expertise and engage with other members of the NGO and expert community to agree and communicate conservation priorities.
- Contribute technical expertise and work with companies and governments to develop transparent guidelines and methodologies, as well as consistent and transparent measures and indicators for achieving “no net loss” of biodiversity that will satisfy the needs of stakeholders and be workable in practice.
- Help to build the capacity of companies, governments and communities to discuss conservation priorities and to engage in fair and transparent discussions on offsets, both generally and in specific cases.
- Help to monitor and evaluate biodiversity offset projects.

Communities

Communities affected by development projects are often those who stand to lose or gain the most from biodiversity offsets. Their involvement is crucial. Communities interested in this approach should:

- At the political level, signal interest in biodiversity offsets to governments and companies. Fear that communities will not accept offsets is one of the greatest barriers to their use.
- When biodiversity offsets are planned at the project level, engage with government, companies and seek independent expert advice. This would help all concerned to select and design biodiversity offsets that ensure the original site is sufficiently rehabilitated while the offset project delivers the appropriate mixture of local benefits and contribution to biodiversity priorities.

8.3.3 Gain more practical experience with offsets

Perhaps the most effective way to address the many doubts that surround biodiversity offsets would be to point to projects on the ground that demonstrably improve the status of biodiversity. Practical experience, for instance through pilot projects and case studies documenting the design, implementation and evaluation of biodiversity offsets, is an essential input to the debate, as well as the development of guidelines and methodologies. As Geoff Burton of Environment Australia puts it, “If you can show the biodiversity outcome for both on-site remediation and off-site conservation is better than if the site had not been disturbed in the first place, the biodiversity offset cannot be criticised.” To achieve this, one needs well-designed and adequately-funded projects that involve all appropriate stakeholders, that establish clear and transparent goals, and that have agreed and measurable indicators of success. Published case studies describing the practical experience of biodiversity offsets and communicating the results of the projects against their goals, targets and agreed performance indicators would help enormously. No such pilot projects have yet been established, although a project to do so is described below. Nor are there many clear and comprehensive case studies on specific projects to offset biodiversity damage, with a few notable exceptions, particularly for projects related to wetland mitigation in the US.

8.4 Next steps for Insight and IUCN

Insight Investment plans to use this report as the basis for engagement with companies in which it is invested, to encourage them to address the business risks associated with biodiversity to which they are exposed. Insight also aims to contribute to discussions on biodiversity offsets taking place in groups such as the Energy and Biodiversity Initiative and the International Council on Mining and Metals.

Insight Investment is collaborating with Forest Trends on a programme to establish a number of pilot biodiversity offset projects around the world.

The authors plan to present this report and discuss the issues involved at the IUCN World Conservation Forum in Bangkok in November 2004. This and other venues will be used to explore the concept of biodiversity offsets by promoting dialogue with industry and debate among the conservation community. It is hoped that further stakeholder dialogue will help to clarify the concepts and practices involved and to develop appropriate policy frameworks and practical guidelines for equitable, sustainable and cost-effective biodiversity offsets.

Appendix 1: Interviewees and other informants

Interviewees: Private Sector

1. Stuart Anstee, Rio Tinto
2. Steven de Bie, Shell
3. Steve Botts, Antamina
4. David Brand, Hancock Natural Resources Group
5. Jessica Fox, Electric Power Research Institute
6. Chris Herlugson, BP
7. Dale Heydlauff, American Electric Power
8. Leah Haygood, Consultant
9. Rick Herd, Consultant
10. Kathryn Shanks, BP
11. Sachin Kapila, Shell
12. Doug Lashley, Greenvest
13. Rich Mogensen, Earth Mark Companies
14. Bradley Raffle, Baker Botts LLP
15. David Richards, Rio Tinto
16. Candace Skarlatos, Bank of America
17. Chris Spray, Northumbrian Water (now of the Scottish Environment Protection Agency)
18. Ian Wood, BHP Billiton
19. One interviewee preferred to remain anonymous

Interviewees: Government & Intergovernmental Organisations

20. Tina Bartlett, California Department of Fish and Game, USA
21. Robert Brumbaugh, U.S. Army Corps of Engineers, Institute for Water Resources, USA
22. Geoff Burton, Environment Australia
23. José Carlos Fernández, National Ecology Institute, Mexico
24. Habiba Gitay, Millenium Ecosystem Assessment
25. Palmer Hough, Environmental Protection Agency, USA
26. Deblyn Mead, U.S. Fish and Wildlife Service, USA
27. Alice Ruhweza, National Environment Management Authority, Uganda
28. Bob Watson, World Bank

Interviewees: NGOs and Academic Organisations

29. Andrew Balmford, Department of Zoology, University of Cambridge
30. Michael Bean, Environmental Defense
31. Robert Bonnie, Environmental Defense
32. Assheton Carter, Conservation International
33. Jason Coccia, Conservation Fund
34. Ismid Hadad, Kehati, Indonesia
35. Martin Hollands, Fauna and Flora International
36. Dick Rice, Conservation International
37. Julie Sibbing, National Wildlife Federation

*Other informants**

* These individuals contributed information on particular boxes and issues included in the report, but did not necessarily discuss the range of topics described in Appendix 2.

Lidia Ahmad, BP Berau Ltd
Ken Atkins, Department of Conservation and Land Management, Western Australia
Tony Baird, Western Power, Australia
Marc Carter, Department of the Environment and Heritage, Australia
Jocelyn Davies, Adelaide University, Australia
Ann DeVoy, Environmental Law Programme, IUCN
John Finnie, English Nature
Annelisa Grigg, Fauna and Flora International
Ted Gullison, ParksWatch
David Harrison, English Nature
Toby Janson-Smith, independent consultant
Yolanda Kakabadse, President, IUCN
George Kelly, Environmental Banc and Exchange (EBX)
James Marsden, English Nature
Craig Mackenzie, Insight Investment
Krystal Maze, South African National Biodiversity Institute
Ann Neville, Kennecott Utah Copper Corporation
Geoff Nickolds, Severn Trent
Reyna Oleas, independent consultant
Stuart Pudney, Northumbrian Water
Juliana Rehfeld, Anglo American Brazil
John Scanlon, Environmental Law Programme, IUCN
Phil Tanner, Anglo American
Sophie Williams, Shell

Appendix 2: Issues discussed during the interviews

One of the main sources of information for this report was a series of semi-structured interviews with knowledgeable individuals who have worked on issues related to biodiversity offsets. A general list of questions – rather than a formal questionnaire – was prepared as the basis for the interviews. Each interview followed a slightly different course, according to the experience and interests of the interviewee, as well as the time available. The interviews were guided by the following questions and issues:

What do you understand offset to mean?

- Discussion of concepts such as: offset, no net loss, net positive effect, 'replacement' of what is lost
- Distinction between biodiversity offsets and positive conservation measures
- Distinction between biodiversity offsets and mitigation
- Scope of activities that could legitimately be covered by biodiversity offsets other than on the ground conservation measures, e.g. taxonomic studies, capacity-building of institutions

What is your experience with offset?

- How the organisation has dealt with unavoidable environmental damage
- Experience of the organisation with compensatory offsets and nature of social and environmental impact involved
- Nature of any specific organisational policy on offsets
- Any reference made by the organisation to offsets and related issues in publicly available documents, including any standard approaches, guidelines etc
- Discussion of the perceived risks and rewards of biodiversity offsets
- How interviewee has set about negotiating offsets and with whom

Can you give us specific examples of biodiversity offsets?

- Discussion of what was offset, where, when, how and by whom
- Indication of the cost of the offset and how it compares to other remediation and conservation investments

What is the motivation to conduct biodiversity offsets?

- Whether (and, if so, what kind of) regulatory framework is needed for offsets to work or whether there is enough motivation to offset on a purely voluntary basis
- Whether the organisation would engage in offsets only where required to do so by law (if so, which law?) or also voluntarily
- In the case of voluntary offsets, discussion of motivation, including various components of the business case

What would be needed to make offsets work?

- Discussion of whether the concept and approach is useful
- Discussion of the perceived main challenges and opportunities
- Discussion of methodologies for establishing equivalence of biodiversity gains and losses
- Discussion of timelines and whether and how permanence of conservation outcomes could be ensured
- Whether and how issues of lack of confidence concerning the concept and lack of trust of stakeholders could be overcome
- What would be needed to make progress with biodiversity offsets
- What would be needed to help the interviewee with his/her work in this area

Where should the offsetting conservation activities take place?

- Discussion of the range of possibilities from local to internationally traded offsets
- Factors that would affect the decision on location of biodiversity offsets

How should the offsetting conservation activities take place?

- The range of options, including through the organisation's own projects, through partnerships and through contractors/third parties

Who else should we talk to about offsets?

- Request for additional useful contacts

References

- Baird, A. 2003. "How Can A Native Vegetation Offset Policy Contribute To A 'No Net Loss' Of Native Vegetation Quality And Quantity?" Thesis for Master of Science in Environmental Science. School of Environmental Science. Murdoch University, Western Australia.
- Barbier, E.B., Markandya, A. and Pearce, D.W. 1990. "Sustainable Agricultural Development and Project Appraisal," *European Review of Agricultural Economics* 17: 181-196
- Bauer, M., Fox, J., and Bean, M. 2004. Landowners Bank on Conservation: The U.S. Fish and Wildlife Service's Guidance on Conservation Banking. *Environmental Law Reporter*. August: V 34 pp 10717-10722
- Baumol, W.J. and W.E. Oates. 1971. "The use of Standards and Prices for Protection of the Environment," *Swedish Journal of Economics*, 73: 42-54.
- Baumol, W.J. and W.E. Oates. 1988. *The Theory of Environmental Policy*, Second edition. Cambridge University Press: New York.
- Bayon, R. 2002. "A Bull Market in Woodpeckers: Making Money in Environmental Derivatives", *Milken Institute Review*, First Quarter 2002.
- Bayon, R. 2004. "Will New Regulations Mean Big Business for US Mitigation Bankers?", *The Ecosystem Marketplace*, www.ecosystemmarketplace.com.
- Bayon, R. 2004. "Making Environmental Markets Work: Lessons from early experience with sulphur, carbon, wetlands and other related markets". *Forest Trends*. www.forest-trends.org
- Bishop, J. 2003. Producing and Trading Habitat, or Land development as a source of funding for biodiversity conservation: a review of mitigation and conservation banking in the USA and its implications for global biodiversity conservation. Draft, 1 October 2003.
- Bowles, I., Downes, D., Clark, D. and Guérin-McManus, M. 1996. Encouraging Private Sector Support for Biodiversity Conservation: the use of economic incentives and legal tools, Organisation Thirty two: Washington, D.C. (reprinted in *Duke Environmental Law and Policy Forum*, 8, 1998; also available online at: <http://www.law.duke.edu/journals/delpf/articles/delpf8p209.htm#H2N4>)
- Cervigni, R. 1993. *Biodiversity: Incentives to Deforest and Tradable Development Rights*. CSERGE Working Paper GEC 93-07. University College London: London.
- Chomitz, K. M., Thomas, T. S. and A. S. Brandão. 2003. "Creating markets for habitat conservation when habitats are heterogeneous," paper presentation at the Fourth BioEcon Workshop on the Economics of Biodiversity Conservation - Economic Analysis of Policies for Biodiversity Conservation, Venice International University, Venice, 28-29 August 2003.
- Clark, D. and Downes, D. 1995. *What Price Biodiversity? Economics and Biodiversity Conservation in the United States*. Center for International Environmental Law: Washington, D.C. (reprinted in *Journal of Environmental Law & Litigation* 9, 11, 1997).
- Coyne, M. 2004. "Wetlands: Bush Changes Administration Policy to 'Net Gain' of Resource", *Greenwire*, April 23, 2004, *Natural Resources Vol. 10 No. 9 Environment and Energy Publishing LLC*.
- Davis, P. 2000. *Carbon Forestry Projects in Developing Countries: Legal Issues and Tools*. Forest Trends: Washington DC. www.forest-trends.org

- Earl, R (ed). 2003. Mitigation – Does it Measure Up? Steps to Best Practice. Post Conference Notes from CIWEM Conference organisation by Coastal Management for Sustainability at the School of Oriental and African Studies, London, 20 November 2003.
- Energy and Biodiversity Initiative (EBI). 2003. Integrating Biodiversity Conservation into Oil and Gas development. <http://www.theebi.org/org/pdfs/sources.pdf>
- Gardner, R.C. 2003. "Rehabilitating Nature: A comparative review of legal mechanisms that encourage wetland restoration efforts," *Catholic University Law Review*, Vol. 52, No. 3 (Spring), Washington, D.C.
- Goodland, R. 2003. Sustainable Development Sourcebook for the World Bank's Extractive Industries Review: Examining the Social and Environmental Impacts of Oil, Gas and Mining. World Bank, Washington, D.C.
- Graßl, H., Kokott, J., Kulesa, M., Luther, J., Nuscheler, F., Sauerborn, R., Schellnhuber, H.-J., Schubert, R., Schulze, E.-D. 2002. Charging the Use of Global Commons. Special Report, German Advisory Council on Global Change: Berlin.
- Grigg, A and ten Kate, K. 2004. Protecting shareholder and natural value. Biodiversity risk management: towards best practice for extractive and utility companies Insight Investment, London.
http://www.insightinvestment.com/Documents/responsibility/protecting_shareholder_and_natural_value.pdf
- IUCN, 2000. Biodiversity is life: www.iucn.org/bil/bioloss.html
- IUCN, 2002. Red list, major threats: www.redlist.org/info/major_threats.html
- Johnston, R. and Madison, M. 1997. "From landmarks to landscapes: A review of current practices in the transfer of development rights," *Journal of the American Planning Association*, 63(3): 365-378
- ten Kate, K. 2003a. Consultation document to accompany Insight's presentation to the World Parks Congress, 13 September 2003. Biodiversity: towards best practice for extractive and utility companies. <http://www.insightinvestment.com/Corporate/responsibility/project/biodiversity.asp>
- ten Kate, K. 2003b. Biodiversity offsets: Mileage, methods and (maybe) markets. Background paper for discussion at Katoomba VI private meeting "Beyond carbon – emerging markets for ecosystem services" Locarno, 1 November 2003.
<http://www.katoombagroup.org/Katoomba/meetings/katoomba6.htm>
- Kiss, A. 2002. Making Biodiversity Conservation A Land Use Priority, Columbia University Press.
<http://epp.gsu.edu/pferraro/special/AgBookChapter2002.pdf>
- Landell-Mills, N. and I.T. Porras. 2002. Silver bullet or fools' gold? A global review of markets for forest environmental services and their impact on the poor. IIED: London
- McCarthy, M.A.; Parris, K.M.; van der Ree, R.; McDonnell, M.J.; Burgman, M.A.; Williams, N.S.G.; McLean, N.; Harper, M.J.; Meyer, R.; Hahs, A. and Coates, T. The habitat hectares approach to vegetation assessment: An evaluation and suggestions for improvement. *Ecological Management & Restoration*, April 2004, vol. 5, no. 1, pp. 24-27(4) Blackwell Publishing
- Montgomery, W. 1972. "Markets in licenses and efficient pollution control programs," *Journal of Economic Theory*, 5: 395-418
- National Research Council. 2001. Compensating for Wetland Losses under the Clean Water Act. Committee on Mitigating Wetland Losses, Board on Environmental Studies and Toxicology, Water

- Science and Technology Board, Division on Earth and Life Studies, National Research Council. National Academy Press: Washington, D.C.
- New South Wales Government. 2002. Green offsets for sustainable development. Concept paper. Environment Protection Authority, Sydney. April 2002.
- New South Wales Government. 2001. Offsets, Salinity and Native Vegetation: Discussion
- OECD. 1999. Economic Instruments for Pollution Control and Natural Resource Management in OECD Countries: A Survey, ENV/EPOC/GEEI(98)35/REV1/Final. Organisation for Economic Co-operation and Development: Paris.
- OECD. 2002. Handbook of Biodiversity Valuation: A guide for policy makers. Organisation for Economic Co-operation and Development: Paris.
- Pagiola, S., Bishop, J. and N. Landell-Mills (eds.) 2002. Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan: London
- Panayotou, T. 1994. 'Conservation of Biodiversity and Economic Development: The Concept of Transferable Development Rights' *Environmental and Resource Economics*, 4:91-110.
- Parkes, D.; Newell, G. and Cheal, D. The development and raison d'être of 'habitat hectares': A response to McCarthy et al. (2004) *Ecological Management & Restoration*, April 2004, vol. 5, no. 1, pp. 28-29(2) Blackwell Publishing
- PENGO. 2002. Submission on Green Offsets for Sustainable Development Concept paper, Peak Environment Non-Government Organisations, (July).
- Rolfe, J. 2000. Mining and Biodiversity: Rehabilitating Coal Mine Sites. Policy, Summer 2000-01. Centre for Independent Studies. <http://www.cis.org.au/Policy/summer00-01/polsumm0001-2.htm>
- Salzman, J and Ruhl, B. 2002. 'Paying to Protect Watershed Services: Wetland Banking in the United States', in Pagiola, S, Bishop, J and Landell-Mills, N (eds) *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*, Earthscan, London, 300pp.
- Secretariat of the Convention on Biological Diversity. 2000. Sustaining life on Earth: How the Convention on Biological Diversity promotes nature and human well-being. <http://www.biodiv.org/doc/publications/cbd-sustain-en.pdf>
- Secretariat of the Convention on Biological Diversity, 2004. Global Biodiversity Outlook, <http://www.biodiv.org/gbo/>.
- Sevastopulo, D. 2003. Equator Principles Celebrate First Anniversary. *Financial Times*, 4 June 2003.
- Stavins, R. 2003. "Market-Based Environmental Policies: What Can We Learn from U.S. Experience and Related Research?" Faculty Research Working Papers Series, No. RWP03-031, John F. Kennedy School of Government, Harvard University: Cambridge, MA (available at: <http://ssrn.com/abstract=421720>)
- Swanson, T.M. 1995. "The Theory and Practise of Transferring Development Rights: The Institutions for Contracting for Biodiversity", Paper presentation at a workshop on Financing Biodiversity Conservation, Harare, Zimbabwe, 13-15 September 1995.
- Tietenberg, T. 1980. "Transferable Discharge Permits and the Control of Stationary Source Air Pollution: A Survey and Synthesis", *Land Economics* 56:391-416.
- Tietenberg, T. 2002. "The Tradable Permits Approach to Protecting the Commons: What Have We Learned?" *Fondazione Eni Enrico Mattei, Nota di Lavoro* 36.2002, FEEM: Venice.

Turner, R., Redmond, A. and Zedler, J. 2001. Count It by Acre or Function – Mitigation Adds Up to Net Loss of Wetlands. National Wetlands Newsletter. Vol 23, no. 6. Environmental Law Institute, Washington D.C., USA.

United Nations. 2002. Report of the World Summit on Sustainable Development. A/CONF.199/20* http://www.johannesburgsummit.org/html/documents/summit_docs/131302_wssd_report_reissued.pdf

U.S. Environmental Protection Agency. 2001. The United States Experience with Economic Incentives for Protecting the Environment, EPA-240-R-01-001, Washington, D.C. (chapter 6).

U.S. Government. 1995. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks. 60 Federal Register 228, 58605-58614. Washington, D.C.

U.S. Government. 2003. Guidance for the Establishment, Use and Operation of Conservation Banks. 68 Federal Register 89, 24753. Washington, D.C.

Victorian Government. 2002. Victoria's Native Vegetation Management – A Framework for Action.

Weber, M. 2003. "Assessing the Effectiveness of Tradable Landuse Rights for Biodiversity Conservation: an Application to Canada's Boreal Mixedwood Forest," Paper presentation at the Fourth BioEcon Workshop on the Economics of Biodiversity Conservation - Economic Analysis of Policies for Biodiversity Conservation, Venice International University, Venice, 28-29 August 2003.

Western Australian Environmental Protection Authority. 2004. Environmental Offsets. Preliminary Position Statement No. 9. EPA. July 2004. http://www.epa.wa.gov.au/docs/1863_Offsets%20PS9.pdf;

Wilkinson, J. and C. Kennedy. 2002. Banks and Fees: The status of off-site wetland mitigation in the United States. Environmental Law Institute: Washington, D.C.