Business and Biodiversity

Offsetting the impact on biodiversity

Annex to the report 'Business & Biodiversity'

VBDO
Vereniging van
Beleggers voor
Duurzame
Ontwikkeling

Business and Biodiversity

Offsetting the impact on biodiversity

Annex to the report 'Business & Biodiversity'

March 2005

Research by Crem for VBDO
Financially supported by VROM

VBDO
Postbus 504
4100 AM Culemborg

tel: 0345 532653
fax: 0842 218746

email: info@vbdo.nl
internet: www.vbdo.nl

CREM
Spuistraat 104 d
1012 VA Amsterdam

tel: 020 627 49 69
fax: 020 626 65 39

email: info@crem.nl
internet: www.crem.nl

Contents

Chapter

1

Introduction, definition and relevance

1.1 __ Background

The discussion paper under review with respect to biodiversity offsets is one of the documents constituting the output of the project '*Business and Biodiversity in developing countries higher on the agenda of Dutch companies quoted on the stock exchange: identification of concepts and strategies*' of the Dutch Association of Investors for Sustainable Development (VBDO).

The VBDO represents shareholders having an interest in the sustainability performance of the companies of which they hold shares. In view of the goals of the World Summit on Sustainable Development in Johannesburg (2002), VBDO wishes to stimulate Dutch listed companies to pay more attention to their (direct or indirect) impact on biodiversity in developing countries. To assist VBDO in its dialogues with individual companies on sustainability issues, the project 'Business and Biodiversity' has served to identify opportunities for a company to optimize its biodiversity performance. Offsetting its biodiversity impact is one of the options. This document serves as an impetus to discuss fundamental issues related to biodiversity offsets and how offsetting residual biodiversity impact could take place.

General conclusions and recommendations for companies to optimize their biodiversity performance are presented in a separate report "*Business & Biodiversity*". This document is available with the VBDO.

1.2 __ What is a biodiversity offset?

There is no unambiguous interpretation of the term "biodiversity offset". Various interpretations of the term "offset" exist throughout industries and organizations in different countries. Moreover, confusion can arise when mixing the concepts of "offsets" and "compensation". In relation to biodiversity offsets, the terms "mitigation" and "prevention" are often discussed as well.

The concepts of "offsets" and "compensation"
The term "offsets" differs from the term "compensation", although they are often used interchangeably. Compensation has a financial connotation and refers to financial payment of damage, often associated with legal liability and damages. This implies that the financial payment is not necessarily dedicated to counteracting the harm (e.g. to biodiversity) caused by certain activities. Counteracting the harm (which may result in 'no

net loss' of biodiversity) is however the goal of offsets, although this does not mean that offsets cannot follow a financial path, e.g. companies wishing to engage in biodiversity offsets can pay for an external party to execute the offset.

The concepts of "mitigation" and "prevention"
The term mitigation has a different meaning in Europe than it has in North America. In Europe the term "mitigate" often means to minimise harm or to make it less severe. In North-America it is used to refer to activities designed to compensate for unavoidable environmental damage [Insight Investment, 2004]. Generally, the term "prevention" is interpreted as avoiding for a certain impact to occur.

The oil and gas industry uses the term "mitigate" in line with the European interpretation as "mitigation" covers all measures from prevention to repression (end-of pipe) and clean-up activities. Offset activities are not seen as mitigating measures as offset covers the residual (unavoidable) impact after mitigating measures have been applied [interview Shell, 2004].

The concept of "impact on biodiversity"
In order to assess the impact on biodiversity, it should be defined in which terms the impact is to be described. A general approach, established also in the Convention on Biological Diversity (paragraph 2.2), is the ecosystem approach. Consequently, the report refers to the residual impact on biodiversity *in terms of ecosystem services*.

Ecosystems form a dynamic complex of flora, fauna and micro-organisms and their a-biotic environment (soil, air, water) that function as one. Ecosystems deliver services and goods essential to human existence (deliverance of goods as wood and fish, regulation of lifecycles such as oxygen and climate, possibilities for economic activities, recreation etcetera). Each ecosystem in a certain area delivers a unique combination of 'functions'. These functions can be divided in four categories:

- the 'production' function (e.g. deliverance of goods);
- the 'processing and regulation' function (e.g. composting processes, life cycle processes);
- the 'support/carrying' function (e.g. wetlands deliver clean water, mangroves protect coastal areas); and
- 'significance' function (e.g. religious, recreation and tourism, intrinsic value).

Definitions in this report
In this report "prevention" and "mitigation" are seen as two different types of measures within the context of biodiversity harm. With prevention, the impact on biodiversity in a certain area is avoided all together by putting of the intervention (e.g. redirect the originally planned road), while mitigating measures allow the activity to take place but reduce the impact on biodiversity on site (e.g. construct the originally planned road but include the construction of a badger tunnel). Within the scope of the project under consideration, the term "offset" is seen as complementary to preventive and mitigating measures. This implies that offsets refer to activities compensating for the final residual 'unavoidable' harm after preventive and mitigating measures have been applied to reduce the negative impact on biodiversity, in order to achieve a 'neutral' biodiversity impact (no net loss). This interpretation coincides with definitions of "offset" often practised in terms of existing principles of environmental management, which regard offsets as complementary to the traditional environmental impact mitigation hierarchy of

"avoid, minimise, mitigate" [Insight Investment, 2004].[1]

In conclusion to the above, the term "offset" is defined in this report as follows:

A biodiversity offset can be described as striving to reduce a company's residual unavoidable impact to ensure 'no net loss'[2] in biodiversity by creating conditions that may result in the creation or preservation of biodiversity 'equivalent' to the residual biodiversity loss caused by certain interventions in a certain area .

1.3 __ Why should a company engage in biodiversity offsets?

The question can be raised why a company should engage in biodiversity offsets. The undertaking of such offsets is, in principle, either based on legal requirements or based on voluntarily commitments.

Legal biodiversity offsets
"Offsets" are part of various legal schemes (for example the European Habitats and Birds Directives). When a company operates in areas that reside under a law involving an offset scheme, a company is legally obliged to offset any arising residual impact on biodiversity due to these activities. Examples of current legal requirements involving offset schemes are dealt with in chapter 2.

Offsets on a voluntarily basis
In the absence of a legal requirement, what can be the motivation of a company to *voluntarily* offset its direct or indirect residual unavoidable impact on biodiversity? Companies may argue that their activities already contribute to other aspects of sustainability, e.g. employment for local communities, contribution to local and national economy, contributions to social welfare by the construction of roads and other facilities resulting from the activities. They may also arguably find themselves at a potential competitive disadvantage position when voluntarily offsetting or claim that their position in the production chain puts them in no position to deal with any indirect impact on biodiversity. In addition, only few precedents exist as to *how* offsetting possibly may take place (see chapter 2), which constitutes a risk for companies. Offsetting operations regarded by stakeholders as 'window dressing' or 'used as a license to operate environmentally unfriendly' can damage a company's reputation.

Regardless the fact whether or not these arguments are viable (and may convince a company not to engage in biodiversity offsets), addressing the residual unavoidable impact on biodiversity can offer companies a number of opportunities. Opportunities for companies offered by offsetting the residual impact largely coincide with the opportunities offered by preventing or mitigating a (potential) negative impact on biodiversity (see also the principal document "Business & Biodiversity"). Acknowledgement of these opportunities are important for companies to make a balanced and calculated decision.

[1] In this context, "avoid" is to prevent, "minimise" means designing a project in such a way as to reduce harm caused by certain activities and "mitigate" means to alleviate the harm to the extent possible.
[2] Aim for 'no net loss' is in line with the Conference on Biological Diversity (1992) and various legal systems (see chapter 2).

Important opportunities for companies to engage in biodiversity offsets include:

- To strengthen the licence to operate and licence to growth
  Consent from governments, local communities, financial institutions and other stakeholders is often a prerequisite to operate on a long-term basis.

- To conserve production systems
  Preservation of resources indispensable to the company's future production may contribute to its long-term existence.

- To gain competitive advantage
  Companies may gain a competitive advantage when they demonstrably operate in a sustainable and responsible way (e.g. market demand for sustainably produced products).

- To meet conditions of stakeholders
  Stakeholders (e.g. investors and purchasers) increasingly demand companies to take responsibility for any (in)direct impact on biodiversity resulting from activities in the production chain.

- To create market opportunities
  The undertaking of offsets can serve as a marketing tool towards consumers thus creating market opportunities for the company's products.

- To gain power to influence regulation
  A pro-active attitude can provide opportunities to be actively involved in the (public) policy debate on offsets and be a full-fledged member of the table.

Barriers to offsets
Insight Investment and IUCN also describe some of the barriers to engage in biodiversity offsets [Insight Investment, 2004]:

- Suspicion of companies' and governments' motivations
  The conservation community, scientists, local communities and other key stakeholders may either not support the offsets created or developed by the company or be suspicious concerning the companies' or governments' true motivations for offsetting.

- Increased scrutiny
  Linked to the issue of distrust as stated above, 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.

- Unfulfilled promise
  Companies face the risk that the conservation outcomes and associated reputational benefits will not be generated after having invested much time and energy in offsets. The process of engagement with stakeholders is very important in this respect.

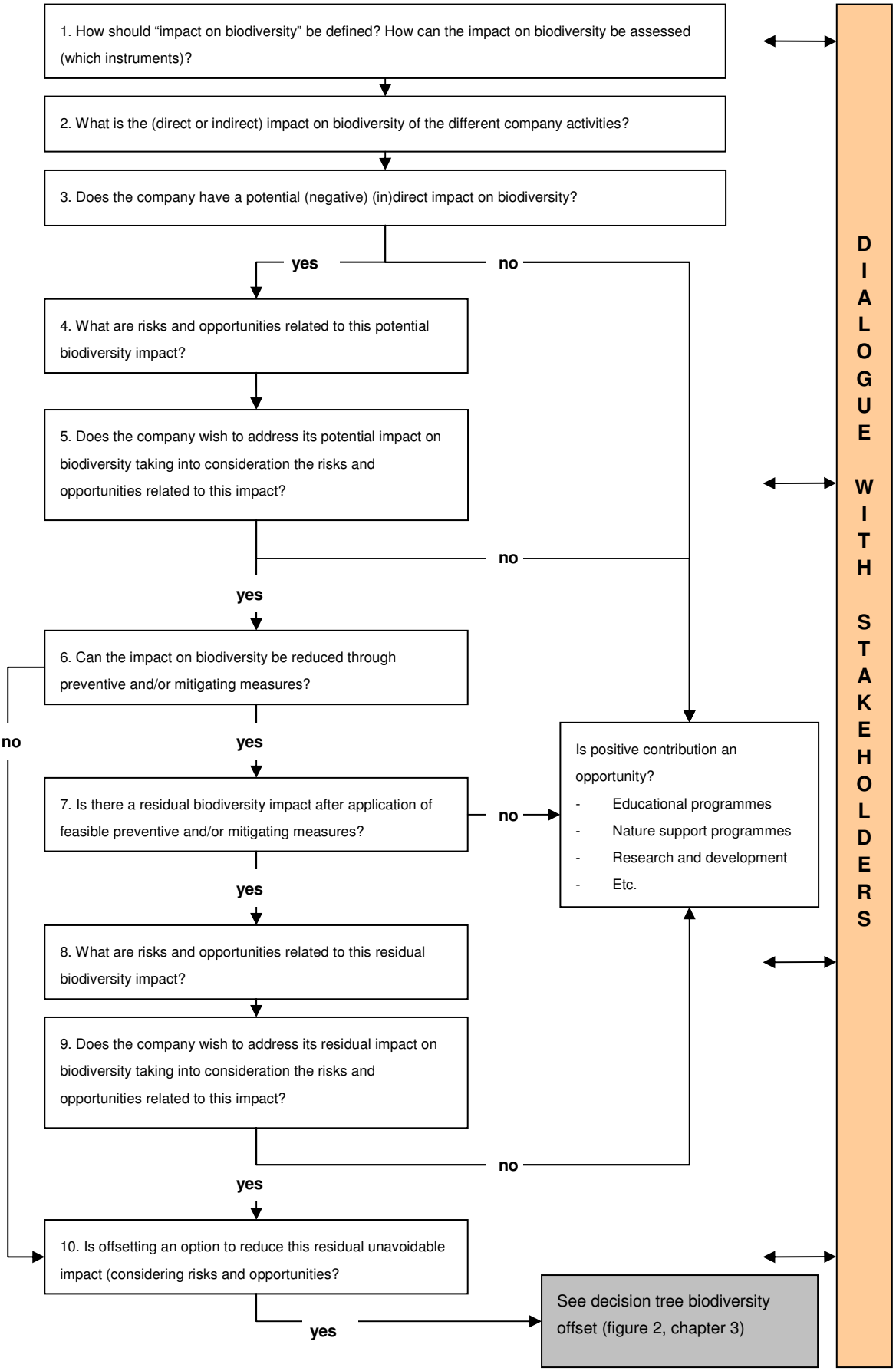
- Legal liabilities and new responsibilities
  It can be questioned whether the designing or implementation of a biodiversity offset can raise unforeseen legal liabilities and, consequently, incur additional responsibilities.

1.4 __ When could a company consider engaging in biodiversity offsets?

No general guideline can be given with respect to when a company could consider engaging in biodiversity offsets. The Decision tree in figure 1 may assist companies by posing relevant questions as to when to address biodiversity impacts by means of biodiversity offsets.

Note:
During the entire process, it is advisable for companies to remain into dialogue with stakeholders. Reasons to do so are the fact that biodiversity offsets may still be considered a sensitive topic, the global inexperience with offsets and the lack of uniform assessment methods to define when biodiversity offsets would be an option and which offsets would be appropriate.

Figure 1: Decision tree for companies considering engaging in biodiversity offsets



1. How should “impact on biodiversity” be defined?
   How can the impact on biodiversity be assessed (which instruments)?

Before the possibility of offsetting biodiversity impact can be discussed, agreement should be reached (on company level) on the definition of “impact on biodiversity” (see paragraph 1.2 referring to the impact on biodiversity in terms of ecosystem services). In addition, the instruments to measure a potential impact will have to be stipulated. A global uniform method to measure the impact on biodiversity is lacking (which actually would be required to stipulate the appropriate counter value). Even if expert knowledge is available within the company, it may be advisable to seek expert advice, for example with governmental institutions, NGOs or environmental impact assessment agencies.

2. What is the (direct or indirect) impact on biodiversity of the different company activities?

Step 2 requires research on the activities performed in the entire production chain(s) of which the company forms part, as the potential impact may be either direct (resulting from activities undertaken by the company itself) or indirect (resulting from activities undertaken by other parties in the production chain). It may well be that the company needs to seek expert advice to take this step.

3. Does the company have a potential (negative) (in)direct impact on biodiversity?

Each production chain may involve an impact on biodiversity. This impact can be negative, neutral or positive. The results of step 2 can assist in indicating whether the company has a potential negative (in)direct impact on biodiversity. When no potential negative (in)direct impact on biodiversity exists, the company may still consider making a positive contribution to biodiversity. Should a potential negative (in)direct impact on biodiversity occur, the decision tree can be continued with step 4.

4. What are risks and opportunities related to this potential biodiversity impact?

Risks and opportunities will differ per country, per location, per sector and per company. In each specific case the risks and opportunities will have to be identified. Paragraph 1.3 may provide input for the identification of possible opportunities. Once the risks and opportunities are known, the decision tree can be continued with step 5.

5. Does the company wish to address its potential impact on biodiversity taking into consideration the risks and opportunities related to this impact?

The company should consider the risks and opportunities identified in step 4 and assess – taking into account the company’s commitment to sustainability issues and its sustainable business policy – whether the risks and opportunities are enough reason for the company to address the potential negative impact on biodiversity. Should this be the case, the decision tree can be continued with step 6. If not, the company may still consider making a positive contribution to biodiversity.

6. Can the impact on biodiversity be reduced through preventive and/or mitigating measures?

The general approach is that preventive or mitigating measures that avoid or reduce a negative impact on biodiversity should have priority above biodiversity offsets. This is reflected in policy statements and legislation of governments (e.g. the Habitats Directive), in the views of NGOs and in several initiatives of companies (e.g. the Energy and Biodiversity Initiative of four energy companies and five conservation organizations (see box 1)).
It is also reflected in the definition used for "offset" in this report, as it refers to addressing the *residual unavoidable* impact on biodiversity as a result of a company's activities in a certain area. Following such an approach, however, is not always desirable or possible from the company's point of view.

Possible preventive or mitigating measures are:

- refrain from activities in certain areas, for example protected areas and areas of high biodiversity value;
- amendment of the production process in case of a direct impact;
- the use of biodiversity criteria in the choice of suppliers;

This step often necessitates research before a decision can be made whether implementation of these measures is feasible. It depends on various factors if, and to what extent, a company may wish or is able to pursue preventive and/or mitigating measures successfully. Important factors are for example:

- The position of a company in the production chain: when a company uses natural resources (agriculture, logging, fishing, extraction of oil and gas, etc.), in general the impact on biodiversity is direct as opposed to companies involved in the production of semi-fabricates and final products. The impetus to address the biodiversity impact will probably be stronger in case of a direct impact as will the possibilities to address the impact on biodiversity.

- The power of a company: the relative power a company has in comparison with other companies in the production chain, both vertically and horizontally, may increase or decrease its ability to address a negative biodiversity impact, especially in case of an indirect impact.

- The cooperation in the chain: the willingness of other companies in the chain to cooperate in addressing a negative biodiversity impact may increase the chance for preventive and/or mitigating measures to succeed.

In case preventive and/or mitigating measures can be applied, the decision tree should be continued with step 7. If preventive or mitigating measures are not available or the implementation is not feasible, the decision tree should be continued with step 10.

7. Is there a residual biodiversity impact after application of feasible preventive and/or mitigating measures?

Research should show whether preventive and/or mitigating measures have attributed in creating a neutral or positive biodiversity impact. In the event that a neutral or positive biodiversity impact exists, the company may still consider making a positive contribution to biodiversity. Should a residual negative impact on biodiversity occur, the decision tree can be continued with step 8.

8. What are risks and opportunities related to this residual biodiversity impact?

Risks and opportunities may differ per country, location, sector and company. In each specific case these risks and opportunities will have to be identified. Paragraph 1.3 may provide input for the identification of possible opportunities. Once the risks and opportunities are known, the decision tree can be continued with step 9.

9. Does the company wish to address its residual impact on biodiversity taking into consideration the risks and opportunities related to this impact?

The company should consider the risks and opportunities identified in step 8 and assess – taking into account the company's commitment to sustainability issues and its sustainable business policy – whether the risks and opportunities are enough reason for the company to address the negative impact on biodiversity. Should this be the case, the decision tree can be continued with step 10. If not, the company may still consider making a positive contribution to biodiversity.

10. Is offsetting an option to reduce this residual unavoidable impact (considering risks and opportunities)?

Biodiversity offsets *may* become an option when companies *have applied all feasible preventive and mitigating measures* and the company's activities still have a residual impact. In the decision tree in chapter 3 (figure 2) the possibilities of biodiversity offsets are further elaborated.

Box 1: The Energy & Biodiversity Initiative

The Energy & Biodiversity Initiative (EBI) brings together leading energy companies and conservation organizations to develop and promote a framework of best practices for integrating biodiversity conservation into upstream oil and gas development. EBI member organizations are: BP, ChevronTexaco, Conservation International, Fauna & Flora International, IUCN – The World Conservation Union, The Nature Conservancy, Shell, Smithsonian Institute and Statoil. The partners have created a set of practical guidelines and tools to minimize impacts on biodiversity and maximize contributions to conservation wherever oil and gas resources are developed. The guidelines address all stages of the project lifecycle — from pre-bid to decommissioning — and are designed to be integrated into existing company management systems.
Due to pressure from governments, communities, shareholders and NGOs it has become important for energy companies to contribute to biodiversity conservation as an addition to mitigating negative impacts. One of the EBI Reports ('Opportunities for Benefiting Biodiversity Conservation') shows examples of opportunities to go beyond mitigating negative impacts and to take advantage of opportunities to benefit biodiversity conservation in and around project sites and in the countries and regions where they operate. [The Energy & Biodiversity Initiative]

1.5___ The following chapters

When a company has decided to voluntarily offset its residual biodiversity impact, a range of questions presents itself. Which basic principles should outline offset activities? How does one compensate? What is a sufficient amount of compensation in order to neutralise the residual biodiversity impact caused by a certain product or production process? These and other issues will be addressed in the following chapters. To gain insight in how offsetting is currently put into practice, examples of existing offsetting schemes will first be briefly discussed in chapter 2. Chapter 3 thereupon describes the basic issues related to biodiversity offsets. An example of a model operationalizing biodiversity offsets is given in chapter 4. Chapter 5 concludes with several conclusions and recommendations.

Chapter

2

Overview existing offset and compensation initiatives

2.1 __ Introduction

In this chapter examples of existing international and Dutch legislation (paragraph 2.2) and non-legislative initiatives (paragraph 2.3) with respect to offsets are briefly analyzed, concluding with a short review on the current practice of biodiversity offsets (paragraph 2.4).

2.2 __ Existing legislation

Convention on Biological Diversity
The Convention on Biological Diversity (CBD) provides guiding principles for international and national biodiversity policy of countries that have ratified the Convention. One of the main principles of the CBD is the 'no net loss principle'. The 'no net loss principle' states that any further decline in biodiversity should be considered negative or undesirable. This implies that if the negative biodiversity impact of an activity in a particular area cannot be prevented or mitigated, one must refrain from the activity all together. Although an explicit offset principle is not included in the CBD, the 'no net loss principle ' is similar in practice to the offset principle in, for example, EU and Dutch legislation as the basic thought of offset is also 'no net loss of nature values' (i.e. neutralizing any negative consequences of activities). In practice, application of the 'no net loss principle' by parties to the CBD is fairly limited until now. Governments have trouble operationalizing this principle due to the often conflicting interests of pursuing economic growth and preserving the environment. [Convention on Biological Diversity]

European Union legislation
EU legislation has submitted the offset principle in its Habitats Directive of 1992 (92/43/EEC). This offset principle is formulated as follows:[3]

'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall

[3] The compensation principle is submitted in Article 6, sub-article 4.

coherence of Natura 2000[4] is protected. It shall inform the Commission of the compensatory measures adopted.
Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.'

The authority or company that intervenes in a certain area is the entity that is obligated to offset. Before compensatory measures are allowed, other (mitigating) alternatives have to be investigated extensively. Offset is not a licence to adhere in an activity regardless of the consequences for the environment. When there are no suitable alternatives and a nature area is bound to be damaged due to planned interventions, then offset is obligatory. The same or equivalent nature values have to return in the area that is used as compensatory area. Financial offset or compensation is not possible.

Biodiversity offsets can be realised in quantity (physical area and flora and fauna species therein) and/or in quality: state and nature value of the biotic (flora and fauna species) and a-biotic environment (soil type, water quality and quantity, manuring degree etc.). The Habitats Directive states – comparing intervention versus offset area – that the quality of an area should not deteriorate and offset has to take place in an area with similar a-biotic circumstances. Quantity is not a criterion in the Habitats Directive which implies that the offset area does not have to be the exact equivalent of the intervention area in terms of number of species and size of the physical area.

Member States have to transpose the Habitats (and Birds) Directive into national legislation and determine the so-called Habitat and Bird areas, i.e. special protection zones together making up the Natura 2000 ecological network of European sites. The biodiversity offset principle as formulated in the EU Habitats Directive applies to these zones. The legal body that is responsible for approving the proposed offsets is appointed on national level by each Member State itself. [EU legislation]

Dutch legislation
Apart from the Habitat and Bird areas, national governments of EU Member States can have additional legislation in which an offset principle is present as well. This may differ from the EU offset principle with respect to the fundamental criteria. This is illustrated by the case of the Netherlands outlined below.

The case of the Netherlands
Biodiversity offset in the Netherlands is, among others things, regulated by the provisions of the 'Structuurschema Groene Ruimte (SGR)[5]', which applies to areas that are part of the Dutch National Ecological Network, the 'Ecologische Hoofd Structuur' (EHS). Similar to the provisions of the Habitats Directive, the SGR prescribes that (mitigating) alternatives have to be investigated prior to the consideration of biodiversity offset measures. When it will not be possible to restore an equivalent nature area somewhere else in terms of quality *and quantity*, this can be a ground for refusal even though the planned activities are considered to have an overriding public interest.

[4] Natura 2000 areas are special legally protected zones that are designated under the provisions of the EU Habitats Directive and from areas established by the EU Birds Directive.
[5] Components of the Dutch EHS that have international significance are part of the European network Natura 2000. Creating a global ecological network, in which the European and Dutch Ecological Networks take part, is an important instrument in the policy goal to realise a sustainable use of biodiversity worldwide. [CBD]

For areas belonging to the Dutch EHS, financial offsets are allowed. Finances generated by the EHS legal scheme are deposited in a green fund, the 'Groenfonds'. This Groenfonds is a government fund that finances nature projects. Until now, there have been no specific guidelines for (the calculation of) financial offsets. However, EU legislation on environmental liability has recently been drafted and deposited with the European Council for approval. This future Directive aims to create a framework to ensure that future environmental damage is prevented or restored on the 'polluter pays' principle, i.e. polluters are liable for the damage they have caused. Although the meaning of the Directive is not directly related to the principle of biodiversity offsets, it may provide useful tools and rules of thumb for setting guidelines with respect to (the calculation of) financial offsets. [telephone interview Ministry LNV, 2004, Broekmeyer, 2002]

Another national law that constitutes a biodiversity offset principle is the Dutch Forest Law (Boswet) which applies to all public areas that are not designated as nature areas under the provisions of the Habitats Directive, Birds Directive or the Dutch SGR. The Forest Law subscribes that for every tree or hectare of forest that is cut, the same type of tree or hectare should be planted in return. [telephone interview Ministry LNV]

In practice, more than one legal framework – each having different provisions – may apply to the same area. For example, some areas have been appointed as Bird area and form part of the Dutch EHS.

Box 2: Dutch biodiversity offsetting principle

The Dutch offsetting principle under the SGR legislative scheme applies to areas designated as SGR areas which are damaged due to interventions characterised as activities of overriding public interest. One of the conditions for intervention is that loss of surface (quantity) and quality are to be compensated in the direct environment. In the Netherlands, the regional government bodies (provinces) are responsible for determining how biodiversity offset should take place. A study of the Dutch research institute Alterra shows that at present there is no uniform method available as to how biodiversity offset is exactly estimated and executed. Each regional government body uses its own set of criteria within the broad criteria set by the respective legislative schemes. In practice, quantity sometimes compensates for quality or biodiversity offset takes place by upgrading a certain nature area. [Broekmeyer, 2002]

Wetland banking in the United States

Section 404 of the US Clean Water Act has established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include the conversion of wetlands to uplands for farming and forestry. The basic premise of the program is that no activities will be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. When applying for a permit, it must therefore be shown that:

- steps have been taken to avoid wetland impacts where practicable;
- potential impacts to wetlands have been minimized;
- for remaining, unavoidable impacts, compensatory mitigation has been provided to replace the loss of wetland functions.

Compensatory mitigation in this context is defined as "the restoration, creation, enhancement, or in exceptional cases preservation of wetlands for the purpose of compensating for unavoidable impacts". The Army Corps of Engineers (or approved state authority) is responsible for determining the appropriate form and amount of

compensatory mitigation required for which approximately 40 different assessment methods have been developed (Insight Investment, 2004). Compensatory mitigation can be located on or adjacent to the development site or when environmentally preferable can be performed at another location. Mechanisms for compensatory mitigation are:

- Project Specific Mitigation
  Restoration, creation, enhancement or preservation of wetlands is undertaken in order to compensate for wetland impacts resulting from a specific project.

- Mitigation Banking
  A wetlands mitigation bank is a wetland area that has been restored, created, enhanced or preserved, which is then set aside to compensate for future conversions of wetlands for development activities. The value of a bank is determined by quantifying the wetland functions restored or created in terms of "credits." Parties required to comply with compensatory mitigation have the option of purchasing credits from an approved mitigation bank rather than restoring or creating wetlands themselves.

- In-Lieu Fee Mitigation
  Mitigation that occurs when funds are provided to an in-lieu-fee sponsor, generally a public agency or non-profit organization, in stead of completing project-specific mitigation or purchasing credits from a mitigation bank.

The mitigation obligations can be fulfilled by the developers themselves or developers can pay third parties to do this in their stead. [US Wetland banking]

2.3___ Non-legislative biodiversity offset and compensation initiatives

Apart from legal schemes some non-legislative schemes working with offsets exist. In this respect, the International Finance Corporation (IFC) Guidelines of the World Bank are an example. According to these Guidelines, companies have to pay ‘conservation offset’ costs in order to compensate for loss of biodiversity resulting from planned activities. The offset has to be agreed upon (thus is subject to negotiation) prior to entering into the loan agreement and forms part of the same. Various options for offsetting are allowed, for example purchasing or protecting a certain nature area or depositing money in certain funds. Depending on the destination of these funds (what is the money used for), the latter may (sometimes) in practice be financial compensation rather than actual biodiversity offset. For example, the residual impact on biodiversity is not ‘neutralised’ by funding an educational programme on biodiversity. The extent of offsets is determined on a case-by-case base, depending on the local situation, knowledge available on local biodiversity values, the impact assessment, and in some cases the lobby of local/national NGOs. The IFC Guidelines provide no general framework for offsetting activities. [telephone interview WorldBank]

Box 3: Two examples of projects involving offsetting schemes/elements

The following projects serve as an example for current projects involving offsetting schemes. Within the scope and timeframe of this project a thorough analysis of both projects was not possible. Therefore, only a few important conclusions have been drawn.

Example 1
The Chad/Cameroon Development Project is developing oilfields in southern Chad and is building a 1,070 kilometre (663 miles) underground pipeline to a marine terminal off the coast of Cameroon. Construction costs are estimated at US$3.5 billion. The World Bank is involved in the project, both by providing financial support (demanding strict environmental and social standards) as well as by giving support regarding development aspects of the project. The project is still under construction. Compensation plans address such issues as resettlement, compensation for lost crops, an Offsite Environmental Enhancement Program to protect biodiversity, oil spill prevention and response, pipeline routing, disease control, protection of indigenous peoples and accident prevention. Up to and including the 2nd quarter of 2004, the project has paid approximately $12.7 million (over 8.2 billion FCFA) in cash and in-kind compensation.
[http://www.essochad.com/Chad/Chad_HomePage.asp]

Example 2
The 390-mile long, $2 billion Cuiaba natural gas pipeline stretches from near the city of Santa Cruz in eastern Bolivia to Cuiaba, Matto Grosso, Brazil. The Inter-American Development Bank (IDB) and World Bank (WB) approved loans to finance a significant portion of the pipeline. The pipeline cuts through the 15 million-acre Chiquitano, the last large, relatively intact tall dry forest in the world. An agreement required Enron to pay $1.9 million for an "Indigenous Development Plan" and to fund efforts to secure land titles for local residents. The environmental groups who produced the study were persuaded to drop their opposition in exchange for $20 million from Enron toward a "Chiquitano Forest Conservation Fund". [http://www.alternet.org/story.html?StoryID=13143, http://www.amazonwatch.org/amazon/BO/bbgp/reports/bolbra.pdf]

Both projects have certain elements of biodiversity offsets. In both cases the offsets also compensate for loss of economic and social functions of biodiversity. It is not known to which extent the offsets are linked to the actual impact on biodiversity, especially in the case of physical biodiversity (loss of forest). Time will learn, for example, whether the funds acquitted to the “Chiquitano Forest Conservation Fund” truly offset the loss of forest caused by the construction of the pipeline and whether the Offsite Environmental Enhancement Program achieved its goal of protecting biodiversity. During the establishment of offsets, the process was complicated by arguments between stakeholders, disagreements on defining the level of primary and secondary impacts and the lack of an offset framework.

In both cases, the offsets were largely initiated by requirements of the World Bank, although many project improvements originated from responding to on-going pressure by groups at the local, national and international levels.

Positive contributions

Another company engaged in various biodiversity projects is Shell. However, as these projects are not directly linked to the negative impact on biodiversity caused by Shell’s activities, the initiatives – in principle – do not qualify as biodiversity offset activities dealing with an unavoidable residual impact. Shell itself refers to the activities as ‘positive contributions’ and ‘compensation’. The latter constitutes of financially compensating local communities for loss of income due to a loss of biodiversity (for example destruction of the local fish stock). The actual biodiversity (the fish stock) is not offset by establishing or supporting fish stock in the vicinity.

Box 4: Insight Investment

Insight Investment, the asset manager of Halifax and Bank of Scotland Group, is committed to working with companies in which it invests to encourage high standards of governance and corporate responsibility. Insight Investment is currently engaged in a research programme encouraging best practices for extractive and utility companies [Investor Responsibility Bulletin]. By encouraging best practices Insight Investment helps companies see the opportunities of applying best practices as opposed to the risks of not addressing biodiversity issues. Helping companies gain a better understanding of the benefits it may offer them, will stimulate companies to address biodiversity issues, as not doing so will affect companies directly in the long run.
In cooperation with IUCN, Insight Investment has also been involved in a study to make an inventory of the level of compensation undertaken by extractive and utility companies, both on an obligatory and a voluntary basis. First findings learn that companies have not adopted a formal policy on compensation and that the level of compensation, being determined on a case-by-case base, shows differences [telephone interview IUCN].

2.4___ Review on current practice of biodiversity offsets

In practice, there is some experience with actual offsets as an exponent of legal schemes (e.g. European Union, Netherlands, United States) and non-legislative frameworks working with offsets (e.g. Worldbank). In the case of legal schemes this *predominantly* concerns actual biodiversity offsets with the goal of creating 'no net loss', in which cases a clear relation between intervention and replacement area is established. In the case of *non*-legislative frameworks the encountered examples mostly concerned a combination of biodiversity offsets (finances were (re)directed to projects creating, upgrading or preserving nature areas) and compensation (funds dedicated to economic and social goals). In these cases, a direct relation between offsets and impact on biodiversity was often missing.

The different encountered examples putting offset into practice show that estimating biodiversity offsets in terms of quality, quantity and location, i.e. *definitions, criteria and a prioritisation of criteria* can be characterised as '*arbitrary*'. In general, research seems to learn that compensation is frequently discussed, both in (inter)national policy as well as by NGOs, but at the moment *no internationally accepted and practised compensatory framework exists* that consists of universal criteria and a method to estimate the required 'amount' of biodiversity offset. This does not mean that there are no efforts in this area. A possible method which could be used for calculating the offset area – taking into account its quality – is the Natural Capital Index (NCI). The NCI was developed by the Dutch institute 'Rijksinstituut voor Volksgezondheid en Milieu' (RIVM) as a contribution to the implementation of the CBD (see box 5).

Apart from the NCI, there are various methods that have been developed worldwide to address the economic (financial) values of nature which could be used to calculate the value of offsetting nature and additional functions of an area.

Box 5: Natural Capital Index

The Natural Capital Index has been developed by the Dutch institute 'Rijksinstituut voor Volksgezondheid en Milieu' (RIVM) as a contribution to the implementation of the Convention on Biological Biodiversity (CBD). It was designed to answer the questions 'How much biodiversity remains?', 'What are the causes of loss?' and 'What can we do about it?'. The Natural Capital Index (NCI), defined as the product of the size of the remaining area (quantity) and its quality – ecosystem quantity (% area) x ecosystem quality (% baseline) – is meant to be a practical tool for policy-makers to manage natural resources. The ecosystem quality is calculated by counting the average abundance of a core set of animal and plant species. The NCI range is from 0 to 100%. If it is assumed for a country – for example – that when 60% of the natural area remains, with a quality of 20%, the natural capital is 12%. An NCI of 12% means an average abundance of the characteristic species of roughly 12% of the baseline state.

At the moment, only the RIVM uses the NCI-system in pilot studies. The goal is to implement the NCI worldwide within the framework of the CBD, but this is still a long way of. The first step for CBD member states is designating areas of large biological biodiversity; these are the areas that are to be classified according to the NCI. The designation and classification of the areas is expected to take a large amount of time. [RIVM]

Offset framework

Chapter 3 elaborates on the basic components which should be incorporated when considering the development of an internationally accepted and practised offset framework.

Chapter

3

Biodiversity offsets: basic issues

3.1 Introduction

Chapter 2 has shown that for companies involved in natural resource use, active in areas that reside under **legal** schemes with an offset component (e.g. the Habitats Directive in EU countries), matters are relatively straightforward. These companies have to offset according to legal provisions applicable in these particular areas. However, as these provisions do not contain an exact offsetting framework, the actual offsets are decided on a case-by-case basis to be approved by the licensed authorities.

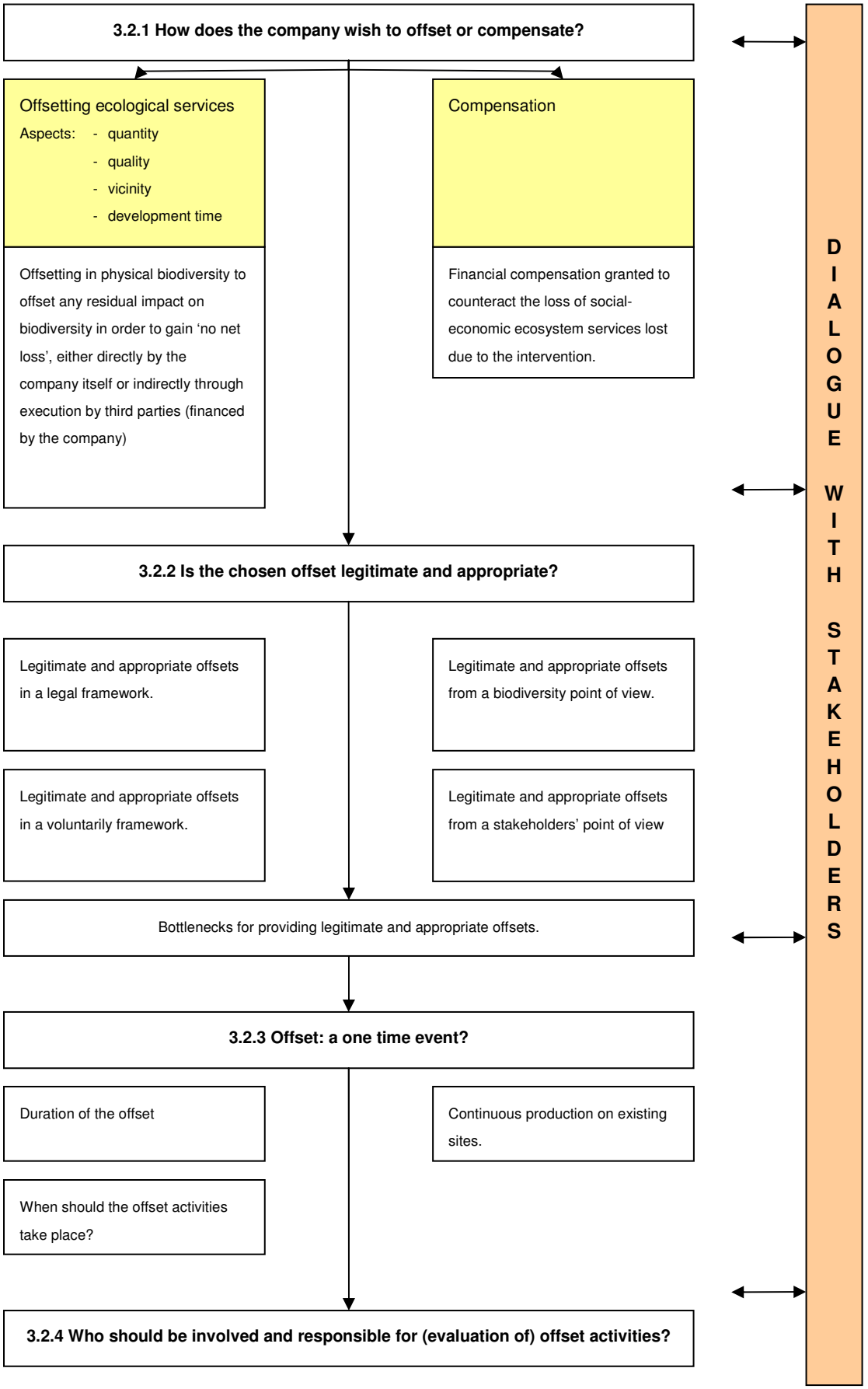
Companies operating or planning to operate in areas *not* subject to legal offset schemes which consider offsetting their residual biodiversity impact **voluntarily,** will have to address a number of issues themselves. The same accounts for companies which are not directly involved in natural resource use, though wish to take responsibility for a residual impact occurring in another link in the chain. Most issues involve making choices, which could be translated by companies in basic operating principles or an offset framework. Figure 1 (chapter 1) depicted the process preceding the decision whether offsetting a residual biodiversity impact is considered desirable by a company. Following this decision tree, figure 2 depicts questions and issues companies will encounter when they have concluded that offsetting may be a feasible opportunity. Figure 2 forms the basis of chapter 3 and will be elaborated in paragraph 3.2. The paragraph titles correspond with the numbers used in the decision tree. Paragraph 3.3 concludes with the principle of 'positive contributions' to biodiversity. Should a company not be able to calculate offsets, an alternative positive contribution to biodiversity could be granted.

3.2 Basic offset issues

Based on the decision tree in figure 2, this paragraph identifies and briefly discusses relevant issues regarding offsetting a residual impact on biodiversity resulting from an activity undertaken by the company or by another party within the production chain.

Note:
In practice, the contemplation of the offsetting and compensation issues discussed below demand making certain fundamental choices (setting criteria). As these choices involve sensitive and complex matters, it has not been feasible within the framework of this project to develop an offset framework in which the questions raised are answered. A company may well decide to seek advice with environmental experts and stakeholders on these issues through the entire process.

Figure 2: Questions and issues in respect of biodiversity offsets



3.2.1 __ How does the company wish to offset or compensate?

Companies having gone through the steps in figure 1 (paragraph 1.4) may conclude that offsetting is a desirable option to reduce the residual unavoidable impact on biodiversity. Several opportunities exist to offset or compensate for ecosystem services lost due to activities performed. These opportunities include:

Offsetting ecological services
- Offsetting in physical biodiversity to offset any residual impact on biodiversity in order to gain 'no net loss', either directly by the company itself or indirectly through execution by third parties (financed by the company).

Compensation of social-economic services (financial offsets)
- Financial compensation granted to counteract the loss of social-economic ecosystem services lost due to the intervention.

In practice, a combination of offsets and compensation will often occur. Each of the aforementioned concepts is elucidated below.

Offsetting ecological services
Offsets in physical biodiversity are realised through the creation of an area which physically offsets the intervention area (which can include all types of area, including aquatic systems) and in-situ loss of biodiversity by providing similar ecosystem functions (see paragraph 1.2). In the replacement area, the conditions to 'substitute' the residual biodiversity impact caused by company activities are either present or can be created. These offsets comply with the definition of 'biodiversity offsets' as applicable in this report (paragraph 1.2).

Considerations linking ecosystems and offsetting areas raise the following questions:

- Should each ecosystem be valued equally? An offsetting party may decide to value ecosystems differently, for example to value a rainforest higher than a desert, for reasons such as that certain ecosystems are threatened more on a local, regional or global scale. The different valuation of ecosystems can be reflected in the size of the offset area.
- Should offset always take place in a 'similar' ecosystem as that of the intervention area? If not, under which conditions is offsetting in 'different' ecosystems acceptable?
- Should areas of high or special biodiversity value be excluded from offsetting possibilities, i.e. from any intervention?

Offsetting ecological services can be undertaken directly by the company. However, a company might lack the knowledge and experience to execute offsets. In this situation, this task can be handed over to a third party designated for such a project. A financial sum is then to be put at the disposal of the third party with the purpose of arranging physical biodiversity offsets. Such sum must be based on the money needed to offset the biodiversity lost, as the relation between the intervention and replacement area is similar as in the case of offsets directly by the company. The drawback of offsetting in this way is the potential risk that the funds are not directed to the creation of a 'correct' offset area. It is therefore important that the third party accepts the obligation to arrange for the biodiversity offsets. This agreement should include clear criteria with respect to the quantity, quality, vicinity and development time of the offset area.

How to determine the budget needed to offset loss of biodiversity (ecological services) is one of the main challenges to be addressed when this concept is being applied. Biodiversity offsets usually refer to the 'amount' of *ecological* biodiversity loss, in terms of quality (habitat functions) and quantity (hectares and/or – less common - number of species) and can be expressed in terms of ecological equivalence (no net loss of biodiversity). Thereupon, these ecological values must be translated into financial means sufficient to cover the purchase of the required physical offset area, with an additional sum intended for any maintenance / development costs.

The following interrelated aspects are fundamental to offsets in physical biodiversity:

1. Quantity
2. Quality
3. Vicinity
4. Development time

Sub 1. Quantity
Within the framework of offsets, quantity concerns two aspects:

- loss of physical surface area (loss of trees, plants, bushes); and
- loss of animal species.

The 'quantity' of the intervention area used for activities should be in some sort of relation with the 'quantity' of the replacement area. In this respect, relevant questions raised include:

- Does the offsetting party wish to define loss of biodiversity in terms of quantity as a loss of species and/or a loss of physical surface size? In other words, is it preferred to pursue one-on-one offsetting with regard to surface area and species?
- How does the quantity relate to the quality of an area? Does either quantity or quality of an area deserve priority (e.g. one-on-one compensation for the loss of animal species or the presence of indicator species as point of reference)?
- Is a minimum area size required when a new area is to be acquired in which conditions are created to offset the area (biodiversity) that was lost due to activities (e.g. if 'only' 2 hectares of area are lost – which formed part of a larger nature area – should the replacement area at least for example be 10 hectares when not linked to a larger nature area?)?

Sub 2. Quality
Within the framework of offsets, the quality of an ecosystem refers to:

- the ecosystem functions/services (see paragraph 1.2); and
- the level of biodiversity (e.g. in terms of species, uniqueness, reservoirs of genetic diversity).

Important choices with respect to the quality of an area in relation with offsets are strongly intertwined with the aspects of quantity (see before) and vicinity (see below). Relevant questions raised include:

- Is offsetting with an area of 'equivalent' nature quality preferable to compensating in the vicinity of the intervention area with an area of lesser quality (in other words, which is valued more: quality or vicinity)?
- Is offsetting with an area of 'equivalent' nature quality preferable to compensating with a larger-sized area of lesser quality (in other words, which is valued more: quality or quantity)?
- What is an acceptable quality level and when (e.g. would a suitable area further of be preferable to a nearby degraded area for which upgrading requires a long timeframe)?

Sub 3. Vicinity

The 'vicinity' aspect refers to the location where offset is to take place. Relevant questions with respect to vicinity include:

- Is offsetting in the vicinity of the intervention area a prerequisite? If not, what is an acceptable distance? If vicinity is a prerequisite, what should be done when there is no suitable offset area in the vicinity of the intervention area, e.g. is offsetting in a different ecosystem an option (rainforest for wetland)?
- How does the vicinity relate to the quality and quantity level of a potential offset area when there is no suitable offset area nearby?

Sub 4. Development time

The development time of an ecosystem refers to the time it takes for a certain ecosystem to develop to its full potential. It will depend on the type of ecosystem and the quality of the replacement area, which time is required to obtain an area similar to the area converted, e.g. forests may take a long time from being planted to developing into full-fledged forest areas. Some fauna types have a limited spreading ability which may hamper the inhabitation of the 'new' nature area with these particular species. For some ecosystems it is virtually impossible to create conditions in order for the ecosystem to develop.

The relevant questions with respect to the development time are:

- If the development time makes some areas unfit for compensation, should a company refrain from intervention (and compensation) altogether?
- Are some areas (types of areas) unfit for being offset – and therefore for any intervention -in view of the development time/possibilities?
- Is the maintenance time taken into account (see paragraph 3.2.3)? Should the maintenance time at least be equal to the time it will take to develop a certain ecosystem?
- What is an acceptable time frame to develop/upgrade an area to offset the impact on biodiversity?

Box 6: Biodiversity credits

In view of the Kyoto Protocol on Climate Change a system of CO_2 credits has been developed to compensate CO_2 emission and reduce emissions of greenhouse gasses. Both companies and (governmental) organizations can purchase CO_2 credits of projects which reduce the emission of CO_2. Besides compensating CO_2 emissions the system also supports sustainable forest projects focussing on maintaining existing areas as well as acquiring additional nature areas. [Ministry of LNV]

Embroidering on this approach a similar system could be developed for biodiversity by developing a method to establish biodiversity credits in relation to biodiversity impact. Criteria will have to be established as to how biodiversity credits can be used to avoid all biodiversity worldwide becoming interchangeable, e.g. credits can only be used within the country of production, the use of a specific credit system for each kind of ecosystem and using requirements relating to the quality of the ecosystem for which credits are given. An example of biodiversity credits is the Wetland Banking system in the United States (see paragraph 2.2).

The way in which the credits are utilized determines in the end whether the credits obtained can be considered offsets (is the purchasing of credits directly linked to the impact on biodiversity and the realisation of no net loss) or positive contributions (no direct link with impacts, see paragraph 3.3)?

Financial compensation to counteract the loss of social-economic ecosystem services

Apart from the ecological aspects, an intervention may lead to the loss of social-economic ecosystem services as well. Offsetting these services is often referred to as 'financial compensation'. As described in paragraph 1.2, financial compensation is mostly associated with liability and damage contrary to offsets which are associated with 'no net loss'.

Financial compensation requires the calculation of the values of the different social-economic services the area provides, such as providing employment, supporting livelihoods as well as allowing recreation and research. This raises the question as to how these different aspects are to be defined and valuated. Determination of the social-economic impact requires direct involvement of stakeholders. The costs related to each of the services can be calculated based on the economic value each service represents. However, an important obstacle related to using economic valuation methods is the lack of a uniform calculation system (Insight Investment, 2004).

3.2.2___ Is the chosen offset legitimate and appropriate?

What is a sufficient amount of offsets in order to neutralise the residual biodiversity impact caused by a certain product or production process? An objective answer to this question does not exist. In the absence of uniform calculation methods to ecologically and economically value nature, an offset always has subjective components – even when it is based on scientific research.

Legitimate and appropriate offsets in a legal framework

When a legal requirement to offset is in place, the valuation whether the chosen offset is legitimate and appropriate is to be made by the licensed authorities. This usually takes place prior to commencing activities in the area in question. They will approve whether the proposed offset – in their view –meets the requirements. If agreed upon, the chosen offset can be considered legitimate and appropriate.

Legitimate and appropriate offsets in a voluntarily framework
Pending the situation in which no uniform framework exists for voluntarily offsetting biodiversity impact, the question whether the chosen offset is legitimate and appropriate is merely to be answered by stakeholders involved (see paragraph 1.3 and 'legitimate and appropriate offsets from a stakeholders' point of view' below).

Legitimate and appropriate offsets from a biodiversity point of view
In theory, offsets are legitimate and appropriate when they meet the definition as given in paragraph 1.2, i.e. accommodating the no net loss principle. Such offsets involve replacement areas to be ecologically similar to the intervention areas as far as quality and quantity are concerned and as close as possible to the intervention area. When offsetting in accordance with this principle is not set as a prerequisite (e.g. deviation is allowed under identified circumstances such as in the event that a certain ecosystem is not 'available' or too severely degraded), this implies that ecosystems are treated as interchangeable. Theoretically, this could lead to the situation that a country ends up with a small variety in ecosystems providing a limited diversity in ecosystem services.

Legitimate and appropriate offsets from a stakeholders' point of view
Consent from stakeholders forms an important license for a company's existence and operation. Even if an offset is legitimate and appropriate from all other points of view, the company may face problems if it is not accepted by the stakeholders. A positive feedback by stakeholders strengthens the company's position. Therefore, involving the stakeholders in the entire offset process is a prerequisite, especially in view of the opposing and conflicting views which are likely to arise in respect of offsets.

Bottlenecks for providing legitimate and appropriate offsets
Even though the intention may be present to physically offset the intervention area and grant financial compensation for stakeholders affected by the loss of social-economic services, the execution thereof may be hampered by various bottlenecks. Examples include:

- performing the required environmental impact assessments is difficult, costly and time-consuming;
- local situations may prohibit a company to execute biodiversity offsets, e.g. a lack of appropriate replacement area, legal obstacles or political hindrance;
- aiming for no net loss is – theoretically – not feasible in practice as no two hectares are similar;
- when several activities interfere with a certain area and together create an impact on biodiversity, it may be difficult to allocate the proper share to each activity;
- a lack of knowledge on the intervention site may frustrate attempts to aim for no net loss or financially compensate local stakeholders;
- there is no uniform method to value ecological and social-economic ecosystem services;
- there is no uniform method to objectively determine the type and extent of offsets required to create a 'no net loss' situation;
- the nature of indirect effects of activities, as well as their reach in time and place, may be difficult to estimate.

3.2.3___ Offset: a one time event?

The following time-related issues are important when it comes to biodiversity offsets.

Duration of the offset
Creating conditions necessary to offset the biodiversity impacted or lost requires a certain time. During and after such time, in most cases an area will require maintenance as well. This requires a financial input over a longer period of time. Many environmental organizations argue that offsetting projects should be implemented 'in perpetuity' (Insight Investment, 2004). In practice, this is difficult to achieve and probably not always fair. Questions raised in this context include:

- What is a fair and suitable period for a company to maintain an offset area in view of its residual impact? Would an option be to relate the duration of the offset project to the irreversibility of the damage (the 'more' irreversible the damage, the longer the duration of the offset)?
- Should a minimum maintenance time be agreed upon in case the company's activities cease? Sometimes the full extent of the impact on biodiversity is not immediately evident. Impacts may take place over time and space and reveal themselves later. Mechanisms such as trust funds may help ensure that any occurring impact is entirely offset. These mechanisms may serve as an important appeasement towards stakeholders.

When should the offset activities take place?
Offset activities can either take place prior, during or after starting development projects. The benefit of prior offsets can be found in the advantage of an ensured no net loss at any period of time (based on impact assessments). The risk that the offset activities fail to deliver the required offsets is reduced. The benefit of offsets during or after the intervention activities lies in the knowledge that the offset is appropriate. Until the activities have actually begun to take place, only the potential environmental and potential social-economic impact can be assessed.

Continuous production on existing sites
In practice, the larger part of activities causing an impact on biodiversity is expected to take place on *existing* production sites, i.e. upon converting a (nature) area to a production site, production may continue for some years. Taking as an example the food industry, processing companies may require a certain amount of primary input material on a yearly basis. Depending on factors as rotation system, crop type and fertilizer use, in theory the majority of crops can be cultivated on the same production site for a certain period of time. In other words, it is not unlikely that an area is only converted once for many years of agricultural use. A question raised in this respect is: suppose that conversion of a (nature) area is a one-time event, should offsetting be limited to a one-time event as well or should it continue during the entire period of economic use of the area?

If additional area is converted to accommodate (the same or a higher level of) production, the need for additional offsets is obvious.

3.2.4___ Who should be involved and responsible for (the evaluation of) offset activities?

The previous paragraphs attend to elements which require attention when considering offsets. This raises the question as to who should be involved in determining the extent of

the actual offset (see also paragraph 3.2.2). As different parties view the value and functions of natural habitats differently, it is crucial to include a wide range of stakeholders in establishing the offset activities. Otherwise there is a potential risk of an unsatisfactory offset and criticism by stakeholders. This could result in the offset activities bringing harm to a company rather than creating benefits. Important stakeholders are local and international NGOs, local communities and governments.

Apart from establishing the actual offset activities, another crucial question refers to who is responsible for the execution of the offset activities and evaluates the performance. The expert knowledge required to guide the offset process may not be present within the offsetting company itself. In most cases it is therefore advisable to outsource the execution of the offset activities and monitoring of the process to a third party which has the qualifications and credibility to do so, or to hire personnel equipped with the necessary expertise. Final judgement of the offset activities could best be executed by an independent organization acceptable to the stakeholders.

3.3___ Positive contributions to biodiversity

The situation may occur that an impact on biodiversity is expected to take place within the production chain, but that it is not possible to calculate this loss, e.g. when the intervention area is not exactly known. In such cases, when a company still wishes to act on this unknown impact, a financial sum could be made available by the company to serve as a positive contribution. In principle, a positive contribution has no direct link with the actual impact on biodiversity. It concerns a financial contribution granted to positively support biodiversity.

Options for positive contributions include:

1. Investments in biodiversity funds
   Companies can invest in biodiversity funds, either existing ones (e.g. through conservation organizations) or establish a new fund for this purpose (e.g. when it concerns a sector initiative or forms part of a company strategy). These funds could for example be used to develop new protected nature areas or support existing nature areas.

2. General investments in nature (areas)
   Companies can make available a certain sum of money for general investments in nature (areas). Such investments may comprise of purchasing nature areas, supporting park management of existing nature reserves, funding biodiversity research, developing employee awareness programmes, exchanging technology and information, etc.

3. Funding of nature organizations
   Local or global well-known nature organizations that are actively involved in buying and managing nature areas may be supported financially. These organizations often have comprehensive knowledge of the current biodiversity status of individual countries and biodiversity worldwide, are often internationally acknowledged and respected and have the necessary networks, tools, people and knowledge at hand. Beforehand, clear agreements can be made on appropriate destinations for the available funds.

Self-evidently, a link could be created between these positive contributions and the occurred impact on biodiversity, e.g. through funding nature organizations active in the country where the impact is expected to take place. However, as long as there is no direct link between the actual impact and the offsets (striving for “no net loss”), the compensation should still be regarded as positive contributions.

Chapter

4

Towards a biodiversity offset model

4.1 Introduction

In chapter 3 some of the key issues concerning biodiversity offsets and relevant questions related to offsets have been discussed. Developing a general offset framework including operational guidelines will require extensive research and dialogues with all stakeholders involved. It can even be questioned whether such framework could ever be realized. Different areas (and biodiversity impacts) may require different methods to estimate the offset required to compensate for a company's residual impact. It may turn out that offset activities, in practice, have to be developed purely on a case-by-case basis with a few basic principles only as agreed starting point. The advantage of a uniform framework lies in the minimum requirements which can be set pursuant to which organizations have to contemplate offsets. A uniform framework, though, can also limit flexibility for organizations to contemplate offsets in a way which is most beneficial for biodiversity.

However, to serve as an *impetus to the discussion* on biodiversity offsets and the drafting of a basic general approach to establish offsets, this chapter describes some first steps towards a possible biodiversity offset model. The proposed model is intended for companies voluntarily wishing to offset their residual biodiversity impact after preventive and mitigating measures have been applied to the widest extent possible in a given situation. These companies can either have a 'direct' impact on biodiversity (companies operating with natural resources at the beginning of a production chain) or an 'indirect' impact (companies operating further down a particular production chain).

This chapter starts in paragraph 4.2 with a first outline of the methodology based upon which the model has been drafted. In this model, the following questions are addressed:

1. How to assess the biodiversity impact of a production process or product? (paragraph 4.3)
2. How to assess a company's 'share' in the biodiversity impact of a product or process? (paragraph 4.4)
3. How to assess suitable compensatory measures? (paragraph 4.5)

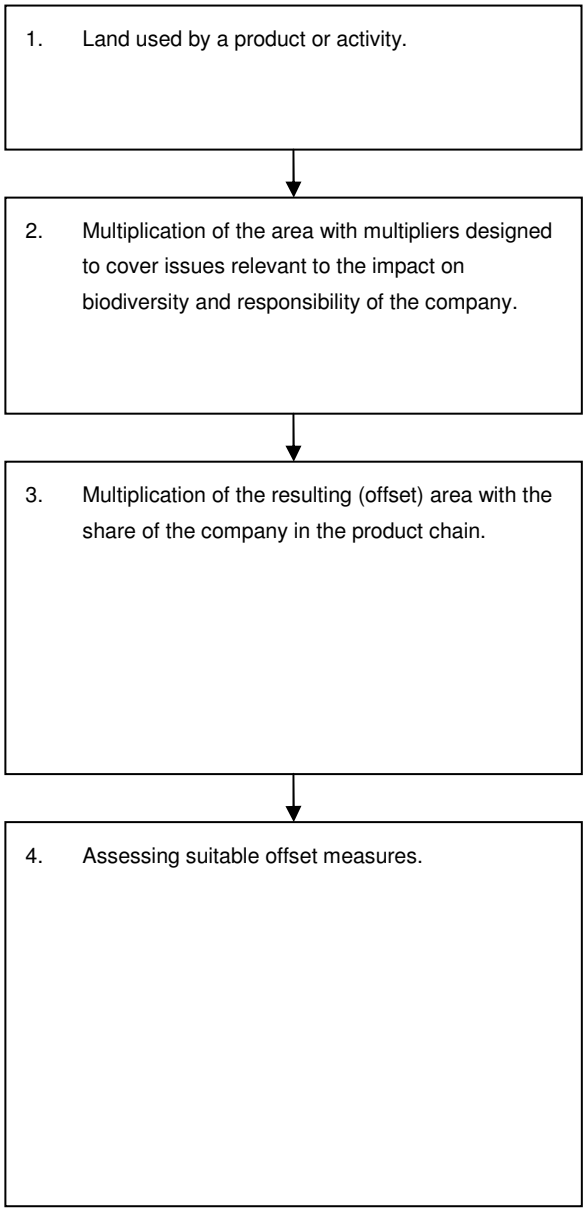
4.2 __ Offset: first outline of a methodology

Assessing the *actual* biodiversity impact is imperative to *exactly* know the degree of offset necessary to 'neutralise' the biodiversity impact of a product. However, for pragmatic reasons the scope of the proposed offset model is limited to a negative biodiversity impact resulting from **land conversion**. Choosing land conversion as the basis of this method has mainly been prompted by two reasons. First, in the majority of cases land conversion constitutes one of the main impacts on biodiversity. This supports a focus on land conversion as a prime parameter to reflect negative biodiversity impact. Secondly, land conversion is unambiguous in the sense that it is quantifiable. Although the number of hectares of land converted for business activities is not completely related to the biodiversity lost (as not all ecosystem services are taken into account), the method thus serves the possibility to *quantify* biodiversity impact and the subsequent offset.

This leaves unimpeded that a negative biodiversity impact is the sum of multiple factors of which a majority can be characterised as diffuse (e.g. emissions to air, water, soil). By taking land conversion as a basis in the model, it is not possible to include all these diffuse factors contributing to a negative biodiversity impact. *The focus on land conversion makes the suggested offset model unfit for aquatic systems as well.*

Based on 'land conversion', the model has been further elaborated, presented in an action plan below. Each step is elucidated in the following paragraphs. The explanation of the model is supported by an example with respect to a primary product called A. Product A is grown on an area which used to be a tropical forest. The company wishing to address the residual biodiversity impact of product A – called XXXX – is not involved in the primary production thereof. XXXX purchases extracts of product A – being A1 – for further processing purposes.

Steps in the proposed methodology for offsetting biodiversity based on land conversion:



Allocation of the converted area based on the economic value of the products and activities resulting from this area.

These multipliers include issues such as:

- the time passed since conversion took place;
- the degree of degradation of the original area;
- secondary effects (e.g. road construction);
- positive contributions to biodiversity.

The company using the product resulting from the converted area is not the only one responsible. Responsibility is carried by every company in the product chain adding value to the product. How to establish a companies share in responsibility is a subject for further discussion.

When the size and quality of the offset area is assessed, a choice has to be made how to offset. Important issues to address at this stage are the choice between land offset and/or compensating 'other' ecosystem services, who is to be in charge of establishing, implementing and evaluating the offset, the development and maintenance of the offset area, etc. Most probably choices will be made on a case by case basis, in close consultation with external (independent) experts.

At the basis of this methodology are fundamental decisions with regard to the moment of offset (prevention and mitigation measures prior to offsets), the offset area (if possible same type of ecosystem, equal quality and quantity and in the vicinity) and the value of different types of ecosystems (e.g. tropical rainforest versus desert, ecological as well as social-economic value)).

Companies will have to decide on these issues as part of their offset policy and strategies.

4.3 __ Allocation of land conversion

4.3.1___ Calculation of land converted due to activities

Step 1
Land used by a product or activity.

This step serves to calculate the land use which is involved in the production of a certain product or activity. It is not feasible to thoroughly scan all production locations during the entire lifecycle of the product or activity and investigate whether biodiversity loss has arisen. Instead, the life cycle should be roughly scanned and the location(s) where the issue of land conversion is expected to play a major role – from a biodiversity point of view – should be taken into account. The numbers of hectares of these locations attributed to the production or processing of the product or activity under review should be added. The allocation of the *actual* converted land is based on the economic value of the products or activities coming from the identified locations.

Allocation of land use according to economic value
It is likely that the negative impact on biodiversity caused by the identified land conversion can be allocated to different *non-related* activities making use of the same converted area, e.g. a single primary production often results in various raw materials that enter into different production chains. This means that the land converted for the primary production of A can be allocated to different production chains, reflected in a certain 'biodiversity impact' share for each production chain. This allocation can be based on the economic value of the different products.

Example
XXXX is a pharmaceutical company. It purchases 1,000 litres of A1 which they use for processing in a certain lotion called B. Each litre of A1 reflects a number of hectares necessary for the production of A. Thus, 1,000 litre of A1 relates to Y hectares production ground of A. However, from A different raw materials are derived: A1 and A2. A1 – 20% of the turnover – is destined for the pharmaceutical industry while A2 – 80% of the turnover – is destined for the food industry. Y hectares should be offset by all stakeholders involved, 20% of which by the stakeholders in the A1 branch of industry (this example is further specified in box 7).

4.3.2___ A multiplier to cover issues other than the physical area

Step 2
Multiplication of the area allocated to the product or activity with multipliers designed to cover issues relevant to the impact on biodiversity and responsibility of the company.

In the model, it is assumed that land conversion, acting as the only parameter, is equivalent to a total (100%) loss of biodiversity of the intervention area *in terms of physical area*. This step introduces a 'multiplier' in an attempt to reflect differences and nuances in various (qualitative) factors related to such land conversion .The multiplier assigns values to factors a company wishes to take into account. Using the multiplier will result in an increase or decrease of the area (in hectares) to be offset. A non-exhaustive overview of possible multiplier parameters is listed below.

- History of conversion: Has the land used already been converted, and if so, how long ago did conversion take place? If land was converted a long time ago, the 'responsibility' of a company with regard to the conversion may be considered lower. A threshold can be considered with respect to prior conversion: e.g. if land was converted for example over 15 years ago, offsetting is no longer an issue. It can be discussed whether there is a difference between 'direct' and 'indirect' responsibility in this respect and whether the company was already involved e.g. 15 years ago (during the time of conversion) or not.
  The multiplier can be used to adjust the amount of hectare to be compensated according to the time passed since conversion took place (e.g. > 15 years: multiplier = 0, < 5 years: multiplier = 2).

- Degree in 'naturalness' or 'degradation': The state of an intervention area may vary in 'naturalness', ranging from a cultivated area to a pristine untouched area. The valuation of the naturalness of an area can be expressed through a parameter in the multiplier, e.g. conversion of pristine areas may count higher than conversion of fairly cultivated areas, as the biodiversity impact in the latter case is most likely to be less prominent. Consequently, a company would have to offset 'more' when the land converted concerns a pristine rainforest as opposed to a secondary forest. Since including the degree of degradation in a multiplier means that potentially an additional number of hectares has to be offset, it may serve as a discouragement to convert non-degraded areas. To assess the level of degradation, cooperation of (local) experts or (local) governments may be required.

- Potential of the area to return to its naturalness: When an area where a certain activity takes place has the potential to return to its original degree of naturalness within a foreseeable and acceptable timeframe once the activity is terminated – and the activity is taking place within a foreseeable time frame – one can consider not to offset or only partially offset the temporary residual biodiversity impact in the area. It is imperative to have an area management plan that outlines when the activity will be terminated. Obviously, the consent of (local) stakeholders is essential in this process.

- Probability to return to its naturalness: Apart from the potential of the area to return to its naturalness, the probability is also a determinant factor in stipulating the offset of biodiversity impact. The probability of return depends on the conditions created for the area to return to its original state after the activity has been terminated. In part conditions and measures to achieve this can be outlined in an area management plan in consultation with stakeholders.

- Secondary effects (indirect effects): Land conversion and subsequent impact on biodiversity can lead to so-called secondary effects, leading to an additional impact on biodiversity which is not directly visible. Fragmentation is an example which can cause an indirect effect by disturbing migration patterns. Other examples of secondary effects caused by economic activities in an area are road construction (land use, fragmentation and opening up the area for additional activities), effects resulting from increased employment (e.g. land use caused by the building of houses and disturbance of habitats by people) or an impact on a pristine forest in the vicinity due to polluted ground water. These effects are not included in land conversion, but may be included in a multiplier (multiplier > 1 per secondary effect occurring).

- Non-related activities that also adversely affect the area under review: In many cases a particular converted area is 'used' by different activities (products, services). For example, in case of crop rotation the same area is used for different agricultural products. The share in the impact on biodiversity has to be allocated to the different

crops and consequently to different production chains. Such allocation can be based on the amount of time each crop is being cultivated, e.g. 9 months crop 1 and 3 months crop 2 is an impact share of 75% for crop1. The result can be translated into a multiplier.

- Positive contribution to other aspects of biodiversity: Production activities may also positively contribute to biodiversity, e.g. a company purchases or uses certain traditional crops, thereby contributing to the (conservation of) genetic diversity. This can be awarded positively by requiring less land to be compensated.

The actual multipliers applicable in a certain situation, are to be determined at a later stage, preferably in close consultation with stakeholders such as environmental organisations and (local) experts.

An example of how the offset area can be calculated is given in box 7.

Box 7: quantitative assessment of negative biodiversity impact: *fictive* example part 1

The Dutch pharmaceutical company XXXX wishes to compensate for the negative biodiversity impact they indirectly cause by purchasing A1 from Brazil. Yearly the company purchases 1,000 litres of A1. For these 1,000 litres of A1, 25,000 Metric ton (Mt) of A is needed. To cultivate 25,000 Mt of A, 100,000 hectares are needed. A1 constitutes 20 percent of the products made from product A, while A2 constitutes 80 percent. If the economic value of the products can be equally divided, 20,000 hectares of land use will have to be allocated to the production chain in which XXXX is involved.

As XXXX has a traceability system for its purchase, it can trace the original production sites on which the product A that is used for 'their' product A1 is being cultivated. According to local experts, five years ago these specific production sites were part of pristine Brazilian rainforest. Right from the start a yearly crop rotation with corn has been practised. Both industries (A and corn) therefore profit equally from the converted land. There are no other economic activities in the area. A road was built to transport product A.

Based on this knowledge, multipliers can be applied to establish the share of biodiversity impact (limited to land conversion) that can be attributed to the production chain XXXX is part of. The multipliers used are:

- Allocation of land use: 20% of the economic value of A can be attributed to A1, thus the multiplier is 0.2.
- History of conversion: The conversion took place a relatively short time ago and, therefore, the multiplier is set on 1.5.
- Degree of degradation: A pristine rainforest is a completely intact ecosystem. The conversion to an agricultural production site creates a large impact on biodiversity, therefore, the multiplier is set on 2.
- Secondary effects (road construction): The road construction involved secondary effects, e.g. a wood chopping company has established itself alongside the road which chops forest wood for export purposes. Therefore, the multiplier is set on 1.5.
- Positive biodiversity contribution: Product A is cultivated only in small parts in Brazil and is grown from traditional seeds. This is 'awarded' by a multiplier of 0.75.
- Non-related activities: Half of the time, corn is grown on the same field and, therefore, the multiplier is set on 0.5.

Multiplier parameters (examples)

* Allocation of land use	=> 0.2 X	100,000 hectares	20,000 hectares
* History of conversion	=> 1.5 X	20,000 hectares	30,000 hectares
* Degree of degradation	=> 2.0 X	30,000 hectares	60,000 hectares
* Secondary effects (road construction)	=> 1.5 X	60,000 hectares	90,000 hectares
* Positive biodiversity contribution	=> 0.75 X	90,000 hectares	67,500 hectares
* Non-related activities	=> 0.5 X	67,500 hectares	33,750 hectares

Total number of hectares **33,750 hectares**

The product chain of which XXXX is part has to compensate 33,750 hectares for the biodiversity loss caused by the purchase of A1. Considering the production area of 20,000, the offset area almost doubles the intervention area. The costs of offsetting 33,750 hectares will have to be divided between companies in the product chain, including XXXX. How this division could take place, will be discussed in paragraph 4.4. An important factor to ensure the offset of the entire impact of A1 is the cooperation of the various companies in the chain.

4.3.3___ Bottlenecks for discussion

Although a quantitative method seems best suitable for addressing biodiversity impact in relation to biodiversity offset, it is not without problems. Similar to most models, it attempts to simplify and structure reality, with the inevitable downside that in most cases it will be an approximation rather than an exact representation of the actual biodiversity impact (and resulting offset). Bottlenecks are discussed below.

- The biodiversity impact on aquatic systems is excluded in this model, as it seems not possible or much more complicated to translate the impact on aquatic systems to hectares, particularly with regard to marine environments. This leaves the question if and how a negative biodiversity impact on aquatic systems could be quantified for offset purposes.

- Land conversion constitutes only one side of the impact on biodiversity. Other, more diffuse biodiversity impacts are difficult to 'simply' convert to a number of hectares. More diffuse biodiversity impacts (e.g. the impact on the water tables in an area or emissions to air and water) will have to be translated into a multiplier value or will not be taken into account in the proposed methodology.

- Traceability may constitute a major bottleneck for a particular company or production chain wishing to offset the impact on biodiversity. In order to assess the negative impact directly or indirectly caused, the precise production sites must be known. Traceability is furthermore necessary to obtain information on quality aspects of the converted areas (type of ecosystem, prior conversion, land use, etc).

  Since companies will not always know the original production sites, traceability efforts may lead to costly, time-consuming and non-efficient exercises. Therefore, it may be necessary to look into non-traceability solutions as well, such as 'worst case scenarios' (e.g. part of the global production sites is known to be converted from pristine forests, thus the multiplier used in this respect is set on 2 (see box 7)) or 'general case scenarios' (e.g. the global average yield is used to calculate the number of hectares required to produce the ingredients for the production chain).

- Secondary effects (road construction, land use for housing, etc.) will be difficult to express in an amount of hectares. The fact that secondary effects can take place in another area than the intervention area and at another time than the time of production, makes it even more complicated. One could investigate the possibilities to select the most probable and prominent secondary effects related to economic activities in general and translate this into a multiplier.

- Positive or negative impacts of the activity in respect of all ecosystem functions (including social and economic functions) should ideally be taken into account. Land conversion as such can be compensated by means of an area of the same size (or bigger/smaller depending on the multipliers), but the value of the impact on all ecosystem functions is very complicated to assess. This obstacle has not yet been addressed in the proposed methodology.

4.4___ A company's share in the product chain

4.4.1 __ Methods to assess a company's share in the production chain

Step 3
Multiplication of the resulting offset area with the share of the company in the product chain.

In general, the company using the product resulting from the converted area will not be solely responsible for the negative impact on biodiversity. A production chain usually consists of different companies involved in different production phases, such as primary production, production of semi-fabricates, transport, final production phase, wholesale and retail. Each production phase contributes to the overall biodiversity impact. Often, a relatively large share of the biodiversity impact is concentrated in the primary production phase where there is direct interaction with water, air, soil and flora and fauna. This does not mean, however, that the responsibility of this impact is concentrated in the primary production phase as well. Ideally, this impact is 'shared' by each of the different parties in each production chain.

In the first two steps of the proposed offset model, the size of the offset area *related to a particular product or activity in a particular production chai*n is calculated through:

- the actual size of the converted area;
- certain (quality) aspects of the converted area (multiplier parameters).

However, ideally this 'size' is to be covered by the entire production chain as the same product is used by different companies throughout the production chain. A methodology to enable estimations of the offset share of each individual company seems very complex to develop. Two possible methods are described below:

- Responsibility should be carried by every company in the product chain adding value to the product. The responsibility of each company can be calculated by relating the added value of the company to the retail price of the (processed) product.

- A product chain usually involves a few participants which have significant power and influence in the chain. The responsibility for offsetting the entire biodiversity impact may be vested in these companies.

Before the methods are shortly elucidated below, *it should be noted* that they do not pretend to provide a clear and workable solution on how to deal with the issue of assessing a company's share in the product chain. They merely serve to illustrate which aspects could be considered when discussing this issue.

Share based on the added value in the chain
A possible method to calculate a company's share is relating the company's share to the value that is added to the original primary material entered in each production phase. The added value is defined as: the costs and profit that is added by each link in the chain. The added value may be expressed as a percentage of the retail price of the (processed) product.

However, when using the added value of a product to estimate a company's share, this estimation may turn out to become a very time-consuming exercise when the product under review is used or processed in a wide variety of products. Moreover, in order to calculate the share of the company one must calculate the retail price of the (processed) product. This may be very difficult or virtually impossible when you are not the producer of the final product.

Share based on influence in the chain and the business case to act
Alternatively, significant power and influence in the product chain may be seen as important factors in establishing responsibility. In practice, the companies with significant power and influence will in many cases be the ones fulfilling a pro-active role in this field of biodiversity offsets (contrary to e.g. a local transport company carrying the product from the harbour to the factory). The business case to deal with the impact on biodiversity may also be most apparent to these companies. Consequently, these companies may also decide for themselves to take responsibility for the entire impact or to cooperate with other major players in the chain.

4.4.2___ Deviation of 'exact' individual share

There may be reasons why a company may not wish to limit possible offset measures to its 'exact' individual share. Three important reasons could be:

- CSR strategy of the company
  If it is part of a company's CSR policy to strive for 100% sustainable sourcing, the company may decide to compensate the entire biodiversity impact of the input purchased yearly.

- Public opinion
  The last decennia western consumers, governments and NGOs have become increasingly critical towards environmental and social aspects of production. To a certain extent, this especially applies to large multinationals operating in less developed countries. When an impact on biodiversity occurs due to a certain production, public opinion may expect more offsets from a (powerful) multinational company than a small scale farmer in a developing country. In case a company wishes to respond to public pressure, the *actual* responsibility or share of each company in the product chain may not be relevant.

- Lack of cooperation
  When a company intends to offset the biodiversity impact due to the production chain, it may seek cooperation with the main stakeholders in this chain to jointly offset the entire impact. In the event that such cooperation cannot be realized in practice, a company with an apparent business case to act may decide not to limit the offsetting to its own share but to take full responsibility on behalf of the production chain.

4.5___ Suitable compensation measures

4.5.1 __ Biodiversity offsets and financial compensation

Step 4
Assessing suitable offset measures.

When the company's share in the biodiversity impact of a product has been calculated, the actual offsets lie with the company that has to decide in which way it wishes to offset. The choice of how to compensate will depend on a range of factors such as attainability, effectiveness, efficiency, (pressure by) stakeholders, goals of the company, the product or production process under review, the company, the country of which the product is pertained, the converted area itself, traceability, etc. The main efforts undertaken in the offsetting field are biodiversity offsets and financial compensation. Possible offset measures are preferably investigated prior to developing activities by discussing and agreeing on topics dealt with in Chapter 3. Should the company for example wish to offset in physical biodiversity, it should be clear whether this is possible in the vicinity of the intervention area and, if not, whether the proposed offset area is still acceptable.

Assessing whether possible offset measures are suitable mainly concerns the following aspects:

- To which extent are the offset measures legitimate and appropriate (see paragraph 3.2.2)?
- Are the measures supported by corporate policy of the company and, if not, is the company willing to adjust the policy?
- Are all ecosystem services which the converted area provided fully covered by the measures?

Case-by case basis
Even if a preset framework of criteria and priorities regarding various issues has been developed, offset measures will probably have to be established on a case-by-case basis as no two nature areas, impacts, etc. are the same. When the intention exists to cover for all ecosystem services lost, the measures to be taken will result in a combination of biodiversity offsets to reach no net loss of ecological ecosystem services and financial compensation to cover the loss of social-economic services.

External parties
As offsets involve sensitive and complex matters for which most companies are not equipped themselves, it is advisable to involve external (local) experts in the process. An option on an international level would be to establish an independent international 'offset' committee which companies can turn to when they wish to deal with their negative biodiversity impact through offsets or compensation.

4.5.2___ Issues for discussion

Considering time, costs and bottlenecks related to adequately calculating biodiversity offsets, it can be argued that a fixed sum dedicated yearly by a company to offset purposes is preferable to a tailor-made estimated share per activity. This sum could be based e.g. on a percentage of the total costs of a project (having an impact on biodiversity) or a fixed percentage of the company's annual gross turnover, to be transferred to a fund which is spent exclusively on biodiversity offset measures (see box 8). The drawback of this approach is that it can be viewed as a 'pay off' to legitimately develop biodiversity unfriendly projects.

Box 8: Tropical Forest Trust

Tropical Forest Trust (TFT) is striving to expand the area of natural tropical forest that is FSC-certified, helping to ensure that forest management is environmentally appropriate, socially beneficial and economically viable. The TFT links the supply chain from the forest to the consumer through its three membership categories: Producing, Supplying and Buying members.

TFT members invest a fixed percentage of their product's gross margin to fund TFT activities tailored to suit their investment needs. By doing so, timber and wood products trading companies invest in their long-term sustainable future by securing both an ethical wood supply chain and their corporate image. TFT members gain access to timber and wood products generated by specific projects they are supporting – before the project achieves FSC certification, members have the security of knowing that their supply chain originates in a project that is demonstrably moving towards FSC certification with TFT assistance and monitoring.

The investment level that TFT members are required to make, is calculated as a percentage of their gross margin. Because that margin varies from product to product, it is not possible to define a specific percentage to cover all sectors. The percentage will be set after the TFT has ascertained details of a company's particular trading conditions. In all cases the level must be credible in terms of the TFT's objectives and activities, and must be closely comparable with the level agreed to by existing TFT members trading in similar conditions. [Tropical Forest Trust]

Chapter

5

Conclusions and recommendations

5.1 Introduction

From the analysis of current offset practices, the study on basic offset issues and the first steps towards an offset methodology, several conclusions (paragraph 5.2) and recommendations (paragraph 5.3) can be drawn. These are directly relevant to the VBDO when addressing (multinational) companies on their direct or indirect impact on biodiversity: What can be expected from a company in terms of offsets in the light of current practices, chances and bottlenecks?

5.2 Conclusions

The following conclusions have been drawn:

1. Companies that directly intervene in areas subject to an existing legal offsetting scheme are the only parties *legally* obligated to take offsetting measures. Such legislation exists in several countries, e.g. in EU countries and the United States of America. This concerns companies involved in *primary natural resource use*. Companies that are involved in activities located further down the production chain (e.g. the production of semi-fabricates or final products) are *not* legally bound to offsetting measures. The same accounts for companies having production sites in countries where legal offsetting schemes are absent.

   Therefore, engaging in offsetting measures to counteract the direct or indirect biodiversity impact due in the production chain is mostly based on voluntarily initiatives. Contemplating offsets can be beneficial to a company. For example, a pro-active attitude can be favourable to a company's image and performance, especially if a company is engaged in a production chain that can be characterised as relatively 'unsustainable'.

2. Offsetting schemes, both under legislative and non-legislative frameworks, mostly lack detailed prescriptions on how offsetting should take place. As the criteria leave much scope for various interpretations by the bodies authorised to approve the offsetting measures to be taken, the exact execution of offsets is generally determined on a case by case basis.

3. No global uniform methods to calculate the impact on biodiversity, the value of social-economic ecosystem services or the 'amount' of offsets (both from a nature quantity and nature quality point of view) currently exist. This means that in practice, offsetting a residual impact on biodiversity will require a pragmatic case by case approach in close cooperation with all stakeholders involved.

4. Stakeholders active in offset issues (e.g. government and NGOs) in particular focus on companies that are engaged in primary natural resource use. Chain responsibility and allocation of (indirect) responsibility within the production chain (to what extent is a producer of final products responsible for the impact on biodiversity caused by other links in the production chain?) have not really been considered yet with respect to offsets.

5. Assessing the share of a company in the overall responsibility of a product chain with respect to the impact on biodiversity is rather complicated, depending on the product chain and the use of the raw material (e.g. a raw material or semi-fabric used in many different products versus a primary resource directly sold by the producer to a supermarket). In some cases another, more pragmatic approach may be more appropriate, e.g. the use of a fixed percentage of the annual turnover of the relevant products for offsetting purposes.

6. Compensation of less straightforward biodiversity impacts, like impact on water tables and impacts resulting from emissions to air, water and soil will be more difficult to 'catch' in an offset framework. The same accounts for follow-up effects (and impacts) outside the production area and impacts on biodiversity occurring after a certain period of time has passed.

7. Offsets involve various critical issues which demand making choices. This concerns issues such as land versus financial offsets (indirect land offsets), the valuation of ecosystem services, the assessment of the responsibility (share) of a company in the production chain, the use of multipliers in quantifying an offset area, etc. These issues need to be elaborated upon thoroughly before the development of a general offset framework could be considered. It is an extensive process which should not be contemplated without continuous dialogues with stakeholders and experts. Stakeholders are important as they provide the main license to operate for a company. Expert advice is to be sought as the necessary qualifications to contemplate offsets are generally not available within companies. In addition, it strengthens the idea of objectivity when a company outsources offset activities (taking away 'window dressing' or 'greenwashing' suspicions).

   In view of the number and variety of issues concerned, it is doubtful whether a general offset framework fit for every situation could ever be realized.

5.3___ Recommendations

The following recommendations can be made:

1. In practice, stimulating a proper management of biodiversity (impacts) will still be the first step for the VBDO when addressing the Dutch listed companies. For most companies it is likely that preventing and mitigating biodiversity impacts still requires additional attention. Biodiversity offsets only come into play in case of residual impacts.

2. For the VBDO to be able to discuss the concept of offsets with companies, it is essential to gain more insight in the opinions and ideas of the various stakeholders involved. A wider discussion is necessary to gather more detailed information on best practices and offsetting schemes currently in practice and to study the feasibility of an offset model. Organisation of a conference on biodiversity offsets, e.g. in cooperation with other experts like Insight Investment and IUCN, may be considered an important follow up activity. Members to such a conference could originate from e.g. governmental institutions, the business community and non-governmental organizations.

3. Until further steps are taken to develop a more widely accepted approach towards offsets or an offsetting model, companies may be stimulated to follow a more pragmatic approach to offset their residual impact, e.g. through the reservation of budget for biodiversity funds. In this case assessment of the impact on biodiversity (more or less comprehensive), followed by prevention and mitigation (for as far as possible) should still be the first steps since there is a link between the actual impacts and the (pragmatic) offsets.

   Another option is to focus on positive contributions as a means to contribute to biodiversity conservation. In this case there is no relation between the actual impact and the contribution to biodiversity. Positive contributions may therefore be seen as complementary to a proper management of biodiversity impacts, not as a substitute.

4. The proposed offset model could be tested in a pilot study (e.g. product and company) to gain a better understanding of the main chances and bottlenecks related to offsets in practice. It is advisable to start with a fairly ‘simple‘ product for which land conversion constitutes a major biodiversity impact in the production phase, such as agricultural products. VBDO may be able to identify companies interested in participating in such a pilot.

5. Comparable offset models for other ‘more diffuse’ biodiversity impacts and for aquatic systems could be developed. This may result in additional experiences contributing to a more comprehensive offset model. A conference on biodiversity offsets may trigger such follow-up research. The same goes for the feasibility of a system of biodiversity credits.

6. Incentives could be identified to stimulate companies to voluntarily engage in offsetting schemes and thus create practical examples of offsets. A possible incentive are marketing advantages, e.g. by communicating a company’s biodiversity policy, or by means of marketing ‘on the spot’ using the actual offset area (land adopted by “….” signs).

Sources

Kate, K. ten, Bishop, J. and Bayon, R., Insight Investment/IUCN The World Conservation Union, Biodiversity offsets: Views, experience, and the business case, November 2004

Interview Shell, 2004

Convention on Biological Diversity, United Nations Environment Programme, http://www.biodiv.org/welcome.aspx

EU legislation (Habitats Directive, Natura 2000), http://europa.eu.int/scadplus/leg/en/lvb/l28076.htm http://europa.eu.int/comm/environment/news/natura/nat1_en.htm, date of inquiry: 3 March 2004

Telephone interview Ministry LNV, 2004

Broekmeyer, M.E.A., et al., Bescherming van Natuurgebieden: de afwegingskaders van het SGR en de Habitatrichtlijn in de praktijk, Planbureaustudies nr. 6, december 2002, http://www.natuurplanbureau.nl/pls/npb/docs/FOLDER/NPB_PORTAL_CA/PLANBUREAUSTUDIES/Planbureaustudies_6.pdf

US Wetland banking, http://www.epa.gov/owow/wetlands/, date of inquiry: December 2004

Telephone interview WorldBank, 2004

http://www.essochad.com/Chad/Chad_HomePage.asp

Langman, J., Article 'Enron's Bolivian Pipe Scheme', CorpWatch, May 16, 2002, http://www.alternet.org/story.html?StoryID=13143

Bank Information Center, case study on The Bolivia-Brazil pipeline: a 'Model' Development Project? March 1999, http://www.amazonwatch.org/amazon/BO/bbgp/reports/bolbra.pdf

Investor Responsibility Bulletin, Wednesday 2 June 2004

Telephone interview IUCN, June 2004

RIVM National Institute for Public Health and the Environment, brochure 'Biodiversity: how much is left? The Natural Capital Index framework (NCI), 2002

Tropical Forest Trust, http://www.tropicalforesttrust.com/abouttft/abouttft.asp

The Energy & Biodiversity Initiative, Opportunities for Benefiting Biodiversity Conservation, date of inquiry: March 2004, http://www.theebi.org/pdfs/opportunities.pdf

[biodiversity credits] http://www.minlnv.nl/infomart/persinfo/2002/pb040.htm, date of inquiry: 3 March 2004