

**DRAFT FOR DISCUSSION**

**Building Biodiversity Business:**

**Report of a Scoping Study**



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*Cover photograph:* courtesy of Carlton Ward Jr. and taken in Gabon as part of the biodiversity partnership between the Smithsonian Institution and Shell Gabon.

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## FOREWORD

The natural diversity of the living world, with its myriad species, complex ecosystems and constantly evolving genetic structure, is a priceless inheritance. At the same time, this 'biodiversity' is commonly under-valued by modern economies, an important contributing factor in its rapid and continuing disappearance. Some experts liken the current rate of biodiversity loss to the great extinctions of prehistoric eras, when many animals on land and in the seas were wiped out by largely unknown calamities.

Ironically, while the biological foundation of our lives is eroding beneath our feet, human economies continue to thrive, generating ever-greater quantities and qualities of material goods and consumer services. Poverty and conflict continue to afflict the lives of billions, but at the same time overall economic growth means that, for the moment at least, increasing numbers of people around the world enjoy unprecedented levels of prosperity.

On the one hand, diminishing biodiversity; on the other, expanding economies. The two phenomena are not unrelated. Modern economies are very good at producing what people will pay for. They are not so good at preserving what is priceless. Much of the ongoing loss of biodiversity can be attributed, directly or indirectly, to the production and consumption of goods and services.

Action is urgently required to halt the loss of biodiversity but governments and non-governmental organisations (NGOs) cannot do it alone. Policies and regulations that require business and consumers to reduce their environmental footprint are important but not sufficient. Much existing biodiversity policy is essentially 'swimming against the tide' of economic growth, and constantly falling short. Taxing businesses and consumers or seeking charity from them could raise significant sums for biodiversity conservation but does little to alter day-to-day decision-making in the market place.

The question is how to enlist the purchasing power of consumers and the productive capacity of business to help meet the global biodiversity challenge. This in turn requires that we find ways to make a stronger business case for biodiversity conservation.

With a little ingenuity, a compelling business case can be constructed for desired environmental objectives. Twenty years ago few people imagined that an entire industry could be created to mitigate climate change. Today it is a reality. Why not the same for biodiversity?

Can we create or expand markets for genetic diversity, species conservation and ecosystem resilience in the same way that markets now exist at a global level for carbon, and in some countries for SO<sub>2</sub>, NO<sub>x</sub> and groundwater salinity? The power of market-based environmental policy is no longer in doubt – the international carbon trade, for example, is expected to reach US\$25 billion in 2006. Meanwhile biodiversity is still largely neglected by private finance.

The challenge is not so much conceptual or technical as political, namely to persuade the public and policy-makers that biodiversity (or component ecosystem services) can and should become a tradable commodity. Recent experience with market-based approaches to controlling CO<sub>2</sub> and other industrial emissions provides practical lessons as well as encouragement.

This report is the fruit of collaboration between The World Conservation Union (IUCN) and Shell International Limited, in a joint effort to identify potential new business opportunities and market-based mechanisms to conserve biodiversity. It represents the results of consultations over the period January to June 2006, when a series of interviews were conducted with more than 160 people from over 50 organisations, including banks, foundations, multi- and bilateral aid agencies, NGOs, Think-Tanks, academics and fund managers.

Based on the interviews and a literature review, this report provides a snap-shot of the biodiversity business landscape. It reviews a range of biodiversity business sectors, assesses what has worked (or not), describes the main constraints and identifies opportunities to expand market-based biodiversity conservation within each sector. The report also reviews the policy frameworks, technical resources and financing mechanisms that enable biodiversity businesses to grow, in each case highlighting lessons learned from experience and future opportunities.

The authors conclude that there are numerous pro-biodiversity business opportunities that can generate positive financial returns as well as real biodiversity benefits. Many initiatives have been established with impressive results – however none have achieved significant scale or leveraged substantial private investment. There is a need to build on existing initiatives, recruit additional business collaborators, and ‘raise the bar’ in terms of both the scale and conservation benefit of private investment. The report concludes that three separate but related institutional functions must be fulfilled to enable market-based biodiversity conservation to grow, namely appropriate enabling policy, technical support tailored to biodiversity enterprise, and finance from investors who understand the particular constraints and opportunities of creating biodiversity businesses.

Shell International Limited and IUCN are continuing to explore possible collaboration in this area. Meanwhile, we are publishing the results of our work to-date and hope this report will be of interest to a wide audience, including those who are new to biodiversity business, as well as current and future practitioners.

We are aware that the report covers a large subject matter in a rapidly developing field and that, necessarily, not every initiative has been covered. However, we believe that the process we have undertaken is broadly representative of the ‘big picture’ and a robust foundation for our conclusions. Shell International Limited and IUCN are grateful for the time and input of all those who provided the information that underpin this report. In particular, we have benefited enormously from comments received on an earlier draft, which was discussed at a workshop held in Wye River, Maryland in the USA in May 2006. Shell International Limited and IUCN continue to welcome additional feedback on this work.



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# EXECUTIVE SUMMARY

## Background and Rationale

Shell International Limited<sup>1</sup> and The World Conservation Union (IUCN) have agreed to explore initiatives that can positively influence biodiversity conservation on a significant scale. This report focuses on the potential of market-based, more ‘entrepreneurial’ approaches, with a view to harnessing the enormous capacity of markets to drive change, as well as their potential to leverage new investment.

The challenge of halting biodiversity loss should not be underestimated. There are many priorities: expanding the network of protected areas while securing existing areas; promoting biodiversity conservation in productive land and seascapes; increasing public awareness and political support for conservation; developing an effective enabling framework of policy and regulations; building capacity in developing countries and ensuring the participation of affected peoples in biodiversity management; etc.

The question, of course, is who will pay for these actions? Biodiversity conservation desperately needs additional resources, as well as more efficient allocation of existing budgets. This report starts from the premise that current levels of funding are insufficient but also that the funding needed to halt biodiversity loss is far beyond the capacity of current donors and funding models.

There are three broad, complementary options for funding biodiversity conservation, namely: (i) establishing legislation, norms and standards to discourage environmentally harmful activities; (ii) taxing private wealth or soliciting private charity for governments, NGOs and other non-profit groups to invest in conservation; and (iii) making biodiversity conservation a viable business proposition. This report focuses on the latter approach, which seeks to align conservation and commercial objectives and to mobilise significant private investment in sustainable biodiversity businesses, through appropriate use of market-based instruments.

We believe that a new biodiversity business model is needed to deliver large and sustained financing even in the poorest countries. Securing the resources needed for global biodiversity conservation will take time and significant effort. This report argues that we will not succeed through ‘business as usual’. The challenge is to convince governments and international policy makers, conservation and civil society organisations, multilateral agencies, private and investment banks, private companies and individual consumers to work together on a fundamental transformation of economic policy and markets in favour of biodiversity.

## Why are Shell and IUCN involved in this study?

During the past six years, Shell International Limited and the IUCN have developed a strong working relationship, based around two two-way staff secondments and a number of joint initiatives at both country and project level. Shell and IUCN are actively seeking a strategic model for taking the relationship to a new level. This long-standing collaboration between Shell and IUCN seeks to improve the integration of biodiversity in the energy business, while at the same time bringing business skills and approaches to conservation. Shell and IUCN believe that there are numerous pro-biodiversity business opportunities that can generate positive financial returns as well as real biodiversity benefits. Many initiatives have been established with impressive results – however none have achieved significant scale or leveraged substantial private investment. There is a need to build on existing initiatives, involve additional businesses, and ‘raise the bar’ in terms of both the scale and conservation benefit of private investment, and we believe that we can help facilitate that process.

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<sup>1</sup> Hereafter referred to as Shell. All other Shell companies are specified by name throughout this document.

## Aims of the Scoping Study

This Report presents the findings of a Scoping Study conducted by Shell and IUCN staff and consultants during the first half of 2006. The Scoping Study involved interviews with over 160 experts and practitioners as well as a workshop in May 2006. These consultations were complemented by the authors' own review and analysis of secondary literature and data.

The work reported here builds on long-standing collaboration between Shell and IUCN, which seeks to improve the integration of biodiversity in the energy business, while at the same time bringing business skills and approaches to conservation. However, the Study is not just about Shell and IUCN and what we can achieve by working together, significant as that may be. Rather, it seeks to identify opportunities and mechanisms that can mobilise a broad coalition of businesses, conservationists and other stakeholders, based on a shared vision of market-based biodiversity conservation. Through this process we hope to leverage additional contributions – from guidance on business development and financial mechanisms through to the provision of financial backing.

Shell and IUCN believe that there are numerous pro-biodiversity business opportunities that can generate positive financial returns as well as real biodiversity benefits. Many initiatives have been established with impressive results – however none have achieved significant scale or leveraged substantial private investment. There is a need to build on existing initiatives, recruit additional collaborators, and increase both the scale and impact of private investment in biodiversity conservation. The Scoping Study sought to inform the development of a coherent work plan for promoting market-based biodiversity conservation, based on a comprehensive review of options and experience to date.

## Structure of the Report

The findings of the Scoping Study are presented in six parts. [Section 1](#) and [Section 2](#) provide an introduction and develop a rationale for market-based approaches to biodiversity conservation, including potential business, conservation and development benefits. [Section 3](#) sets out the context for biodiversity business, noting the recent rapid expansion of protected areas which has nevertheless failed to stem the loss of biodiversity. This section further notes the heavy reliance of conservation initiatives, currently undertaken mainly by public agencies and non-profit organisations, on government funding and charity, which nevertheless remains grossly inadequate especially in developing countries.

The core of the report comprises a sector-by-sector analysis of biodiversity business opportunities ([Section 4](#)) together with a mechanism-by-mechanism assessment of measures to support biodiversity business ([Section 5](#)). Biodiversity business sectors are grouped into two main categories, namely:

- Businesses that conserve biodiversity *indirectly*, through the production of related goods and services, e.g. eco-agriculture, sustainable timber and non-timber forest products, capture fisheries and aquaculture, payments for biomass-based carbon sequestration ('biocarbon') or watershed protection; and
- Businesses that capture demand for biodiversity *directly*, including ecotourism, sport hunting and fishing, bioprospecting, biodiversity offsets and other biodiversity management services.

The report assesses what has worked (or not), described the main constraints, and identified opportunities to expand biodiversity business within each sector. [Section 5](#) goes on to review the policy frameworks, technical resources and financing mechanisms that enable biodiversity businesses to grow, again highlighting lessons from experience and future opportunities.

The report concludes with a summary of findings ([Section 6](#)), including a list of high potential investment opportunities as well as a discussion of the critical success factors for biodiversity business to grow. This section highlights three separate but related institutional functions or capacities

that must be fulfilled to foster biodiversity business, namely: (i) appropriate enabling policy and institutions; (ii) technical support tailored to biodiversity enterprise; and (iii) finance from investors who understand the particular constraints and opportunities of creating biodiversity businesses. The report suggests that these three capacities can be integrated through the creation of a new **Biodiversity Business Facility (BBF)**. The main conclusions of the report are summarised below.

### Principal Findings

- Governments and philanthropy alone will not address the biodiversity challenge. Likewise Shell and IUCN can help move the agenda forward but their contribution is not enough. There is a need to enlist wider support from both the conservation and business communities. In short, biodiversity conservation must become:
  - Bigger – from US\$10 billion per year to US\$100 billion per year or more, from 12% of land area to 15% plus marine PAs.
  - Better – more cost-effective, socially equitable and wealth enhancing.
  - Faster – keep pace with issues such as land use change, biotechnology, climate change, as well as public / consumer preferences.
- There is general consensus and some recent experience to suggest that viable biodiversity business opportunities exist in most regions of the world, which are *not* fully realised, partly due to the limited scale and reach of existing support. There is plenty of liquidity in the market – i.e. capital is not the main constraint. The main bottleneck is finding projects that deliver a reasonable financial return as well as measurable biodiversity benefits.
- The emphasis should be on achieving large-scale change through ‘market transformation’, rather than replicating existing initiatives by creating another fund to deliver technical support and finance to small-and-medium size eco-enterprise.
- ‘Un-bundling’ and marketing the biodiversity benefits of landscape-level activities, such as organic farming and aquaculture, sustainable forestry or carbon sequestration in the form of conservation credits or offsets are possibilities. Similarly, there is also good potential for expanding markets for biodiversity-friendly climate mitigation, through support for forest, wetland and soil conservation and other activities that sequester carbon in biomass.
- A related possibility is to create biodiversity ‘banks’, both terrestrial and marine / aquatic that can be used to offset environmental degradation by responsible companies. Shell companies could be the initial ‘buyers’ but could also be ‘sellers’ of biodiversity credits (e.g. in the form of voluntary offsets) to other potential corporate buyers.
- ‘Viability’ in biodiversity business must be qualified by recognition that, for the most part, financial returns are likely to be modest (well under 20% internal rate of return and more likely to be in the 5-10% bracket). This implies the need for long-term grant finance, alongside commercial investment, at least until better institutional arrangements can be put in place to allow entrepreneurs to capture private willingness-to-pay for the public benefits of biodiversity.
- Turning biodiversity benefit – a quintessential public good – into cash flow is a major challenge for most market-based approaches to conservation. Experience to date has largely focused on *indirect* approaches, which deliver biodiversity benefits alongside more ‘traditional’ goods and services (e.g. food, fibre, recreation). These approaches often rely on certification systems to inform consumers about what they are buying.
- Indirect approaches can be effective at achieving large scale-impact. However, they are sometimes constrained by the imperfect match between conserving biodiversity and producing other goods and services for the market (or reducing rural poverty). More work is needed to strengthen biodiversity monitoring and management systems in indirect biodiversity business

models, while reducing certification costs and expanding market share for the companies involved. One person noted that certification has the potential to disenfranchise local communities because of the high costs – if these could be developed at low cost by local people for local people, great gains could be made.

- Direct payments for biodiversity avoid some of the problems associated with indirect approaches, but are less well-developed internationally. Experience in several countries, especially the USA, but also Australia, Brazil, Canada and some European nations, demonstrates that biodiversity, in the form of endangered species and / or natural habitat, can be effectively commoditised and traded under appropriate regulatory frameworks (e.g. mitigation or conservation banking or payments for ecosystem services). Such approaches can generate not only significant new business opportunities but also potentially large conservation gains.
- Extending direct market-based approaches to biodiversity conservation to other countries and ecosystems (e.g. marine) is another major need and opportunity. However, unfamiliarity with species / habitat payment and trading models in many countries suggests the need for an experimental phase of voluntary action, based on the willingness of some far-sighted companies and public agencies to pilot new approaches to biodiversity conservation. The main opportunities in the short-term include: one-off biodiversity offsets for site-specific development projects and on-going payments for ecosystem services.

The Scoping Study also revealed a number of *critical success factors* that need to be fulfilled for biodiversity business to thrive.

- ***Multi-stakeholder ownership***, particularly businesses but also government agencies and NGOs. A pre-requisite for involving others as this work proceeds will be to clarify the role and commitment of both Shell and IUCN. Several informants asked for a ‘structured process’ by which potential collaborators can get involved.
- ***The importance of public policy*** for stimulating biodiversity business and the need to involve governments. Voluntary action was recognised as valuable for awareness-raising and testing alternative approaches, and can be sufficient to drive major market changes where consumer preferences for ‘sustainable’ goods and services are strong. However, most informants agreed that regulatory reform is often required to ensure wide uptake, especially for intermediate goods (e.g. timber), or where consumers are unaware of the environmental implications of alternative production methods (e.g. biofuels).
- ***Coupling business development and / or technical assistance with appropriate finance***. The challenge is to integrate biodiversity management into standard due diligence and project implementation processes, while ensuring that these additional measures do not unduly constrain the market. Putting too many conditions on SMEs, especially in developing countries, may be impractical where there is little technical capacity or support.
- ***Flexible financial models***. Various financing instruments are used to promote biodiversity business, using combinations of debt and equity finance, on a commercial, non-commercial or ‘sub-commercial’ basis. Some practitioners indicate a preference for debt or quasi-debt finance, due to concerns about barriers to exit by equity investors in biodiversity business, but there is no strong consensus on this point. More experimentation and analysis is required.
- ***Performance indicators***. Both process and output indicators are critical to the success of biodiversity business. However, these must be fit-for-purpose, simple and cost-effective. Several informants cautioned against devoting disproportionate effort to elaborate monitoring and evaluation as opposed to implementation.

## **Towards a Biodiversity Business Facility (BBF)**

Shell and IUCN are continuing to explore the feasibility of establishing a Biodiversity Business Facility (BBF), which would seek to address the success factors listed above. Based on our analysis, we believe that a BBF would need three main capacities or functions:

- **Think-Tank.** This would address issues related to weaknesses in policy, legal and fiscal regimes, in light of the importance of public policy for stimulating biodiversity business, as well as issues such as biodiversity metrics and the effectiveness of technical assistance models. The Think-Tank would depend on grant funding and could also provide sub-grants, on a limited basis, to test new business models.
- **Incubator.** This would provide assistance to potential investment opportunities to develop them to the point where they can sustain themselves. In addition to providing business development services, the Incubator could also conduct applied research on how to improve the effectiveness of such assistance. As with the Think-Tank, the Incubator would rely on grant funds but could operate on a partial cost-recovery basis and, over time, spin off some services that generate financial returns.
- **Funding Mechanism.** This would invest in businesses that have the potential to deliver both a financial return and biodiversity benefit. It would seek to attract co-investors who may not require commercial rates of return in the first instance but are keen to see this market develop. A portion of the fund would deliver loans and / or grant finance to provide ongoing business development assistance and biodiversity management support to selected enterprises.

Developing a BBF will not be an easy task given the size of the challenge and the range of issues that need to be addressed. There are two main options for establishing such a facility:

- Develop the three components of a BBF simultaneously, i.e. establish the Facility as a stand-alone institution, recruit expertise, identify potential investors, collaborators and potential projects accordingly. This would probably require a detailed Feasibility Study on the concept of the BBF before any specific investments could be undertaken; or
- Accelerate the process by selecting a small number of high-potential biodiversity business opportunities and nurture the BBF through the implementation of these investments. This might include work on policy reform, finding (co-)investors to support specific investment ideas, and business, management and / or technical assistance. There was generally more support for this approach among our informants.

## **Next Steps**

Several high-potential investment opportunities have been identified which merit further feasibility analysis and development. The next phase of work is thus likely to involve the development of detailed business plans for a selection of these opportunities. This will necessarily involve more input from the conservation and business communities, as well as efforts to market the proposal to potential co-investors in the public and private sectors. In summary, the next phase will need to:

- Make the case for a BBF to the business, conservation and other constituencies.
- Clarify Shell and IUCN's role in, and commitment to, the development of a BBF.
- Further develop selected biodiversity business opportunities to identify synergies around which a BBF can be constructed.
- Establish an on-going process for enlisting new collaborators in this initiative, including existing biodiversity business initiatives and other members of the conservation and business communities, together with governments.

# 1. INTRODUCTION

## 1. Introduction – Summary

- Shell International Limited and IUCN have agreed to explore measures to enhance the role of the private sector in biodiversity conservation
- Their focus is on the potential of market-based, more ‘entrepreneurial’ approaches to biodiversity conservation
- The potential for a step change in biodiversity conservation through engagement of the private sector is enormous
- This report presents the results of a joint Scoping Study carried out by IUCN and Shell International Limited to explore the opportunities and challenges of building biodiversity business

Shell International Limited<sup>2</sup> and The World Conservation Union (IUCN) have agreed to explore measures that can positively influence biodiversity conservation on a significant scale, with a specific focus on the role of the private sector.

This report focuses on the potential of market-based, more ‘entrepreneurial’ approaches to biodiversity conservation<sup>3</sup>. The rationale and justification for this focus is provided by the recent Millennium Ecosystem Assessment (MA)<sup>4</sup>, in particular, the business and industry synthesis report<sup>5</sup>, which concluded that “*new business opportunities will emerge as demand grows for more efficient or different ways to use ecosystem services for mitigating impacts or to track or trade services*”.

The report presents the results of a Scoping Study conducted by Shell and IUCN over the period January to June 2006 (see ToR in [Appendix A](#)). The goal of the Scoping Study was to explore the options for developing market-based approaches to biodiversity conservation. The study involved extensive consultation with practitioners and proponents of ‘biodiversity business’ (see [Appendix E](#) for list of interviewees), supplemented by review of literature and an analysis of new and forthcoming initiatives (see [Appendix F](#)), as well as a 1½ day meeting hosted by Shell and IUCN (with support from Forest Trends) on 30-31 May 2006 in Wye River, USA.

During the Wye meeting more than 20 participants (mainly practitioners of biodiversity business or conservation finance) discussed a preliminary version of this Scoping Study report and the development of a shared vision for a BBF, including the ‘value proposition’ to different stakeholder groups (see [Appendix G](#) for workshop report and participant list). A further period of consultation and review based on feedback from the workshop was conducted prior to the preparation of this final draft report. The overall process is summarised in [Figure 1](#).

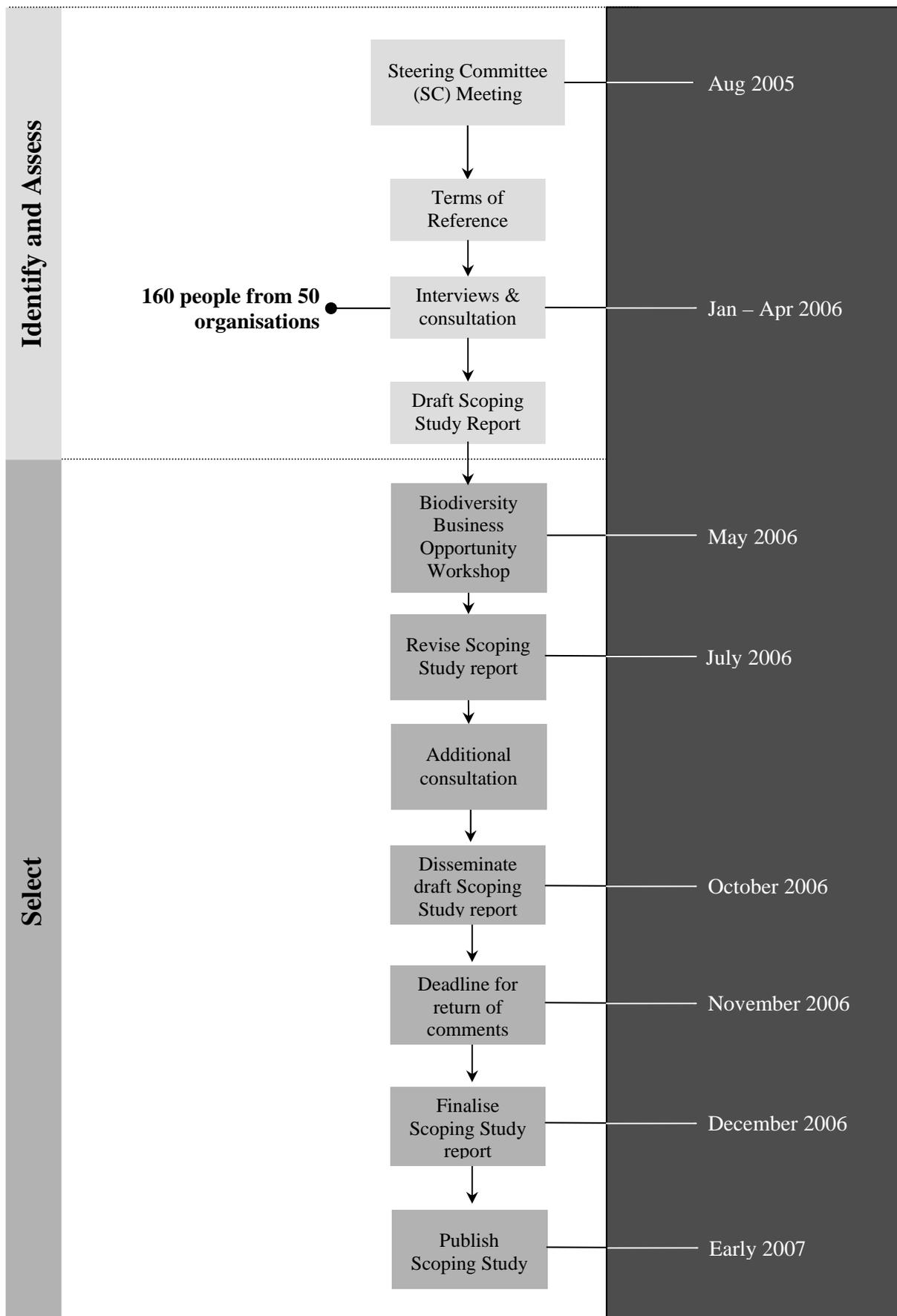
<sup>2</sup> Hereafter referred to as Shell. All other Shell companies are specified by name throughout this document.

<sup>3</sup> Other options for engaging the private sector in biodiversity conservation were also considered in preparing for this study, such as increased efforts to discourage environmentally harmful activities, or increased tax and/or charitable contributions by business to conservation activities. The focus here on building business models and markets for biodiversity does not imply any criticism or devaluation of other approaches, which are seen as complementary.

<sup>4</sup> The Millennium Ecosystem Assessment was a peer-reviewed, four-year international assessment of the consequences of ecosystem change for human well-being. It was completed in 2005 and remains the preeminent scientific appraisal of the world’s ecosystems and their conservation and sustainable use ([www.MAweb.org](http://www.MAweb.org)).

<sup>5</sup> Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Opportunities and Challenges for Business and Industry*. World Resources Institute, Washington, DC.

**Figure 1.** The Scoping Study timeline



In undertaking the Scoping Study, we sought to:

- Learn from efforts in the public sphere to broaden the scope of biodiversity conservation across the landscape, both within and outside the network of protected areas (PAs); to restore degraded ecosystems and conserve intact habitat; and to ensure positive benefits for local communities, both as an end in itself and because conservation is not sustainable without their support.
- Assess the main obstacles to and risks of market-based biodiversity conservation, such as lack of finance, limited knowledge about how to supply biodiversity through the market, weak capacity, lack of enabling policy, insufficient public consensus, weak or fickle consumer demand, potential adverse social impacts, etc.
- Identify high potential opportunities to build biodiversity businesses, including investment in commercial enterprise as well as activities that build the foundations of biodiversity markets, such as market research and product development, pilot testing of biodiversity business concepts, pre-commercial purchase of biodiversity services based on competitive business principles and, where appropriate, policy advice on market creation for biodiversity.

[Sections 2](#) and [3](#) of the report provide the context and rationale for why Shell and IUCN have undertaken this Scoping Study, including the business case and conservation case for doing so. [Section 4](#) assesses a range of business models that generate biodiversity benefits, as well as gaps and opportunities for new investment. [Section 5](#) describes the enabling policies, business tools and financing instruments used to build biodiversity enterprise, concluding again with an analysis of gaps and opportunities. Finally, [Section 6](#) provides an overall conclusion and proposes the next steps in the process of developing a BBF.

## 2. RATIONALE: WHY BIODIVERSITY BUSINESS?

### 2. Rationale – Summary

- There is a strong business case for biodiversity conservation, but making this case to some business audiences can be challenging
- From a conservation perspective, biodiversity business should be seen to complement rather than replace existing approaches
- Bringing conservation groups and business together to deliver concrete biodiversity outcomes through the market is both an opportunity and a challenge
- There are good reasons to expect biodiversity businesses to contribute to other global objectives, notably the reduction of poverty in developing countries
- Efforts to build biodiversity business must ensure that the very poor are not displaced from their jobs or cut off from natural resources that they previously exploited

Shell and IUCN have a long-standing collaboration that seeks to improve the integration of biodiversity in the energy business, while at the same time bringing business skills and approaches to conservation<sup>6</sup>. However, this review is not just about Shell and IUCN and what they can achieve by working together, significant as that may be. The aim of this report is to identify opportunities and mechanisms that can mobilise a broad coalition of businesses, conservationists and other stakeholders, based on a shared vision of market-based biodiversity conservation. Through this process we hope to leverage additional contributions – from guidance and advice on business development, financial

<sup>6</sup> See: [www.iucn.org/themes/business/secretariat/shell2.htm](http://www.iucn.org/themes/business/secretariat/shell2.htm); [www.shell.com/biodiversity](http://www.shell.com/biodiversity)

engineering and delivery mechanisms through to the provision of financial backing – and enlist further collaborators as we move forward. The rationale for doing so is outlined below.

## 2.1 The Business Case for Biodiversity

The business case for biodiversity conservation is most easily made when the business in question depends directly on biodiversity to operate and

survive. Conservation based tourism is a good example where the income stream to private enterprise depends directly on the health of the surrounding ecosystem. In such cases, business owners and managers need little persuasion to invest in biodiversity management.

For many other businesses the case for investing in biodiversity conservation is less clear. Understanding what biodiversity means and how it affects business value is not always straightforward. The Convention on Biological Diversity (CBD) offers a comprehensive definition of biodiversity – expressed in terms of genes, species and ecosystems – together with an elaborate framework and guidelines for conservation. In most cases, however, the language of conservationists does not resonate with business audiences<sup>7</sup>.

The main drivers of business investment in biodiversity conservation today are legal requirements and informal pressure from investors, shareholders, local communities and / or NGOs. More generally, the business case for investing in biodiversity may be expressed in terms of protecting firms' (a) 'license to operate' – i.e. avoiding delays, securing access to natural resources as well as access to capital, insurance or partnerships; (b) relationships with employees, communities and regulators; and (c) policy influence or the potential to inform emerging environmental regulations.

*“The degradation of ecosystems and the services they provide ... destroys business value and limits future growth opportunities”*

World Business Council for Sustainable Development 2005  
“Sustaining ecosystems and ecosystem services” *Issue Brief*, June.

### **Box 1.** Shell companies and biodiversity conservation

Shell companies, like other responsible companies seek to develop new ways to reduce its biodiversity 'footprint'. Just as the carbon footprint of Shell companies is set to grow with its exploration aspirations, so will its impact on biodiversity. Currently, however, there is no agreed technical solution comparable to carbon capture or energy efficiency to reduce biodiversity impacts. New approaches are required, not only for Shell companies but also for other companies.

Within Shell's Exploration and Production and Gas and Power Businesses, and elsewhere in the private sector, there may be opportunities to create new businesses that can mitigate biodiversity impacts. This could include the restoration and rehabilitation of degraded landscapes or the creation of new habitats such as wetlands or artificial coral reefs, based on models developed in the emerging market for biodiversity offsets. Other opportunities include investing in companies that deliver both financial returns for local communities as well as biodiversity benefits. Shell could utilise its extensive network and expertise within the Downstream Business to assist such enterprises in getting their products to market. In addition, where Shell companies have a legal obligation with biodiversity implications, such as the recently mandated increase in delivery of biofuels in Europe, new business models will need to be developed to ensure compliance while avoiding adverse biodiversity impacts.

For most business sectors and companies, however, biodiversity conservation remains a liability, an obligation or a cost, rather than a profit centre. Nevertheless, an increasing number of companies seek to distinguish themselves from competitors and gain favour with the public by supporting biodiversity

<sup>7</sup> The CBD Secretariat has increased its efforts to engage business in the implementation of the Convention, including the preparation of a guide to the CBD for the private sector. See [www.biodiv.org](http://www.biodiv.org).

conservation. This may include direct association of business product and services with ‘natural’ environments in advertising campaigns, voluntary reporting of business impacts on biodiversity or of business contributions to conservation activities, subscribing to voluntary schemes that certify business compliance with certain biodiversity performance standards, etc. [Box 1](#) highlights some of the motivations for Shell companies to invest in biodiversity conservation.

## 2.2 The Conservation Case for Biodiversity Business

Market-based approaches to environmental management are increasingly popular with governments, NGOs and businesses around the world. The question is: can markets and business achieve more and better biodiversity conservation than existing mechanisms for delivering conservation results?

Some argue that the main positive contribution that business can make to biodiversity conservation is simply to provide cash, through taxes or charitable contributions, for conservation activities carried out by governments, NGOs or community organisations<sup>8</sup>. Others emphasise the need to reduce the biodiversity ‘footprint’ of existing businesses, through government regulations, binding voluntary agreements or under pressure from NGO advocacy campaigns<sup>9</sup>. All of these approaches have their place in the conservation ‘tool box’. The basic premise of this report, however, is that biodiversity would benefit from the development of complementary approaches that seek to make conservation a profitable business activity in its own right.

Taxes on private wealth raise very large sums that can be used to provide valuable public goods and services, including biodiversity conservation. In practice, most government tax revenue is simply redistributed (e.g. from workers to pensioners). What little money remains tends to be spread thinly, used politically and very often inefficiently. In most countries, and at the global level, the share of public spending allocated to biodiversity conservation is trivial<sup>10</sup>. Charitable giving and other private spending on conservation are not well documented but probably account for less than half of public spending on biodiversity<sup>11</sup>. A more fundamental problem with this ‘tax-and-spend’ approach is that it fails to address the main threats to biodiversity. So long as private entities continue with business as usual (albeit at a reduced pace due to the burden of tax and / or charitable contributions), conservation efforts will continue to struggle against the adverse impacts of economic activity.

A second common approach to enlisting the private sector in biodiversity conservation is therefore to persuade producers and consumers to reduce or refrain from environmentally-harmful activities. Examples include environmental assessment and mitigation requirements for large investments, land use zoning, restrictions on allowable technology, limits on pollution, voluntary commitments to reduce waste and avoid damage to habitat, etc. Private expenditure to undertake such actions can be substantial, where compliance is good. The problem with this approach, like tax-and-spend, is that it still involves ‘swimming against the tide’. So long as environmentally-harmful activities are less costly or more profitable than biodiversity-friendly ones, people might be tempted to cheat, or make only token contributions to environmental protection while continuing to devote most of their effort to damaging activities. As a result, governments (and some NGOs) are obliged to spend considerable effort on monitoring and enforcement, sometimes at greater expense than can be justified by the environmental benefits achieved.

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<sup>8</sup> See for example: [www.iucn.org/themes/ceesp/Wkg\\_grp/Seaprise/Ref 5 Earth Profits Fund.doc](http://www.iucn.org/themes/ceesp/Wkg_grp/Seaprise/Ref 5 Earth Profits Fund.doc).

<sup>9</sup> Friends of the Earth International. 2005. *Nature for Sale: The impacts of privatizing water and biodiversity*. Issue 107 (January); Von Witzkacker, E.U., Young, O.R., Finger, M. 2005. *Limits to Privatization: How to avoid too much of a good thing*. Earthscan: London.

<sup>10</sup> Pearce, D.W. 2005. “Paradoxes in Biodiversity Conservation” *World Economics* Vol. 6, No. 3 (July–September), pp. 57-69.

<sup>11</sup> Pearce, D. and Palmer, C. 2001. “Public and Private Spending for Environmental Protection: A Cross-Country Policy Analysis” *Fiscal Studies* Vol. 22, No. 4, pp. 403–456.

Frustration with conventional approaches has led to a search for new ways to align private and public interests in biodiversity conservation. This can be seen as part of wider efforts to enlist the private sector in the provision of public goods, through public-private partnerships and the use of economic incentives<sup>12</sup>. Increasing evidence from around the world suggests that market-based instruments can achieve some environmental objectives at lower economic cost than conventional approaches, such as uniform pollution standards or technology mandates<sup>13</sup>. Other advantages claimed for market-based approaches include greater flexibility and innovation, more sensitivity to consumer preferences, better access to investment capital and, in some cases, reduced enforcement costs due to better alignment between private and public interests.

Some still question the potential of market-based mechanisms for environmental management, particularly in countries where regulatory capacity is weak<sup>14</sup>. Others note that certain aspects of biodiversity may be difficult to address using market-based approaches, due to cultural barriers or institutional weaknesses (e.g. genetic resources or biodiversity in the high seas). A more fundamental barrier to assessing and comparing conventional and market-based biodiversity conservation is the lack of experience with market-based approaches. Examples are relatively few and far between, and often poorly documented.

What is clear is that market-based approaches to ecosystem management have attracted significant support from both public agencies and private investors, as well as growing interest from the research community<sup>15</sup>.

*“Within a corporate governance framework geared more to sustainability and equity, the concept of **sustainable profitability** should therefore be viable – and perhaps even a necessary condition of making the transition to a sustainable economy as efficiently and painlessly as possible. Excelling in the pursuit of legitimate profitability while simultaneously making continuous progress towards genuine sustainability will become an increasingly important test of real business leadership”*

Jonathon Porritt  
Earth, Wealth and Wellbeing (in: *Resurgence* No. 234, January / February 2006)

<sup>12</sup> Examples include cap-and-trade or tradable quota systems, resource user fees and pollution taxes, competitive tendering of management services and concessions, certification and labeling of environmental performance, performance bonds and bonuses, etc.

<sup>13</sup> EEA. 2005. *Market-based instruments for environmental policy in Europe*. Technical report No 8/2005, European Environment Agency: Copenhagen; Huber, R. M., Ruitenbeek, J. and Seroa da Motta, R. 1998. *Market-based instruments for environmental policymaking in Latin America and the Caribbean: Lessons from eleven countries*, World Bank Discussion Paper No. 381, The World Bank: Washington, D.C.; Stavins, R. 2003. “Market-Based Environmental Policies: What Can We Learn from U.S. Experience and Related Research?” *Faculty Research Working Papers Series*, No. RWP03-031, John F. Kennedy School of Government, Harvard University: Cambridge, MA; Tietenberg, T. 2002. “The Tradable Permits Approach to Protecting the Commons: What Have We Learned?” *Nota di Lavoro* 36.2002, Fondazione Eni Enrico Mattei: Venice.

<sup>14</sup> Greenspan-Bell, R. and Russell, C. 2002. “Environmental Policy for Developing Countries” *Issues in Science and Technology* Spring, pp 63-70.

<sup>15</sup> Daily, G.C., and Ellison, K. 2002. *The New Economy of Nature and the Marketplace: The Quest to Make Conservation Profitable*. Island Press: Washington, D.C; Ferraro, P.J., and Kiss, A. 2002. “Direct Payments to Conserve Biodiversity” *Science* 298 (29 November): 1718-1719; Fox, J., and Nino-Murcia, A. 2005. “Status of Species Conservation Banking in the United States” *Conservation Biology* 19 (4), 996-1007; Gutman, P. (ed.) 2003. *From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries*. Danida and WWF: Washington, D.C; Jenkins, M., Scherr, S. and Inbar, M. 2004. “Markets for Biodiversity Services” *Environment* Vol. 46, N° 6; p. 32-42; July / August; Johnson, N., White, A., and Perrot-Maitre, D. 2001. *Developing Markets for Water Services from Forests: Issues and Lessons for Innovators*. Forest Trends with World Resources Institute and the Katoomba Group: Washington, D.C; Landell-Mills, N., and Porras, I. 2002. *Markets for Forest Environmental Services: Silver Bullet or Fool’s Gold?* International Institute for Environment and Development: London; Mantua, U., Merlo, M., Sekot, W., and Welcker, B. 2001. *Recreational and Environmental Markets for Forest Enterprises: A New Approach Towards Marketability of Public Goods*. CABI Publishing: Wallingford; Pagiola, S., Bishop, J., and Landell-Mills, N. (eds.) 2002. *Selling Forest Environmental Services: Market-Based Mechanisms for Conservation and Development*. Earthscan: London; Scherr, S., White, A., and Khare, A., with Inbar, M., and Molnar, A. 2004. *For Services Rendered: The current status and future potential of markets for the ecosystem services provided by tropical forests*. Technical Series No 21, International Tropical Timber Organization: Yokohama; Swingland, I. (ed.) 2002. *Capturing Carbon and Conserving Biodiversity: The Market*

A more general difficulty with assessing biodiversity conservation (market-based or otherwise) is the lack of agreed targets or indicators of performance that can be applied at a local or enterprise scale, together with a weak record of evaluation<sup>16</sup>. Progress towards the CBD 2010 biodiversity target, for example, is hard to measure in any context, even without trying to single out the contributions of market-based approaches<sup>17</sup>.

The case for market-based biodiversity conservation is thus based on a combination of frustration with conventional approaches, the apparent success of market-based instruments in addressing other environmental issues, and awareness of the dynamism of markets more generally. A particular attraction of market-based approaches is their potential to attract new sources of funding for a notoriously under-funded activity.

Of course, markets are fickle beasts. It is impossible to predict how much additional investment will be mobilised or where biodiversity will be protected through efforts to promote biodiversity business. Who could have foreseen the explosive growth of demand for organic foods in some countries over the past 10 years? Who would have thought that European forests would come to dominate the supply of certified timber? In both cases, however, it is clear that those leading the campaign achieved large changes in corporate and consumer behaviour with relatively modest investments. The key question is how to identify the most cost-effective market-based mechanisms, in terms of immediate biodiversity outcomes and financial leverage. Experience to-date suggests that the greatest leverage is achieved with voluntary, sector-wide initiatives, e.g. certification standards, rather than the slow slog of legislative change or the pinprick approach of investing in particular projects.

Whatever the prospects for market-based approaches, it is clear that governments and NGOs will continue to play a key role in biodiversity conservation. Market-based mechanisms cannot succeed without effective environmental regulations and equitable governance at local, national and international levels. There will likewise remain a need for NGO vigilance to provide constructive criticism and public campaigns, where appropriate, against ill-considered private investments.

A more immediate opportunity (and challenge) for many conservation groups will be to collaborate effectively with businesses to deliver concrete biodiversity outcomes through the market. IUCN and its member organisations are the world's main source of conservation information and expertise today. Their technical capacity will be essential to identify investment opportunities that generate the greatest biodiversity benefit, to develop effective biodiversity management systems for businesses (e.g. standards, guidelines and metrics), as well as providing technical inputs for the design and evaluation of market-based biodiversity policy and incentives. There is likewise a need for guidance to protect the public reputation and credibility of those conservation groups that choose to work with business.

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

<sup>16</sup> Agrawal, A. and Redford, K. 2006. *Poverty, Development and Biodiversity Conservation: Shooting in the dark?* Working Paper No. 26 (March), Wildlife Conservation Society: Bronx, NY; Ferraro, P.J. and Pattanayak, S.K. 2006. "Money for nothing? A call for empirical evaluation of biodiversity conservation investments" *PLoS Biology* 4(4): e105, pp 0482-0488; Tucker, G. 2006. *A Review of Biodiversity Conservation Performance Measures*. Rio Tinto and Earthwatch Institute: Oxford.

<sup>17</sup> The goal adopted by the Conference of the Parties to the Convention on Biological Diversity, at its 6<sup>th</sup> meeting in 2002, was: "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth." An Annex to the decision identifies 11 subsidiary goals and 21 targets, most of them very high-level (e.g. Target 1.1 "At least 10% of each of the world's ecological regions effectively conserved").

## 2.3 The Development Case for Biodiversity Business

Market-based approaches to biodiversity conservation are not only of interest to businesses and environmentalists. There are good reasons to expect the development of biodiversity businesses to contribute to other global objectives also, notably the reduction of poverty and inequality, especially in developing countries.

*“Market-based mechanisms have great potential to provide additional income sources to rural land users, as well as reduced risk through diversification and other indirect benefits. However, realizing this potential often requires particular efforts to be made to ensure that the poor are not excluded, such as securing land tenure for marginalized groups, supporting cooperative institutions for bundling and bargaining, facilitating access to training and start-up capital, and of course designing the market itself.”*

Pagiola, S., Bishop, J. and Landell-Mills, N. (Eds.) 2002.  
*Selling Forest Environmental Services: Market-Based Mechanisms for Conservation and Development.* Earthscan: London

Most of the demand for ecosystem services arises in or near urban areas<sup>18</sup>. Millions of urban residents need water, energy, food and fibre, recreation and other goods and services. Increasingly, they want (or must) buy environmentally-friendly products. Meanwhile, the supply of ecosystem goods and services comes mainly from rural areas. In general, urban populations are better off, on average, than rural residents. Hence at an aggregate level, biodiversity markets are likely to involve transfers from richer to poorer. The argument is even more persuasive where biodiversity business is based on exporting goods and services produced in developing countries to consumers in rich countries.

At the same time, there are concerns about the potential adverse impacts of market-based approaches to biodiversity conservation on the poor. Efforts to build biodiversity business must ensure that the very poor are not displaced from their jobs or cut off from natural resources they previously exploited. Complementary measures may be needed to enable poorer groups to participate as suppliers of biodiversity and ecosystem services.

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<sup>18</sup> The concept of ecosystem services builds on economic interpretations of environmental value, particularly the notion of “indirect use value” derived from the role of natural ecosystems in supporting and protecting economic activity and property. The Millennium Ecosystem Assessment ([www.maweb.org/](http://www.maweb.org/)) adopts a more inclusive definition, in which all environmental benefits are described in terms of services provided to people. See also: Pagiola, S., von Ritter, K., and Bishop, J. 2004. *Assessing the Economic Value of Ecosystem Conservation*, Environment Department Paper No. 101. The World Bank: Washington, D.C.

### 3. CONTEXT: THE BIODIVERSITY CHALLENGE

#### 3. Context – Summary

- Global environmental challenges and the persistence of poverty are increasingly well-documented, as is the rapid erosion of biological diversity in most parts of the world
- Government-established protected areas cover 12% of the earth's land area but many diverse ecosystems are under-represented, particularly marine ecosystems, while even well-managed protected areas are increasingly vulnerable to external pressures such as climate change
- Conservation efforts in developing countries are most seriously handicapped by inadequate funding and generally weak public sector institutions
- Global funding for biodiversity conservation is estimated at US\$10 billion annually, most from public or philanthropic sources and most spent in the developed countries
- Estimates of the additional funding required to halt biodiversity loss range widely, from as little as US\$1 billion per annum up to US\$45 billion per annum, reflecting diverse ambitions but also the lack of reliable data on current spending and its effectiveness

Contemporary concerns of conservationists and the wider sustainable development community focus on the continuing deterioration of the natural environment, together with the persistence of poverty in many parts of the world. With respect to the environment, the MA is the most recent comprehensive statement of the significant challenges facing society today, including climate change, species extinction, water scarcity and nutrient deposition. The challenge of poverty is well documented by many different organisations, such as the World Bank and the UN Millennium Project. The need for a coordinated global response is illustrated by the proliferation of multilateral agreements and policy statements, notably the World Summit on Sustainable Development (2002) and the Millennium Development Goals ([www.un.org/millenniumgoals](http://www.un.org/millenniumgoals)).

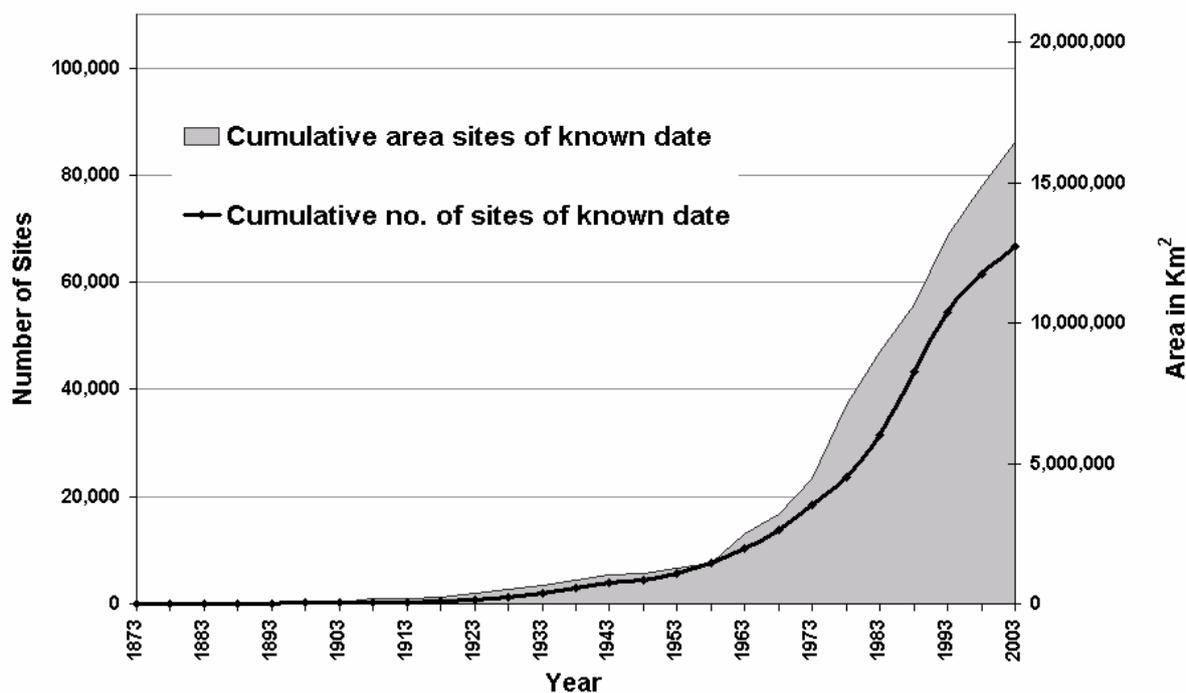
Biodiversity refers to the diversity of genes, species and ecosystems that make up life on earth<sup>19</sup>. Components of biodiversity include the vast range of natural materials, products and ecosystem services upon which all businesses and economies ultimately depend, directly or indirectly. Efforts to conserve biodiversity have evolved dramatically in recent years, reflecting improved understanding of the fundamental drivers of biodiversity loss, as well as the consequences for human well-being. At a global level the main legal instrument for conservation is the CBD, which aims to complement national and local efforts to protect our natural heritage.

The most common means of conserving biodiversity is to protect or restrict the use of areas which are highly diverse, contain rare or endangered species, or which generate other important ecosystem services<sup>20</sup>. Roughly 12% of the global land surface is currently protected under a range of legal and customary arrangements designed to ensure the conservation of important ecosystem benefits (see [Figure 2](#)). Additional conservation measures include an expanding regulatory and enforcement toolbox, including EIA and a range of other measures and mechanisms designed to assess, avoid and / or mitigate biodiversity losses associated with economic activity.

<sup>19</sup> From the Convention on Biological Diversity ([www.biodiv.org/doc/publications/guide.asp](http://www.biodiv.org/doc/publications/guide.asp)).

<sup>20</sup> IUCN defines a protected area as “an area of land and / or sea especially dedicated to the protection and maintenance of biodiversity, and of natural and associated cultural resources, and managed through legal or other effective means” (Chape, S., Blyth, S., Fish, L., Fox, P., and Spalding, M. (compilers) 2003. *2003 United Nations List of Protected Areas*. IUCN: Gland, Switzerland and Cambridge, UK and UNEP-WCMC: Cambridge, UK. ix + 44pp).

Figure 2. Growth in protected areas<sup>21, 22</sup>



While most ‘official’ PAs are state property, local communities and private landowners protect significant areas of land informally. In Namibia, for example, community-managed conservancies cover more than 74,000 km<sup>2</sup> or 9 percent of the country’s land<sup>23</sup>. At a global level, one estimate is that the total forest area under ‘community conservation’ is roughly equivalent to the area conserved in public protected forests<sup>24</sup>.

Despite the impressive growth of PAs and other conservation measures, there are major gaps in the global conservation network. Many areas that contain some of the world’s highest concentrations of biodiversity still lack protection, notably marine ecosystems. Even more disturbing is the evidence from a range of sources that contemporary approaches to conservation are merely slowing, rather than reversing, the global erosion of biodiversity (see Figure 3). There is growing concern that the world may not achieve “a significant reduction of the current rate of biodiversity loss by 2010”, as agreed at the World Summit on Sustainable Development in 2002<sup>25</sup>. Long-term prospects for biodiversity conservation remain uncertain, due to climate change and a host of other potential threats (e.g. the rapid spread of invasive alien species through trade, increasing concentration of human populations in coastal areas, developments in biotechnology, etc).

Perhaps the biggest biodiversity challenge lies in the developing world, where conservation efforts often confront weak political and macroeconomic stability, widespread poverty, underdeveloped local economies, lack of capacity and resources and institutional weaknesses in relevant public sector bodies. It has been estimated that “well over one half of all protected areas occur in nations where

<sup>21</sup> Chape, S., Harrison, J., Spalding, M., and Lysenko, I. 2005. “Measuring the extent and effectiveness of protected areas as an indicator for meeting global biodiversity targets” *Phil. Trans. R. Soc. B*, 360, 443–455. See [www.unep-wcmc.org/resources/publications/GlobalTargets/Measuring\\_PA\\_Extent.pdf#search=%22chape%20harrison%20spalding%22](http://www.unep-wcmc.org/resources/publications/GlobalTargets/Measuring_PA_Extent.pdf#search=%22chape%20harrison%20spalding%22)

<sup>22</sup> Note: 38,427 protected areas covering some 4 million km<sup>2</sup> have no date and are not included in the cumulative graph.

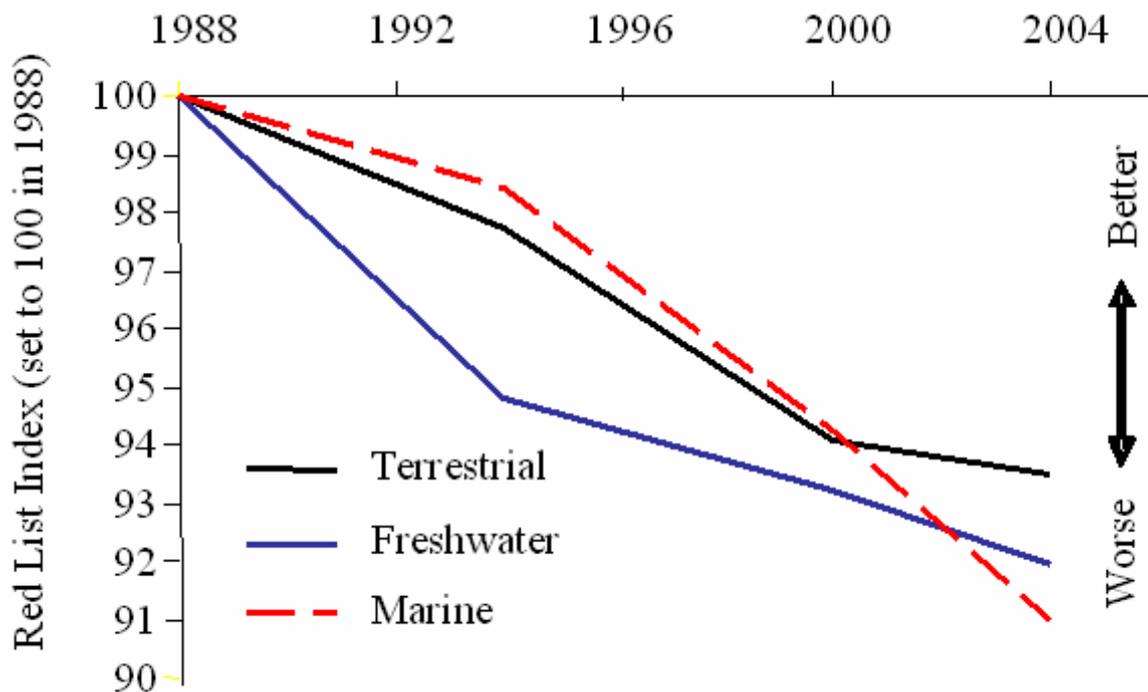
<sup>23</sup> [www.dea.met.gov.au/met/ArchivedNews/030824news.htm](http://www.dea.met.gov.au/met/ArchivedNews/030824news.htm).

<sup>24</sup> Molnar, A., Scherr, S.J., and Khare, A. 2004. *Who Conserves the World’s Forests? Community-Driven Strategies to Protect Forests & Respect Rights*. Forest Trends: Washington, D.C.

<sup>25</sup> [www.biodiv.org/decisions/default.aspx?m=COP-06&id=7200](http://www.biodiv.org/decisions/default.aspx?m=COP-06&id=7200)

*governance is weak*<sup>26</sup>. The result is many poorly protected ‘paper parks,’ a failure to conserve sufficient biodiversity, and, in other cases, conflict with local communities. Biodiversity in the high seas, beyond national waters, is likewise threatened by the absence of adequate international agreements and enforcement mechanisms.

**Figure 3.** The Red List Index for birds in different ecosystems<sup>27</sup>



Biodiversity conservation has long relied on public finance and private philanthropy to secure the resources it needs. Data on current biodiversity expenditure is sketchy, but one recent estimate is that the world spends approximately US\$10 billion per annum on conserving ecosystems<sup>28</sup>. Global spending on biodiversity includes an estimated US\$6.5 billion devoted to managing PAs, of which about US\$2.5 billion is spent in the USA alone<sup>29</sup>. Developing countries as a whole are thought to spend between US\$1.3 billion and US\$2.6 billion per annum on their national parks<sup>30</sup>. Uncertainty about current spending is compounded by weak analysis of its effectiveness.

Estimates of the funding requirements for biodiversity conservation (or more narrowly for PAs) are wildly divergent, reflecting the different ambitions of analysts and thus the lack of consensus on how much area should be protected in order to conserve biodiversity. One relatively modest assessment suggests that an additional US\$1.1 billion is required to cover the basic expenses of PA management in developing countries and countries with economies in transition<sup>31</sup>. This is perhaps optimistic. Most

<sup>26</sup> Pearce, D. 2005. Paradoxes in Biodiversity Conservation. *World Economics*, Vol. 6, No. 3, July–September, pp. 57–69.

<sup>27</sup> Adapted from: Butchart, S.H.M., Stattersfield, A.J., Baillie, J., Bennun, L.A., Stuart, S.N., Akçakaya, H.R., Hilton-Taylor, C., and Mace, G.M. 2005. “Using Red List Indices to measure progress towards the 2010 target and beyond” *Phil. Trans. R. Soc. B*, 360, 255–268.

<sup>28</sup> Pearce (2005) *ibid*.

<sup>29</sup> James, A., Gaston, K.J. and Balmford, A. 2001. “Can we afford to conserve biodiversity?” *BioScience* 51: 43–52.

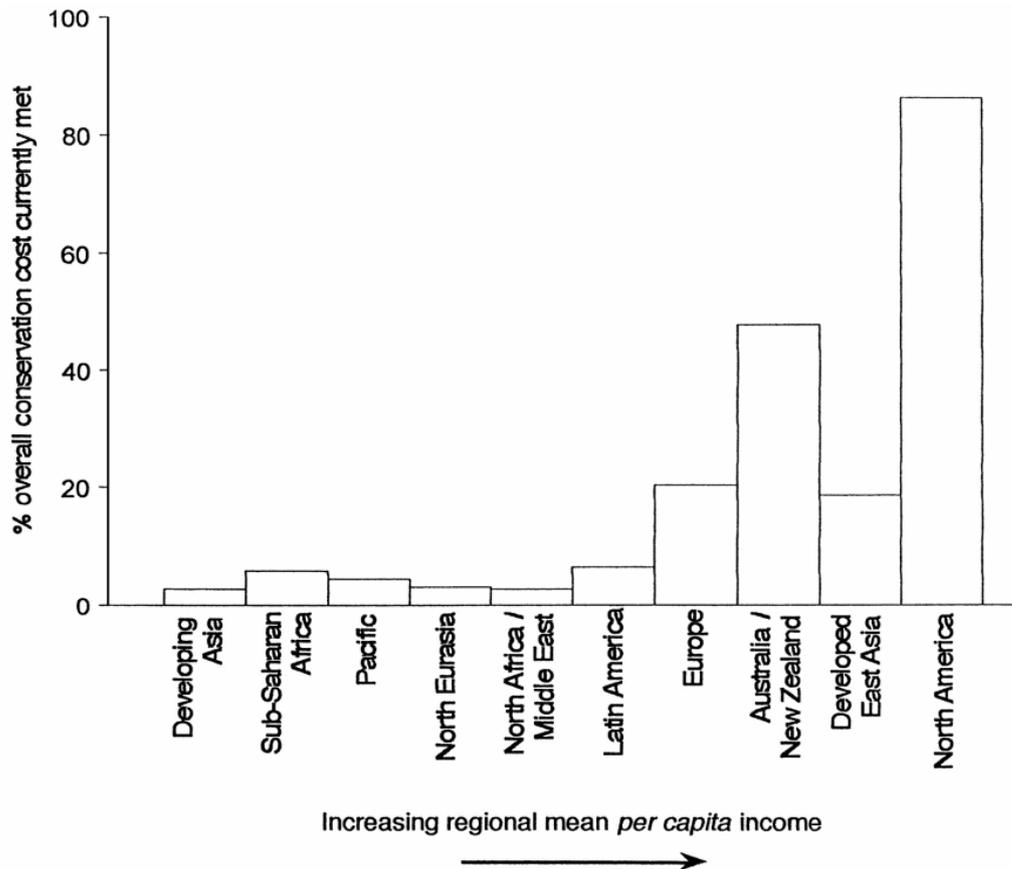
<sup>30</sup> Molnar, A., Scherr, S. J. and Khare, A. 2004. *Who Conserves the World’s Forests? Community-Driven Strategies to Protect Forests and Respect Rights*. Forest Trends: Washington, DC.

<sup>31</sup> Vreugdenhil, D. 2003. *Protected Areas Management; Biodiversity Needs and Socioeconomic Integration* World Institute for Conservation and Environment (available at: [www.birdlist.org/downloads/PA\\_Systems.doc](http://www.birdlist.org/downloads/PA_Systems.doc)).

analysts agree that there is a large unmet need for biodiversity finance, especially in the developing world (see [Figure 4](#)). Other recent estimates ([Figure 5](#)) include:

- US\$12-13 billion per year over 10 years to expand and manage PA systems in developing countries<sup>32</sup>.
- Up to US\$45 billion per year (over 30 years) to secure an expanded network of PAs covering 15% of terrestrial and 30% of marine ecosystems, mainly in the tropics<sup>33</sup>.

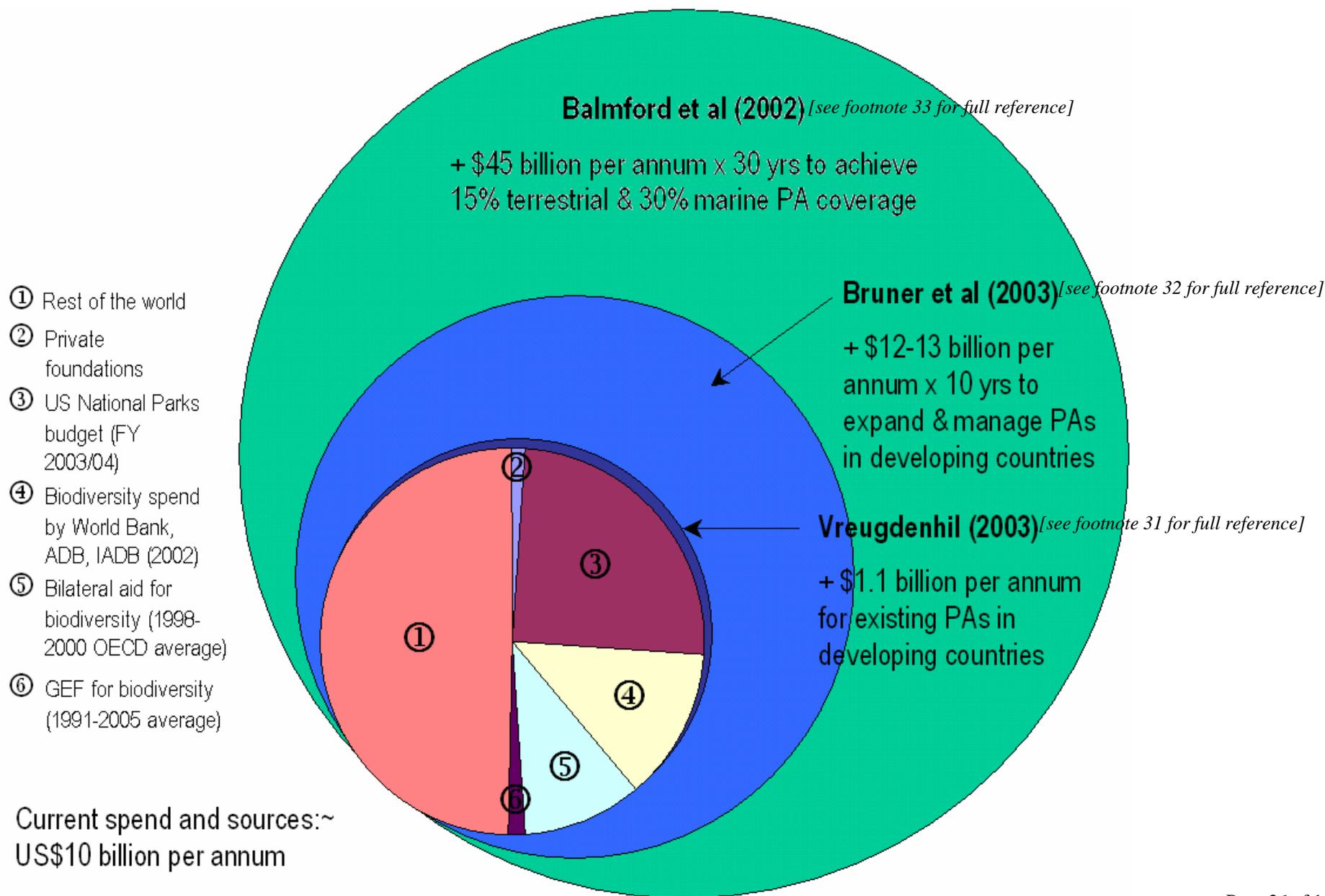
**Figure 4.** The protected area financing gap, by region<sup>34</sup>



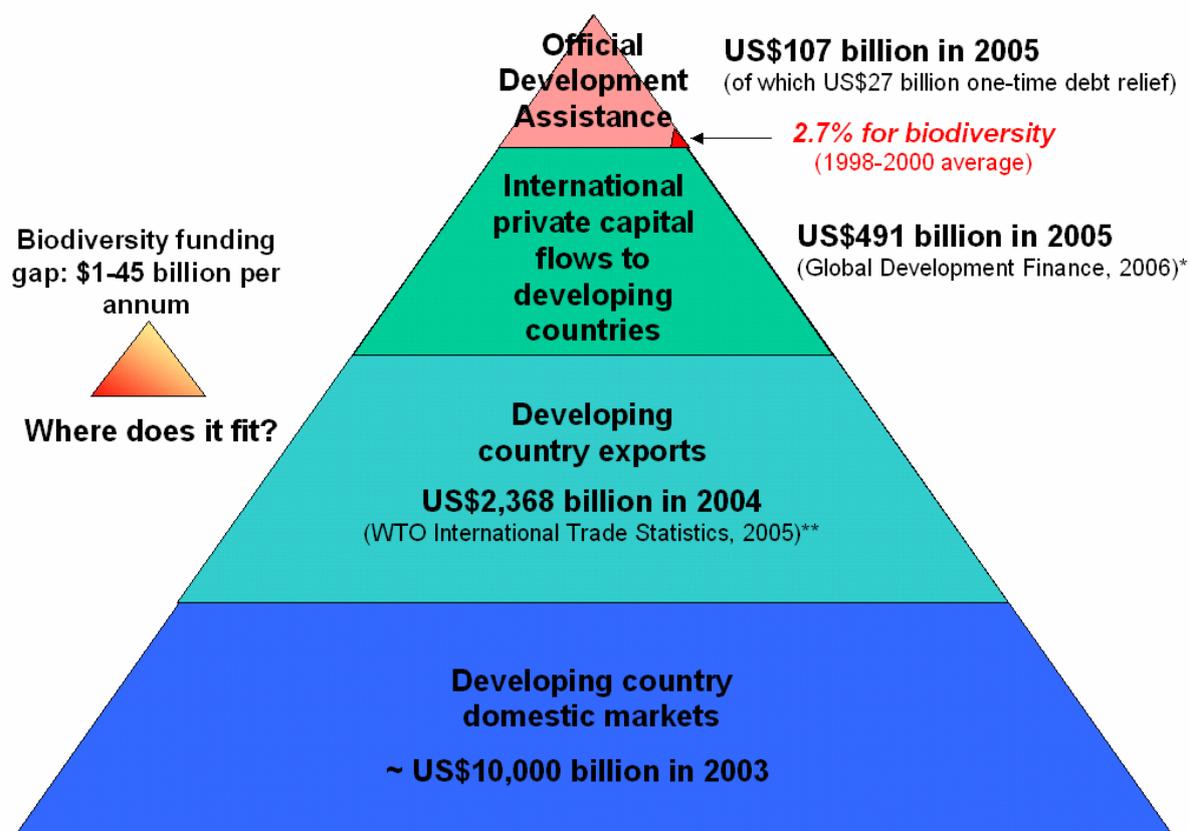
The significant funding gap for biodiversity conservation should be seen in context. The world as a whole is not short of funds. What is lacking is the motivation for increased investment in biodiversity. The potential for change through increased engagement of the private sector is highlighted in [Figure 6](#), which contrasts the gap in biodiversity funding with the scale of private capital flow, exports and domestic markets in developing countries. If even a small fraction of private capital, exports and domestic markets can be ‘diverted’ to pro-biodiversity business then the prospects for enhanced conservation could be significantly improved.

<sup>32</sup> Bruner, A., Hanks, J. and Hannah, L. 2003. *How Much Will Effective Protected Area Systems Cost?* Presentation to the Vth IUCN World Parks Congress, 8–17 September: Durban, South Africa.  
<sup>33</sup> Balmford, A., Bruner, A., Cooper, P., Costanza, R., Farber, S., Green, R.E., Jenkins, M., Jefferiss, P., Jessamy, V., Madden, J., Munro, K., Myers, N., Naeem, S., Paavola, J., Rayment, M., Rosendo, S., Roughgarden, J., Trumper, K. and Turner, R.K. 2002. “Economic Reasons for Conserving Wild Nature”. *Science* 297: 950–953 (9 August).  
<sup>34</sup> Balmford, A., Gaston, K.J., Blyth, S., James, A., and Kapos, V. 2003. “Global variation in terrestrial conservation costs, conservation benefits, and unmet conservation needs” *PNAS*, February 4, 100(3): 1046-1050.

**Figure 5.** Global biodiversity finance – estimated current spending and future requirements for protected areas (US\$ billion per annum)



**Figure 6.** Integrating biodiversity in development finance



\* See [siteresources.worldbank.org/INTGDF2005/Resources/gdf05complete.pdf](http://siteresources.worldbank.org/INTGDF2005/Resources/gdf05complete.pdf)

\*\* See [www.wto.org/english/res\\_e/statis\\_e/statis\\_e.htm](http://www.wto.org/english/res_e/statis_e/statis_e.htm)

## 4. THE BIODIVERSITY BUSINESS LANDSCAPE

### 4. Biodiversity Business Landscape – Summary

- This section reviews industries and business models that can provide biodiversity benefits – either *indirectly* or *directly*
- Industries that can generate indirect biodiversity benefits are widespread and ‘sustainable’ segments of these sectors are growing rapidly. However, the links between production practices and biodiversity outcomes are often tenuous – there is a pressing need to develop better monitoring and evaluation systems to demonstrate biodiversity benefits
- While industries with direct biodiversity benefits are much smaller in terms of market size, the potential for long-term growth and the associated positive biodiversity impact is significant, especially given that most of the profiled sectors are still in their infancy
- Major donors are providing significantly increased funding for business-based approaches to biodiversity conservation, both regulated and voluntary markets for environmental service payments are growing rapidly, and multiple platforms are being sponsored by the respective industries to promote more environmentally sustainable practices, with growing collaboration from the public sector
- The business needs and opportunities in each sector can be grouped under three broad categories – policy / enabling environment; business development services; and investment opportunities

Society has responded to threats to biodiversity in many ways. Public and philanthropic support for conservation is critical and will clearly remain a central plank in future conservation strategies. However, more is needed. Governments and NGOs cannot halt the loss of biodiversity by themselves. Charitable contributions from business are important but not sufficient.

From a business perspective, contemporary approaches to biodiversity conservation are handicapped not only by insufficient funding, especially in developing regions, but more fundamentally by weak links between consumer willingness-to-pay and biodiversity finance, as well as a general lack of business planning and management skills amongst those responsible for conservation<sup>35</sup>.

Innovative solutions are needed, including new institutional arrangements for generating financial and managerial resources (of which access to capital is a significant part) to address these challenges. In particular, there is a need to develop and expand profitable business models for biodiversity conservation, in both established and emerging sectors.

#### 4.1 Defining Biodiversity Business

There are many ways to classify biodiversity business<sup>36</sup>. In this report, we distinguish two broad categories:

- Businesses that conserve biodiversity **indirectly** ([Section 4.2](#)), through the production of related goods and services, e.g. organic agriculture, shade coffee, certified timber, payments for biomass-based carbon sequestration or watershed protection.
- Businesses that capture demand for biodiversity **directly** ([Section 4.3](#)), including for example conservation concessions and easements, ecotourism gate fees, bioprospecting access agreements, biodiversity offsets and other payments for habitat conservation, etc.

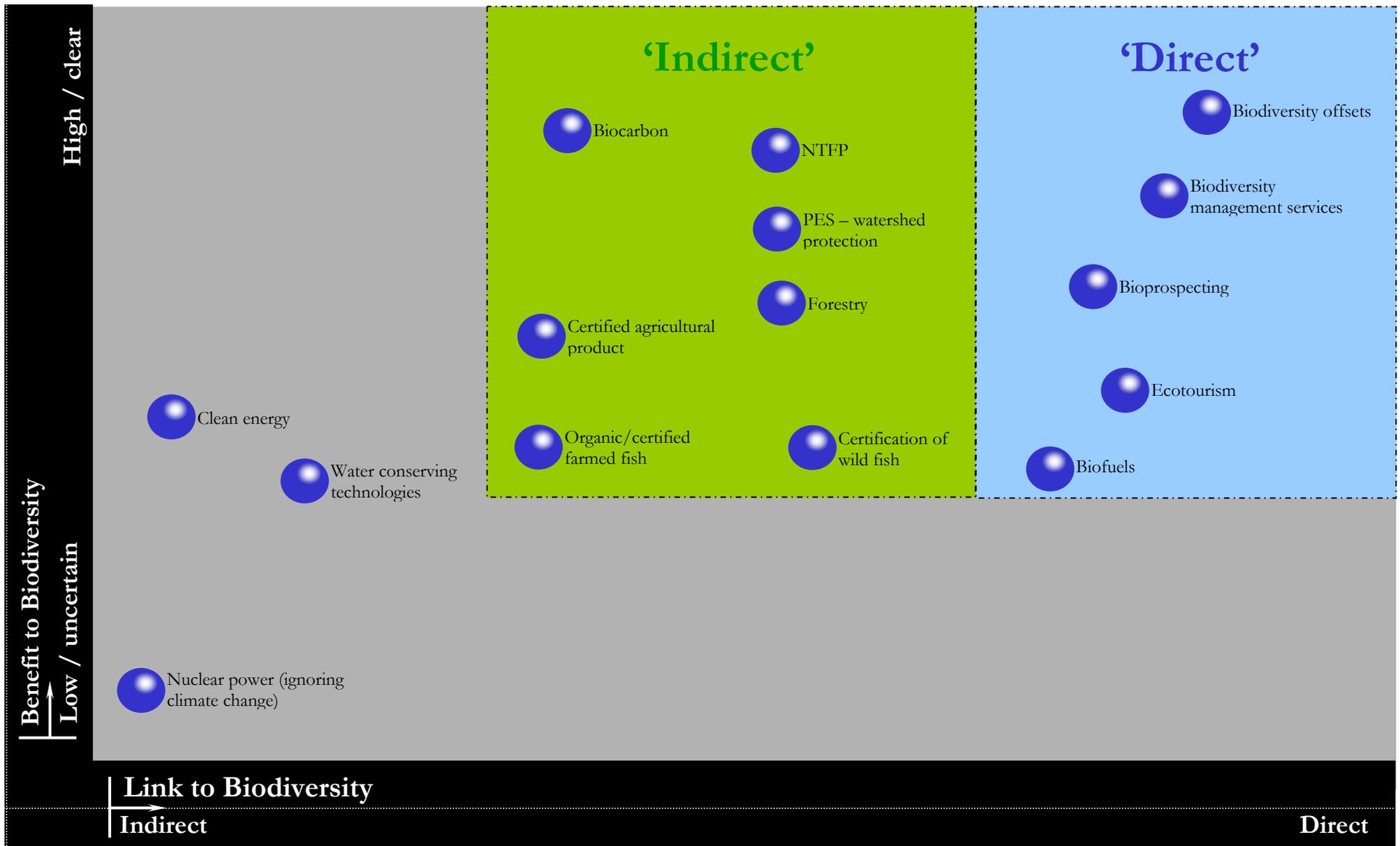
These and other business models can be roughly ‘mapped’ in terms of their relation to biodiversity and in relation to other sectors (see [Figure 7](#)).

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<sup>35</sup> This has in part inspired the Shell Foundation’s pilot programme with the United Nations Educational, Scientific and Cultural Organisation (UNESCO) to use business skills to improve the management of natural World Heritage Sites.

<sup>36</sup> It is common to distinguish between businesses for which biodiversity is mainly a risk or liability, including most extractive industries, and others for which biodiversity is a business opportunity, such as eco-tourism. This report argues that biodiversity can be an opportunity for all industries, based on a broad interpretation of the business case.

Figure 7. Mapping biodiversity business opportunities



## 4.2 Indirect Supply of Biodiversity Benefits

Several natural resource-based industries can provide biodiversity benefits through the application of modified management systems and adoption of alternative technologies and practices. Such biodiversity benefits are typically secondary considerations for the companies involved. Moreover, these industries have traditionally been major sources of biodiversity loss, through habitat destruction or degradation and / or over-exploitation of commercial species.

Recently, in recognition of the biodiversity benefits that can be achieved, several organisations have begun to support the conservation of biodiversity in productive landscapes and sectors, in addition to the traditional approach of financing PAs (see [Box 2](#)). Various approaches are utilised within these sectors to promote conservation, including:

- Certification or ‘eco-labelling’, using an array of standards and independent certification agencies.
- Development of biodiversity monitoring, evaluation and reporting systems for businesses.
- Provision of business development services, especially for smaller-scale and less sophisticated community organisations or business entities involved in biodiversity conservation.
- Formation of multi-sectoral stakeholder groups to promote participatory planning and governance and to resolve conflicts over natural resource management and other issues.

Four established industries that can supply biodiversity benefits indirectly are:

- Agriculture – focusing on environmentally-friendly practices ([Section 4.2.1](#)).
- Forestry – focusing on sustainable management ([Section 4.2.2](#)).
- Non-timber forest products (NTFPs) – including commercial use of wild species ([Section 4.2.3](#)).
- Fisheries – including aquaculture ([Section 4.2.4](#)).

In addition, this section also covers emerging market mechanisms that provide biodiversity benefits indirectly, namely payments for:

- Carbon sequestration in biomass ([Section 4.2.5](#)).
- Watershed protection ([Section 4.2.6](#)).

The potential for market growth in some of these areas is summarised in [Table 1](#).

**Box 2.** From protected areas to productive landscapes: the role of the Global Environment Facility<sup>37</sup>

The Global Environment Facility (GEF) is one of the main sources of funding for biodiversity conservation in developing countries. Financed by grants from rich-country governments, the GEF channels its resources through the World Bank, UNDP and UNEP. Over the period 1991-2001, the GEF provided about US\$1.1 billion in grants and leveraged an additional US\$2.5 billion in co-financing for biodiversity-related projects. Most of these were grants to developing country governments and NGOs, used to support more than 1,000 protected sites covering 226 million hectares in 86 countries. Funding for biodiversity projects involving the private sector has been relatively limited and focused on ‘capacity building and technical assistance in eco-tourism, agro-forestry, ... certification of commodities, payments for environmental services, and conservation of medicinal and herbal plants’. Much of the latter work was overseen by the International Finance Corporation (IFC).

In 2006 the GEF Secretariat developed a revised strategy to enhance engagement with the private sector. Key elements include: (i) a new US\$60 million ‘public / private sector partnership fund’; (ii) increased use of ‘non-grant / risk mitigation instruments’ (such as loan guarantees, concessional credit, insurance, debt-for-nature swaps); and (iii) various communication activities to promote private sector engagement. Particular emphasis is placed on finding a role for the GEF that is ‘clearly additional to what the private sector is carrying out on its own’ and ensuring that the GEF does not ‘subsidise’ business as usual or ‘standard mitigation activities’. With respect to biodiversity, the strategy sets out an ambitious agenda ‘to internalise the goals of biodiversity conservation and its sustainable use into production systems, supply chains, markets, sectors, development models, policies and programs’. Target sectors include ‘agriculture, banking and insurance, fisheries, forestry, infrastructure, mining and gas, oil, tourism, and transport’. If the strategy is successful, it could lead to significant new investment by the private sector in biodiversity conservation in developing countries. However, the GEF remains handicapped by relatively onerous and time-consuming application and approval processes, multiple objectives, as well as strict rules about what, where and how it can fund. The GEF may need to become more nimble and focused in order to attract investment partners from the private sector.

**Table 1.** Selected indirect ecosystem markets and their potential for growth<sup>38</sup>

ECOSYSTEM MARKET	CURRENT SIZE (US\$ per annum)	POTENTIAL SIZE – 2010 (US\$ per annum)	POTENTIAL SIZE – 2050 (US\$ per annum)
<b>Certified Agriculture and Fisheries</b>	\$26,000 million in global sales; \$21,000 million	\$60,000 million	\$200,000 million
<b>Carbon Sequestration through Forestry</b> (e.g. Kyoto, land use, land-use change and forestry (LULUCF))	\$100 million (much of this in developing countries)	\$1,500 million (if EU ETS allows sinks in by 2008)	\$6,000 million
<b>Certified Products</b> (Timber and NTFPS)	Forestry Stewardship Council (FSC) alone estimated at \$5,000 million	\$15,000 million	\$50,000 million
<b>Government Payments for Water-Related Ecosystem Services</b>	\$1,000 million New York City – \$150 million, WRP \$240 million, EQUIP estimate 50% for water-related – \$500 million); Mexico program \$15 million; Costa Rica Program \$5 million; China program \$1+ billion?	\$3,000 million	\$20,000 million
<b>Private Watershed Management Payments</b>	\$5 million (many public payments for environmental services (PES) are partially public – like Costa Rica approx. 30% private funds by electric, also Ecuador, public utility revenues)	\$50 million	\$10,000 million

<sup>37</sup> Sources: Good, L. (2003) Presentation to the Vth IUCN World Parks Congress, 8 September 2003, Durban, South Africa; GEF Working Document “*GEF Strategy to Enhance Engagement with the Private Sector*”, available at [www.gefweb.org/Documents/Council\\_Documents/GEF\\_C28/documents/C.28.14PrivateSectorStrategy\\_000.pdf](http://www.gefweb.org/Documents/Council_Documents/GEF_C28/documents/C.28.14PrivateSectorStrategy_000.pdf); and GEF Information Document “*Additional Information to Support the GEF Strategy to Enhance Engagement with the Private Sector*”, available at [www.gefweb.org/Documents/Council\\_Documents/GEF\\_C28/documents/C.28.Inf.4PrivateSectorStrategy.pdf](http://www.gefweb.org/Documents/Council_Documents/GEF_C28/documents/C.28.Inf.4PrivateSectorStrategy.pdf).

<sup>38</sup> Adapted from information supplied by Michael Jenkins (Forest Trends) (*Pers. Comm.*, 2006).

## 4.2.1 Agriculture

### 4.2.1 Indirect Supply: Agriculture – Summary

- Major multilateral and bilateral donors are providing significantly increased funding for biodiversity conservation in production landscapes in recognition of the need to work beyond protected areas and the potential widespread positive impacts that sustainable agricultural practices can have; multiple platforms are being sponsored by the food and agriculture industries to promote sustainable agriculture / natural products, with growing collaboration from the public sector
- Although the growth of certified / verified sustainable products in these industries is much faster than for conventional products (typically 3-4 times greater) the combined total volume and market value of all such products is still a small percentage of any given product category – typically less than 5%
- Few certification systems currently focus on biodiversity conservation; to varying degrees, all the certification systems profiled lack clear, rigorous analysis regarding the impact of recommended practices on biodiversity and do not examine or address landscape-level conservation issues; more cost-effective monitoring and evaluation methodologies are required, along with the associated metrics, to assess impacts on biodiversity
- Supporting sustainable agriculture in high-value biodiversity landscapes, with good potential for regeneration of native habitats and species, combined with clear biodiversity impact indicators, is one approach that warrants greater support
- Another approach is focusing on those agricultural commodities and industries that pose the greatest threats to biodiversity; this could include a focus on biofuels, depending upon how these are promoted, especially in biodiverse regions in developing countries

#### *What is ‘environmentally-friendly’ agriculture?*

Increasingly, farmers at all scales are called upon to reduce the environmental impact of their operations. The terms ‘sustainable’, ‘green’ and ‘ecoagriculture’ are used to describe environmentally-friendly agricultural practices, which often also have positive socio-economic impacts. The promotion of environmentally-friendly agriculture tends to involve some or all of the following practices<sup>39</sup>:

- Creating biodiversity reserves on farms.
- Developing habitat networks around and between farms.
- Reducing conversion of wild habitat to agriculture by increasing farm productivity and by protecting priority areas, such as watersheds, forest fragments, rivers and wetlands.
- Taking marginal agricultural land out of production and assisting regeneration of natural habitats.
- Modifying farming systems to mimic natural ecosystems as much as possible.
- Low-input or less environmentally damaging agriculture practices, focusing on reduced erosion and chemical or waste ‘run off’ through ‘zero tillage’ planting techniques, contour ploughing, the use of vegetation and trees as windbreaks and use of leguminous species, etc.
- Sustainable livestock practices that range from modified grazing and pasture management systems to promoting the incorporation of trees and other vegetation into livestock grazing areas.

Various labels and certification standards are used to distinguish farms that adopt such practices from conventional agriculture, such as ‘bird friendly’, ‘shade-grown’, ‘conservation’, ‘sustainable’, ‘organic’ and ‘fair trade’.

<sup>39</sup> Based largely on information provided by EcoAgriculture Partners.

### *Agriculture – status and trends*

Commercial and subsistence agriculture remain major sources of environmental damage and biodiversity loss, primarily in tropical and less developed countries. In recent years, some large-scale and widely publicised examples include the loss of vast tracts of the Amazon Rainforest and Brazilian ‘Cerrado’ ecosystems from the dramatic expansion of soybean production, and large areas of lowland rainforest in Southeast Asia from the development of palm oil plantations.

In Brazil alone, the Environment Ministry has reported that 26,000 km<sup>2</sup> of forest were lost from August 2003-4, with deforestation highest in the state of Mato Grosso where just under half of this area was converted to soya fields<sup>40</sup>. Concerns are also growing regarding the potential impact of biofuels production on biodiversity (see [Box 3](#)). Against this background there is continuing rapid growth in demand for certified sustainable agricultural commodities, notably in developed’ countries, but also in a number of large urban centres in less developed countries. However, despite the expansion of such certification schemes, with few exceptions, the combined total volume of all certified agricultural produce in a given market segment tends to small – less than 5 percent of the internationally traded volume. Certified coffee – where there is perhaps the greatest variety of certification systems – represents less than 2 percent of the volume of the global coffee market.

#### **Box 3.** Biofuels and biodiversity impacts

A wide-range of organic feedstocks can be used to produce liquid biofuels for transport (e.g. palm oil, soya, sugarcane, oilseed rape, sugar beet, agricultural waste and wheat). Currently, the world’s top commercially produced biofuels are ethanol – made from fermented sugar cane, beets and grain crops – and biodiesel – made from rapeseed, palm and coconut oil. There are alternatives. For example, Royal Dutch Shell, in partnership with the Canadian biotech firm Iogen Corporation is to develop a second generation of biofuels – cellulose ethanol – from renewable resources such as wood chips and plant waste, and aims to produce up to 100 million litres of the fuel annually from 2009. Some countries mandate the use of organic feedstocks in fuels (e.g. the EU 2003 Directive requires a 5.75 percent biofuel component in all EU25 countries by 2010; the Malaysian government has mandated the use of 5 percent refined palm oil in diesel fuel, starting in 2007).

The rationale for these targets is potential positive environmental and social impacts, notably the mitigation of climate change through GHG abatement, conservation of fossil fuels, energy supply security and employment in the agricultural sector. This however is only part of the story. There are real concerns about additional environmental and social impacts associated with some feedstocks. In broad terms the main biodiversity impacts are as follows:

- Conversion of natural forests to mono-crop plantations. For example, Indonesia and Malaysia produce over 80% of the world’s palm oil and control over 90% of world exports. This has led to several million hectares of deforestation in both countries.
- Expansion of the palm oil industry in areas where prominent endangered species exist such as orangutans, Sumatran rhino and Asian elephants.
- Land clearing fires for the establishment of new plantations.
- Soil erosion and increased sedimentation.
- Pollution through use of fertilisers and pesticides.
- Pollution through palm oil mill effluents.
- Potential use of genetically modified varieties in the soya industry.
- Use of land targeted for alternative uses such as nature conservation.

Various initiatives are underway to address the potential environmental and social impacts of these feedstocks, develop principles and criteria for sustainable production, implement codes of conduct, verify performance and promoting uptake of sustainable materials in the marketplace. Examples include the Roundtable for Sustainable Palm Oil (RSPO) (covering approx 65% of world volume) ([www.sustainable-palmoil.org](http://www.sustainable-palmoil.org)), the Roundtable on Sustainable Soya, the Responsible Commodities Initiative and the Sustainable Food Lab ([www.sustainablefood.org/commodities](http://www.sustainablefood.org/commodities)).

There is increased interest on the part of major food and agriculture companies in promoting more sustainable agricultural practices, partly in response to pressure groups but more fundamentally in order to secure their supply chains and consumer markets. Noteworthy examples include:

- The Sustainable Agriculture Initiative Platform ([www.saiplatform.org](http://www.saiplatform.org)), which aims to support agricultural practices and agricultural production systems that preserve resources and enhance their efficiency.
- The Sustainable Tree Crop Program for Africa ([edcintl.cr.usgs.gov/treecropsaf.html](http://edcintl.cr.usgs.gov/treecropsaf.html)), focusing on cocoa, coffee and cashews with support from USAID, major chocolate and cocoa trading companies and other businesses.
- The Common Code for the Coffee Community, funded and coordinated by GTZ ([www.gtz.de](http://www.gtz.de)) in conjunction with leading coffee traders, roasters and retailers.
- Business for Social Responsibility's Food and Agriculture Group ([www.bsr.org](http://www.bsr.org)), focusing on sustainable water use within its corporate members' supply chains.
- The World Business Council for Sustainable Development Ecosystems Champions Group, of which Royal Dutch Shell is a leading member.

Based, in part, on the perceived growth in demand for more sustainable agricultural products and the potential linkages to enhanced biodiversity conservation, a number of donors are launching new programs to support this form of rural development. Two prominent examples are reviewed in [Box 4](#). In addition, some investment banks and other financial institutions are becoming more active in the sustainable agriculture sector. Examples include Rabobank, Citigroup, Tridos Bank and ABN-Ambro.

Several specialised investment funds and lending institutions likewise provide finance to small and medium-scale sustainable agricultural enterprises. Financial

support is often conditional on some form of certification. Examples include The Nature Conservancy's (TNC) EcoEnterprises Fund ([www.ecoenterprisesfund.com](http://www.ecoenterprisesfund.com)), Conservation International's (CI) Verde Ventures (VV) ([www.conservation.org/xp/verdeventures](http://www.conservation.org/xp/verdeventures)) and Ecologic Finance (EF) ([www.ecologicfinance.org](http://www.ecologicfinance.org)). These and other funds are described in more detail in [Appendix B](#).

**Box 4.** Programmes for rural development

*Biodiversity Agriculture Commodities Program (BACP)*

This approximately US\$50 million, 10-year project is funded by the GEF and implemented by the International Finance Corporation with an expected start date of January 2007. In the first phase, the GEF will provide US\$7 million and seek to leverage at least double this amount from other donors / investors. The BACP will not channel GEF or other initial donor funds to directly subsidise private sector firms. Instead, BACP funds will go to third parties such as NGOs, industry, association or foundations that work with private sector sponsors to promote biodiversity conservation in the agricultural commodities industry. BACP will initially focus on cocoa and oil palm and subsequently on soybean and sugar. BACP will provide technical assistance to projects with the following goals: to support the adoption of better management practices at the production level; to increase demand for biodiversity-friendly products; to improve financial institutions' ability to support the adoption of biodiversity-friendly practices, and to improve the enabling marketing environment by supporting existing commodity roundtable initiatives and working with governments to address relevant policy issues (source: [www.bacp.net/uk/FlyerBACP.pdf](http://www.bacp.net/uk/FlyerBACP.pdf)).

*Central American Markets for Biodiversity (CAMBio)*

This US\$30 million, 6-year project is funded by GEF and executed by the Central American Bank for Economic Integration (CABEI). The project will work with financial intermediaries in the region to develop and extend new financial products to biodiversity-friendly small and medium enterprises in Central America. CABEI will provide credit lines to its financial partners to lend to biodiversity-friendly SMEs and GEF funds will cover bank risk through the provision of partial risk guarantees and other loan enhancements.

<sup>40</sup> BBC News May 19, 2005, citing the Brazilian National Institute of Space Research deforestation figures.

## *Agriculture – what is working / not working*

The various forms of agricultural certification are well entrenched and growing, both in terms of total annual sales / volumes and market share, in most developed countries. However, there is currently relatively little certification occurring in many developing countries, with the levels in Africa, parts of Asia and, surprisingly, North America being particularly low.

Taking organic agriculture as an example, which is by far the leading form of certified agriculture, a recent survey conducted by the International Federation of Organic Agricultural Movements (IFOAM)<sup>41</sup> states there are currently more than 31 million hectares of farmland under organic management worldwide, a gain of around five million hectares in a single year. A major increase of organic land has taken place in China, where nearly three million hectares of pastoral land were recently certified.

In terms of organic land, excluding wild collection, Australia is the world leader, with 12.1 million hectares (mainly pastoral land), followed by China (3.5 million hectares) and Argentina (2.8 million hectares). Most of the world's organic land is in Australia / Oceania (39%), followed by Europe (21 %), Latin America (20%), Asia (13%), North America (4 %) and Africa (3 %). Regarding the share of organic farmland in comparison with the total agricultural area, Austria, Switzerland and Scandinavian countries lead the way. In Switzerland, for example, more than ten percent of the agricultural land is managed organically. In 2004, the market value of organic products worldwide reached US\$27.8 billion (23.5 billion EUR), with the largest share of organic products being marketed in Europe and North America.

While various forms of certification are growing at higher annual rates than conventional agriculture in many parts of the world, the base continues to be relatively small. In addition, the complexity and cost of implementing certification systems, and, in the case of organic certification, of going through a transition period, constitute significant barriers to the spread of agricultural certification, especially for small-scale producers in developing countries.

Large food and agriculture companies are increasingly involved in promoting and buying certified produce, with prominent examples being Chiquita and Kraft foods purchasing and promoting Rainforest Alliance (RA) certified bananas and coffee / cocoa, respectively, and MacDonalD's, Proctor & Gamble and Nestle purchasing fair trade certified coffee. At the same time, there are growing concerns, in some quarters, about the proliferation of certification systems and labels, due to the potential confusion of consumers in the face of multiple seals and the related difficulty of clearly communicating messages about the characteristics and differences of the various systems.

While some certification programs, notably those of the Rainforest Alliance and the Smithsonian Migratory Bird Center (Bird Friendly), give prominence to biodiversity and environmental criteria, most of the others don't currently address these issues. For example, organic certification focuses primarily on farming practices that increase soil composition and fertility and avoiding the use of prohibited synthetic agricultural inputs, but does not have criteria regarding protection of natural vegetation, rivers and water bodies, fauna, etc.

With all these systems there is currently little rigorous analysis or clear, compelling evidence to support the claims made about the positive biodiversity conservation benefits, versus more general positive environmental impacts, that sustainable agriculture practices can provide. In addition, most impact measurement is currently restricted to the individual farm level, with little attention to the impact on biodiversity beyond the farm areas, let alone at the landscape level. There is even less analysis regarding the cost-effectiveness of the various practices or how these approaches might be

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<sup>41</sup> *The World of Organic Agriculture, Statistics and Emerging Trends*, 2006. IFOAM Publication, 8th, revised edition, February 2006, 196 pages, ISBN 3-934055-61-3.

combined, sequenced over time or located physically within given landscapes to optimise the tradeoffs between enhanced conservation and improved agricultural production. In addition, there are relatively few examples of biodiversity-friendly agriculture practices being promoted and then spontaneously adopted by producers on a large-scale. Being cognisant of these limitations, several certification systems are working to incorporate greater attention to biodiversity in their standards. IFOAM, for example, has developed comprehensive draft landscape and biodiversity standards that have the potential to be incorporated into its basic organic standards in the future, even those these standards are not required for organic certification (for more details see [www.ifoam.org/about\\_ifoam/standards/norms/draft\\_standards/BiodiversityDraftStandardsD2050728.pdf](http://www.ifoam.org/about_ifoam/standards/norms/draft_standards/BiodiversityDraftStandardsD2050728.pdf))

### ***Agriculture – gaps and business investment opportunities***

There is a need to develop and promote more cost-effective monitoring and evaluation methodologies, along with the associated metrics and indicators to assess impacts on biodiversity. One approach that seems particularly promising is to focus on the reduction in major threats to habitat and species. For example, if ‘slash and burn’ agricultural practices, and the associated risk of uncontrolled fires, are identified as a major threat to biodiversity in a given area, then measures could be taken to monitor the incidence and severity (in terms of total areas burnt and extent of fire damage sustained) of man-made fires over a period of time, most logically in relation to efforts to educate local farmers about alternative practices and fire prevention techniques. This threat-reduction approach to conservation monitoring and evaluation is advocated by Foundations of Success, a US-based conservation organisation, among others, as a relatively simple, lower-cost and accessible means for local communities to gauge the impact of conservation measures, rather than seeking to collect and analyse more comprehensive information on outcome variables<sup>42</sup>. In this regard, the monitoring and evaluation methodologies and associated sharing of information promoted by the Conservation Measures Partners Initiative<sup>43</sup> seems particularly relevant. Using landscapes as the unit of analysis and planning, as advocated by EcoAgriculture Partners<sup>44</sup> and the Global Partnership on Forest Landscape Restoration<sup>45</sup>, among others, may offer a practical means of involving various actors in this process. Specific opportunities for improving the biodiversity impacts of agriculture include:

1. Assist agriculture-based enterprises within important biodiversity landscapes. This approach would be more effective where agricultural expansion and current practices pose significant, but controllable, threats to biodiversity. This approach could build on the practice of using environmental screening systems to select suitable areas and enterprise activities. Examples of organisations using this approach include VV and the European Bank for Reconstruction and Development (EBRD)<sup>46</sup>, which is developing a programme in Poland using the Natura 2000 network of PAs as the reference for such decisions.
2. Support ecoagriculture approaches in priority production landscapes with specific private sector partners. Such activities could be implemented by participating in stakeholder groups of development and conservation partners and local government and community representatives. The development and application of cost-effective, credible monitoring and evaluation systems and practical metrics would be central to such support.
3. Support donors and development organisations, notably eco-investment funds focusing on small- and medium-sized enterprise (SME), to scale-up their support for environmentally-friendly agricultural enterprises in existing target regions and to expand their operations to new regions, notably Africa and Asia
4. Support efforts to convert marginal agricultural land to native habitat, via assisted natural regeneration – ideally with a focus on biological corridors – alongside intensifying agricultural

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<sup>42</sup> See Foundations of Success literature (available from [fosonline.org/Site\\_Page.cfm?PageID=4](http://fosonline.org/Site_Page.cfm?PageID=4)).

<sup>43</sup> This initiative is coordinated by Foundations of Success ([fosonline.org/](http://fosonline.org/)).

<sup>44</sup> See [www.ecoagriculturepartners.org](http://www.ecoagriculturepartners.org).

<sup>45</sup> See [www.unep-wcmc.org/forest/restoration/globalpartnership](http://www.unep-wcmc.org/forest/restoration/globalpartnership).

<sup>46</sup> See [www.ebrd.com](http://www.ebrd.com).

production, using biodiversity-friendly practices, on more suitable land. This approach could be implemented through payments for environmental services, tax breaks, or other incentives.

#### 4.2.2 Forestry

##### 4.2.2 Indirect Supply: Forestry – Summary

- Certification standards are increasingly recognised by consumers and respected by producers, including those developed by the Forest Stewardship Council, Sustainable Forest Initiative, Canadian Standards Association, and Pan European Forest Council. However, the total percentage of certified timber is low, particularly in developing countries
- In addition to certification schemes, other promising approaches to forest management include Joint Forestry Management and Community Forestry – which are most widespread in South Asia, and community-owned forestry enterprises – which are most common in Latin America
- There is a need to develop and promote more efficient timber processing and charcoal manufacturing technologies, in order to improve the currently very low conversion rates in many developing countries
- There is a growing opportunity to invest in companies that manage forest resources to optimise the environmental benefits they provide, e.g. by selling certified timber and wood products, tapping into emerging markets for environmental services, NTFPs, ecotourism and other 'green' products and services
- To promote more widespread implementation of sustainable forestry, there is a need to address policy issues related to land tenure, use rights and the decentralisation of forest management to involve local communities, and also to combat illegal logging and corruption

#### *What is sustainable forestry?*

Sustainable forest management seeks to ensure that “*forest-related activities should not damage the forest to the extent that its capacity to deliver products and services – such as timber, water and biodiversity conservation – is significantly reduced. Forest management should also aim to balance the needs of different forest users so that its benefits and costs are shared equitably*”<sup>47</sup>. Sustainable forestry and related ‘low impact’ logging practices are designed to minimise adverse impacts on forests, rivers and streams, protect important habitats, maintain the various environmental services that forests provide and allow for the sustainable harvesting of NTFPs (see [Section 4.2.3](#)).

Increasingly, the credibility of claims regarding sustainable forest management are tested and validated through certification, using qualified, independent organisations. Several certification standards are in use, including those developed by the Forestry Stewardship Council (FSC) ([www.fsc.org](http://www.fsc.org)), the Sustainable Forest Initiative (SFI) ([www.aboutsf.org](http://www.aboutsf.org)), the Canadian Standards Association ([www.csa.ca](http://www.csa.ca)), and the Pan European Forest Council (PEFC) ([www.pefc.org](http://www.pefc.org)).

#### *Forestry – status and trends*

Since 1961, tropical countries have lost more than 500 million ha of forest cover<sup>48</sup>, while consumption of forest products has risen by 50%<sup>49</sup>. The role of forests in environmental protection and biodiversity conservation and links to livelihoods support and poverty amongst the rural poor have been increasingly acknowledged in recent years. Rural poverty is concentrated in many areas of

<sup>47</sup> See International Tropical Timber Organization: [www.itto.or.jp](http://www.itto.or.jp).

<sup>48</sup> FAO. 2000. *Commodity Market Review 1999-2000*. Commodities and Trade Division, FAO, Rome.

<sup>49</sup> Gardner-Outlaw, T. and Engelman, R. 1999. *Forest Futures: Population, Consumption, and Wood*. Washington, DC: Population Action International (available from [www.populationaction.org/resources/publications/archive.htm](http://www.populationaction.org/resources/publications/archive.htm) under ‘Environment’ section).

world's most threatened forest biodiversity<sup>50</sup> and over 90% of the world's poorest people depend on forests, while population growth in these forest areas is over twice the world's average rate<sup>51</sup>. However, as noted by Forest Trends<sup>52</sup>, moves to recognise traditional and indigenous rights have resulted in a doubling of community-owned and administered forest lands to 22% of all developing country forests, which is three times the amount owned by individuals and firms. Current trends indicate that community tenure will double again by 2020 to more than 700 million ha.

According to the Food and Agriculture Organization's (FAO) 2005 Global Forest Resources Assessment, forests currently cover nearly 4 billion ha or 30% of the world's land area, with two-thirds concentrated in just 10 countries: Australia, Brazil, Canada, China, the Democratic Republic of the Congo, India, Indonesia, Peru, the Russian Federation and the USA. At a global level the rate of net forest loss appears to be slowing, thanks to new planting and natural expansion of existing forests.

However, the trend in net loss masks two important facts: first, the gains are not necessarily in the same areas as the losses, and second the quality and biodiversity value of the replacement forest may be less than that of the forest loss. The annual net loss of forest area between 2000 and 2005 was 7.3 million ha per year (an area about the size of Panama) or 0.18 percent of global forest area, down from an estimated 8.9 million ha per year between 1990 and 2000. In the same period, South America suffered the largest net loss of forest (around 4.3 million ha per year), closely followed by Africa (4.0 million ha per year). Asia moved from a net loss of around 800,000 ha per year in the 1990s to a net gain of 1 million hectares per year between 2000 and 2005, primarily as a result of large-scale afforestation reported by China. Forest areas in Europe continued to expand, although at a slower rate than in the 1990s. New forests and trees are being planted at increasing rates, although plantations still account for less than 5 percent of forest area. Planted forests are generally far inferior to natural forests in terms of their biodiversity value.

Raw log exports from tropical countries fell by 20% to 12.8 million cubic meters in 2002, largely due to export bans on unprocessed timber in Africa and Indonesia and increasing exports of reconstituted panels, pulp, paper and secondary-processed wood products. Less familiar timber species are also being increasingly promoted as supplies of traditional woods become scarcer<sup>53</sup>. Unfortunately, timber conversion rates in sawmills in many developing countries remain low (average rates are as low as 35% in some countries, notably in Africa). In other words, increasing 'value added' through local processing often translates into less efficient use of raw materials and thus more logging.

Illegal logging, under-payment of forest taxes and illicit exports remain widespread. Estimated rates of illegal logging vary considerably, depending on the definitions used. One recent NGO report claims that rates of illegal logging may be as high as 80 percent in some countries<sup>54</sup>. One major effort that seeks to combat this problem globally, through a series of intergovernmental and regional activities is the Forest Law Enforcement and Governance (FLEG) initiative<sup>55</sup>.

The FAO estimates that about 63% of all wood harvested is burned as fuel<sup>56</sup>. Five countries – Brazil, China, India, Indonesia, and Nigeria – account for about half the firewood and charcoal produced and consumed each year. In countries such as Nepal, Uganda, Rwanda, and Tanzania woodfuels provide 80% or more of total energy requirements. The FAO estimates that fuelwood consumption rose by

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<sup>50</sup> McNeely and Scherr, 2003. *Ecoagriculture: strategies to feed the world and save biodiversity*. Island Press. 279 p.

<sup>51</sup> Cincotta, R.P. and R. Engelman. 2000. *Nature's Place*. Population Action International: Washington, D.C.

<sup>52</sup> White, A. and Martin, A. 2002. *Who Owns the World's Forests? Forest Tenure and Public Forests in Transition*. Forest Trends and Center for International Environmental Law: Washington, D.C.

<sup>53</sup> UN Economic Commission for Europe / FAO Forest Products Annual Market Analysis 2002-2004 (available from [www.unece.org/trade/timber/docs/fpama/2003/fpama2003a.htm](http://www.unece.org/trade/timber/docs/fpama/2003/fpama2003a.htm)).

<sup>54</sup> Matthew, E. 2001. *Briefing: European League Table of Imports of Illegal Tropical Timber*. Friends of the Earth (available from [www.foe.co.uk/resource/briefings/league\\_table\\_tropical\\_timber.pdf](http://www.foe.co.uk/resource/briefings/league_table_tropical_timber.pdf)).

<sup>55</sup> See [www.iucn.org/themes/fcp/publications/files/fleg/iucn-fleg-brochure-may2006.pdf](http://www.iucn.org/themes/fcp/publications/files/fleg/iucn-fleg-brochure-may2006.pdf).

<sup>56</sup> FAO, 1999:37. *State of the World's Forests* (available from: [www.fao.org/docrep/W4345E/w4345e00.htm](http://www.fao.org/docrep/W4345E/w4345e00.htm)).

nearly 80% between 1961 and 1998, slightly trailing world population growth of 92% over the same period. The largest increases in fuelwood consumption were reported in Asia and Africa.

The forest certification schemes mentioned earlier are much more pervasive in temperate and boreal forests. As of January 2002, only 8 percent of the total certified forest area by all schemes was in the tropics, mostly in Central and South America and plantations, with barely any in Africa. However, the pace of certification in the tropics is beginning to accelerate and several new initiatives are being implemented. Forest industries in Africa have taken the initiative to develop a Pan African Certification Scheme, based on the African Timber Organisation and The Center for International Forestry Research (CIFOR), but to date no certificates have been issued. Malaysia (Malaysian Timber Certification Council – MTCC) and Indonesia (The Indonesian Ecolabelling Institute – LEI) have also developed independent national certification schemes that incorporate labelling. The market share of certified timber in some countries is rising (from 4 percent in 1999 to 7 percent in 2001, for FSC-certified timber in the Netherlands, for example, according to WWF). The main markets for certified timber are the UK, Germany and the Netherlands, followed by the US, Japan and France<sup>57</sup>.

### ***Forestry – what is working / not working***

Alongside certification schemes (see for example [Box 5](#)), there are a number of other promising approaches to forest management in developing countries. Two that involve significant participation of local communities are Joint Forestry Management (JFM), which is now widespread in parts of India, and Community Forestry in Nepal. Both systems are based on the partial delegation of forestry management to local committees comprised of community users and local and national authorities. Typically local communities are provided with access and use rights to forest resources in return for some role in their management and improved conservation and / or rehabilitation of the resource base.

A recent World Bank report<sup>58</sup> notes that the JFM approach is now applied to 27% of the national forest area and encompasses 85,000 village committees. In assessing the strengths and weaknesses of the JFM model, the report further notes that most communities still fail to utilise the full potential of forests to improve local livelihoods and that forests are mainly

#### **Box 5. WWF in Central America**

For several years WWF Central America (WWF) has been promoting forest certification under the FSC Standards among producers and the use of certified products in the construction sector, targeting architects, hotels, construction firms, and manufacturers in Costa Rica and Nicaragua. WWF has been working at the Nicaragua's Northern Atlantic Autonomous Region, home of the Miskito and Sumo indigenous groups and the largest remaining block of forest in Mesoamerica. A major success for WWF and the indigenous community has been the negotiation of a favourable price for the certified wood, representing a 200 percent increase over the standard rate. In addition, WWF and Nicaragua's national and local environmental agencies field-tested a participatory Environmental Impact Assessment methodology in two community forests covering over 40,000 ha, which has proved effective in achieving and maintaining FSC certification.

used as a safety net during difficult economic periods or for seasonal subsistence products like fuelwood and fodder. For communities to better exploit this potential, it suggests further reforms are required to address: (i) stronger forest rights and responsibilities for forest communities; (ii) more effective management systems targeted at communities involved with forestry; (iii) improved access to more efficient market systems for major and minor products; and (iv) more effective and flexible institutions and capacities. One informant viewed the profitable and proper management of native forests / native species for timber as a major advance in Latin America, and considered these forests /

<sup>57</sup> [www.tropenbos.nl/DRG/certification.html](http://www.tropenbos.nl/DRG/certification.html).

<sup>58</sup> World Bank. 2006. *India: Unlocking Opportunities for Forest Dependent People in India. Main Report: Volume 1.* Report No. 34481-IN. Agriculture and Rural Development Sector Unit, South Asia Region. 6 February 2006.

mixed plantations as a source of significant biodiversity benefits and more appropriate / lucrative than other uses such as agriculture.

Promising community and small-producer enterprises have emerged throughout the developing world<sup>59</sup>. In Mexico, 750 communities own timber enterprises. Forest communities in Nepal and India generate more than US\$3 billion in economic activity annually. Forest producers in Indonesia and Southeast Asia conserve highly diverse forests in agro-forestry systems. These enterprises have had a favourable impact on community incomes, rejuvenated cultural and social processes, built local institutional capacity for self-development, stabilised the resource base and checked deforestation with limited outside investment. Global demand for timber and NTFPs continues to grow while at the same time forests are increasingly being valued for their environmental services. Consequently communities will need to learn manage these resources as multi-value assets, tapping into new revenue streams to optimise returns in the broadest sense.

A challenge for many small-scale forest producers wishing to access high-value markets is the cost of achieving a higher standard of production, as well as the costs of the certification process itself, in a market context driven by increasing competition from relatively inexpensive plantation timber. A number of organisations currently provide support for such producers to obtain certification and access international markets (for example, the Rainforest Alliance Training Research, Extension, Education and Systems (TREES) program, WWF's JagWood Program, Forest Trends and the Tropical Forest Trust<sup>60</sup>). However, there remains a need to expand the scale and geographic scope of such assistance to meet the needs of vastly underserved forestry communities globally.

#### ***Forestry – gaps and business investment opportunities***

1. Support the adoption of certification standards in developing countries, particularly in regions where these are currently non-existent or embryonic. As with other certification systems, improved monitoring and evaluation systems for measuring impacts of such practices on biodiversity conservation and community livelihoods are required.
2. Address the policy issues related to land tenure, use rights and the decentralisation of forest management to involve local communities. Such work should include a focus on the fuelwood and charcoal sectors, given their importance for forest conservation and community livelihoods in many parts of the world, and the relative lack of attention they currently receive from the international development and conservation community.
3. Invest directly or indirectly (e.g. via existing eco-enterprise funds) in companies that market certified sustainable timber and timber products. This could include technical assistance to help develop more profitable businesses and ensure sustainable management practices and access to markets.
4. Develop and promote more efficient timber processing and charcoal manufacturing technologies, in order to improve the currently very low conversion rates in many developing countries.
5. Invest in companies that manage forest resources to optimise the environmental benefits they provide, e.g. by selling certified timber and wood products, tapping into emerging markets for environmental services, in addition to NTFP markets, ecotourism and other 'green' markets.
6. Support efforts to implement new and enforce existing policies and promote practices to combat illegal logging and corruption within the forestry sector, particular in those countries and regions where these problems are most rampant.

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<sup>59</sup> Molnar, A. , Scherr, S. J., and Khare, A. 2004. *Who Conserves the World's Forests? Community-Driven Strategies to Protect Forests & Respect Rights*. Forest Trends: Washington, D.C.

<sup>60</sup> [www.rainforest-alliance.org/programs/forestry/trees/services/index.html](http://www.rainforest-alliance.org/programs/forestry/trees/services/index.html); [www.forest-trends.org/](http://www.forest-trends.org/); [www.wwfca.org/php/resena/jagwood/JagWood3eng.php](http://www.wwfca.org/php/resena/jagwood/JagWood3eng.php); [www.tropicalforesttrust.com/home/abouttft.htm](http://www.tropicalforesttrust.com/home/abouttft.htm).

### 4.2.3 Non-timber forest products

#### 4.2.3 Indirect Supply: Non-timber forest products – Summary

- Non-timber forest products (NTFPs) including 'bushmeat' are major sources of both subsistence and cash income that are important for the rural poor: efforts to promote more sustainable use of forests have led to increased interest in NTFP collection and marketing as an instrument for rural development
- The 'sustainability' of NTFP use depends upon a number of factors including the nature of government policies and involvement, distribution of property rights, the ability of local people to claim and enforce such rights, market transparency, business management skills and the pressure on NTFP resources; there are currently few practical, scientifically-credible guidelines for sustainable NTFP harvesting
- The FSC has recently developed standards for NTFP certification that hold promise for providing such guidance; even so, FSC certification is probably still most appropriate for large-scale industrial NTFP operations, given its relatively high costs
- There is an opportunity to invest in a portfolio of NTFP enterprises that promote best management practices regarding sustainable harvesting and support for local communities; such investment could be direct or indirect – via existing or new eco-enterprise funds
- A related need is to support the broader adoption of NTFP certification, the development of lower-cost systems, and research to measure the impacts of NTFP harvesting at both the individual product / species and the habitat / landscape level

#### *What are NTFPs?*

NTFPs are natural products other than wood derived from forests or wooded land. Examples of NTFPs include edible nuts, mushrooms, fruits, herbs, spices, honey, gums and resins, rattan, bamboo<sup>61</sup>, thatch, cork, ornamental plants and flowers, and an array of plant and animal products used for medicinal, cosmetic or cultural purposes.

#### *NTFPs – status and trends*

Globally, several million households depend heavily on NTFPs for subsistence and / or income. The FAO estimates that some 80% of people in the developing world use NTFPs for health and nutritional needs, with women from poor households being particularly reliant on NTFPs for household use and income<sup>62</sup> (see [Box 6](#)).

#### **Box 6.** Bamboo and rattan – facts and figures

- Over one billion people in the world live in bamboo houses.
- The world trade in bamboo and rattan is currently estimated at US\$5 billion per year.
- Annual exports of bamboo shoots from Taiwan alone are approximately US\$50 million.
- The paper industry in India uses 2.2 million tons (2 million tonnes) of bamboo each year.
- Indonesia is the major supplier of rattan, accounting for nearly 70% of global trade, with annual exports of US\$700 million.

*International Network for Bamboo and Rattan [www.inbar.int/facts.htm](http://www.inbar.int/facts.htm)*

<sup>61</sup> It is worth noting that bamboo, and some other exotic timber and NTFPs that are introduced as new cash / subsistence crops, have the potential to become invasive species that become a threat to local biodiversity.

<sup>62</sup> Tropenbos website, [www.tropenbos.nl](http://www.tropenbos.nl).

Another recent synthesis of 54 case studies shows that forest resources generate about one-fifth of average household income in poor rural areas of developing countries<sup>63</sup>.

In addition to their use for subsistence, more than 150 NTFPs are traded internationally, with an estimated annual total market value in the order of US\$11 billion, although statistics are notoriously unreliable for these types of products. A largely ‘invisible’ but highly significant NTFP trade is the ‘bushmeat’ market, or meat from wild animal species that is illegally harvested. Estimates of the national value of the trade range from US\$42 million to US\$205 million per annum across the countries of West and Central Africa<sup>64</sup>. Another estimate is that every year in Ghana alone, 385,000 tonnes of bushmeat are harvested (valued at US\$350 million) and 92,000 tonnes are marketed (valued at US\$83 million), with 60% of all sales occurring in urban areas.<sup>65</sup>

In many parts of the world, but notably in large parts of West and Central Africa, Southeast Asia, Australasia and the Amazon Basin, bushmeat is an important component of household food security and income. However, there is growing concern that current levels of bushmeat extraction are not sustainable and will lead to the loss of this

#### **Box 7. Bushmeat in Ghana**

A recent study<sup>66</sup> by the Zoological Society of London shows that bushmeat consumption is probably sustainable in parts of West Africa. Focusing on the city of Takoradi and 10 mammals (mostly small antelopes and rodents) that accounted for 84 percent of the meat sold, the study demonstrated that hunters are capturing fewer animals than is theoretically sustainable, although past hunting seems to have caused slow reproducing species of monkeys, hogs, and antelopes to become rare or absent in local forests. The study authors conclude that there is no great reason to worry about commercial hunting in areas where people have been doing it for many years. Instead, the biggest problems arise when new forest areas are opened for hunting by logging operations or new roads or regions are settled for the first time.

livelihood source and to the extinction of many threatened species. Policy development to mitigate this risk is impeded by a dearth of information on the structure of the bushmeat trade and its biological sustainability (see [Box 7](#))<sup>67</sup>.

#### ***NTFPs – what is working / not working***

NTFPs have attracted considerable global interest in recent years due to their ability to support and improve rural livelihoods while contributing to environmental / biodiversity conservation objectives. Efforts to promote more sustainable use of forests have led to increased interest in NTFP collection and marketing as an instrument for sustainable development (see example described in [Box 8](#)).

<sup>63</sup> Vedeld, P., Angelsen, A., Sjaastad, E., and Kobugabe-Berg, G., 2004. Counting on the Environment: Forest Incomes and the Rural Poor. Environment Department Papers #98. World Bank, Washington D.C.

<sup>64</sup> Davies G. 2002. Bushmeat and International Development. *Conservation Biology* 16: 587-589.

<sup>65</sup> Ntimoa-Baidu Y. 1998. *Sustainable harvesting, production and use of bushmeat*. Accra: Wildlife Department, Ghana.

<sup>66</sup> Cowlshaw, G., Mendelson, S. and Rowcliffe, J. M. (2005) Evidence for post-depletion sustainability in a mature bushmeat market. *Journal of Applied Ecology* 42 (3), 460-468. doi: 10.1111/j.1365-2664.2005.01046.x

<sup>67</sup> *Ibid.*

**Box 8.** Linking conservation and local economic development – sustainable harvesting of biodiversity resources at Flower Valley, South Africa

South Africa's Cape Floral Kingdom is the world's most botanically rich habitat and nearly 70 percent of the plant species there are found nowhere else on Earth. It is home to the heath-like fynbos vegetation type, the global record holder for floral diversity. However, the flowers of the fynbos are at great risk from agricultural (e.g. vineyards), urban development and other threats. Between 1999 and 2002, Fauna & Flora International (FFI) purchased 1,338 ha of globally important fynbos land (and the associated flower harvesting operation – Flower Valley Farm) that would have otherwise been developed as vineyards. The Flower Valley Conservation Trust (FVCT) was then established to promote by FFI to take on ownership and assess opportunities to link conservation and local economic development through the sustainable use of natural resources.

Starting in 2002 FFI engaged Shell South Africa and Shell to work with FVCT to develop a business model that utilised Shell's retail stations in South Africa and the UK for flower sales. Shell Foundation also contributed US\$240,000 to enable FVCT to hire an Executive Director and purchase farm equipment. In 2003, a new commercial entity, Fynsa, was created to manage the commercial operations and sold to investors, leaving FVCT to focus on non-profit activities. The Shell Foundation then assisted Fynsa to develop an innovative partnership with Marks & Spencer (M&S) – as part of the Shell Foundation's Sustainable Communities Programme – to facilitate access to a much larger retail market. The Foundation has also funded some 20 neighbouring farms to meet international labour standards and supply Fynsa with flowers for M&S, thereby helping to ensure the continued use and protection of the natural flora versus conversion to other agricultural uses.

Despite this emphasis, however, there is no guarantee of a positive outcome. NTFPs have not yet delivered their early promise. High per hectare values of forest fruits and other products that were demonstrated for various ecosystems, such as some Peruvian forests, for example, have not yet translated in the development of adequate markets that capture that value. Also, exploitation of NTFPs requires the same measure of restraint and planning that is required for timber in order that it remains sustainable. It has become clear that while commercialisation of NTFPs does not consistently contribute to poverty alleviation, it can form part of a broader development package. Factors determining outcomes of NTFPs development include the nature of government involvement, distribution of property rights, and the ability of local people to claim and enforce such rights, market transparency, and pressure on the resource<sup>68</sup>.

A particular challenge for the sustainable harvesting of many NTFPs is developing practical, sustainable harvesting guidelines for local collectors and to verify that these harvesting practices are in fact sustainable. One illustration involves the harvest of *Illipe* nuts in Southeast Asia. The host trees have highly variable production levels and in some years produce more than 10 times the volume in 'normal' years. Thus, determining and enforcing a sustainable harvest in a given year is fraught with uncertainty.

Recently, the FSC has developed standards for NTFP certification and has an NTFP Working Group that has conducted trial certification assessments. It is investigating models of community-based certification where a number of harvesters are certified as a group or where a resource manager is certified to oversee multiple harvesting operations. Despite this recent progress, FSC certification is probably still most appropriate for large-scale industrial NTFP operations, given the relatively high costs involved.

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<sup>68</sup> Information in this paragraph is taken from the Tropenbos website, [www.tropenbos.nl](http://www.tropenbos.nl).

A recent United Nations Environment Programme (UNEP) research report – ‘*Commercialization of non-timber forest products: factors influencing success*’<sup>69</sup> – explored why some NTFP initiatives succeed while others do not, examining 19 case studies in Mexico and Bolivia. The key findings were: (i) a lack of market knowledge and financial capability combined with poor infrastructure are the main constraints; (ii) specialised marketing holds good promise, but the associated certification costs could be prohibitive for small-scale producers; (iii) innovation both in resource management and product processing and marketing is often critical to maintaining market share; and (iv) entrepreneurs can play a key role in facilitating access to markets by providing information, skills and financial support.

**Box 9.** PhytoTrade Africa

PhytoTrade Africa is a non-profit trade association that promotes sustainable production and fair trade of natural products in southern Africa. It provides product development, marketing, technical advice, research and development and advocacy services for its members. Clients can be linked directly to source suppliers, quality control assurances, ecological product profiles, and receive help with import / export regulations and contracts. The association also provides a clearinghouse for research and development information on African natural products. Through its European office there is a strong emphasis on the development of close relationships with key players in the European market. PhytoTrade Africa focuses on no more than 10 different plant species at any one time for its product development work, and chooses those with the most evident and immediate potential for commercial applications helping members with trading relationships, maintaining a reliable supply of products and adhering to relevant quality standards. See [www.phytotradafrica.com/](http://www.phytotradafrica.com/) for further information.

The key recommendations for governments are that they should: (i) support the development of the NTFP sector by clearly stating which laws apply to NTFPs and when, and whom is responsible for implementing them; and (ii) encourage lending institutions to recognise the commercial potential of NTFP enterprises and facilitate credit provision for the rural poor and small-scale entrepreneurs.

Additional recommendations for interventions at the community level include: (i) targeting assistance to develop the business skills of rural communities to help them avoid exploitation by others; (ii) building the capacity of potential entrepreneurs and assisting socially-responsible entrepreneurs, and (iii) providing technical know-how and organisational skills to improve sustainable resource management and harvesting, domestication (where appropriate) and product processing (see [Box 9](#) for an example of a successful assistance initiative).

***NTFPs – gaps and business investment opportunities***

During the interviews several general themes emerged regarding the type of support required to promote businesses linked to sustainable use of NTFPs:

1. Strengthen the business skills of NTFP suppliers, their local organisations and entrepreneurs, while at the same time assisting external buyers to understand and work effectively with local suppliers and their organisations.
2. Support NTFP producers to overcome regulatory, research and development, and other hurdles to register new products and enter new markets, both in export and domestic markets.
3. Provide training and technical assistance for producers / SMEs in product development, quality control, export marketing and supply chain / chain of custody / traceability management.

<sup>69</sup> Schreckenber, K., Marshall, E., Newton, A., Rushton, J. and te Velde, D.W. 2005. *Commercialization of Non-Timber Forest Products: Factors Influencing Success. Methodological Procedures*. Project R7925/ZF0137 funded by the Forestry Research Programme of the UK Department for International Development (November 2000 – November 2005) (available from: [quin.unep-wcmc.org/forest/ntfp/cd/10\\_Data\\_collection\\_tools/a\\_Methodological\\_procedures.pdf](http://quin.unep-wcmc.org/forest/ntfp/cd/10_Data_collection_tools/a_Methodological_procedures.pdf)).

4. Improve knowledge and practice regarding the establishment of environmental standards, and monitoring and evaluating the ecological sustainability of NTFP production; this could include support for domestication of some species, where appropriate.
5. Support independent certification of NTFP sustainability and the associated market differentiation, as well as more equitable models for benefit sharing and / or price premiums for community level suppliers.

Some specific business opportunities linked to NTFPs include:

1. Invest in a portfolio of NTFP enterprises, either in a small number of high potential product markets, or a broader ‘market basket’ of products, that promote best management practices regarding sustainable harvesting and support for local communities. This approach may conserve biodiversity more effectively if it were focused in certain regions and priority landscapes, as part of support for a range of biodiversity-friendly enterprises.
2. Invest in existing SME funds that support NTFP businesses, with equity and / or debt financing; alternatively, create new funds that can focus on NTFP enterprises, particularly in regions with market and conservation potential that are currently not covered by existing funds, such as parts of Africa and Asia.
3. Support the broader adoption of NTFP certification, the development of lower-cost systems, and research to measure the impacts of NTFP harvesting at both the individual product / species and the habitat / landscape level.

#### 4.2.4 Fisheries and aquaculture<sup>70</sup>

##### 4.2.4 Indirect Supply: Fisheries and Aquaculture – Summary

- 75% of commercially-important marine and most inland water fish stocks are currently either over-fished or are being fished at their biological limit: aquaculture is growing very rapidly, particularly in Asia, and is increasingly viewed as a potential solution, albeit one that comes with its own set of environmental issues
- There are a several certification schemes that are being developed to promote sustainable capture fishery and aquaculture: while these various schemes and initiatives are promising, only a fraction of the world’s capture fisheries and aquaculture operations currently use environmentally-friendly practices
- There is a need to expand sustainable fisheries certification, such as schemes promoted by the MSC and the Aquaculture Certification Council, in general and particularly in developing countries where certification is currently very limited
- A related opportunity is to invest in certified sustainable fishing and aquaculture enterprises; this concept could be combined with support to expand the operations of sustainable management programs to a range of marine and aquatic species and ecosystems as few marine and aquatic species are currently included in certification schemes
- One promising and innovative approach is to promote marine and aquatic PAs or Limited Use Zones: it may be possible to apply the concepts of payments for ecosystem services and / or biodiversity offsets to such areas where they make a significant contribution to fisheries productivity and ecotourism revenue or compensate for damage elsewhere

<sup>70</sup> Much of the information on aquaculture in this paper comes from WRI’s fact sheet on the aquaculture boom (*Farming Fish: the Aquaculture Boom*); the specific references in the fact sheet have been cited. The fact sheet is available from [www.mindfully.org/Food/WRI-Aquaculture-Boom.htm](http://www.mindfully.org/Food/WRI-Aquaculture-Boom.htm).

### ***What are sustainable fisheries?***

The principles of the Marine Stewardship Council<sup>71</sup> (MSC) recognise that sustainable fisheries should be based upon: (i) the maintenance and re-establishment of healthy populations of targeted species; (ii) the maintenance of ecosystem integrity; (iii) the development and maintenance of effective fisheries management systems, taking into account all relevant biological, technological, economic, social, environmental and commercial aspects; and (iv) compliance with relevant local and national laws, standards and international understandings and agreements.

As demand for fish and other marine and aquatic species continues to increase, and the commercial fishing industry goes to ever greater lengths to access new resources, there is a growing consensus that the world's marine and aquatic ecosystems are under mounting threat and many of the world's fisheries are in a state of serious decline. Various policy and management interventions have been proposed to improve the sustainability of capture fisheries. In addition, aquaculture is increasingly viewed as a potential solution, albeit one that comes with its own set of environmental issues.

### ***Fisheries and aquaculture – status and trends***

The World Resources Institute (WRI)<sup>72</sup> provides the following statistics:

- 75% of commercially important marine and most inland water fish stocks are currently either over-fished or are being fished at their biological limit.
- 1 billion people – mainly in developing countries – depend upon fish as their primary source of animal protein, and an estimated 35 million people are involved, either full- or part-time, in fishing and aquaculture.
- The global fish catch for 2000 was valued at US\$81 billion, while the international fish trade was worth US\$55 billion.
- Over the last thirty years, demand for seafood products has doubled and is anticipated to grow at 1.5 percent per year through 2020.

The FAO<sup>73</sup> further states:

- 52% of fish stocks are fully exploited, 24% are over exploited, depleted or recovering from depletion, 21% are moderately exploited, and only 3% of the world's fish stocks are underexploited.
- Human consumption of fish increased to 100.7 million tonnes in 2002, up from 93.6 million tonnes in 1998; the diets of 2.6 billion people depend on fish as a source of animal protein.
- 200 million people worldwide earn all or part of their income from fishing and related activities.

The WWF's Global Marine Programme<sup>74</sup> lists the following threats to sustainable fishery operations:

- Technological advances that have made large-scale fishing more efficient and far reaching.
- Subsidies that support commercial fishing, keeping too many boats on the water.
- Unfair and poorly enforced fisheries partnership agreements that allow foreign fleets to over fish in the waters of developing countries.
- Illegal fishing operators that don't respect fishing laws or agreements
- Large unintentional 'by-catch' of juvenile fish and other non-commercial species.
- Destructive fishing practices, such as bottom trawling and the use of poisons or explosives.

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<sup>71</sup> [www.msc.org/assets/docs/fishery\\_certification/MSCPrinciples&Criteria.doc](http://www.msc.org/assets/docs/fishery_certification/MSCPrinciples&Criteria.doc).

<sup>72</sup> WRI. 2004. *Fishing for Answers: Making sense of the global fish crisis*, p. vii (available from [pubs.wri.org/fishingforanswers-pub-3866.html](http://pubs.wri.org/fishingforanswers-pub-3866.html)).

<sup>73</sup> FAO. 2004. *The State of World Fisheries and Aquaculture* (available from [www.fao.org/sof/sofia/index\\_en.htm](http://www.fao.org/sof/sofia/index_en.htm)).

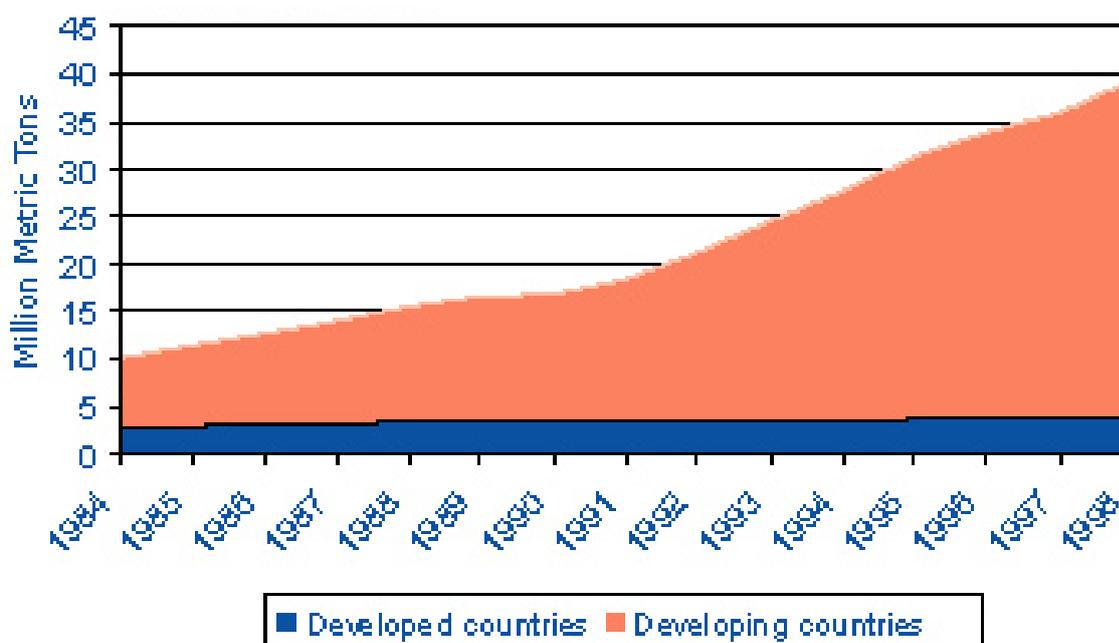
<sup>74</sup> [www.panda.org/about\\_wwf/what\\_we\\_do/marine/problems/problems\\_fishing/boats/index.cfm](http://www.panda.org/about_wwf/what_we_do/marine/problems/problems_fishing/boats/index.cfm).

- Lack of sound fisheries conservation and management policies, practices and enforcement.

Aquaculture (both marine and freshwater) is a large and growing international industry. Aquaculture products fall into two distinct groups: high-valued species, such as shrimp and salmon, that are frequently grown for export, and lower-valued species, such as carp and tilapia, that are primarily consumed locally. Whereas shrimp and salmon require relatively high-cost facilities and the use of fishmeal, carp and tilapia can be raised on low-cost, readily available vegetable-based feed, typically as a supplementary activity to regular crop agriculture. Aquaculture continues to be the world's fastest growing food production sector, exhibiting an overall annual growth rate of over 11.0 percent since 1984, compared with 3.1 percent for terrestrial farm animal meat production, and 0.8 percent for production from capture fisheries. By economic country grouping, approximately 90% of total world aquaculture production in 1998 was produced within developing countries (see [Figure 8](#)), particularly within Low-Income Food Deficit Countries where aquaculture production has been growing over five times faster than within developed countries<sup>75</sup>.

By region, Asia produced over 90% of total global aquaculture production by weight in 1998. Production in China represented 69 of the total global aquaculture production amounting to 27.1 million tonnes in 1998. Apart from China, the world's top ten aquaculture producing nations were found in Asia in 1998. These ten countries represent 89% of total global aquaculture production by weight.

**Figure 8.** Aquaculture production in developed and developing countries 1984-1998<sup>76</sup>



<sup>75</sup> FAO's Aquaculture and Inland Fisheries Statistics; FishStat Plus Version 2.3 (available at [www.fao.org/fi/statist/FISOFT/FISHPLUS.asp](http://www.fao.org/fi/statist/FISOFT/FISHPLUS.asp)).

<sup>76</sup> *Ibid.*

While aquaculture is increasing rapidly, there are constraints to its future growth, notably limitations regarding land and water, the negative environmental impacts of intensive, large-scale production systems and concerns regarding its efficiency. In China, for example, the concern over loss of arable land has led to restrictions on any further conversion of farmland to aquaculture ponds. In Thailand, water diversion for shrimp ponds has lowered groundwater levels noticeably in some coastal areas and caused saltwater intrusion in others. In just 6 years, from 1987 to 1993, the country lost more than 17% of its mangrove forests to shrimp ponds. Moreover, in several developing countries, such as Ecuador,

**Box 10.** The Marine Stewardship Council and certification

The Marine Stewardship Council (MSC) is addressing the decline of fish stocks, safeguarding livelihoods and delivering improvements in marine conservation worldwide through the certification of fisheries. As of March 2005, there were 12 certified fisheries, 17 fisheries in full assessment and over 40 fisheries engaged in the MSC Programme, representing over 3 million tons (2.72 million tonnes) of seafood. There are currently 223 seafood products bearing the MSC eco-label in 24 countries and 192 businesses backing the MSC certification program. Although the majority of fisheries certified by MSC to date are located in developed countries, in 2004, the Mexican Baja California Spiny Lobster Fishery was successfully certified and MSC is currently exploring the possibility of certifying further fisheries in several developing countries, including Papua New Guinea, Uganda, the Bahamas and Vietnam.

*Marine Stewardship Council. 2005 ([www.msc.org](http://www.msc.org))*

Thailand, and Bangladesh, pollution and disease problems within shrimp and fishponds have also led to the complete collapse of aquaculture production in some areas. Some aquaculture production puts more pressure on ocean fish stocks, as most carnivorous species depend on fishmeal; 10 to 15% of all fishmeal goes to aquaculture feeds. It takes roughly 2 kilograms of fishmeal to produce a kilogram of farmed fish or shrimp, resulting in a net loss of fish protein<sup>77</sup>. Others point to the role of aquaculture in the spread of invasive alien species, a major cause of biodiversity loss<sup>78</sup>.

***Fisheries and aquaculture – what is working / not working***

Efforts to promote improved capture fishery and aquaculture practices include:

- The development and growth of certification systems for sustainable fisheries, notably the MSC (see [Box 10](#)) and organic and eco-labelling certification for aquaculture systems.
- Campaigns by conservation organisations and others to promote dolphin- and turtle-friendly fishing, notably with reference to the tuna fishing industry, and the associated monitoring and evaluation activities (see [Box 11](#) for information on WWF's ForTuna Initiative).
- The establishment of protected marine conservation areas linked not only to the protection of critical and sensitive marine and coastal ecosystems, but also the maintenance of fish and other marine creature breeding grounds and stocks of commercial species.

<sup>77</sup> Holmes, B. 1996. Blue Revolutionaries, *New Scientist* (December 7, 1996), p. 34.

<sup>78</sup> Hewitt, Chad L., Campbell M. L. and Gollasch, S. 2006. *Review and evaluation of global, regional and national codes and regulations for the management of alien species in aquaculture systems*, Report to the World Conservation Union (June 2006).

- The development and promotion of improved fish and shrimp farming techniques, that avoid the conversion of sensitive habitat – notably mangroves – reduce pollution and the spread of diseases and parasites to wild populations, and the risk of escaped farmed fish breeding with wild species and altering their genetic makeup.
- Progress in aquaculture production techniques; for example, Chinese researchers are developing a yeast-based protein supplement that can substitute for over half the fishmeal in aquaculture feed preparations<sup>79</sup>.
- Organisations, such as International Marinelife Alliance ([www.marine.org](http://www.marine.org)) and the Marine Aquarium Council ([www.aquariumcouncil.org](http://www.aquariumcouncil.org)), are raising awareness of the use of destructive practices (e.g. cyanide and explosives) in the marine aquarium and live fish trade, and promoting alternative, environmentally-friendly practices.
- The IFC's Program for Eastern Indonesia Small and Medium Enterprise Assistance (PENSA) Sustainable Supply Chain Linkage Program for South East Asia is supporting the development of the Marine Aquarium Market Transformative Initiative (MAMTI). MAMTI is a Global Environment Fund (GEF) supported initiative to develop an environmentally sustainable ornamental fish industry. A key aspect of PENSA is its support for value chain analysis, which investigates how incentives can be created for upstream suppliers in a sustainable supply chain. MAMTI also seeks to strengthen the business capacity of the targeted local marine aquarium fish players and to increase their access to markets, information and finance<sup>80</sup>.
- The Monterey Bay Aquarium has launched a Seafood Watch campaign to inform consumers about sustainable capture fishery and aquaculture practices, using a simple colour coding system (green – best, yellow – good, and red – avoid).
- Sixteen countries have adopted individual transferable quotas (ITQs) for capture fisheries, including New Zealand, which has had these systems in place since 1986. Experience to-date suggests that appropriately designed ITQs can help to prevent over fishing, restore stocks to sustainable levels and increase profitability.<sup>81</sup>

**Box 11. ForTuna**

WWF and TRAFFIC created ForTuna in 2004 to create change in the management of global tuna populations. Demand for tuna is increasing dramatically and as a consequence entire marine ecosystems are being impacted as these top-of-the-food-chain predators are rapidly depleted and other species, such as dolphins, turtles, sharks, rays and albatrosses are unintentionally killed by fishing nets and long-lines. Most industrialised tuna fleets fish in distant foreign waters courtesy of fisheries partnership agreements, mainly with developing countries. Alongside ecosystem impacts, the industrialised fleets often impact the activities of local fishermen. ForTuna focuses on established ecosystem-based management, research and the development of improved mitigation measures in tuna fisheries to support the restoration and maintenance of healthy open-sea ecosystems and to reduce by-catch. ForTuna also works closely with the six regional tuna fisheries management organisations to promote sustainable fishing levels

*WWF Global Marine Programme*  
[assets.panda.org/downloads/fortuna.pdf](http://assets.panda.org/downloads/fortuna.pdf)

While all these developments are promising, only a fraction of the world's capture fisheries and aquaculture operations currently use environmentally friendly practices. Furthermore, as only whole fisheries can currently be certified under MSC rules, individual operators that adopt improved practices may incur higher costs than their competitors, without any credible marketing advantage.

<sup>79</sup> Folke, C. and Kautsky, N. 1992. Aquaculture with Its Environment: Prospects for Sustainability, *Ocean and Coastal Management*, Vol. 17, No. 1 (1992), pp. 5-24.

<sup>80</sup> [www.ifc.org/ifcext/pensa.nsf/Content/MOF\\_PHIL\\_SSCL](http://www.ifc.org/ifcext/pensa.nsf/Content/MOF_PHIL_SSCL).

<sup>81</sup> Stavins, R. N. 2003. Taking Fish to Market: Why not trade fishing rights the way business trades pollution credits? *Forbes*, April 28, 2003.

Several biodiversity fund managers interviewed for this review cited recent investments in sustainable fisheries and aquaculture: TNC's EcoEnterprises Fund has invested in a certified organic farm in Brazil, a saltwater shrimp farming enterprise in Ecuador and invested in a company exporting scallops farmed immediately outside the Reserva de la Biosfera El Vizcaino in Baja California, the largest biosphere reserve in Mexico. EF has provided loan financing to support the operations of MSC-certified spiny lobster fishermen, also located in the same area in Baja California.

### *Fisheries and aquaculture – gaps and business investment opportunities*

1. Promote marine and aquatic PAs (or limited use zones) linked to the sustainable management of capture fisheries in priority marine ecosystems. This concept could be tied to the concept of ITQs or compensation for marine / aquatic degradation caused by extractive industries. In addition, it may be possible to apply the concept of payments for ecosystem services to marine PAs, where they make a significant contribution to fisheries productivity (e.g. mangrove forests and coral reefs which act as 'fish nurseries') and / or ecotourism.
2. Expand sustainable fisheries certification, such as schemes promoted by MSC and the Aquaculture Certification Council ([www.aquaculturecertification.org](http://www.aquaculturecertification.org)), to developing countries. Support for such certification might be a necessary precursor to the following idea.
3. Invest in certified sustainable fishing and aquaculture enterprises, particularly in developing countries where these technologies are currently underutilised. This concept could be combined with support to expand the operations of sustainable management programs to a range of marine and aquatic species and ecosystems (currently few marine and aquatic species are included in certification schemes).

#### **4.2.5 Biocarbon**

#### 4.2.5 Indirect Supply: Biocarbon – Summary

- While forestry and agricultural projects can sell carbon credits through the Clean Development Mechanism of the Kyoto Protocol, few transactions have been approved to date. There is little focus on biodiversity benefits under such schemes which tend to involve mono-species plantations: most activity linking carbon to biodiversity has taken place within the growing voluntary market, as corporations seek to offset their emissions and meet internal reduction targets

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- Biocarbon is not sequestered indefinitely and is subject to greater risks and uncertainties, compared to renewable energy initiatives for example. Hence biocarbon producers are typically unable to sell carbon credits at the prevailing market price but must instead accept lower prices negotiated on a bilateral basis (around US\$5 / tonne)

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- In addition to using afforestation and reforestation as carbon sinks, as permitted under the Kyoto Protocol, there are increasing calls for nations to be compensated for conserving standing forests. At present, this activity is not eligible for credits through the Clean Development Mechanism but a coalition of developing nations is calling for this policy to be changed

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- A key question is whether there would be significant numbers of buyers willing to pay a premium price for carbon sequestration that conserves biodiversity: a related challenge is to demonstrate the biodiversity benefits of such initiatives and to develop associated indicators and measurement protocols that are feasible for the private sector

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- There is a need for further experimentation within the voluntary carbon market and support for initiatives that bundle payments for a range of environmental goods and services including carbon as well as other benefits

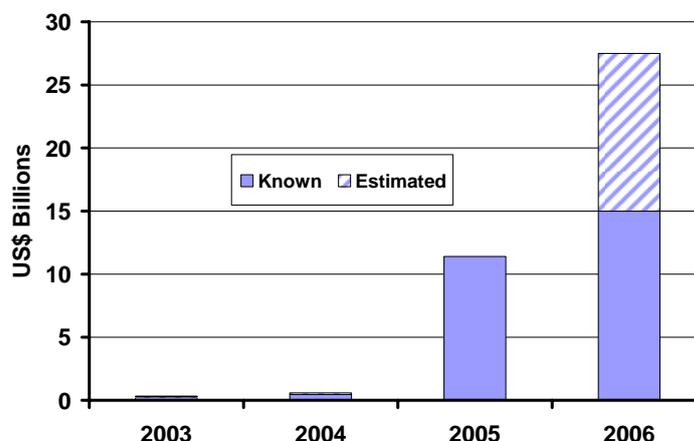
## What is biocarbon?

Growing awareness of the risks of climate change has propelled national and local governments, companies and NGOs to take action to manage greenhouse gas (GHG) emissions, including the introduction of tradable quotas or ‘caps’. At an international level, the main instruments driving the market in GHG emissions are the Kyoto Protocol of the United Nations Framework Convention on Climate Change, which has been ratified to date by 163 countries, and the Emissions

Trading Scheme of the European Union. The recent rapid growth of the global carbon market is summarised in [Figure 9](#) (note that trading prior to 2003 did not exceed US\$100 million in total)<sup>82</sup>.

Under the Kyoto Protocol, emission targets agreed by Parties for the first commitment period (from 2008 to 2012) amount to a total cut in GHG emissions of at least 5 percent compared to 1990 levels. Parties can elect to meet their individual targets through various activities including ‘land use, land use change and forestry’ (LULUCF). The latter includes various forms of forest management, cropland management, grazing land management and re-vegetation, which are thought to ‘sequester’ carbon in biomass and thereby offset emissions from the use of fossil fuels or other sources. LULUCF activities are of critical importance to many economies in transition and developing countries, and their agricultural and forestry sectors can benefit from carbon finance flows.

**Figure 9.** Growth of the global carbon market (value of carbon contracts, in billion US\$)<sup>82</sup>



*“Significant potential lies in the fact that many ‘natural’ forests and certain other ecosystems are both major stores of carbon and areas of valuable biodiversity. Thus, any attempt at conserving these areas has the potential to yield both carbon and biodiversity benefits”.*

Koziell, I. and Swingland, I.R. 2002. Collateral biodiversity benefits associated with ‘free-market’ approaches to sustainable land use and forestry activities. *Philosophical Transactions: Biological Sciences (Royal Society of London)*, v. 360: 1807-1816

Most LULUCF activities are not designed with biodiversity conservation in mind. For example, the establishment of fast-growing forest plantations using mono-crops or exotic species may sequester carbon effectively but it will do little to conserve and may even damage biodiversity. That is not to say that the emergence of a global carbon market does not provide a potentially new and complementary opportunity for financing biodiversity. Carbon sequestration and biodiversity goals can be achieved together, depending upon the type of projects that are undertaken, e.g. restoration of degraded habitat though assisted natural regeneration using native species would meet both goals. Recent work in Madagascar has explored the use of carbon credits to finance rainforest conservation. Through the replanting of 3,000 hectares of tropical rain forest, ‘green corridors’ of indigenous tree species will be used to link habitat fragmented by human activities such as slash and burn farming.

<sup>82</sup> Natsource ([www.natsource.com](http://www.natsource.com)); IETA – International Emissions Trading Association ([www.ieta.org](http://www.ieta.org)); Franck Lecocq, Franck and Karan Capoor. 2005. *State and Trends of the Carbon Market 2005*, (May), 39 pp; Point Carbon. 2006. *Carbon 2006*, Hasselknippe, H. and K. Røine (eds.), 60 pp.

<sup>83</sup> The global carbon market is growing rapidly and is currently dominated by trading under the European Emissions Trading Scheme, which accounts for about two-thirds of total traded volume. During the first six months of 2006 the equivalent of 684 million tonnes of carbon dioxide (CO<sub>2</sub>e) was transacted globally, worth Euro 12 billion (US\$15 billion). This is more than five times the volume traded during the same period in the previous year. The value of the market is forecast to reach Euro 22 billion in 2006 ([www.environmental-finance.com/online/news/1008pcb.htm](http://www.environmental-finance.com/online/news/1008pcb.htm)).

Carbon sequestered by these activities will be offered as credits on the voluntary market, with each hectare expected to generate 230 tonnes of carbon credit ([www.alertnet.org/](http://www.alertnet.org/)).

The idea behind ‘biocarbon’ is simple – it is premised on being able to use carbon finance to stimulate projects with higher biodiversity value, by embedding in the price paid for sequestered carbon a premium for biodiversity. The payment is contingent upon verification that the biological sequestration has taken place, and that the biodiversity benefit has either happened or is likely to materialise in the future. However, because biodiversity enhancements take time, it may not be possible to synchronise monitoring of the two types of benefits. This is where the inherent difficulty lies – demonstrating that the biodiversity benefit has actually taken place, over and beyond what would have happened anyway, and within a timeframe where the additional benefit is measurable.

### ***Biocarbon – who are the key players?***

Most of the activity linking carbon to biodiversity has taken place within the corporate sector seeking voluntary agreements with NGOs, notably through projects in developing countries, as a means of offsetting their own emissions and contributing to internal emission reduction targets. Recent commitments by HSBC and Wal-Mart to going ‘carbon-neutral’ are examples of the direction in which more and more companies are moving.

Other examples are shown in [Box 12](#). Carbon brokers such as CO2e ([www.co2e.com](http://www.co2e.com)), EcoSecurities ([www.ecosecurities.com](http://www.ecosecurities.com)) and Natsource ([www.natsource.com](http://www.natsource.com)) are also becoming increasingly prominent as trading via GHG-related exchanges such as the Chicago Climate Exchange ([www.chicagoclimatex.com](http://www.chicagoclimatex.com)) and Greenhouse Gas Exchange ([www.ghgx.org](http://www.ghgx.org)) continues to increase.

The World Bank has pioneered a number of carbon funds that seek to provide benefits to local communities, in the case of the Community Development Carbon Fund, or to the natural environment, as in the case of the BioCarbon Fund (BioCF). The BioCF’s current support is limited to LULUCF activities approved under the Clean Development Mechanism (CDM), e.g. forest restoration, forest management, revegetation, avoided deforestation, and conservation agriculture<sup>84</sup>. Moreover, the exclusion of forestry projects in the European Union’s (EU) Emission Trading Scheme (ETS) means that no installation in the EU can use such instruments to discharge its legal obligation to reduce greenhouse gas emissions. Note also that biocarbon is not sequestered indefinitely and is subject to greater risks and uncertainties, compared to renewable energy initiatives for example. Hence biocarbon producers are typically unable to sell carbon credits at the prevailing market price but must instead accept lower prices negotiated on a bilateral basis (around US\$5 / tonne)

In addition to using reforestation and afforestation to sequester carbon, there are increasing calls for nations to be compensated for conserving standing forests that might otherwise be logged, burned and / or cleared for agriculture. In principle, this would not only reduce carbon emissions (land use change is estimated to account for as much as one-quarter of anthropogenic emissions) but would also generate additional finance for the conservation of natural forests and the biodiversity they contain. Avoided deforestation is not currently creditable under the rules of the CDM. However, in many forested rural areas of developing countries, the main options for economic growth often require the disturbance or destruction of natural forests – either clearing for agricultural production (e.g. soy, palm oil, coffee, tea, sugar, rice) or through the sale of wood products.

The Coalition of Rainforest Nations<sup>85</sup> aims to establish credible models for avoiding emissions by conserving forests, using a combination of income streams derived from carbon markets, selective

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<sup>84</sup> Future activities of the BioCF may include investment in activities that are not currently creditable under the rules of the Kyoto Protocol, due to restrictions imposed on LULUCF projects.

<sup>85</sup> Coalition nations presently include: Bolivia, Central African Republic, Chile, Congo, Costa Rica, DR Congo, Dominican Republic, Fiji, Gabon, Guatemala, Nicaragua, Solomon Islands, Panama, Papua New Guinea, and Vanuatu.

logging, eco-friendly ‘cash crop’ cultivation, biodiversity purchase and leases, community-based venture creation etc. Focusing specifically on the value of carbon sequestration, and assuming an average price of US\$20 per tonne of CO<sub>2</sub>, the combined forests of ten of the largest coalition nations could be worth as much as US\$1.1 trillion. In addition, these forests provide many other, less easily measured but no less valuable services such as fisheries protection, biodiversity preservation, erosion and flood control, recreation and tourism value, harvest of renewable products, and water supply.

### *Biocarbon – gaps and opportunities*

One significant need is to strengthen the links between biodiversity indicators and carbon metrics and standards. The Climate, Community and Biodiversity Alliance (CCBA) ([www.climate-standards.org](http://www.climate-standards.org)) is developing standards for evaluating land-based carbon projects. The CCB Standards aim to identify land-based climate change mitigation projects that simultaneously generate climate, biodiversity and sustainable-development benefits (see [Box 12](#)).

Generating biodiversity benefits through carbon sequestration may impose a heavy cost burden and it is not obvious that project developers will accept such costs without strong incentives to do so. In a voluntary scheme, there is heavy reliance on demand from the purchasers of carbon credits to deliver additional biodiversity benefits.

#### **Box 12.** The CCB Standards

The Climate, Community and Biodiversity Project Design Standards comprise fifteen required criteria and eight optional “point-scoring” criteria. Once a project has been designed, a third-party evaluator uses standard indicators to determine which criteria are satisfied. Only projects that use best practices and deliver significant climate, community and biodiversity benefits will earn CCB approval. Silver or Gold status is awarded to exceptionally designed projects that go beyond the basic requirements (i.e. projects that use primarily native species, enhance water and soil resources, build community capacity, and adapt to climate change and climate variability or deliver net positive biodiversity impacts).

The measurement of biodiversity benefits remains a challenge to academic, scientific and conservation communities. It is even more difficult to develop biodiversity indicators that are suitable for business, given the short timeframes and decision-making processes they work with. Unless metrics are established that are easily understood, easily implemented, cost-effective, avoid potential liability etc., it will be difficult for organisations piloting new biocarbon approaches to demonstrate their worth.

Perhaps the key barrier relates to whether there would be sufficient buyers willing to pay a premium price for carbon with biodiversity conservation. What we are seeing in the market place is not necessarily an indication of this, although a number of projects are indirectly benefiting biodiversity through the production of carbon credits (see [Box 13](#)).

There is often a trade-off between carbon and biodiversity benefits from the same piece of real estate. A carbon-only deal might focus on fast-growing eucalyptus or pine in a monoculture plantation, whereas a biodiversity weighted project would focus on such aspects as species richness, genetic variability and ecosystem resilience which would fall outside the scope of a carbon deal. This is why experimentation needs to take place within the voluntary framework.

Moreover, opportunities may exist within the voluntary framework for ‘banking’ the biodiversity benefits of forestry assets<sup>86</sup>. Many forestry operations contain valuable habitat (such as wetlands) or provide ecosystem services (such as watershed protection) that are not currently valued or

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<sup>86</sup> Forest Trends’ Business Development Facility is one example of attempts to bundle ecosystem services with timber production ([www.forest-trends.org/programs/bdf.htm](http://www.forest-trends.org/programs/bdf.htm)). The facility provides technical assistance to forest operators in assessing, identifying and developing complementary opportunities for non-timber revenue streams to maximise the value of forest operations, including carbon sequestration, watershed mitigation and biodiversity conservation.

compensated. Might it be possible to ‘un-bundle’ the biodiversity benefits from a forestry asset, to bank these under some form of voluntary register and then find buyers for such assets? The key challenge of course is to find buyers that are willing to pay for biodiversity benefits.

**Box 13.** Voluntary biocarbon initiatives

BP, American Electric Power and other companies, in partnership with The Nature Conservancy, invested approximately US\$10 million in a project to preserve 600,000 ha of Bolivian rainforest, motivated in large part by potential carbon savings. Similarly, Shell Canada is seeking to offset carbon emissions through a voluntary agreement to safeguard approximately 400,000 ha of Borneo’s rainforest. In doing so, this piece of rainforest real estate will be given national park status focusing on safeguarding an endangered population of orangutans. Both projects are anticipated to provide substantial GHG emission reductions by either avoiding, or reducing the rate of, deforestation.

In the US Mississippi River Delta, electric utilities have funded reforestation and permanent retirement of marginal agricultural lands, providing atmospheric benefits, improved water quality and enhanced wildlife habitat, including for the threatened Louisiana black bear.

Plan Vivo is a system for managing the supply of verifiable / quantified reductions in carbon emissions from rural community activities by which sustainable livelihoods are also promoted. Examples of acceptable activities include small-scale timber plantations, restoration of degraded forests, agroforestry and small-scale electricity generation using biomass). Managed by BioClimate Research and Development, there are currently four Plan Vivo projects: Scolel Te in Mexico (which has been selling carbon offsets since 1997); Women for Sustainable Development in Southern India (promoting climate change mitigation and rural development); Nhambita Community Project in Mozambique (aiming to enhance sustainable livelihood creation for the 10,000 local people living within the buffer zone of the Gorongosa National Park) and Trees for Global Benefit in Uganda (working with small-scale farmers on forestry and agroforestry). See [www.planvivo.org](http://www.planvivo.org) for further information.

#### 4.2.6 Payments for watershed protection

##### 4.2.6 Indirect Supply: Payments for Watershed Protection – Summary

- Payments for watershed protection are increasingly used in many countries, ranging from payments by private water users to environmental agencies and NGOs, to direct payments by central government to private landowners
- Finding a willing buyer for watershed protection services is often the main barrier to introducing such schemes or maintaining them over the long-term: the key is to identify downstream water users for whom payments are a more cost-effective option than water treatment, water demand management or the development of alternative water supplies
- Despite numerous examples around the world, it appears that the potential to finance conservation through payments for water services has scarcely been exploited
- Although technical assistance to design and evaluate watershed payment schemes is increasingly available, the more significant funding needed to purchase watershed protection services from private landowners is scarce, particularly in developing countries
- Another option is to scale up existing efforts to create watershed protection funds where the private sector is financing protection

### ***What is watershed protection?***

Demand for fresh water is growing, for hydroelectric power generation, irrigated agriculture, and industrial, domestic and recreational uses. In some countries, water resource managers have discovered that conserving natural forests in watersheds and reducing pollutant loads in runoff from upland areas can be a cost-effective means of providing reliable supplies of clean water.

The conventional policy response is to impose restrictions on the use of upland areas in sensitive watersheds. However, this may not be feasible where land is privately owned, where land users resist punitive measures or where demand for land is increasing. An increasingly popular alternative is to create positive incentives for forestry, soil and water conservation and other forms of watershed protection on private lands. Additional benefits of such schemes include the conservation or restoration of native vegetation and wildlife habitat on private land, as well as reductions in pollution of freshwater habitat. Some proponents claim that these PES schemes can also help to secure the land use rights of marginalised communities in upper watersheds, providing important social benefits as well as a new source of income. Payments for watershed protection have been applied in a variety of countries, and range from payments by private water users to environmental agencies and conservation NGOs, to direct payments by central government to private landowners (see [Box 14](#)).

### ***Payments for watershed protection – status and trends***

Schemes to create economic incentives for watershed protection have been, or are being, developed in several Latin American countries<sup>87</sup>. There are comparable initiatives in Asia (e.g. Rewarding Upland Poor for Environmental Services – RUPES)<sup>88</sup> but relatively little experience of payments for watershed protection in Africa (although a World Bank initiative in Kenya with the Nairobi Water Authority is one example). In most developing countries, such initiatives have been supported by grants, loans and technical assistance from environment and development agencies including the GEF, the World Bank, bilateral development agencies and private foundations, as well as several NGOs (e.g. Forest Trends, International Institute for Environment and Development (IIED), WWF). In developed countries, the key players tend to be domestic government agencies and environmental NGOs. In a few cases industry has played a leading role as the main beneficiary and buyer of watershed protection services (e.g. Perrier-Vittel in France, Coca-Cola in Malawi)<sup>89</sup>.

### ***Payments for watershed protection – gaps and business investment opportunities***

Finding a willing buyer for watershed protection services is often the main barrier to introducing such schemes or maintaining them over the long-term. The key is to identify downstream water users for whom payments are a more cost-effective option than water treatment, water demand management or the development of alternative water supplies. In general, experience suggests that payments for watershed protection are most appropriate when:

- Buying the resource outright is too expensive (and unnecessary).
- Payments are less expensive than alternative technical fixes (e.g. infrastructure).
- Provision of the desired service is verifiable and enforceable.
- Transaction costs are not prohibitive.
- Someone is willing to pay the price<sup>90</sup>.

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<sup>87</sup> Verweij, P. 2003. “Payments for forest hydrological services in Latin America: trends and perspectives” Presentation to the *Congress on Globalisation, localisation and tropical forest management in the 21st century*, 22-23 October 2003, Roeterseiland, Amsterdam, The Netherlands.

<sup>88</sup> [www.worldagroforestry.org/sea/Networks/RUPES/](http://www.worldagroforestry.org/sea/Networks/RUPES/).

<sup>89</sup> [www.weforum.org/pdf/Initiatives/WI\\_Summary.pdf](http://www.weforum.org/pdf/Initiatives/WI_Summary.pdf); [www.forest-trends.org/documents/publications/casesWSofF.pdf](http://www.forest-trends.org/documents/publications/casesWSofF.pdf); [www2.coca-cola.com/presscenter/nr\\_20060531\\_africa\\_watershed\\_program.html](http://www2.coca-cola.com/presscenter/nr_20060531_africa_watershed_program.html).

<sup>90</sup> Kousky, C. 2005. Choosing from the Policy Toolbox, [ecosystemmarketplace.net/](http://ecosystemmarketplace.net/) on 5.12.2005.

The potential of payment schemes for watershed protection to reduce poverty as well as secure water supplies remains uncertain. On the one hand, proponents argue that payments can increase rural incomes, diversify income sources, reinforce social networks and help develop new skills. On the other hand, sceptics point to various obstacles which may prevent poorer groups from benefiting from payments for watershed protection, including:

- Lack of secure property rights to land (i.e. you can't sell what you do not own).
- Large up-front costs to participation (barriers to entry and limited competition).
- Weak public capacity to implement incentives especially in poor countries (i.e. monitoring and enforcement costs, marketing, etc).

Despite numerous examples around the world (see for example [Box 14](#)), it appears that the potential to finance conservation through payments for water services has scarcely been exploited. Key requirements for scaling-up and spreading payments for watershed protection include:

- Better information on the impact of land use on hydrological services.
- Flexible institutional arrangements with low transaction costs.
- Payments that better reflect both the opportunity costs of alternative land uses and the willingness-to-pay of beneficiaries. Tendering systems can help to reduce over-payments.

The technical and financial challenges of payments for watershed protection are significant. On the other hand:

- The approach is widely applicable and increasingly relevant in many locations.
- There is significant potential to leverage co-funding from government and development agencies and, in certain locations, to transfer the scheme to local water users.
- Biodiversity benefits can be large, depending on the types of land uses that are supported by payments and their impacts on water supply.
- Contributions to poverty reduction can be substantial, due to the relatively low incomes of most upland farmers compared to downstream water users.
- Economic returns can be high, particularly where the

**Box 14.** Payments for watershed protection in Costa Rica<sup>91</sup>

Payments for watershed protection are provided under several initiatives in Costa Rica. At a national level, since 1997, the National Fund for Forest Financing (FONAFIFO) pays landowners and PAs for reforestation, forest management and forest conservation. Landowners involved in the scheme receive payments over 5 years for specified land use changes. Payments are set at slightly more than the opportunity cost of relatively low-value land uses such as pasture, about US\$35–40/ha/year for conserving forest, compared to US\$538/ha over five years for reforestation. At these prices, most landowners prefer to conserve existing forest, rather than undertake more expensive reforestation. Landowners are legally bound to honour their commitments under the scheme for 10-15 years *after* the payments cease. As of the end of 2001, about 4,500 contracts had been written covering over 250,000 ha, with pending applications for another 800,000 ha.

Funding for the scheme has come from various sources, including a fossil fuel tax, sales of carbon credits, a World Bank loan and a grant from the GEF. Some hydroelectric power utilities have made additional, voluntary contributions to finance conservation payments to farmers in watersheds that supply their reservoirs and turbines. As of 2001, contracts under negotiation with hydroelectric power companies were expected to generate about US\$500,000 per year for the FONAFIFO program. Related initiatives include a bilateral agreement between a private electricity producer, La Manguera S.A., and the NGO that owns the Peñas Blancas watershed, from which one of the firm's hydropower plants draws its water. In 1998, La Manguera agreed to pay the Monteverde Conservation League US\$10/ha/year to maintain the watershed under forest cover.

<sup>91</sup> Pagiola, S. 2002. "Paying for Water Services in Central America: Learning from Costa Rica" in Pagiola *et al.* (2002) *op cit*, pp. 37-62; Snider, A.G., Pattanayak, S.K., Sills, E.O., and Schuler, J.L. 2003. "Policy Innovations for Private Forest Management and Conservation in Costa Rica" *Journal of Forestry* (July/August): 18-23.

alternative to watershed protection is investment in costly water treatment or development of new water supplies.

- The approach is still relatively undeveloped, especially in Africa and Asia.

One option is to ‘kick start’ the demand for watershed protection services and help to overcome the initial high set-up and learning costs experienced by many schemes. Although technical assistance to design and evaluate watershed payment schemes is increasingly available and not very expensive, the more significant funding needed to purchase watershed protection services from private landowners remains scarce, particularly in the developing world. As seen in Costa Rica, and more recently in Mexico, the sums involved can be substantial<sup>92</sup>. The challenge is to develop working payment schemes that can be ‘sold’ to local buyers – i.e. situations where local water users can be persuaded to make long-term financial commitments once the approach has been shown to deliver real benefits.

Another option is to scale up existing efforts to create watershed protection funds where the private sector is financing the protection, such as the Water Fund being managed by WWF in Guatemala (see [Box 15](#)).

#### **Box 15. The Water Fund**

WWF, in collaboration with local partners, is developing a water fund to finance responsible watershed management in Guatemala’s Sierra de las Minas Biosphere. Under this initiative a range of water users – including bottling companies, distilleries, hydroelectric plants and paper processing mills – are making significant financial contributions towards environmental services in the region.

According to Carlos Morales, Freshwater Officer for WWF Central America, “This Fund will encourage short-term investments to optimise water use in the industries as a means of reducing effluents to the Motagua and Polochic Rivers, as well as the vulnerability of the soils. Investments will also encourage better management of watersheds and water recharge zones in the upper reaches of the watershed to ensure a permanent water supply”. Cooperative agreements have been signed with Coca Cola Bottling Company, the paper production plant, PAINSA, and the rum production plant Licorera Zacapaneca S.A. In the future, WWF intends to work with agro-industry and household users of freshwater.

### **4.3 Direct Supply of Biodiversity Benefits**

The preceding section described efforts to conserve biodiversity *indirectly*, by building businesses that generate biodiversity benefits as a ‘by-product’ or by promoting ecologically sustainable production practices in businesses that rely heavily on renewable resource inputs. In such cases, biodiversity is essentially ‘bundled’ with the final product, e.g. ‘green’ housing, organic food or fibre, or even biocarbon credits, rather than being a product in its own right.

This section focuses on efforts to establish financial incentives or build markets for biodiversity *directly*, where the ‘product’ or service is a more fundamental expression of biodiversity itself (i.e. the diversity of genes, species or ecosystems) or of proximate threats to biodiversity (e.g. the right to convert land or to extract resources).<sup>93</sup> Examples of this approach include:

- **Sales of species information**, including genetic material or bioactive compounds derived from wild plants and animals, as an input to various industries.
- **Biodiversity management services** such as biodiversity baseline assessments, ecological restoration or enhancement projects, preparing Biodiversity Action Plans (BAPs) etc.

<sup>92</sup> An average of US\$100 / ha / year over five years for a pilot programme targeting 100,000 ha would imply payments to land owners totaling US\$50 million, excluding programme administration costs.

<sup>93</sup> Direct approaches to market creation for biodiversity are similar to the creation of financial derivatives such as risk markets, where fundamental attributes of investment securities are separated as tradable commodities in their own right.

- **Recreational use of biodiversity**, including sport fishing and hunting and nature-based tourism (or ‘ecotourism’).
- **Markets for biodiversity offsets**, including wetland mitigation and conservation banking where legislation makes this possible, or where voluntary commitments by companies to reduce biodiversity loss are sufficient to generate entrepreneurial responses.

The potential for growth in these areas are summarised in [Table 2](#).

**Table 2.** Summary of direct ecosystem markets and potential for growth<sup>94</sup>

<b>ECOSYSTEM MARKET</b>	<b>CURRENT SIZE</b> (US\$ per annum)	<b>POTENTIAL SIZE – 2010</b> (US\$ per annum)	<b>POTENTIAL SIZE – 2050</b> (US\$ per annum)
<b>Bioprospecting</b>	\$17.5 – 30 million	\$35 million	>\$500 million
<b>Regulatory Driven Ecosystem Offsets</b> (including US Wetland Mitigation Banking)	\$200 million (just private for profit wetland and stream; \$1,000 million total (including in-lieu fee etc.) Unknown how many ecosystem offsets are driven by EIA regulation in developing countries	\$600 million (banks); \$1,500 million total	\$2,000 million (banks); \$3,000 million total
<b>Regulatory Driven Species Offsets</b> (including US Conservation Banking)	\$45 million in the US. Program just begun in Australia and possibly similar programme in France, size unknown	\$65 million	\$200 million
<b>Voluntary Conservation Payments and Biodiversity Offsets</b>	\$20 million (increased if money flowing through conservation organisations is included)	\$25 million	\$150 million – if corporations take to the concept
<b>Government Conservation Payments and Biodiversity Offsets</b>	\$3,000 million – just flora and fauna oriented programmes (not including water and soil conservation); in developing countries the government involvement may be through state electricity, water, road agencies	\$4,000 million	\$10,000 million
<b>Land Trusts, Conservation Easements</b> (and expenditure by NGOs for conservation)	\$6,000 million in US alone. Size and use of easements in developing countries is unclear	\$10,000 million	\$20,000 million

Often these approaches are combined and in some cases they may form part of a package with indirect mechanisms. Below we describe in more detail – drawing on the interviews and other material – some recent attempts to create markets for species information (‘bioprospecting’), the creation of economic incentives for conservation of private lands, the growth of biodiversity offsets and ‘banking’, management of biodiversity services, ecotourism and recreational hunting and fishing.

<sup>94</sup> Adapted from information supplied by Michael Jenkins (Forest Trends) (*Pers. Comm.*, 2006).

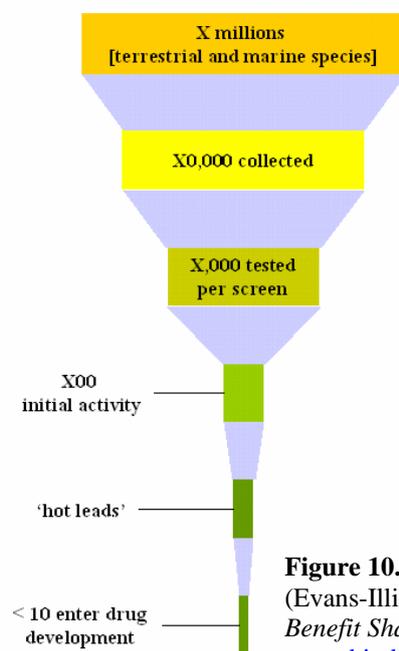
### 4.3.1 Bioprospecting

#### 4.3.1 Direct Supply: Bioprospecting – Summary

- There are few hard numbers regarding the size of the bioprospecting industry but growth to date has disappointed many advocates; one source suggests that the current market is worth US\$17.5 – 30 million, although by 2050 this could grow to over US\$500 million
- Because novel products do not originate only in biodiversity-rich areas, the presumed link between bioprospecting and biodiversity conservation is not as clear as it might first appear
- There is ongoing debate concerning the overlap of, and distinction between, bioprospecting and biopiracy. Agreement on how much regulation is needed remains elusive, although most stakeholders accept that common standards and credible assurance mechanisms would help ensure equitable benefit-sharing
- The development of high-throughput screening technologies may allow more efficient identification of useful natural products, enabling bioprospecting to compete more effectively with synthetic chemistry
- The socio-economic benefits of bioprospecting could be increased by supporting investments in rural communities that provide raw materials; domestication of plants / organisms that are susceptible to unsustainable levels of harvesting may help reduce potential adverse impacts on biodiversity but would of course reduce the potential value of *in situ* resources

#### What is bioprospecting?

Bioprospecting can be defined as “*the systematic search for genes, compounds, designs, and organisms that might have a potential economic use and might lead to a product development*”<sup>95</sup>.



Bioprospecting also encompasses the collection of indigenous knowledge as a means of discovering and exploiting genetic or biochemical resources.

Bioprospecting is relevant to a wide range of sectors and activities, including biotechnology, waste, agriculture, pharmaceutical and cosmetics industries, bioremediation, biomonitoring, agriculture, health, pulp and paper processing, biological mining and fuel production from biomass. There are however many steps between identifying a potentially-useful biological compound and marketing a commercial product; it is typically a long, expensive and uncertain process<sup>96</sup>. This is illustrated by Figure 10, which highlights the magnitude of sample sizes and research efforts required to produce drug development candidates.

**Figure 10.** The drug development process – from the many to the few (Evans-Illidge, E.A. and Murphy, P.T. (undated). *A New Approach to Benefit Sharing in Bioprospecting* [available from [www.biodiv.org/doc/case-studies/abs/cs-abs-au.pdf](http://www.biodiv.org/doc/case-studies/abs/cs-abs-au.pdf)].

<sup>95</sup> Tamayo, G., Guevara, L. and Gamez, R. 2004. Biodiversity Prospecting: The INBio Experience, Chapter 41 in: A T. Bull (ed). *Microbial Diversity and Bioprospecting*. Washington, DC, American Society for Microbiology. However, a recent United Nations University Institute of Advanced Studies (UNU-IAS) report, *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects* (p.7) recently noted that there is no agreed formal definition of bioprospecting

<sup>96</sup> United Nations University – Institute of Advanced Studies. 2005. *Bioprospecting in Antarctica*, 31 pp (available from [www.ias.unu.edu/binaries2/antarctic\\_bioprospecting.pdf](http://www.ias.unu.edu/binaries2/antarctic_bioprospecting.pdf)).

## ***Bioprospecting – status and trends***

International policies that address bioprospecting activities include the United Nations Convention on the Law of the Sea (UNCLOS) ([www.un.org/depts/los/index.htm](http://www.un.org/depts/los/index.htm)), the Convention on Biological Diversity (CBD), the World Intellectual Property Organization, the International Treaty on Plant Genetic Resources for Food and Agriculture ([www.fao.org/ag/cgrfa/itpgr.htm](http://www.fao.org/ag/cgrfa/itpgr.htm)) and a host of other measures and instruments<sup>97</sup>. Public authorities in several countries have also placed restrictions on the right to collect biochemical or genetic materials from naturally occurring organisms, on state land and elsewhere within their borders.

A variety of access fees, royalties and profit-sharing arrangements for bioprospecting have been employed in several countries. Some proportion of the payment is typically allocated to *in situ* conservation efforts.

There are few hard numbers on the size of the bioprospecting industry, but its growth to date has disappointed many of its advocates. Forest Trends suggests that the current market is in the range of US\$17.5 – 30 million, although they estimate that by 2050 this could increase to over US\$500 million. Some conservationists and tropical governments project the potential revenues as enormous, perhaps reaching hundreds of billions of dollars. Expectations of large revenue streams are often backed up by reference to Costa Rica's National Institute of Biodiversity (INBio – see [Box 16](#)), which received US\$1.1 million from the US pharmaceutical company Merck in exchange for a two year research and sampling contract. However, even this limited scale of investment has never been repeated.

Quantifying the contribution that genetic resources make to the global biotechnology industry is complicated by a number of factors, not least of which is the competitive nature of product development. However, the *potential* magnitude can be illustrated by some pertinent examples<sup>98</sup>:

- More than half of the 150 most-prescribed

*“Biological prospecting as a term means different things to different people. Some see it as nothing more than the extension of everyday research, others as a distinct type of research aimed exclusively at commercial products. Still others consider the term to be too emotive and tainted by its association with “biopiracy” to be of any value”*

UNU-IAS Report  
Bioprospecting in Antarctica, May 2005

### **Box 16. INBio**

A well-known deal that aimed to benefit both users and providers of biodiversity is the collaboration between Merck – an international pharmaceutical company – and the National Biodiversity Institute (INBio) of Costa Rica. Dating from the early 1990s, their agreement grants Merck access to natural material from which compounds are extracted and screened using various bioassays to see whether they have medically useful properties. Under the terms of the agreement, Merck supports the strengthening of INBio's capacity to carry out its work, as well promising a portion of the profits arising from any successful drug produced. INBio in turn provides a share of this funding to Costa Rica's PAs. INBio has negotiated similar agreements with a number of other companies, including Givaudan-Roure, Recombinant Bio-Catalysis, Bristol-Myers Squib, AnaLyticum and Indena. Despite criticism of these deals, mainly relating to concerns about transparency, public accountability and the price paid by companies for access to resources, INBio has demonstrated the potential of securing funds for public conservation from commercial bioprospecting.

McNeely, J. 1999. *Mobilizing Broader Support for Asia's Biodiversity: How Civil Society Can Contribute to Protected Area Management*, Asia Development Bank and IUCN — The World Conservation Union: Gland.

<sup>97</sup> United Nations University – Institute of Advanced Studies. 2005. *Bioprospecting in Antarctica*, pp. 22-29 (available from [www.ias.unu.edu/binaries2/antarctic\\_bioprospecting.pdf](http://www.ias.unu.edu/binaries2/antarctic_bioprospecting.pdf)).

<sup>98</sup> United Nations University – Institute of Advanced Studies. 2005. *Bioprospecting in Antarctica*, 31 p.

- drugs in the USA are derived from, or patterned after, natural sources<sup>99</sup>.
- Annual sales derived from traditional knowledge using genetic resources are US\$3 billion for the cosmetic and personal care industry, US\$20 billion for the botanical medicine sector, and US\$75 billion for the pharmaceutical industry.
- 62% of cancer drugs approved by the US Food and Drug Administration are of natural origin or modelled on natural products.
- A study of small-molecule new chemicals introduced globally as drugs between 1981 and 2002 showed that 61% can be traced to, or were inspired by, natural products. This figure rose to 80% in the year 2002-2003.

Despite these promising figures, the trend is away from research into novel organisms and compounds and towards the development of products based on known metabolites, driven by the low ‘hit rate’ of new products based on genetic resources. This is, however, balanced in part by increasing consumer demand for ‘natural’ products and improvements in the techniques available for screening natural materials and subsequent data analysis / management. While R&D and screening costs remain high it is likely that medical and pharmaceutical companies will become increasingly unwilling to pay for basic research and screening, although they are still often willing to pay for specific leads derived from such research and analysis. Bureaucracy, legal uncertainties and weak regulatory frameworks in developing countries are also seen as constraints to bioprospecting<sup>100</sup>.

### ***Bioprospecting – where is it?***

Both terrestrial and marine areas are targets for bioprospecting and there are many patents (but not necessarily products) involving genetic resources from both sources<sup>101</sup>. Novel products do not originate just in biodiversity-rich areas and therefore the presumed link between bioprospecting and sustainable use and management of the most threatened biodiverse regions is not as clear as it might first appear. The link can sometimes be strengthened by concentrating bioprospecting activities within areas of high biodiversity value, using for example the following criteria:<sup>102</sup>

- Does the area have a valuable and unique range of biodiversity?
- Are there ecosystems that can be set aside for research and collection?
- Are there local / regional biotechnology industries and an accompanying infrastructure?
- Can local community biodiversity and ethnobiology knowledge be accessed?
- Does the source country have clearly defined land- and resource-use rights?
- Is the government committed to controlling access to biological resources?

### ***Bioprospecting – key players (practitioners and donors)***

There have been a number of high-profile bioprospecting arrangements since the early 1990s. The more well known of these include the US government’s ongoing International Cooperative Biodiversity Groups initiative ([www.fic.nih.gov/programs/research\\_grants/icbg/index.htm](http://www.fic.nih.gov/programs/research_grants/icbg/index.htm)), which has funded drug discovery partnerships between US researchers and collaborators in Argentina, Chile, Mexico and Peru; a 1991 agreement between the drug company Merck and Costa Rica’s INBio and a US\$3.2 million agreement between Extracta (Brazil) and Glaxo Wellcome to screen 30,000 samples from Brazil’s biota<sup>103</sup>.

<sup>99</sup> Grifo, F. et al. 1997. The origins of prescription drugs. In: Grifo, F. and Rosenthal J. (eds). *Biodiversity and Human Health*, pp. 131-163. Island Press, Washington DC.

<sup>100</sup> Sampath, P. G. 2005. *Regulating Bioprospecting*.

<sup>101</sup> UNU-IAS. 2005. *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*, p.15

<sup>102</sup> Adapted from *Conservation Finance Mechanisms* at [guide.conservationfinance.org/chapter/index.cfm?Page=5](http://guide.conservationfinance.org/chapter/index.cfm?Page=5).

<sup>103</sup> Bonalume Neto, R., and D. Dickson. 1999. \$3m Deal Launches Major Hunt for Drug Leads in Brazil. *Nature* **400**, 6742 (22 July 1999), 302.

### ***Bioprospecting – what is working?***

The key factors that underpin successful bioprospecting activity, from both corporate and conservation perspectives, include<sup>104</sup>:

- Prior informed consent of local communities and other users of biodiversity resources.
- Access on mutually agreed terms.
- Effective handling of intellectual property rights issues.
- Returns from bioprospecting for local communities and other resource users compare favourably with competing land uses (such as agriculture and cattle grazing).
- Government supports the processing of specimen exports with appropriate regulations.
- Major threats to the future supply of resources are absent.
- Profits are reinvested in appropriate conservation efforts.
- Benefits are shared in a fair and equitable manner among all stakeholders.

### ***Bioprospecting – what is not working?***

In many countries, including most developing nations, genetic resources and the traditional knowledge associated with their use are not private property and thus may be open to ‘biopiracy’<sup>105</sup>.

Some observers fear that granting patents to scientific or industrial users over natural compounds or processes based on traditional knowledge about plants and animals may restrict access

*“While once widely regarded as a ‘saviour’ of tropical forests—the size of the global drugs market is enormous and a reasonable part of it is based on materials derived from nature—the reality is that bioprospecting does not result in large financial flows to poor countries. This reflects the availability of substitute routes to derive drug materials (e.g. synthetics), the vast scale of tropical forests, and the low probabilities of finding successful drugs from a given sample of material”*

Pearce, D. 2005. Paradoxes in Biodiversity Conservation. *World Economics*, Vol. 6, No. 3, July–September 2005, pp. 57-69.

by local communities and indigenous peoples to resources on which they depend for their livelihoods (including communities that were the source of the knowledge in the first place).

There is ongoing debate concerning bioprospecting and biopiracy. Some believe they are essentially the same thing and that few if any conservation or socio-economic benefits will be delivered to local communities or national governments from this type of resource exploitation. Others argue that patents on products developed as a result of the efforts of bioprospectors are sometimes based so closely on traditional knowledge that they are a form of intellectual property theft. Conversely, there are also many who believe that biopiracy can be avoided and controlled through appropriate policies, and that bioprospecting can make an important contribution to biodiversity conservation.

Early expectations of high financial returns from bioprospecting have not been realised. Bioprospecting is thus perceived in some quarters as a relatively un-remunerative investment, compared to the value that can be realised from other non-consumptive uses of biodiversity. For example, Costa Rica has received US\$4.5 million from bioprospecting accords, a small sum compared to the annual income of approximately US\$400 million derived from ecotourism. Furthermore, collection of wild species (with payment for this collection) may be a one-off event or may stimulate an intense burst of unsustainable harvesting. Once a successful product has been

<sup>104</sup> Adapted from Bioprospecting. *Conservation Finance Mechanisms* (available from [guide.conservationfinance.org/chapter/index.cfm?Page=5](http://guide.conservationfinance.org/chapter/index.cfm?Page=5)).

<sup>105</sup> Biopiracy is typically defined as the non-equitable and non-consensual patenting and / or commercialisation by private companies of natural substances derived from wild plants and animals occurring on public or communal lands. As it is not possible to patent living organisms, patents are typically taken out on specific chemicals isolated or developed from them, often in combination with a stated and documented use of those chemicals.

developed, new discoveries that yield the same product may be redundant and, in effect, valueless from a bioprospecting perspective<sup>106</sup>. As more countries enter the biochemical prospecting market with unique combinations of biological and technical resources for sale, market niches may become smaller, leading to declining profits and conservation incentives<sup>107</sup>. As a result, many analysts have cautioned against undue optimism about the potential contribution of bioprospecting revenues to biodiversity conservation<sup>108</sup>.

One informant noted that lack of funding is a particular constraint on bioprospecting in marine and aquatic ecosystems. It was also noted that many researchers in developing countries still suffer from lack of access to information, which may limit their ability to stay on top of developments and to raise funds for research in this area.

### ***Bioprospecting – gaps and opportunities for investment***

1. There are substantial business risks associated with bioprospecting, not least of which is the potential reputational damage related to biopiracy claims. While this does not rule out bioprospecting entirely, it does mean that the most appropriate opportunities (initially) will be in countries with a robust policy and management framework.
2. It may be possible to reduce risk by investing in companies that actively support the communities that provide the raw materials they utilise, including domestication of plants / organisms susceptible to unsustainable levels of harvesting.
3. Investing in the development of high throughput screening technologies / programmes to allow more efficient screening of natural products may enable bioprospecting to compete more effectively with synthetic compounds formulated in the laboratory.
4. Developing countries could improve their healthcare systems by asking major pharmaceutical companies to help them improve their ability to research and develop their own drugs in return for access to natural resources, rather than making unrealistic assumptions regarding the level of financial gains that are possible from bioprospecting<sup>109</sup>.

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<sup>106</sup> Simpson, R. D., Sedjo, R.A. and Reid, J.W. 1996. Valuing Biodiversity for Use in Pharmaceutical Research, *Journal of Political Economy*. 104(1): 163-85.

<sup>107</sup> McNeely, J. 1999. *Mobilizing Broader Support for Asia's Biodiversity: How Civil Society Can Contribute to Protected Area Management*, Asia Development Bank and IUCN — The World Conservation Union: Gland.

<sup>108</sup> Barbier, E.B. and Aylward, B.A. 1996. "Capturing the pharmaceutical value of biodiversity in a developing country" *Environmental and Resource Economics*, Vol. 8, No. 2, pp. 157-181; ten Kate, K. and Laird, S.A. (eds.) 1999. *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit Sharing*. Earthscan: London; Laird, S. and ten Kate, K. 2002. "Linking Biodiversity Prospecting and Forest Conservation" (Chapter 9) in Pagiola, S., J. Bishop and N. Landell-Mills (eds.) *Selling Forest Environmental Services: Market-Based Mechanisms for Conservation and Development*. Earthscan: London, pp. 151-172.

<sup>109</sup> Sampath, P. G. 2005. *Regulating Bioprospecting: Institutions for Drug Research, Access and Benefit-Sharing*. United Nations University Press, ISBN: 92-808-1112-6, 340 p.

### 4.3.2 Biodiversity offsets

#### 4.3.2 Direct Supply: Biodiversity Offsets – Summary

- The use of legally mandated biodiversity offsets is growing and examples can be found in the US, Brazil, Canada, Switzerland, as well as several Australian states: the Environmental Liability Directive passed by the European Commission in 2004 could lead to similar arrangements throughout the EU; similar policies are under development in Mexico, New Zealand and Uganda, among other countries
- In addition to mandatory offsets, there is growing interest in the potential of voluntary offsets in many companies: some companies have made public commitments to implement biodiversity offsets linked to their 'footprint', while several mainstream investors are looking at biodiversity offsets as a new business opportunity, as well as an indicator of good corporate governance
- Long-term prospects for biodiversity offsets may include international trade in conservation 'credits', along the lines of the market for carbon credits: unlike carbon, however, biodiversity is not a homogenous commodity but a complex system which makes the development of any trading regime more challenging
- International trade in biodiversity credits may be remote but several informants highlighted opportunities to develop biodiversity offsets as a new business sector at local, national and corporate levels
- There are opportunities to develop biodiversity offsets as a commercial business, focusing on situations where there is significant unmet demand for offsets, or where demand could be stimulated more easily: variations include local ecosystem 'banks', ecosystem service 'brokers', and biodiversity 'offsets for imports'

#### *What are biodiversity offsets?*

Biodiversity offsets are conservation activities intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects<sup>110</sup>. The basic idea of biodiversity offsets is to extend the traditional mitigation hierarchy of avoid, reduce, rescue and repair in an effort to achieve no net loss or a net positive impact on biodiversity ([Figure 11](#)).

Examples of biodiversity offsets range from one-off, voluntary initiatives (e.g. the creation of PAs supported by a trust fund as 'compensation' for environmental damage resulting from the construction of the Chad-Cameroon oil pipeline) through nation-wide, legally-mandated systems of compensation for damage to natural habitat.

#### *Biodiversity offsets – status and trends*

One of the best-established systems of biodiversity offsets is in the USA, under federal and state laws requiring 'no net loss' of wetlands and the conservation of endangered species habitat. Regulations under the Clean Water Act of 1972 require both public and private developers to compensate or 'mitigate' the loss of wetlands, when adverse impacts are considered unavoidable, by financing the creation, restoration and / or protection of comparable wetland habitat (see [Box 17](#)). Similarly, regulations under the Endangered Species Act of 1973 require compensation for the loss of many other critical habitats.

<sup>110</sup> ten Kate, K., Bishop, J., and Bayon, R. 2004. *Biodiversity offsets: Views, experience, and the business case*. IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK (available from [www.eldis.org/static/DOC16610.htm](http://www.eldis.org/static/DOC16610.htm)). Other terms commonly used to describe biodiversity offsets include "compensatory mitigation", "conservation banking", "complementary" or "compensatory remediation", "reconstitution" or "replacement" of affected ecosystems, etc.

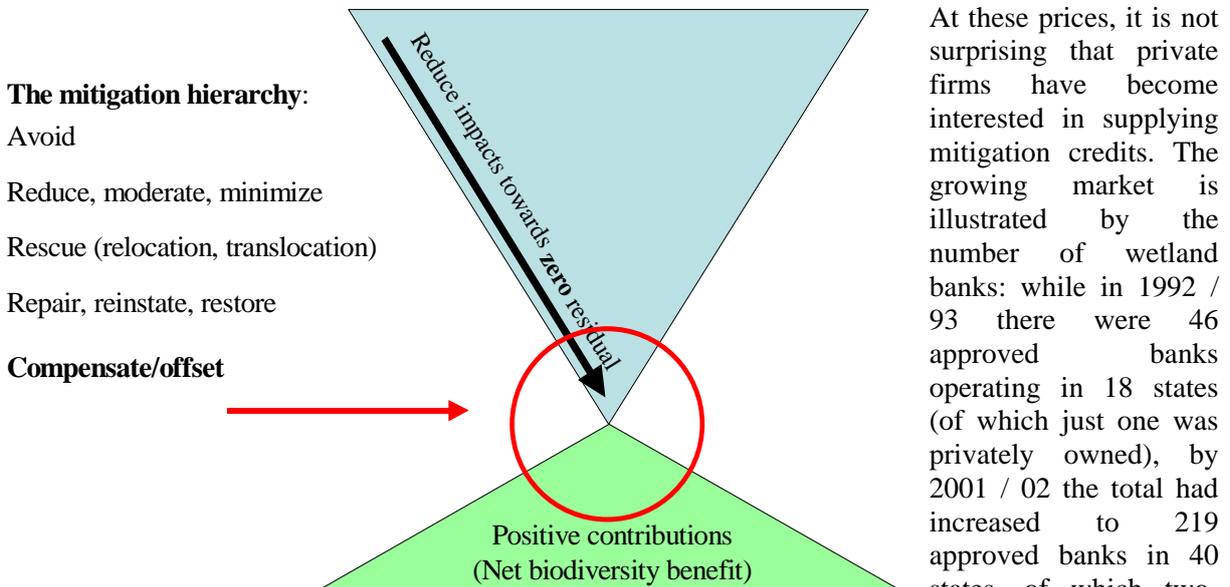
**Box 17. The Inland Sea Shorebird Reserve**

Kennecott Utah Copper mine, a wholly owned subsidiary of Rio Tinto Plc, is North America’s largest copper mine. During the mid-1990s the company needed to acquire land to store mining waste. The company purchased an area adjacent to its mining operations along the south shore of the Great Salt Lake. However, this property contained designated wetland habitat and Kennecott was, therefore, required by law to offset the loss by creating of an agreed number of “habitat units”. A wetland mitigation plan was developed that identified nesting and migratory shorebirds and waterfowl as the primary focus. Although the plan called for an offset of 426 ha of wetlands, Kennecott decided on a larger voluntary offset, aiming to enhance and restore a landscape which would be more likely to succeed in conservation terms and initially identified and purchased 1,010 ha suitable for wetlands mitigation which officially became known as the Inland Sea Shorebird Reserve (ISSR). A five-year monitoring programme indicates that wildlife values have increased substantially, with a 1,000-fold increase in bird use over the baseline numbers for the same site. In 1997 the site was expanded from 1,010 ha to more than 1,450 ha and four ponds were added. In the long-term, the company plans to hand the site over to National Audubon to become part of its large bird reserve and eight-mile contiguous shoreline habitat.

*Adapted from: ten Kate, K., Bishop, J., and Bayon, R. 2004. Biodiversity offsets: Views, experience, and the business case. IUCN, Gland, Switzerland and Cambridge, UK.*

In the USA, the developer need not directly carry out compensation for unavoidable losses of wetland and other natural habitat. The possibility of off-site mitigation by third parties, where public authorities determine that it is feasible and appropriate, has stimulated an emerging market in mitigation services. Prices of mitigation credits are highly variable, depending on land purchase and restoration costs as well as the demand from developers. Reported prices range from as low as US\$1,200 per hectare for wetland credits in some areas, up to US\$300,000 per ha for exceptional conservation banks.

**Figure 11.** Biodiversity offsets and impact mitigation



thirds were private, commercial operators<sup>111</sup>. Conservation banking for endangered species is at an earlier stage of development but is also growing rapidly, with 35 approved banks operating in five states in 2003, of which 63% were privately owned<sup>112</sup>. In the case of both wetland mitigation and

<sup>111</sup> Wilkinson, J., and Kennedy, C. 2002. *Banks and Fees: The status of off-site wetland mitigation in the United States*. Environmental Law Institute: Washington, D.C.

<sup>112</sup> Fox, J., and Nino-Murcia, A. 2005. Status of Species Conservation Banking in the United States, *Conservation Biology* 19 (4), 996-1007.

conservation banking, for each hectare of habitat that is damaged or destroyed, developers must purchase credits from approved conservation banks to support conservation efforts in the surrounding area, for habitat that is similar to that which they intend to convert. A variant of mitigation or conservation banking in the USA is the payment of ‘in-lieu-fees’ by developers to environmental agencies. As before, the developer is allowed to transfer legal liability for adverse impacts to another party, who in turn assumes the responsibility to compensate for those impacts. In-lieu-fees are normally paid to a public agency to fund land acquisition and / or other conservation activities.

Other examples of legal support for biodiversity offsets can be found in Brazil (Protected Areas Law of 2002 and Forestry Code of 2001)<sup>113</sup>; Canada (Fisheries Act of 1985); Switzerland (Federal Law for Protection of Nature and Landscape of 1983), as well as several Australian states (e.g. Victoria’s Native Vegetation Management Framework of 2002, New South Wales Green Offset Pilot programme). The Environmental Liability Directive passed by the European Commission in April 2004 could lead to similar arrangements throughout the EU, as firms seek to fulfil their legal obligation to compensate for environmental damage on- or off-site. Similar policies are under development in Mexico, New Zealand and Uganda, among other countries.

An interesting variation on biodiversity offsets is a Brazilian law (Art. 36; Law 9.985/2000; SNUC), which requires industrial development projects to contribute at least 0.5 percent of their total capital cost to the National Protected Area System, as ‘compensation’ for environmental damage. In this case, however, all revenue is managed by the state and there does not appear to be any role for private providers of compensation services. Several Brazilian informants noted the need for more efficiency and transparency in how this compensation fund is allocated.

In addition to mandatory offsets, there is growing interest in the potential of voluntary offsets in many companies. Some companies have made public commitments to implement biodiversity offsets linked to their ‘footprint’, e.g. BC Hydro, Rio Tinto and Walmart, among others. Some mainstream investors are looking at biodiversity offsets as a new business opportunity, as well as an indicator of good corporate governance, e.g. ABN-Amro, Bank Paribas, Henderson Investors, Insight Investment, ISIS Asset Management, Vereniging van Beleggers voor Duurzame Ontwikkeling (VBDO), World Bank / International Finance Corporation (IFC) and others. Finally, there have been a number of multi-stakeholder initiatives related to biodiversity offsets in recent years, including the Business and Biodiversity Offset Programme (BBOP), Biodiversity Neutral Initiative (BNI) and work by the International Council on Mining and Metals (ICMM)<sup>114</sup>.

There is growing interest in biodiversity offsets among business, government, local communities and conservation groups alike. The conservation benefits claimed for biodiversity offsets include:

- More and better conservation:
  - Focus efforts on priorities, in context of landscape / regional planning.
  - Trade small compromised sites for larger areas with better conservation prospects.
  - Greater connectivity of PAs.
- Integrate biodiversity into regional planning as well as the investment proposals of private developers.
- Raise new funds for conservation and ecosystem restoration and stimulate private conservation efforts.
- Lower the cost of conservation, by focusing effort where land is cheap and concentrating regulatory attention on fewer, larger sites.

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<sup>113</sup> See also: Chomitz, K. M., Thomas, T. S. and A. S. Brandão. 2003. Creating markets for habitat conservation when habitats are heterogeneous. Paper presentation at the *Fourth BioEcon Workshop on the Economics of Biodiversity Conservation – Economic Analysis of Policies for Biodiversity Conservation*, Venice International University, Venice, 28-29 August 2003.

<sup>114</sup> BBOP: [www.forest-trends.org/biodiversityoffsetsprogram](http://www.forest-trends.org/biodiversityoffsetsprogram); BNI: [www.biodiversityneutral.org/index\\_content.html](http://www.biodiversityneutral.org/index_content.html); ICMM: [www.icmm.com/newsdetail.php?rcd=67](http://www.icmm.com/newsdetail.php?rcd=67).

The benefits of biodiversity offsets to business can also be considerable, and include:

- License to operate:
  - Access to resources (formal / informal).
  - Access to capital.
  - ‘Preferred partner’ status.
  - Relations with employees, communities and regulators.
- Flexibility:
  - Location and / or scale of rehabilitation.
  - Third party implementation / liability.
- Efficiency – often more cost-effective than on-site rehabilitation.
- Influence – potential to inform emerging environmental policy.

While the benefits of biodiversity offsets are potentially large, several hurdles need to be crossed to achieve them. Some of the main concerns and questions include:

- Slippery slope: will biodiversity offsets lead to the approval of development projects that should not take place (e.g. a ‘licence to trash’, destruction of unique habitats, or irreversible loss)?
- Social equity: how to ensure equitable distribution of costs and benefits of offsets, while respecting the rights and concerns of local and indigenous communities?
- Currency: can offsets provide comparable biodiversity and livelihood benefits as the original ecosystem? How to measure impact and determine a suitable offset?
- Responsibility: how far does responsibility for environmental impact extend? Should developers offset the indirect impacts of their projects (e.g. impacts arising from labour migration)? For how long should a developer be responsible for the offset (i.e. what is the term of their responsibility and liability)?
- Additionality: how to ensure that offsets deliver new and additional biodiversity benefits, and that biodiversity loss is not simply displaced (i.e. ‘leakage’)?
- Sustainability: how to ensure that biodiversity offsets are secured in perpetuity or at least for the duration of the impact?
- Timing: should offsets be in place prior to any environmental impact? How can this be achieved?
- Performance standards: need credible metrics and governance for biodiversity offsets, including effective mechanisms for stakeholder participation and oversight.

It is important to note that although offsets are fraught with policy, legislative and technical challenges, they provide a real opportunity to make a positive contribution to biodiversity when compared to the current level of activities displayed by most project developers.

Long-term prospects for biodiversity offsets may include the potential for international trade in conservation ‘credits’, along the lines of the emerging international market for carbon credits<sup>115</sup>. Unlike CO<sub>2</sub>, however, biodiversity is not a homogenous commodity but a complex system of many parts. This makes it hard to imagine an international trading regime for biodiversity. One informant, however, suggested that a ‘symbolic’ approach could be sufficiently compelling, if it allowed people to buy into an ‘emotion’, like a ceremonial gift or religious tithe. Another noted that this might be

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<sup>115</sup> Proposals for international financial transfers based on the concept of “tradable development rights” have been circulating for years, mainly in the academic literature. See for example: Cervigni, R. 1993. Biodiversity: Incentives to Deforest and Tradable Development Rights, *CSERGE (The Centre for Social and Economic Research on the Global Environment) Working Paper GEC 93-07*. University College London: London; Graßl, H., Kokott, J., Kulesa, M., Luther, J., Nuscheler, F., Sauerborn, R., Schellnhuber, H.-J., Schubert, R., Schulze, E.-D. 2000. *Charging the Use of Global Commons*. Special Report, German Advisory Council on Global Change: Berlin; Panayotou, T. 1994. Conservation of Biodiversity and Economic Development: The Concept of Transferable Development Rights, *Environmental and Resource Economics*, Vol. 4, pp. 91-110; Swanson, T.M. 1995. The Theory and Practise of Transferring Development Rights: The Institutions for Contracting for Biodiversity, paper presentation at a *Workshop on Financing Biodiversity Conservation*, Harare, Zimbabwe, 13-15 September 1995.

possible for voluntary credit sales at the retail level but regulated or monitored markets would require substantially more rigor. Yet another informant suggested that demand (funding) for biodiversity offsets could be generated from importers of food and other natural products, if companies could be persuaded to make voluntary contributions to address adverse biodiversity impacts of imports *not* already certified as ‘sustainable’.

While international trade in biodiversity credits may be remote, several informants highlighted opportunities to support the development of biodiversity offsets as a new business sector at local, national and corporate levels. For example, one informant suggested the possibility of setting up a Prototype Biodiversity Fund in Brazil, to stimulate entrepreneurial investment and liquid trade in habitat compensation. Mexico was identified as another location where such an initiative could help inform and accelerate emerging public policy on biodiversity offsets.

Even where government does *not* require compensation for biodiversity loss, there are already examples of agreements by companies and agencies to pilot biodiversity offsets on a voluntary basis. Such initiatives could be encouraged more widely, with a focus on leading companies in land-using sectors, e.g. oil and gas, road construction, utilities, mining, etc.<sup>116</sup> Several informants noted that Shell companies could become buyers of offsets in countries where there are significant on-the-ground operations. Another informant noted the potential to develop mechanisms for independent certification of biodiversity offsets.

#### ***Biodiversity offsets – business investment opportunities***

Biodiversity offsets could be developed as a commercial business, focusing on situations where there is already significant unmet demand for offsets, or where demand could be stimulated more easily. Variations include:

1. Local ecosystem ‘bank’: buy or lease land, restore it and sell habitat ‘credits’ to public agencies and / or private companies that need offsets for regulatory compliance or to meet voluntary ‘no net loss’ commitments. Shell companies could themselves be significant buyers of offsets for field operations, along with many other companies and government agencies.
2. Ecosystem service ‘broker’: purchase biodiversity credits from land owners (secured by development rights), rather than the land itself, e.g. biodiversity on top of other people’s coffee, carbon or timber plantations, fishponds, etc. Sell credits to mitigation buyers, as in 1.
3. Biodiversity ‘offsets for imports’: identify global conservation priorities, define standards for credible offsets, and set up a verification system for companies, which would be encouraged to purchase voluntary offsets for all imports not already certified as ‘sustainable’ under recognised schemes (e.g. FSC, MSC, Rainforest Alliance). Offsets would be supplied by accredited providers and subject to independent verification and regular renewal.

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<sup>116</sup> This is one aim of the Business and Biodiversity Offsets Program (BBOP), a new initiative in which both Shell and IUCN are participants. See [www.forest-trends.org/biodiversityoffsetsprogram](http://www.forest-trends.org/biodiversityoffsetsprogram).

### 4.3.3 Biodiversity management services

#### 4.3.3 Direct Supply: Biodiversity Management Services – Summary

- This specialised market is expected to increase significantly as more companies come to view biodiversity as a significant business risk and opportunity; the public sector is also likely to become a more significant customer for biodiversity management services (BMS)
- There is a need to develop specialist BMS providers to augment the services currently offered by conservation organisations, academic and scientific institutions and generalist environmental consultants
- There are several non-profit opportunities that could be supported by a Think-Tank and ultimately lead to the development of additional (for-profit) investment opportunities through civil society, research, partnership brokering and public sector capacity building initiatives
- More direct, for-profit, opportunities might include: integration of biodiversity with EIA processes; providing ecosystem restoration / rehabilitation services; benchmarking biodiversity performance; conducting and certifying biodiversity action plans (BAPs); or creating and certifying biodiversity offsets

#### *What are biodiversity management services?*

Many large companies are investing heavily in biodiversity management, driven by internal policies, regulation, stakeholder pressure and other factors. Industry-specific guidance on biodiversity management is becoming increasingly common and trade associations are playing a greater role in promoting improvements (see [Box 18](#)). Although one-off and strategic

**Box 18.** The International Petroleum Industry Environmental Conservation Association (IPIECA) / OGP Biodiversity Working Group

The IPIECA / OGP Biodiversity Working Group is an industry-led joint initiative established in 2002 to develop good practice guidance and to promote good practice in the oil and gas industry (see [www.ipieca.org](http://www.ipieca.org)). The working group also provides a forum for members to exchange information and discuss how the industry can deliver enhanced biodiversity conservation performance.

partnerships with external organisations, such as conservation NGOs, can help companies manage their biodiversity impacts, to a large extent the private sector must meet rising expectations for its performance by purchasing biodiversity management services (BMS) from specialist providers to supplement existing in-house skills and resources. BMS represent a growing niche within an expanding market for environmental management services across the private and public sectors.

BMS includes a range of professional activities and services undertaken by public and private entities that deliver benefits for biodiversity, for which a fee is received by the service provider. These providers bring specialist knowledge and expertise into the marketplace and aim to make a substantial contribution to the biodiversity performance of client companies.

Existing (E) and future (F) biodiversity management services include:

- Policy and strategy*
  - Development of biodiversity policies and strategies (E)
  - Development of biodiversity tools and guidelines (E)
- Project design*
  - Engineering-related (E)
  - Scientific basis (E)
  - Early risk analysis (E)
  - Analysis of mitigation options (avoid – reduce – remedy – compensate) (E)
  - Offset options (to counterbalance unavoidable residual biodiversity impacts) (F)

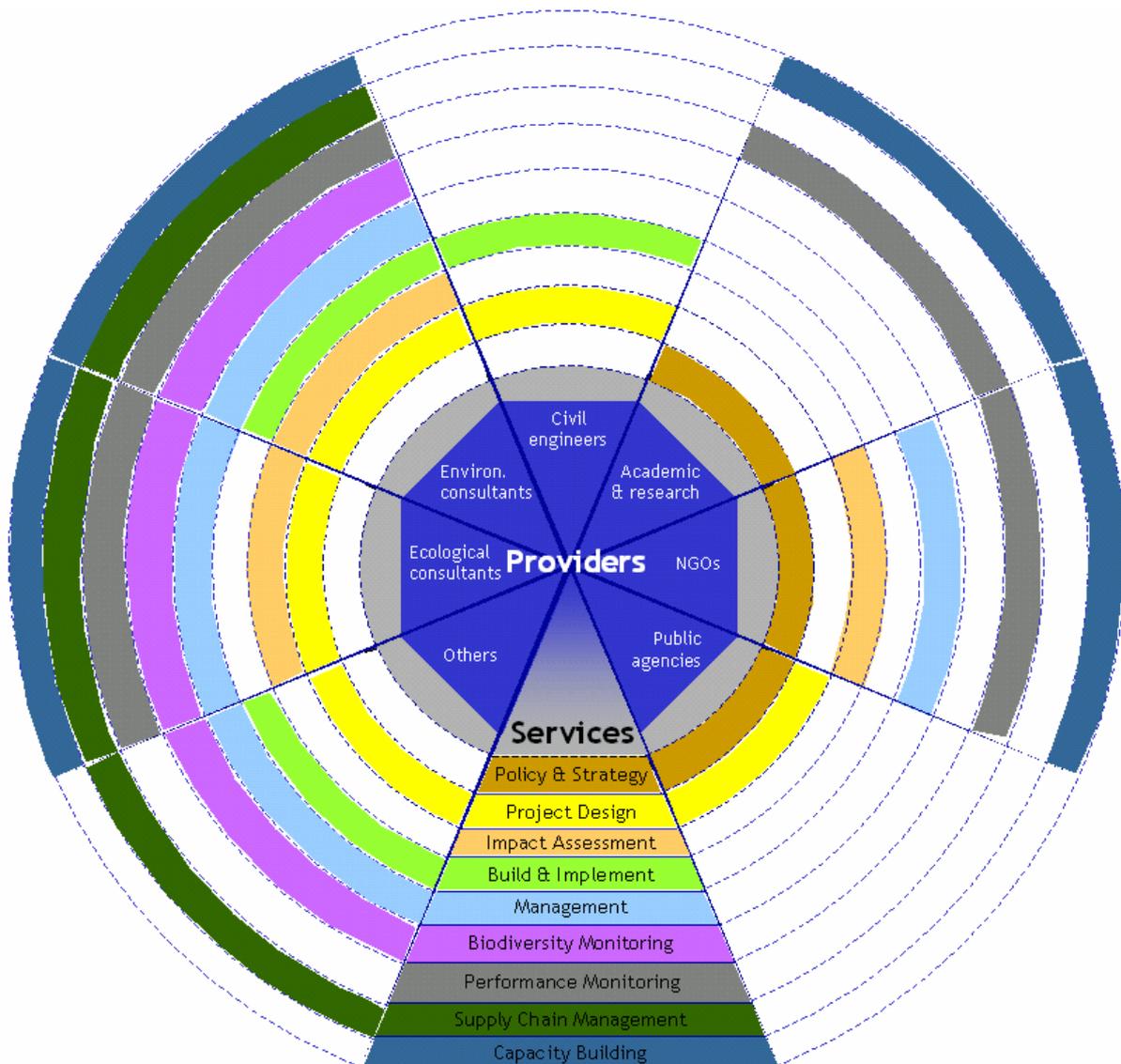
- c) *Impact assessment*
  - Baseline measurements (E)
  - Biodiversity Impact Assessments (including impact prediction and mitigation measures) (F)
  - EIAs (with integrated biodiversity) (E)
  - Social Impact Assessments (with integrated biodiversity) (F)
  - Strategic Impact Assessment (E)
  - Strategic Environmental Assessment (E)
- d) *Build & implement*
  - Restoration (E)
  - Rehabilitation (E)
- e) *Management*
  - Preparation of Biodiversity Action Plans (F)
  - Adaptive management (E)
  - Environmental Management Plans (with integrated biodiversity) (F)
  - Stakeholder identification, analysis and engagement (E)
- f) *Biodiversity monitoring*
  - Development and application of biodiversity indicators (E)
  - Fauna and flora (E)
- g) *Performance monitoring*
  - Auditing of biodiversity management systems (E)
  - Certification and auditing of BAPs (against a standard) (F)
  - Certification and auditing of biodiversity offsets (F)
  - Conservation, sustainable use and benefit sharing outcomes (F)
- h) *Supply chain management*
  - Development of certification methodologies (E)
  - Materials / product certification (E)
  - Certification of small-scale producers (e.g. agricultural and NTFP-related) (F)
  - Certification of biodiversity management systems (F)
- i) *Capacity building*
  - Training (E)
  - Capacity building (technical skills / science base) (E)
  - Database management (E)
  - Knowledge management (E)
  - Good practice guidance (E)
  - Integration of biodiversity in Health, Safety and Environmental Management (E)

Biodiversity management service providers come from a range of sectors, including:

- Public agencies.
- Conservation NGOs.
- Academic and research institutions.
- Commercial consultancies (e.g. civil engineering, environmental, biodiversity / ecological).
- Other professional companies / consultants (e.g. architects, land use consultants, planners etc).

Although there is a degree of overlap between biodiversity management service providers, they remain relatively compartmentalised. [Figure 12](#) summarises at a generic level the relationship between providers and the services they typically offer.

**Figure 12.** Biodiversity management services offered by different providers



***Biodiversity management services – status and trends***

Globally, the general consulting market – e.g. technical, non-technical, management and financial – is huge, with annual revenues for direct services in excess of US\$140 billion while the value of outsourcing is more than twice that amount. Within this total, environmental consulting represents a small but still significant market where specialist providers thrive, often operating through alliances and contracts with long-term clients and other consultants to gain access to major contracts.

Although BMS are a specialist market, there is significant potential for increases in scale as more companies (and public agencies) begin to view biodiversity as a relevant business risk and opportunity, and begin to develop and implement biodiversity planning / management strategies. Increased demand for services in the future highlights the need to develop additional specialist BMS providers to augment the capacity currently offered by conservation organisations, academic and scientific institutions and less specialised environmental consultants. Moreover, potential is growing for the sale of services to public agencies and institutions, substantially increasing the potential client base for BMS providers.

### ***Biodiversity management services – opportunities for investment***

BMS providers are typically small-to-medium scale companies or consultancies (<10 employees) with annual revenues under US\$1 million. There is therefore limited scope for substantial financial returns on investment. Moreover, such investment would deliver few direct ‘pro-poor’ benefits because of the level of technical knowledge required (i.e. minimum of degree level education in most cases). Nevertheless, there are several non-profit opportunities that could be supported by a Think-Tank and that could ultimately lead to the development of additional (for-profit) investment opportunities. These may include:

- Civil society initiatives:
  - Support for alternative mechanisms to monitor EIA management plan implementation.
  - Support for initiatives featuring trans / tri sector partnerships.
- Research:
  - Means to move beyond simple mitigation, such as offsets.
  - Mechanisms for valuing biodiversity, land rights and market-based instruments. This might include valuing ecosystem services. The possibility of tradable rights for wetland mitigation credits or biodiversity offsets could also present an opportunity to create a new market.
  - Improving understanding and capacity in EIA application, particularly with respect to integrating biodiversity and going beyond impact mitigation.
- Partnership brokering – support of private sector–conservation organisation partnerships (facilitation, pump priming, skills and knowledge transfer etc).
- Public sector capacity building:
  - Capacity building of authorities in countries with less developed environmental legislation, including EIA, impact mitigation, offset and market based instruments.

More direct – for-profit – opportunities for investment through seed funding or other investments in organisations that offer BMS might include:

- Integration of biodiversity with the EIA process.
- Providing ecosystem restoration / rehabilitation.
- Benchmarking biodiversity performance.
- Conducting and certifying Biodiversity Action Plans.
- Creating and certifying biodiversity offsets.
- Ecosystem audits (i.e. assessing ecosystem functions in the context of a proposed project).

#### 4.3.4 Ecotourism

##### 4.3.4 Direct Supply: Ecotourism – Summary

- Ecotourism is growing rapidly and there are many examples of operations that maintain high standards and provide direct support for biodiversity conservation. However, there is also widespread misuse of 'eco' labels and statements with little substance behind their claims: some ecotourism certification and verification systems are not very rigorous in terms of the standards they use and their inspection and rating protocols
- There are few examples of ecotourism operations that generate significant local economic benefits, build local management capacity and business skills, or actively involve local communities in the planning, management and evaluation of associated biodiversity conservation
- There is an opportunity to invest in ecotourism companies that professionalise the management of tourism concessions in national parks and / or create private ecotourism facilities in areas of significant biodiversity: any such tourism facilities / operations would need to be certified according to credible standards
- Another opportunity is to invest in and / or create a 'chain' of ecotourism hotels and related operations – with well-designed facilities, professional management, centralised 'back office' operations, and a common promotional strategy – to create a brand that is synonymous with the highest ecotourism standards. This goal could also be achieved by buying a number of leading ecotourism operations
- Alternatively or additionally, there is the opportunity to invest in existing eco-funds, and / or create new investment funds, that include ecotourism in their portfolios

#### ***What is ecotourism?***

The term 'ecotourism' is sometimes used interchangeably with the terms 'sustainable' or 'nature-based' tourism. While the connotations of 'nature-based' are broader than other terms, all incorporate the core concept of reducing the environmental impacts of tourism operations by ensuring that visitor numbers and activities do not significantly damage host ecosystems or endanger wild species.

The International Ecotourism Society (TIES) defines ecotourism more broadly as “*responsible travel to natural areas that conserves the environment and improves the well-being of local people.*” TIES has developed an ambitious set of ecotourism principles: (i) minimise impact; (ii) build environmental and cultural awareness and respect; (iii) provide positive experiences for both visitors and hosts; (iv) provide direct financial benefits for conservation; (v) provide financial benefits and empowerment for local people; (vi) foster sensitivity to host countries' political, environmental, and social climate and (vii) support international human rights and labour agreements.

#### ***Ecotourism – status and trends***

Tourism is one of the largest business sectors in the world. Over the last twenty years, ecotourism has become an important sub-sector within this industry. Beginning in the 1990s, ecotourism (together with nature tourism) became the fastest growing sector of the industry, increasing at between 20-34% per year while the tourism industry as a whole was growing at about 9% per year. While 'sun and sand' resort tourism has now matured as a market, with relatively flat growth, 'experiential' tourism – which encompasses ecotourism, heritage, cultural, and soft adventure tourism, as well as sub-sectors such as rural and community tourism – is among the sectors expected to grow most quickly over the next two decades. The United Nations declaration of 2002 as the International Year of Ecotourism signified that ecotourism has assumed global importance<sup>117</sup>.

<sup>117</sup> The statistics provided in this and the preceding paragraph is from The International Ecotourism Society, 2005. [www.ecotourism.org/index2.php?publications/digital\\_traveler/index.php&id=22](http://www.ecotourism.org/index2.php?publications/digital_traveler/index.php&id=22).

There are thousands of hotels, travel companies, tour operators, tourist guide businesses and other related enterprises that describe themselves as ecotourism companies (see [Box 19](#)). Numerous countries and regions within nations are also increasingly promoting themselves as ecotourism destinations. There are multiple national and sub-regional or state ecotourism societies that seek to play a variety of roles in promoting ecotourism and improved ecotourism practices. While TIES is perhaps the leading organisation in this sector, it alone refers to more than 40 ecotourism associations on its website<sup>118</sup>. In addition, there is a growing number of ecotourism certification and labelling initiatives worldwide, which may be harmonised via the proposed international Sustainable Tourism Stewardship Council (see [Box 20](#)).

**Box 19.** Guidelines and standards in the tourism industry

The Tour Operators' Initiative for Sustainable Development is creating environmental guidelines for hotels, resorts and tourist attractions in biodiversity hotspots. Guidelines on 'Sustainable Hotel Siting, Design and Construction' have been adopted by many large hotel chains (see [www.celb.org/xp/CELB/news-events/press\\_releases/09142005.xml](http://www.celb.org/xp/CELB/news-events/press_releases/09142005.xml)). In a partnership with the tourism industry, the Convention on Biological Diversity has also developed 'Guidelines on Biodiversity and Tourism Development' (see [www.biodiv.org/doc/publications/tou-gdl-en.pdf](http://www.biodiv.org/doc/publications/tou-gdl-en.pdf)).

There are numerous examples of how ecotourism is making direct, significant contributions to biodiversity conservation. One approach is through revenue generated to support PAs. PAs receive millions of visitors and some PAs generate significant revenue from visitor fees. In South Africa, for example, some 60% of foreign tourists visit a national park or game reserve and the South African National Parks Board finances up to 80% of its annual budget from tourism receipts<sup>119</sup>.

**Box 20.** Sustainable Tourism Stewardship Council (STSC)

The STSC is a proposed global accreditation body for sustainable tourism and ecotourism certification programs. The Rainforest Alliance Sustainable Tourism Division recently conducted an 18-month feasibility study to investigate the possibility of establishing an international accreditation body, and subsequently established an advisory group to support the development of this entity. During the first phase, Rainforest Alliance is working in partnership with TIES to launch the Sustainable Tourism Certification Network of the Americas. This phase is designed to provide a vehicle to build trust and take ownership of the proposed system. The second stage will be to establish an STSC Association to market certified tourism products, provide guidance to countries seeking to establish or upgrade tourism standards, and to facilitate agreement on standards and processes. The final proposed phase is STSC Accreditation to recognise and market programmes that meet the agreed standards and demonstrate capacity to conduct certification.

[www.rainforest-alliance.org/programs/tourism/certification/network-of-americas.html](http://www.rainforest-alliance.org/programs/tourism/certification/network-of-americas.html)

In addition to entry fees, several countries impose indirect taxes on tourists and tourism facilities, with a proportion of the revenues earmarked for conservation. In Belize, for example, the Protected Areas Conservation Trust receives much of its revenue from an airport tax, paid by visitors upon departure, as well as a small commission on cruise ship passenger fees. Similarly, the government of the Turks and Caicos Islands earmarks a portion of hotel tax receipts to support the country's PAs.

Public authorities often delegate responsibility for managing tourism operations in PAs to private businesses, NGOs, individuals or local communities. In Indonesia, for example, the management plan for Komodo National Park (an IFC / GEF project with TNC and others) establishes an ecotourism concession operated by a business-NGO joint venture<sup>120</sup>. Similarly, the South African National Parks

<sup>118</sup> [www.ecotourism.org/](http://www.ecotourism.org/).

<sup>119</sup> Eagles, P. 1999. cited in Emerton, L. and Bishop, J. with Thomas, L. 2005. *Sustainable Financing for Protected Areas: a global review of challenges and options* (available at: [www.iucn.org/bookstore/HTML-books/BP13-sustainable-financing/cover.html](http://www.iucn.org/bookstore/HTML-books/BP13-sustainable-financing/cover.html))

<sup>120</sup> The Nature Conservancy, *Komodo National Park: Collaborative Management Initiative* ([www.tnc.org/](http://www.tnc.org/)).

Board grants concessions to private companies to build and operate tourism facilities in national parks.

In some cases, private entities (including NGOs) have voluntarily assumed certain responsibilities for public PAs or funded other conservation activities. In Bonaire, Saba and the British Virgin Islands, for example, commercial dive operators perform basic interpretive, information and surveillance functions on behalf of marine PA authorities<sup>121</sup>.

### ***Ecotourism – what is working / not working***

While ecotourism is growing rapidly and there are many positive examples of operations that maintain high standards and provide direct support for biodiversity conservation, there is also the perception of widespread, and often blatant, ‘green washing’ in which tourism operations make use of the ‘eco’ label with very little substance to support their claims. In addition, some ecotourism certification / verification systems are less than rigorous both in terms of the standards they use and their inspection and rating protocols.

Moreover, even when credible ecotourism certification standards exist and are implemented, there are currently few examples of ecotourism operations that can demonstrate credible evidence that their activities result in significant biodiversity conservation. It is also rare for local communities to share a significant portion of the profits from ecotourism operations, although the latter often do create local employment and demand for local goods and services, and can provide models that spur the creation of locally owned ecotourism operations. A notable exception is described in [Box 21](#).

#### **Box 21. Rainforest Expeditions (RFE)**

Rainforest Expeditions (RFE) is a model ecotourism project, with investment co-financed by EcoEnterprises Fund and the project principals, CI, and EcoLogic Finance. It offers comfortable, low-impact lodging in the Peruvian Amazon. The company incorporates local sustainable development and environmental education and research into its rainforest experience, including the protection of macaw nurseries and harpy eagle nests. RFE also has a unique relationship with the indigenous Ese’eja community of Infierno. Ese’eja owns one of RFE’s two lodges and receives 60 percent of the profits from the lodge, generating almost US\$ 250,000 for this indigenous community since 1998. The community receives additional benefits from its partnership with RFE, including employment, training, and sale of goods. The lodges are located in the buffer zone of the Tambopata-Candamo Reserve Zone, part of a biological corridor that is one of CI’s hotspots. The area also features a significant diversity of plant life. Tourism has increasingly become an important economic livelihood for the local peoples, mitigating the threats from illegal logging, hunting, and slash and burn agriculture. RFE was a winner in the World Resources Institute’s New Ventures Business Plan Competition in October 2001. In 2003, the company was selected by Outside Magazine as one of the World’s Best Ecolodges, and has received similar accolades in prior years. The Nature Conservancy honoured the Ese’eja community in 2002 as one of the Equator Prize finalists for outstanding achievement in sustainable development.

### ***Ecotourism – gaps and opportunities***

Although ecotourism already is widespread and growing in terms of international coverage, there are relatively few developing countries that are major ecotourism destinations in terms of total visitor numbers and tourism revenues. Even within these destinations, ecotourism tends to be concentrated in a small number of regions and facilities. There is potential to promote ecotourism within regions where ecotourism is currently quite modest but holds significant promise, if designed, managed and promoted effectively, such as some areas in West or Central Africa, for example. Such efforts would probably be most effective if they focused initially on niche markets within the ecotourism sector, such as birdwatchers or ecotourists with a strong interest in local culture, art, music, sport fishing etc.

<sup>121</sup> Geoghegan, T. 1998. *Financing Protected Area Management: Experiences from the Caribbean*. Caribbean Natural Resources Institute (available from [www.canari.org/finance.pdf](http://www.canari.org/finance.pdf)).

### ***Ecotourism – investment opportunities***

1. Invest in ecotourism companies to professionalise the management of tourism concessions in national parks (making the case to countries for the private management of tourism facilities in public PAs where these facilities are currently managed by government or parastatal agencies). These companies could also create or invest in private ecotourism facilities in areas of important biodiversity. These investments could range from joint partnerships with existing ecotourism or hotel management companies to the creation of new companies. Any tourism facilities / operations would need to be certified according to credible standards.
2. A variation on this theme would be to invest in and / or create a ‘chain’ of ecotourism hotels and related operations – with well-designed facilities, professional management, centralised ‘back office’ operations, and a common promotional strategy – to create a brand that is synonymous with the highest ecotourism standards. This goal could also be achieved by buying a number of leading ecotourism operations.
3. Invest in existing eco-funds, and / or create new investment funds, that include ecotourism in their portfolios. These funds could be focused on ecotourism operations that are not only certified according to credible standards, but also set new standards in terms of local community participation and benefits.

### **4.3.5 Recreational hunting and sport fishing**

#### 4.3.4 Direct Supply: Sport Hunting and Fishing – Summary

- Recreational hunting and fishing are significant sources of conservation funding in developed and some developing countries: as international travel and tourism continue to expand, the demand for recreational hunting and fishing in developing countries can be expected to increase
- A pre-requisite for successful management of sport hunting and fishing is the ability of government agencies to develop regulations and associated monitoring and enforcement capacity to ensure that the activity does not lead to unsustainable use of permitted or other species
- The CAMPFIRE Initiative in Zimbabwe is one of the best known examples of a recreational hunting programme that has achieved significant biodiversity conservation and community economic development benefits on a wide scale level: this approach has also been replicated in several other African countries
- There is an opportunity to replicate the CAMPFIRE approach in other countries where potential for game hunting exists, and applying the same principles to sportfishing: in such cases, it will be important to support research to determine the sustainable harvest and to monitor the population of game species as well as the health of associated ecosystems
- Opportunities exist to work with recreational hunting and fishing organisations with good records in supporting biodiversity conservation in developed countries to open chapters, or enter into mentoring relationships with similar organisations, in developing countries to implement conservation programmes

### ***Hunting and sport fishing – status and trends***

Many people who engage in recreational hunting and fishing are strong supporters of environmental conservation. The various associations and organisations they support contribute significant resources to habitat and species conservation. Although these organisations are found mainly in developed countries, there are several examples of recreational hunting and fishing operations that support biodiversity conservation in developing economies.

More than 47 million people participate in recreational hunting or fishing in the US,<sup>122</sup> and recreational fishing is often ranked as *the* most popular outdoor activity in the country. There are a further estimated 25 million recreational anglers in Europe and 17 million in Japan<sup>123</sup>. Annual expenditure on recreational hunting and fishing in the US is estimated at around US\$70 billion. In 2001, US anglers alone spent US\$34 billion on fishing trips<sup>124</sup>, and in 1996, US anglers and hunters spent US\$700 million and US\$600 million, respectively, on licenses and permits.

In South Africa, during 1997, the recreational hunting industry generated over R176 million (approximately US\$38.2 million) from tariffs and trophy fees paid by some 7,500 foreign hunters. There are currently some 9,000 privately owned game ranches in South Africa, expanding at an average rate of 300,000 ha per annum and representing capital investments of approximately R6 billion<sup>125</sup> (approximately US\$1.3 billion).

The revenue generated from hunting and fishing licenses typically is used to support the operational expenses of wildlife agencies involved in the management of PAs and regulation of hunting and fishing activities. In some countries, fees from such licenses constitute the bulk of these operating expenses. One estimate suggests that these fees provide 75% of US state wildlife departments' annual budgets<sup>126</sup>. In some countries, these fees are specifically earmarked for the conservation and protection of wildlife habitat and game species. For example, the US federal government imposes an 11% excise tax on all sales of hunting weapons and ammunition, which generates more than US\$300 million each year. Half of this amount is used to finance the US Wildlife Restoration Fund. A similar 10% US federal excise tax on sales of sport fishing equipment and motorboat fuel, which is used to finance the US Aquatic Resources Trust Fund<sup>127</sup>.

In North America, Europe, Australasia and parts of East Asia there are numerous recreational hunting and fishing organisations that provide support for conservation activities using membership dues and other private financial sources. Two examples from the US are noted in [Box 22](#).

Informal associations of traditional hunters and fisher-folk can be found in many developing

**Box 22.** Hunting and fishing associations and conservation activities

*Ducks Unlimited* (DU) is the world's largest private, non-profit, waterfowl and wetland conservation organisation, and has more than 1 million supporters in the U.S., Canada, and Mexico. Other DU affiliates are in Australia, New Zealand, and Europe. Since its inception in 1937, DU has conserved more than 3.8 million ha of waterfowl habitat throughout North America and raised nearly \$1.6 billion for conservation.

Ducks Unlimited  
[www.ducks.org/](http://www.ducks.org/)

*FishAmerica Foundation* is the conservation and research arm of the American Sportfishing Association. Over the last 20 years, the Foundation has provided more than \$6 million in matching grants for over 750 grassroots conservation and research projects. In 2006 the Foundation announced a partnership with the National Oceanic and Atmospheric Administration (NOAA) Community-based Restoration Program to provide \$800,000 to restore marine and freshwater fisheries habitat, including salt marshes, seagrass beds, mangroves and rivers important to fish species that spawn in freshwater and migrate to the sea, such as salmon and striped bass

American Sportfishing Association  
[www.asafishing.org/asa/](http://www.asafishing.org/asa/)

<sup>122</sup> US Fish and Wildlife Service. National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. 2001. (available at: [www.census.gov/prod/2002pubs/FHW01](http://www.census.gov/prod/2002pubs/FHW01)).

<sup>123</sup> European Fishing Tackle Trade Association ([www.eftta.com/english/default.html](http://www.eftta.com/english/default.html)) and Japanese External Trade Organization ([www.jetro.go.jp](http://www.jetro.go.jp)).

<sup>124</sup> US Fish and Wildlife Service. National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. 2001 (available at: [www.census.gov/prod/2002pubs/FHW01](http://www.census.gov/prod/2002pubs/FHW01)).

<sup>125</sup> Republic of South Africa Department of Environmental Affairs and Tourism website, [www.environment.gov.za/](http://www.environment.gov.za/). Note: the average conversion rate for the US dollar to the South African Rand in 1997 was \$1=4.6 Rand.

<sup>126</sup> ConservationForce, [www.conservationforce.org](http://www.conservationforce.org).

<sup>127</sup> Conservation Finance Alliance, [www.conservationfinance.org](http://www.conservationfinance.org).

countries, although few of these are formally recognised by public authorities. An exception can be found in regions where game hunting or sportfishing have become an important part of the tourism economy, such as Eastern and Southern Africa for game hunting and the Caribbean and Central America for sportfishing, where such organisations are more common.

One noteworthy initiative that has generated significant funding for local communities from hunting activities over many years is the Communal Areas Management Program for Indigenous Resources (CAMPFIRE) in Zimbabwe. Although the CAMPFIRE programme has suffered setbacks recently, due to wider political and economic difficulties in Zimbabwe, a number of similar initiatives have been developed in Namibia, Zambia and several other African countries. One example in Zambia is described in [Box 23](#).

As international travel and tourism continue to expand, the demand for recreational hunting and fishing in developing countries can be expected to also expand and to become more widespread geographically. The emergence and / or growth of an urban middle class in several developing countries (notably in China and India) can also be expected to fuel this growth.

### ***Hunting and sport fishing – what is working / not working***

Despite strong differences of opinion that continue to exist between and within

conservation organisations regarding the ethics of recreational hunting and fishing, there is a growing acceptance that these industries and organisations can be positive forces for conservation. For example, in several countries, sportfishing operators are increasingly requiring that their clients respect ‘catch and release’ policies for large sportfish (notably marlin and sailfish) in an effort to maintain fishing numbers. They are also promoting the use of circle-shaped, versus the standard ‘J-shaped’, hooks, which cause significantly less damage to fish. Costa Rica is a leading example of such approaches.

One issue surrounding the promotion of recreational hunting and fishing in developing countries is the ability to develop sufficiently rigorous regulations and the associated monitoring and enforcement capacity to ensure that the approval of hunting licenses does not exacerbate the depletion of wild species due to habitat loss and / or poaching. A counter argument is that illegal hunting and the bushmeat trade are already rampant in many developing countries, hence the approval of relatively small numbers of licences could provide additional resources and incentives to improve the monitoring and enforcement of hunting and fishing operations. A related concern is whether ministries of environment and parks and wildlife departments in many developing countries have

#### **Box 23. The Luangwa Integrated Resource Development Project in Zambia<sup>128</sup>**

The Luangwa Integrated Resource Development Project (LIRDP) arose out of efforts to reduce elephant and rhino poaching in the Luangwa Valley, in Zambia. Originally designed as an integrated development project, the LIRDP evolved during the 1990s into an initiative combining management of the South Luangwa National Park (SLNP) with a community-based natural resource management programme for 40-50,000 people in the Lupande Game Management Area. The SLNP is Zambia’s premier wildlife tourism attraction and is known internationally for its abundant wildlife and charismatic large animals such as elephants, leopard, lions, hippos, buffaloes, giraffe, and antelope. A key feature of the project in its later stages was the transition from managing wildlife *for* local people to managing wildlife *by* the people, driven by fiscal empowerment and democracy. In its later stages, the project focused particular attention on cutting costs and increasing revenues from tourism. Although total financial independence remains elusive, the project increased cost recovery from 7% to 60% in a period of four years, while at the same time improving park management and increasing local community participation in wildlife protection and sustainable use.

<sup>128</sup> Dalal-Clayton, B. and Child, B. with Butler, C. and Phiri, E. 2003. *Lessons from Luangwa: The Story of the Luangwa Integrated Resource Development Project, Zambia*. International Institute for Environment and Development: London, and the Zambia Wildlife Authority: Chipata.

sufficient information regarding wildlife population dynamics and ecosystem function to develop sustainable hunting and fishing quotas.

These issues are currently coming to the fore in several countries regarding whether catch and release sport-fishing should be allowed in marine PAs as a way of generating additional revenue for marine conservation efforts. Opponents of this approach are concerned that not enough is currently known about the potential adverse effects of fishing on wild fish populations and other components of PAs. In contrast, recreational fishermen often claim that their impacts are negligible, especially compared to commercial fishing boats that operate immediately adjacent to PAs and sometimes invade them.

### ***Hunting and sport fishing – gaps and business investment opportunities***

1. Replicate the ‘CAMPFIRE’ approach in other countries where good potential for game hunting exists, and apply the same principles to sportfishing. This approach might involve taking an ownership position in existing recreational hunting and fishing companies to redirect their operations, entering into joint partnerships with existing hunting organisations or creating new companies. These companies would share a percentage of the revenues generated with local communities. They could also collaborate with national governments and NGOs to support associated community education and conservation projects. Given the potential sensitivity and negative public image that such an approach could entail, it would be important to support research to provide a sound scientific basis for determining sustainable ‘off take’ numbers and to monitor the population dynamics of the game species in question, in addition to the health of the associated ecosystems.
2. Work with recreational hunting and fishing organisations with good records in supporting biodiversity conservation in developed countries to open chapters, or enter into mentoring relationships with similar organisations, in developing countries to implement similar conservation programmes.

## **4.4 Conclusions on the Biodiversity Business Landscape**

This section has described a range of indirect and direct business models for biodiversity conservation, as well as key gaps and opportunities. A summary of the suggestions made with respect to each business sector is provided below. These are grouped under three broad themes, namely:

- The policy / enabling environment.
- Business development services.
- Investment opportunities.

### **4.4.1 Enabling environment**

1. Support efforts to convert marginal agricultural land to native habitat, via assisted natural regeneration – ideally with a focus on biological corridors – alongside intensifying agricultural production, using biodiversity-friendly practices, on more suitable land. This approach could be implemented through payments for environmental services, tax breaks, or other incentives [agriculture].
2. Support the adoption of certification standards in developing countries, particularly in regions where these are currently non-existent or embryonic. As with other certification systems, improved monitoring and evaluation systems for measuring impacts of such practices on biodiversity conservation and community livelihoods are required [forestry].
3. Address the policy issues related to land tenure, use rights and the decentralisation of forest management to involve local communities. Such work should include a focus on the fuelwood and charcoal sectors, given their importance for forest conservation and community livelihoods in many parts of the world, and the relative lack of attention they currently receive from the international development and conservation community [forestry].

4. Promote marine and aquatic PAs (or other limited use zones) linked to the sustainable management of capture fisheries in priority marine ecosystems. This concept could be tied to the concept of Individual Transferable Quotas or compensation for marine / aquatic degradation caused by extractive industries. In addition, it may be possible to apply the concept of payments for ecosystem services to marine PAs, where they make a significant contribution to fisheries productivity (e.g. mangrove forests and coral reefs which act as ‘fish nurseries’) [fisheries and aquaculture].
5. Expand sustainable fisheries certification, such as schemes promoted by Marine Stewardship Council and the Aquaculture Certification Council, to developing countries [fisheries and aquaculture]
6. Support non-timber forest product (NTFP) producers to overcome regulatory, research and development, and other hurdles to register new products and enter new markets, both in export and domestic markets [NTFPs].
7. Support independent certification of NTFP sustainability and the associated market differentiation, as well as more equitable models for benefit sharing and / or price premiums for community level suppliers [NTFPs].
8. Pilot a voluntary scheme to un-couple the biodiversity benefits of forestry assets, ‘bank’ these under some form of voluntary register and seek buyers for them [biocarbon].
9. Demonstrate credible models of climate mitigation through forest conservation and other land use activities, in order to provide a basis for the eventual relaxation of restrictions on carbon sinks in international climate policy, as recently proposed for example by the Coalition of Rainforest Nations [biocarbon].
10. Identify water users for whom payments for watershed protection are a more cost-effective option than water treatment, water demand management or the development of alternative water supplies [watershed protection].
11. Work at policy level to overcome obstacles preventing poorer groups from benefiting from payments for watershed protection, including lack of secure property rights; up-front costs; and weak public capacity to implement incentives [watershed protection].
12. R&D to help scale-up and spread payments for watershed protection including better information on the impact of land use on hydrological services; flexible institutional arrangements with low transaction costs; and payments which better reflect both the opportunity costs of alternative land uses and the willingness-to-pay of beneficiaries [watershed protection].
13. Work with recreational hunting and fishing organisations with good records in supporting biodiversity conservation in developed countries to open chapters, or enter into mentoring relationships with similar organisations, in developing countries to implement similar conservation programs [recreational hunting].
14. Review global conservation priorities, define standards for credible offsets, and set up a verification system for major commodity importers. Companies would be encouraged to purchase voluntary offsets for all imports not already certified as ‘sustainable’ under recognised schemes (e.g. FSC, MSC). Offsets would be supplied by accredited providers and subject to independent verification and regular renewal [biodiversity offsets].

#### **4.4.2 Business development services**

15. Develop and promote more efficient timber processing and charcoal manufacturing technologies, in order to improve the currently very low conversion rates in many developing countries [forestry].
16. Strengthen the business skills of NTFP suppliers, their local organisations and entrepreneurs, while at the same time assisting external buyers to understand and work effectively with local suppliers and their organisations [NTFPs].
17. Provide training and technical assistance for producers / SMEs in product development, quality control, export marketing and supply chain / chain of custody / traceability management [NTFPs]
18. Improve knowledge and practice regarding the establishment of environmental standards, and monitoring and evaluating the ecological sustainability of NTFP production; this could include support for domestication of some species, where appropriate [NTFPs].

19. Test the CCB Standards, which seek to identify land-based climate change mitigation projects that simultaneously generate climate, biodiversity and sustainable-development benefits [biocarbon].
20. Develop cost-effective, credible monitoring and evaluation systems and practical metrics that can demonstrate a clear benefit to biodiversity in the context of private sector timeframes and decision-making processes [biocarbon].
21. Develop new screening technologies / programmes to allow more efficient screening of natural products, allowing materials derived from bioprospecting to compete with synthetic compounds [bioprospecting].

#### **4.4.3 Investment opportunities**

22. Eco-enterprise funds to scale-up their investments in environmentally-friendly agricultural businesses in existing regions, and to expand their operations to new regions, notably in Africa and parts of Asia [agriculture].
23. Assist agricultural enterprises within important biodiversity landscapes. Use environmental screening systems to select suitable areas and enterprise activities [agriculture].
24. Companies that market certified sustainable timber. This could include technical assistance to help ensure sustainable management practices and improve access to markets, and / or tapping into emerging markets for environmental services [forestry].
25. Companies that link healthcare with bioprospecting. For example, ask pharmaceutical companies to help developing countries improve their ability to research and develop their own drugs in return for access to their natural resources, rather than make unrealistic assumptions regarding the level of financial gains that are possible from bioprospecting [bioprospecting].
26. Buy or lease land, restore it and sell habitat ‘credits’ to public agencies and / or private companies that need offsets for regulatory compliance or to meet voluntary ‘no net loss’ commitments. Shell companies could themselves be buyers of offsets for field operations, along with other companies and government agencies [biodiversity offsets].
27. Companies that assist communities that provide the raw materials they utilise; possibly supporting domestication of plants / organisms susceptible to unsustainable levels of harvesting [bioprospecting].
28. Purchase biodiversity credits from land-owners (secured by development rights), rather than the land itself, e.g. biodiversity on top of other people’s coffee, carbon or timber plantations, fishponds (i.e. act as an ecosystem service broker). Sell credits to mitigation buyers, as above [offsets].
29. Ecotourism companies that can ‘professionalise’ the management of tourism concessions in national parks. These companies could also set up private ecotourism facilities in areas of important biodiversity. Investments could range from joint partnerships with existing ecotourism or hotel management companies to the creation of new companies [ecotourism].
30. Businesses that include ecotourism in their portfolios, focusing on operations that are not only certified according to credible ecotourism standards, but also set new standards in terms of local community participation and benefits [ecotourism].
31. Create a ‘chain’ of ecotourism hotels and related operations – with well-designed facilities, professional management, centralised back office operations and a common promotional strategy – to create a brand that is synonymous with the highest ecotourism standards. This could also be achieved by buying out existing ecotourism operations [ecotourism].
32. Extend the CAMPFIRE approach to other countries where potential exists for sustainable game hunting / viewing, and apply the same principles to sport-fishing. This would probably involve taking an ownership position in existing recreational hunting and fishing companies, entering into joint partnerships with existing enterprise or creating new companies. These companies would share a percentage of the revenues generated with local communities and collaborate with national governments and NGOs to support associated community education and conservation projects [recreational hunting].
33. Invest in certified sustainable fishing and aquaculture enterprises, particularly in developing countries where sustainable technologies are currently underutilised. This concept could be

combined with support to expand the operations of sustainable management programs to a range of marine and aquatic species and ecosystems [fisheries and aquaculture].

34. NTFP enterprises that adopt best management practices regarding sustainable harvesting and support for local communities. This approach would probably be more effective if it was focused on priority landscapes and as part of support for a range of biodiversity-friendly enterprises, particularly in regions with good market and conservation potential that are not targeted by existing funds, e.g. Africa and Asia [NTFPs].
35. Purchase watershed protection services from private landowners, for re-sale to private water users. This approach could include setting up watershed management institutions and incentive schemes to link upstream land users and downstream water users [watershed protection].
36. Companies delivering biodiversity management services, such as:
  - Integrating biodiversity with Environmental Impact Assessment.
  - Companies doing restoration / rehabilitation work.
  - Benchmarking biodiversity performance.
  - Developing and certifying Biodiversity Action Plans.
  - Creating and certifying biodiversity offsets.
  - Assessing ecosystems and their functions in the context of proposed projects [BMS].

In general terms, the opportunities listed above all point to the need to combine investments in given business sectors with efforts to address related policy constraints and to improve business management practices. Several crosscutting themes emerge from this review, including the need to:

- Develop practical biodiversity screening criteria that can be consistently applied to potential ‘eco’ investments.
- Improve the effectiveness and use of monitoring and evaluation methodologies, in order to provide more credible information about the causality and impact of investments on biodiversity conservation, especially at the landscape level.
- Promote more widespread adoption of ‘sustainable’ certification and verification standards, and ensure that such systems devote sufficient attention to measuring the impact of ‘sustainable’ practices on biodiversity, versus general environmental impacts.
- Provide business skills training and technical advice to help overcome a number of common constraints that eco-entrepreneurs tend to face, such as new product development, quality control, accessing export markets, etc.
- Engage relevant policy makers in an effort to alleviate constraints to scaling-up promising pilot initiatives, notably concerning land tenure and / or access rights to local communities that depend upon natural resources in biodiversity rich environments.

In addition, this review has revealed several new investment opportunities, including market creation or enhancement concepts such as:

- Payments for watershed protection or biodiversity conservation to create positive incentives for more sustainable practices where markets currently fail to reward them.
- Working with potential buyers of biocarbon credits to help drive the expansion of this emerging market, including the concept of carbon credits for forest conservation.
- Creating local ecosystem ‘banks’ that can sell habitat ‘credits’ to companies and public agencies that need offsets for regulatory compliance or voluntary ‘no net loss’ commitments.

## 5. REVIEW OF BUSINESS PROMOTION MECHANISMS

### 5. Business Promotion Mechanism – Summary

- Various mechanisms are used to promote biodiversity business, ranging from policy and institutional reform, dedicated biodiversity business tools, and a range of financing instruments. All are essential
- Policy and institutional reforms have the greatest potential to transform markets in ways that support biodiversity, but they are also the most difficult mechanisms to design and implement, often requiring painstaking consensus building
- Biodiversity business tools that combine business development assistance with biodiversity management and financing can be very effective, although most existing tools are still relatively weak when it comes to assessing biodiversity outcomes
- A range of financing instruments for biodiversity business has been used successfully. Specialised investment funds are still relatively few in number and small in size. Many appear to rely on partial grant funding to cover the additional costs of biodiversity management for small and medium-size business

The previous section described a range of economic sectors and business models that can generate biodiversity benefits. This section reviews various mechanisms used to promote the development of biodiversity business, including enabling policies, regulations and norms; business ‘tools’ (including technical assistance) and, of course, finance.

#### 5.1 Mechanisms to Promote Biodiversity Business

All firms depend on supportive policies and norms that govern how business is conducted. Most businesses also rely, at some point in their development, on financial support from banks or investors to capitalise their operations and acquisitions, or to cover initial operating costs when revenues may be minimal. Many businesses further owe their success, at least in part, to technical assistance and development services provided by various state agencies, industry associations, non-profit organisations and commercial service providers<sup>129</sup>.

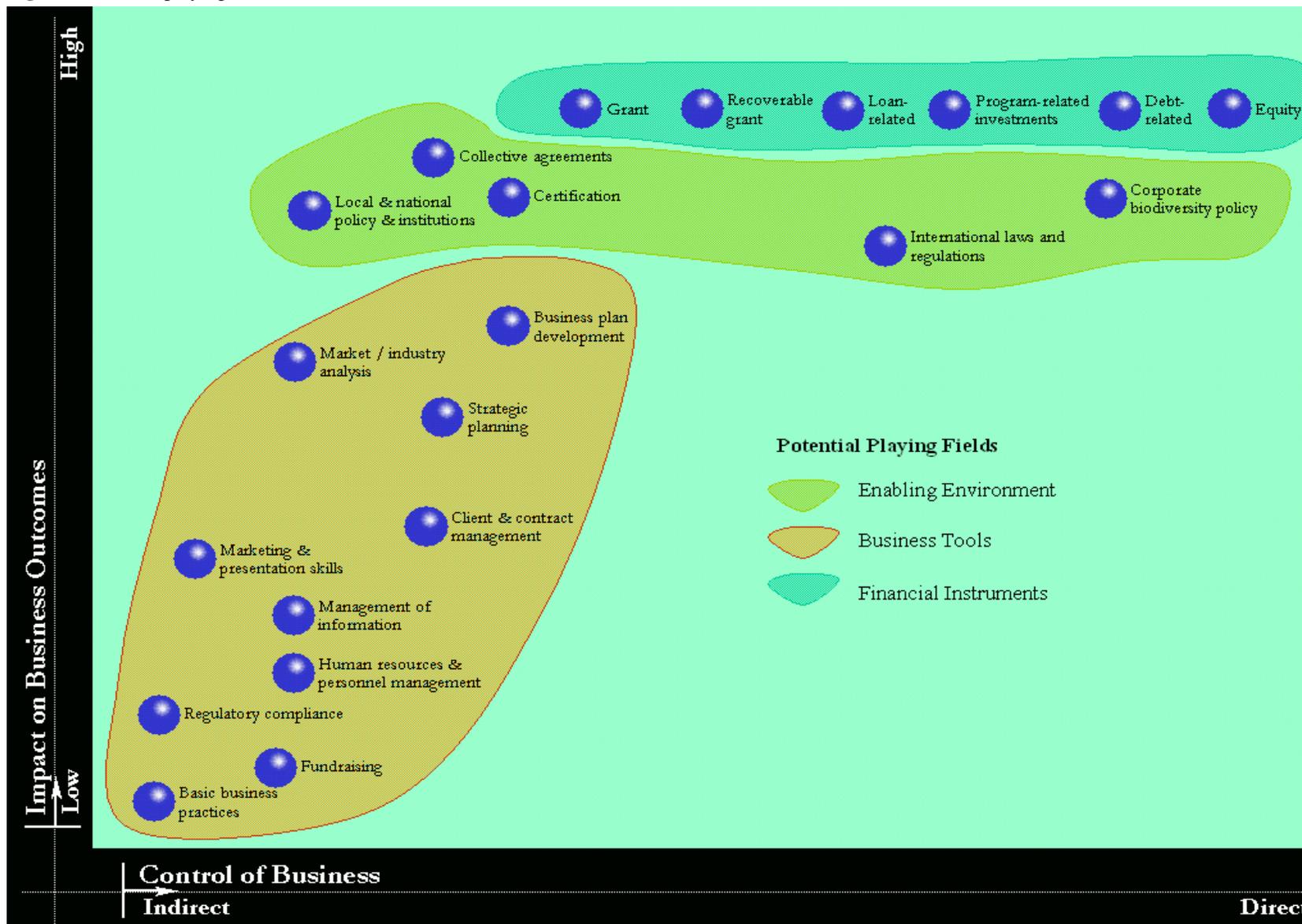
Mechanisms to promote biodiversity business can be distinguished in terms of their influence on business outcomes and the extent to which they imply direct control over firm-level decisions. For example, environmental laws can have major impacts on an entire business sector, but need not imply the direct, ‘hands-on’ involvement of regulators in day-to-day business decisions. At the opposite extreme, the purchase of a company by a private venture capital fund can yield total control over the target firm and its assets, but may have relatively little impact on the sector as a whole. Based on this typology, we define the ‘playing field’ of interest here as those business promotion mechanisms that focus on building biodiversity into existing business practices, or the creation of new markets and businesses based on the conservation and sustainable use of biodiversity ([Figure 13](#)).

In the following pages, we review a range of biodiversity business promotion mechanisms under three broad headings, namely:

- Enabling environment.
- Business tools.
- Sustainable financing instruments.

<sup>129</sup> Other drivers of business investment and performance include consumer preferences, the actions of competitors, access to technology, insurance and other inputs, as well as skilled staff. These and other factors are not considered here.

Figure 13. The 'playing fields' of interest



### 5.1.1 Enabling environment

All businesses operate within a framework of property and use rights, legal liabilities and social norms. Government taxes, subsidies and regulations, as well as voluntary commitments, likewise influence the profitability of private enterprise<sup>130</sup>. These enabling conditions reflect public expectations about the rights, responsibilities and role of business in society.

In the case of biodiversity business, the necessary enabling frameworks are often poorly developed. Biodiversity is generally treated as a public good<sup>131</sup> for which government and charities take responsibility. For most private investors and business managers, if biodiversity means anything at all, it represents a resource to be exploited or an environmental liability, rather than an asset to be conserved and managed in its own right.

A conducive enabling environment is required in order to make it more profitable to conserve biodiversity than to ignore or destroy it. While certain components of biodiversity are relatively easy to commercialise, such as hunting, fishing and ecotourism, other aspects of biodiversity are more difficult to value, let alone to sell. Similarly, many government agencies charged with managing biodiversity fail to capture the potential economic ‘rent’ from consumers of the resources under their control. Nevertheless, as described above, promising approaches are being piloted in several countries which suggest that even intangible biodiversity benefits such as ‘existence value’ can form the basis of viable businesses and / or generate substantial revenue for public resource management agencies, provided the right rules are in place<sup>132</sup>.

Enabling policies to increase rent recovery and stimulate private investment in biodiversity business may be mandatory or voluntary. They include a range of sub-national, national and international laws and regulations, as well as fiscal policy (taxes and subsidies), property law and legal liability regimes. Voluntary enabling frameworks include firm-level biodiversity policies (where these exceed legal requirements) as well as collective agreements. The latter include voluntary certification standards for specific products (e.g. FSC timber), sector-wide initiatives (e.g. the Roundtable on Sustainable Palm Oil), or multi-sector performance and reporting commitments (e.g. the Global Reporting Initiative).

### 5.1.2 Business tools

Growing consumer environmental concerns have stimulated markets for products and production practices that conserve biodiversity. Demand for organic food, sustainably harvested timber and ecotourism, for example, has been growing at double-digit rates<sup>133</sup>. However, to date there has been only limited technical support to small- and medium-scale enterprises seeking to engage in these markets. The little support available has mainly come from NGOs, foundations and aid agencies. Target firms are typically small-to-medium-scale enterprises engaged in activities such as nature-based tourism, organic agriculture, certified ‘sustainable’ forestry, the collection and processing of

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<sup>130</sup> The same applies to public agencies or enterprise that operate like private companies, i.e. charging customers for the provision of goods and services and using the revenue to cover at least part of the costs of supplying them.

<sup>131</sup> Technically, a public good is something that (i) any number of people can enjoy without congestion effects (non-rivalry) and (ii) people cannot be prevented from enjoying (non-excludability). The classic example is a lighthouse. Quasi-public or ‘club’ goods may exhibit attenuated rivalry or excludability. For details see: Cornes, R. and Sandler, T. 1996. *The Theory of Externalities, Public Goods and Club Goods*. Cambridge: Cambridge University Press.

<sup>132</sup> One reason why private conservation efforts typically under-supply biodiversity is that a significant portion of the total “demand” for biodiversity is not backed by money. Although surveys suggest that people are willing to pay for conservation, even in foreign countries they have no intention of visiting, mechanisms are currently lacking to convert this hypothetical willingness-to-pay into real cash flow (see for example: Kramer, R. and Mercer, E. 1997. “Valuing a Global Environmental Good: U.S. Residents’ Willingness to Pay to Protect Tropical Rain Forests,” *Land Economics*, 73: 196-210).

<sup>133</sup> See for example: [www.ecotourism.org](http://www.ecotourism.org), [www.ifoam.org](http://www.ifoam.org), and [www.unece.org](http://www.unece.org).

wild food products, etc<sup>134</sup>. Impressive results have been achieved in some sectors in some parts of the world, notably organic foods and certified timber, while other efforts have been less successful.

### 5.1.3 Financing instruments

Private capital (debt or equity) for biodiversity businesses is scarce – most commercial banks are not familiar with the issue, many projects are too small for direct financing, and most venture capital funds have focused on other, more lucrative sectors. In response, some governments, international agencies, NGOs and private investors have set up programmes to provide long-term finance, often combined with technical assistance, to commercial ventures based on the conservation or sustainable use of biodiversity. These programmes are generally still quite young and small-scale, and have had mixed results, with some no longer being operational, while others have managed to expand and maintain solid repayment rates, if not strong financial returns to date. These programmes employ a range of financing instruments in when investing in such ecoenterprises.

## 5.2 Review of Mechanisms

This section reviews experience with biodiversity business promotion mechanisms in different parts of the world, illustrated with examples from the interviews and literature consulted as part of this Scoping Study. The section first discusses the broader enabling environment for biodiversity business, i.e. policies and institutions including corporate and voluntary initiatives, before looking at a range of business tools and financing instruments used to build biodiversity business at the enterprise level.

### 5.2.1 Creating an enabling environment for biodiversity business

#### 5.2.1 Enabling Environment – Summary

- Policies and institutions to promote biodiversity business have been developed at various levels, from corporate policy to national legislation and multilateral instruments. The most innovative approaches are often at the company or local level
- Both mandatory (binding) and voluntary policies can be used to promote biodiversity business; voluntary initiatives often lead the way where governments are reluctant to move quickly or strongly
- Biodiversity policy relies increasingly on 'market-based' approaches which harness the profit motive to conserve biodiversity, rather than relying on government mandates, restrictions or charity
- A high priority is to reform existing policies that undermine biodiversity, e.g. so-called 'perverse' subsidies that stimulate resource conversion and extraction
- Consensus, capacity-building and rigorous monitoring and reporting are key pre-requisites for the introduction of market-based biodiversity policy, especially in developing countries

Policies and institutions to promote biodiversity business must support both biodiversity conservation and business success. Until the value of biodiversity is fully reflected in market prices, no single variable will express both objectives.

Indicators of business success include trends in sales, profits and return on capital. Additional macro-level indicators include the number and average size of firms involved in a sector, total employment, export revenues, etc.

<sup>134</sup> Bovarnick, A., and Gupta, A. 2003. *Local Business for Global Biodiversity Conservation: Improving the design of small business development strategies in biodiversity projects*. UNDP: New York, NY.

Indicators of biodiversity conservation for businesses are harder to define. The Millennium Ecosystem Assessment assessed 24 key ecosystem services but acknowledged the importance of many others for which data were unavailable. The CBD has adopted a framework of 11 goals and 20 targets to assess progress towards the globally agreed aim of ‘a significant reduction in the current rate of biodiversity loss by 2010’. However, most of these targets are quite general and difficult to measure even at national levels. Although work is underway to develop more specific biodiversity indicators, at present there are no reliable indicators of biodiversity performance that can be easily measured at the level of a company or enterprise<sup>135</sup>.

Even where relevant indicators can be identified, isolating the specific influence of policies and institutions on biodiversity outcomes or business performance is an inexact science. Different criteria and indicators may be needed depending on the scope of the policy (e.g. from corporate to global), the type of business and its relation to biodiversity. Experience and data built up over many years is usually required to evaluate policy impacts with any degree of confidence.

For this study, we assess enabling policies and institutions in terms of their likely impacts on biodiversity business, based on a combination of theory, expert opinion (from the interviews) and a review of the available empirical literature. We start with mandatory (binding) policies and then turn to voluntary initiatives. We include not only policies explicitly intended to promote biodiversity business but also some other policies – notably subsidies for resource-intensive industry – that have significant impacts on the viability of biodiversity business.

### ***Mandatory policy***

Policy-makers can choose from a wide range of policy instruments and institutional frameworks to promote biodiversity business. Their choice depends partly on the capacity of public agencies and the convictions of policy-makers, as well as the nature of property rights over the resource (public or private, concentrated or dispersed), and the scope of government authority (from local to global).

So-called ‘command-and-control’ policies are most common, perhaps because they are relatively simple to conceive (if not to enforce). Such policies typically require firms to limit their activity in sensitive areas, adopt certain performance standards or use particular technologies. In their efforts to satisfy these requirements, firms often seek assistance from external consultants to assist with business planning or development of new capacities. The provision of biodiversity management services is a major market in its own right, as described in the preceding section.

In contrast, ‘market-based’ policies seek to make biodiversity conservation profitable in its own right. We can distinguish mechanisms intended to influence private use of publicly-owned natural resources from mechanisms designed to influence private use of privately-owned resources. The former include various user fees / charges and concession agreements, typically used to maximise the recovery of resource rents by government, while the latter include:

- Property rights and legal liability (e.g. tradable fishing quotas or biodiversity offsets).
- Fiscal policy and public services (taxes and subsidies, including some forms of payment for ecosystem services, provision of public infrastructure).
- Information instruments (e.g. mandatory certification, corporate sustainability reporting, public access to information).

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<sup>135</sup> Tucker, G. 2006. *A Review of Biodiversity Conservation Performance Measures*. Rio Tinto plc and Earthwatch Institute: London and Oxford. See also: [www.conservationmeasures.org/CMP/Initiatives\\_Active.cfm](http://www.conservationmeasures.org/CMP/Initiatives_Active.cfm); [www.insightinvestment.com/responsibility/Engagement/biodiversity.asp](http://www.insightinvestment.com/responsibility/Engagement/biodiversity.asp).

Finally, policies and institutions for biodiversity business can be distinguished in terms of the scale at which they apply, from local to global. The discussion below begins at the international level, before turning to national and local policies and institutions.

#### *International laws and regulations*

Environmental protection is supported by a growing body of international law and regulations. In 2002, UNEP identified more than 500 international treaties and other agreements related to the environment, including 323 regional agreements. Most of these were negotiated over the past 30 years. By far the largest cluster concerns the marine environment. Biodiversity-related conventions form an important but smaller cluster, including the World Heritage Convention (1972), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973), the Convention on Migratory Species (CMS) (1979), and the CBD (1992).

International biodiversity policy tends to be restrictive rather than enabling of business, where it has any impact at all. A good example is CITES, which requires Parties to ensure that exports of species covered by the Convention are maintained within levels that do not threaten species survival, and that species considered to be endangered are not imported for ‘primarily commercial purposes’. The most potent instrument under CITES is to ban trade in endangered species or in products derived from them, e.g. elephant ivory or textiles based on endangered camelids. The effectiveness of trade bans on wildlife conservation is hotly debated. Impacts on business are likewise mixed, with some business enterprise undermined by trade bans while others may benefit<sup>136</sup>. Recent discussions within CITES have explored opportunities to develop positive economic incentives to encourage the conservation and sustainable use of wild fauna and flora, as a complement to existing, more restrictive policies.

Other international environmental policies with significant impacts on biodiversity business include:

- The Cartagena Protocol on Biosafety, under the CBD, which regulates international transfers of genetically modified organisms.
- The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of Their Utilization, a voluntary agreement under the CBD.
- The International Treaty on Plant Genetic Resources, negotiated under the auspices of the Food and Agriculture Organization.
- The Kyoto Protocol, under the Framework Convention on Climate Change, which includes provisions for mitigating climate change through forestry and land use activities that affect biodiversity.

The last of these is particularly interesting, from a biodiversity business perspective, due to the rapid growth of a commercial demand for climate mitigation services. Most climate mitigation is currently provided through industrial-scale destruction of GHGs, capture of methane from landfill, energy efficiency and renewable energy supply<sup>137</sup>. However, as discussed in [Section 4.2.5](#), there is considerable potential to provide cost-effective climate mitigation through forestry and other land use activities that sequester atmospheric carbon in biomass.

The adoption by the CBD of a Decision on Engagement of the Private Sector, at the most recent Conference of the Parties in Curitiba, Brazil in early 2006, suggests an emerging consensus regarding the need to enlist business in the conservation and sustainable use of biodiversity. Moves in this direction remain fairly timid, however, with little immediate prospect of strong frameworks being introduced to enable or encourage biodiversity business. Some developing country governments, for example, have expressed concern about the term ‘ecosystem services’, as promoted by the MA,

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<sup>136</sup> For example, the introduction of a ban on trade in endangered species will undermine the business of many traders but may also create new opportunities for captive breeding (or for smuggling).

<sup>137</sup> Franck Lecocq, Franck and Karan Capoor. 2005. *State and Trends of the Carbon Market 2005*, (May), 39 pp; Point Carbon. 2006. *Carbon 2006*, Hasselknippe, H. and K. Røine (eds.), 60 pp.

arguing that reference to benefits obtained from nature as services could imply that people will have to pay for benefits they formerly enjoyed for free. Similarly, the CBD remains unable even to reach consensus on the definition of incentives for biodiversity, let alone agree a detailed programme of work<sup>138</sup>. In short, international biodiversity policy continues to rely heavily on voluntary guidelines and reporting, supplemented in a few cases by restrictions on trade. Positive incentives for biodiversity business are rare at this level.

#### *Local and national policy and institutions*

In contrast to the dearth of enabling policy for biodiversity business at an international level, many local, state / provincial and national governments rely increasingly on market-based instruments to conserve biodiversity. A comprehensive review is beyond the scope of this study. Nevertheless, we highlight here some major themes and examples based on the interviews and literature review.

As noted above, one broad category of biodiversity policy includes mechanisms that influence how private firms (or consumers) use *publicly-owned natural resources*. Many of the biodiversity business sectors described in the previous section are based on the commercial (legal) use of publicly owned resources, such as:

- Forestry operations based on the harvest of timber from public lands;
- Capture fisheries that exploit fish stocks in national and / or international waters;
- Sustainable harvest of NTFPs from public lands;
- Commercial bioprospecting based on wild genetic resources; and
- Ecotourism enterprise linked to public protected areas.

In all such businesses, public policy and institutions play a critical role, as they determine the conditions under which private enterprise (or individual consumers) can secure access to natural resources. Well-designed and effectively enforced policies can help ensure the conservation and sustainable use of public resources ([Box 24](#)). Badly designed or ineffective policies, on the other hand, can lead to rapid depletion of valuable resources, excessive pollution or other adverse environmental effects, inequitable distribution of costs and benefits, waste, fraud, etc.

Another broad category of biodiversity policy focuses on how to influence the private use of *privately-owned resources*. The rationale for policy intervention, in this case, is to ‘internalise’ the environmental impacts of private resource use in business decisions, particularly where such impacts fall outside the normal profit-and-loss calculus of business managers.

As noted above, most biodiversity policy relies on so-called ‘command and control’ approaches. These typically specify what private resource users must do (or not do), as well as when, where and how they must do it (or not do it). Examples include technological mandates (e.g. minimum mesh size of fishing nets, bans on hunting with certain types of traps), geographic restrictions (e.g. land use zoning), harvest quotas or size class limits (e.g. minimum diameter rules for logging), closed seasons (e.g. allowing hunting only during part of the year), or maximum allowable emissions of pollutants to air and water from industrial facilities.

More recently, many governments have begun to employ ‘market-based’ policies for biodiversity conservation. These seek to align private incentives with public objectives, such as conservation and sustainable use, by harnessing and guiding market forces rather than simply restraining them.

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<sup>138</sup> A recent report on the 8<sup>th</sup> Conference of the Parties of the Convention on Biological Diversity notes with respect to economic incentives that “*discussion focused purely on the process ... as delegates agreed that no agreement would be reached on substance*” ([www.iisd.ca/download/pdf/enb09363e.pdf](http://www.iisd.ca/download/pdf/enb09363e.pdf)).

**Box 24.** Biodiversity policy in the forest sector<sup>139</sup>

Almost four-fifths of the world's forests are – under national law – owned and administered by governments. Up to half of this “public forest estate” is managed for timber production under concession agreements with private firms. Contemporary policy debates with respect to the use of forest lands by private timber interests focus on:

- The division of resource rents between public land owners and concessionaires.
- The environmental impacts of logging operations and how to reduce them.
- Reducing illegal logging and exports (e.g. harvests in excess of quotas or outside concession areas, smuggling where policy forbids the export of certain species or unprocessed logs, transfer pricing, etc).

A variety of incentive mechanisms are used to address such concerns. With respect to rent capture, an important innovation is to switch from administratively determined concession fees and export taxes (which often fail to keep up with market prices) to competitive tendering for logging rights or export quotas. Illegal logging, smuggling, transfer pricing and other illicit behavior is generally less amenable to simple policy interventions, although some countries have had good results by contracting out export monitoring services.

A variety of mechanisms are used to reduce the environmental impacts of logging on public forest lands. One option is to require private timber concession holders to post a bond which is reimbursable subject to meeting certain performance standards (e.g. damage to residual vegetation, impacts on wildlife or water supply, etc). Provided the bond is set at a realistic level (i.e. where company profits are significantly at risk) and effective monitoring and enforcement is in place, the influence on company performance can be considerable. Another mechanism that has received significant attention in recent years is the certification of environmental (and in some cases, social) performance by third parties, as discussed below.

One of the simplest and most common forms of market-based incentive is tax relief on private donations. In the USA, for example, income tax relief on charitable contributions has encouraged donations of land or ‘development rights’ to environmental trusts around the country, protecting over 810,000 ha<sup>140</sup>. Similar tax incentives are used in Europe and some developing countries ([Box 25](#)).

While tax credits can be a useful mechanism to promote private conservation in developed and some middle-income countries, fiscal policy is not always supportive of conservation. One informant noted that in South Africa, private philanthropists pay a ‘donations tax’ rather than receiving a tax credit if they donate land for conservation purposes. Similarly, local rates (land taxes) in South Africa are generally lower for agriculture than for conservation.

A variation on tax incentives is the notion of ‘payments for ecosystem services’ (PES)<sup>141</sup>. Existing systems of PES seek to create financial incentives for resource users and managers to adopt, voluntarily, activities and technologies that generate environmental benefits. PES is a recent phenomenon – most schemes were developed in the last decade or so – but the approach is increasingly popular as a tool for conservation on private land.

Many PES schemes are funded by government and administered by agricultural ministries, as a less market-distorting alternative to food price supports or input subsidies.

<sup>139</sup> White, A. and Martin, A. 2002. *Who Owns the World's Forests? Forest Tenure and Public Forests in Transition*. Forest Trends and Center for International Environmental Law: Washington, D.C.

<sup>140</sup> Clark, D., and Downes, D. 1996. *What Price Biodiversity? Economic Incentives and Biodiversity Conservation in the United States*, Centre for International Environmental Law, Washington DC.

<sup>141</sup> Also sometimes referred to as ‘markets for environmental services’, ‘rewards for ecological services’, ‘compensation for ecosystem services’ etc.

Examples of PES include payments by government or other private parties to private landowners to conserve or restore native vegetation or to adopt low-external-input production methods. In theory, payment schemes could be developed for any ecological benefit generated by the land. In practice, PES schemes are most often developed for ecosystem services that are relatively easy to measure and most highly valued by beneficiaries. These conditions vary from one country to another, leading to diverse experiences with PES for different ecosystem services in different locations.

Another market-based approach to biodiversity conservation involves the creation by government of new rights and liabilities affecting the use of resources. Examples include the emergence of wetland banking in the US<sup>144</sup>; trade in forest conservation obligations in Brazil<sup>145</sup>, and emerging markets for groundwater salinity credits in Australia<sup>146</sup>. What these initiatives have in common is the possibility of trade, namely buying and selling, environmental obligations to meet government mandates. Without a trading mechanism, of course (or another financial incentive such as a tax credit), there is only the legal obligation to comply with the mandate. This may be sufficient to achieve public environmental goals, assuming that enforcement is effective, but it does not provide any positive incentive to provide environmental benefits and is likely to result in higher costs of compliance.

**Box 25.** Fiscal incentives for private reserves in Brazil<sup>142, 143</sup>

Under Brazil's Programme for Private Reserves of Natural Heritage (RPPN), private landowners can voluntarily declare all or any part of their property to be permanently protected. Launched by Federal Decree (1996) and State Decree (1998), the RPPN Programme was revised and incorporated in legislation passed by Congress in 2000. To date, six of Brazil's 26 states have enacted legislation that mirrors the federal law. Landowners must apply for RPPN status with the Brazilian Environmental Institute or, where laws permit, with local officials. If approval is granted, landowners receive breaks on property taxes and priority access to certain public financing programmes, such as the National Environmental Fund. Under the RPPN programme, land use is restricted to research, environmental education, ecotourism and limited resource extraction. The RPPN has been especially useful as a means of consolidating fragments of natural habitat and creating ecological corridors. Approximately half a million hectares of privately-owned land are now protected by state and federal laws in Brazil, representing just under 0.5 percent of total conservation units in the country. Since 1990, nearly 600 individuals, corporations and activist groups have voluntarily registered private property under the RPPN scheme.

Tax incentives, payments for ecosystem services and habitat banking (or 'offsets') all have the potential to stimulate more conservation on private land, particularly in countries where such incentives are not yet in place. At the same time, an urgent priority in most countries is to remove or reform existing 'perverse' incentives that damage biodiversity or undermine conservation efforts. These include government subsidies for a range of sectors and uses of natural resources ([Table 3](#)).

<sup>142</sup> Hinchberger, B. 2004. "Private Reserves embrace ecotourism in Brazil" ([www.brazilmax.com/](http://www.brazilmax.com/)); Bernades, A.T. Undated. "Brazil – Federal Conservation Units" *Biodiversity in Development Case Study Series*, European Commission, UK Department for International Development and IUCN — The World Conservation Union: Brussels.

<sup>143</sup> Shine, C. 2004. 'Using tax incentives to conserve and enhance biological and landscape diversity in Europe.' Report to the 8<sup>th</sup> meeting of the Committee of experts for the development of the Pan-European Ecological Network, Krakow, 5-6 October 2004 (available from: [www.strategyguide.org/](http://www.strategyguide.org/)); Ingo Bräuer, Rainer Müssner, Katrina Marsden, Frans Oosterhuis, Matt Rayment, Clare Miller, Alena Dodoková. 2006. *The Use of Market Incentives to Preserve Biodiversity: Final Report*. Framework contract for economic analysis ENV.G.1/FRA/2004/0081. Ecologic (July).

<sup>144</sup> Wilkinson, J., and Kennedy, C. 2002. *Banks and Fees: The status of off-site wetland mitigation in the United States*. Environmental Law Institute: Washington, D.C.

<sup>145</sup> Chomitz, K. M., Thomas, T. S. and Brandão, A.S.. 2003. Creating markets for habitat conservation when habitats are heterogeneous. Paper presentation at the *Fourth BioEcon Workshop on the Economics of Biodiversity Conservation – Economic Analysis of Policies for Biodiversity Conservation*, Venice International University, Venice, 28-29 August 2003.

<sup>146</sup> van Bueren, M. 2001. *Emerging Markets for Environmental Services: Implications and opportunities for resource management in Australia*. RIRDC Publication No 01/162, Rural Industries Research and Development Corporation: Barton, Australia.

Such reforms can relieve pressure on natural resources and have the additional merit of saving money, although they can be difficult to enact in the face of opposition from vested interests<sup>147</sup>.

**Table 3.** Global subsidies 1994-98 (US\$ billion per annum)<sup>148</sup>

	OECD*	Non-OECD	World	OECD subsidies as % of world subsidies
<b>Natural resource sectors</b>				
Agriculture	335	65	400	84
Water	15	45	60	25
Forestry	5	30	35	4
Fisheries	10	10	20	50
Mining	25	5	30	83
<b>Energy and industry sectors</b>				
Energy	80	160	240	33
Road transport	200	25	225	89
Manufacturing	55	negligible	55	100
<b>Total</b>	<b>725</b>	<b>340</b>	<b>1065</b>	<b>68</b>
Total as % GDP	3.4	6.3	4.0	

\* Organisation for Economic Co-operation and Development

There are many barriers to the reform of perverse incentives and wider use of market-based incentives for biodiversity conservation. Chief among these is the lack of technical and enforcement capacity in many environmental agencies, especially in the developing world, to design and implement biodiversity-friendly policy reforms<sup>149</sup>. There is also concern, in some quarters, about the potential adverse equity impacts of market-based approaches to environmental management<sup>150</sup>. Additional challenges include the relatively narrow and shallow tax base of the least developed countries, where priority given to broadening the tax base and increasing revenues rather than granting tax exemptions or making payments for activities often considered ‘un-productive,’ such as biodiversity conservation. In this context, it may be more realistic to identify the *private* beneficiaries of ecosystem services and develop incentives which can mobilise their willingness-to-pay, rather than relying on public funds.

### ***Voluntary policies***

Partly out of frustration at the slow pace of official policy reform and innovation with respect to biodiversity, some NGOs, international agencies and far-sighted companies have developed a range of voluntary policy initiatives to promote biodiversity conservation in existing businesses, or to develop new biodiversity businesses. Some of these initiatives are discussed below, starting with company-level policy before turning to collective agreements involving several businesses or entire sectors.

#### *Corporate biodiversity policy*

Private participation in biodiversity conservation is not only motivated by profit or tax savings. Many companies undertake voluntary action to support biodiversity conservation, far in excess of regulatory

<sup>147</sup> World Bank. 2005. *Environmental Fiscal Reform: What should be done and how to achieve it*. The World Bank: Washington, D.C.

<sup>148</sup> van Beers, C and van den Bergh, J. 2001. “Perseverance of perverse subsidies and their impact on trade and environment”, *Ecological Economics*, 36: 475-486.

<sup>149</sup> Bell, R.G. and Russell, C. 2002. “Environmental Policy for Developing Countries” *Issues in Science and Technology* Spring: 63-70.

<sup>150</sup> Friends of the Earth International. 2005. *Nature for Sale: The impacts of privatizing water and biodiversity*. Issue 107 (January).

requirements. Such contributions can generate significant business for biodiversity service companies as well as funding for conservation organisations.

Typically, the first step for a business seeking to develop a biodiversity policy is to undertake a biodiversity risk assessment of its operations. This may focus narrowly on the direct ‘footprint’ of the company on the land or seascape. Alternatively, it may extend to a ‘lifecycle’ analysis of the company’s raw material supply chains, employee lifestyle choices, and the biodiversity impacts of how customers use and dispose of their products. Benchmarks may be defined internally or relative to other leading firms in the same (or another) sector. The results of such a risk assessment are often used to define corporate biodiversity performance targets, combined with management assessment, reporting and incentive systems to motivate continuous improvements over the long term, and eventually reported either internally or publicly.

Most stages in the development and implementation of corporate biodiversity policy require external support, which may be provided by commercial consulting firms or non-profit organisations. The global market in corporate BMS is not well documented but probably exceeds several US\$ billion annually<sup>151</sup>.

In the case of companies with a large ‘footprint’ on the land or seascape, such as energy, mining or forest products industries, conservation action may be linked explicitly to the environmental impacts of the companies’ operations. The mining company Rio Tinto, for example, announced their aim to have a ‘net positive impact’ on biodiversity, going beyond conventional impact mitigation and rehabilitation measures by making additional contributions to biodiversity conservation in regions where they operate<sup>152</sup>. BC Hydro, a Canadian electric power utility, has likewise committed itself to a long-term goal of ‘no net incremental environmental impact’, entailing investments in ecological compensation and restoration where adverse impacts cannot be avoided<sup>153</sup>. Several other companies have reported similar voluntary initiatives.

#### *Collective agreements with or among businesses*

While company-level biodiversity initiatives have had some success, in some cases stimulating parallel efforts by competitors, the quickest route to sector-wide change typically involves several leading companies working together, often with NGOs and governments. Several business networks for sustainable development have emerged in recent years, at both national and global levels (e.g. World Business Council for Sustainable Development (WBCSD) and its national affiliates, World Environment Center (WEC), International Business Leaders Forum (IBLF), etc). Many of these have dedicated significant resources to work on biodiversity or ecosystem management, helping to raise awareness in business circles, identify and share best practice, develop common standards for corporate biodiversity management and reporting, etc. Such initiatives can be seen as part of broader efforts to raise the standard of corporate social and environmental responsibility ([Box 26](#)).

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<sup>151</sup> At a global level, the environment industry was estimated to have generated revenues of US\$550 billion in 2001. Revenues were expected to reach US\$620 billion by 2005, split equally between environmental goods and environmental services and with the fastest growth in transition and developing countries. Data are from Environmental Business International, cited in: Kennett, M. & Steenblik, R. 2005. “Environmental Goods and Services: A synthesis of country studies” *OECD Trade and Environment Working Papers* 2005/3 OECD Publishing.

<sup>152</sup> [www.riotinto.com/library/microsites/SocEnv2004/landacc/211c\\_guidprincip.htm](http://www.riotinto.com/library/microsites/SocEnv2004/landacc/211c_guidprincip.htm).

<sup>153</sup> [www.bchydro.com/info/reports/2005annualreport/newpurpose\\_0\\_4.html](http://www.bchydro.com/info/reports/2005annualreport/newpurpose_0_4.html).

**Box 26.** Corporate social responsibility standards and biodiversity

Corporate social responsibility (CSR) refers to the idea that business should improve its performance with respect to environmental and social issues, over and above compliance with the law. The term is new if not the practice; some 19<sup>th</sup> Century industrialists, for example, invested in social-welfare projects only distantly related to their commercial interests. More recently, public agencies, NGOs and industry groups have defined and promoted a wide range of social and environmental standards, guidelines, performance assessment tools and / or reporting systems for particular products and industries or for common business processes. Leading examples include:

- ISO 14001, an environmental management standard developed by the International Organization for Standardization ([www.iso.org](http://www.iso.org)).
- Equator Principles, which set a benchmark for the financial industry to manage social and environmental risk in project financing ([www.equator-principles.com](http://www.equator-principles.com)).
- Global Reporting Initiative, which provides a framework for organisational report on economic, environmental and social performance ([www.globalreporting.org](http://www.globalreporting.org)).
- Performance Standard 6 on *Biodiversity Conservation and Sustainable Natural Resource Management*, developed by the International Finance Corporation for all projects it finances ([www.ifc.org/ifcext/enviro.nsf/Content/PerformanceStandards](http://www.ifc.org/ifcext/enviro.nsf/Content/PerformanceStandards)).

The impact of CSR standards on business performance is mixed. In some cases, such standards can help to identify or add impetus to cost-saving measures that clearly benefit the bottom line (e.g. energy efficiency). In other cases, the benefits of achieving certain CSR standards may be less tangible, such as improvements in employee morale or how a company is perceived by its customers. It is often suggested that CSR is simply a form of ‘green wash’ which seeks to improve the image of business but involves little significant change in behaviour or impact. To counter this perception, CSR standards increasingly require companies to adopt quantitative targets and to submit to independent validation or certification of their performance. Biodiversity has not traditionally been a central focus of CSR but this is changing due to increasing public and business awareness of the issue, notably since publication of the Millennium Ecosystem Assessment in 2005.

One of the most well-known forms of collective agreement is the use of voluntary eco-labelling and certification schemes to recognise more ‘sustainable’ products and services, based on their social and environmental performance<sup>154</sup>. Typically initiated by NGOs, certification schemes often seek early endorsement from groups of industry leaders (e.g. buyers’ clubs) in an effort to gain market share. Several certification schemes have gained wide consumer recognition and a small but rapidly growing share of total sales in some markets (e.g. coffee, timber, fish, organic food). These trends can be expected to continue in the short- and medium-term, and probably beyond, with demand for a range of certified goods and services growing at a higher rate than for ‘conventional’ products. The strengths and weaknesses of certification, using coffee as an example, are examined in [Table 4](#). Other examples of collective agreements for biodiversity conservation involving business are described in [Box 26](#).

<sup>154</sup> See for example: Bass, S., Thornber, K., Markopoulos, M., Roberts, S. and Grieg-Gran, M. 2001. *Certification's Impacts on Forests, Stakeholders and Supply Chains*. International Institute for Environment and Development: London; Eba'a Atyi, R. and Simula, M. 2002. *Forest Certification: Pending Challenges for Tropical Timber*. Background Paper. ITTO: Yokohama; Upton, C. and Bass, S. 1995. *The Forest Certification Handbook*. Earthscan: London.

**Table 4.** Certification strengths and weaknesses: the case of coffee

Issue	Pros	Cons
1. Complexity	Varies by system (at least 7 separate systems). All require internal controls, detailed information systems, and traceability / segregation. Easier for large farms & cooperatives; subsidised technical assistance available for small producer in many countries.	Very difficult for small producers without subsidised external technical assistance. Certification with multiple schemes is common, adding to the complexity. National policies / requirements vary significantly for organic standards.
2. Costs	Typically significantly less than economic benefits, after initial costs. Composed of: (i) initial investments in new practices, infrastructure, systems, training, etc. (ii) annual fees and (iii) annual inspection costs. In the case of organic, lower production during transition period (3 years) from conventional. Varies by system. Some donor and NGO support to cover costs. Economies of scale possible with larger areas / volumes.	Typically high initial costs; often prohibitive for small producers, without donor support and external assistance.  Annual costs are typically several thousand US dollars for larger farms and cooperatives. Under most systems, the costs have to be incurred before sale of certified product; limited finance for such expenditure.
3. Market Access	Generally improved with certification, though varies by system and demand for specific origins and characteristics. Demand for some systems / origins is growing more rapidly than conventional market.	Market supply exceeds demand for some systems and origins, notably organic and fair trade. Total volume of all certified coffee < 2% of global volume.
4. Price Premiums	Varies significantly by system; only fair trade has price floors and fixed premiums (Utz Kapeh also has a minimum price).	Declining over time for certain systems and origins. Increasingly linked to product quality. Significant volumes of certified end up sold as conventional.
5. Availability	Organic, Fair Trade and Utz Kapeh are available in most origins.	Rainforest Alliance, Bird Friendly / Shade, Starbucks' C.A.F.E. Practices and Conservation Coffee (CI) are mainly available in Latin America, though expanding to other regions.
6. Credibility	Most systems have rigorous, consistent standards, with third party verification / certification. In general, standards and practices are becoming more rigorous and consistent over time.	Not all are accredited with independent entities that monitor implementation standards and practices. The rigor and requirements of verifiers / certifiers can vary significantly.
7. Biodiversity Conservation	Rainforest Alliance, Shade / Bird Friendly, and C.A.F.E. Practices have relatively comprehensive biodiversity requirements. Other systems are incorporating more environmental components over time. Some small-scale pilot carbon sequestration and watershed protection projects.	Few systems have solid biodiversity monitoring and evaluation requirements. Only Conservation Coffee attempts to measure impact at a landscape level, though Rainforest Alliance is implementing landscape-level pilot projects

***Key lessons / challenges and opportunities***

Establishing policies and institutions to enable biodiversity business is not easy. The first step is to build consensus that biodiversity is sufficiently important to justify policy and institutional reform. Legislative change, in particular, can be difficult to secure where there are large economic interests at stake. As can be seen in the case of climate policy, achieving consensus on the need for change is a painstaking process. Biodiversity can be even harder to 'sell', due to its inherent complexity (genes,

species and ecosystems). Economic valuation of biodiversity benefits can help make the case for policy change, as well as clarifying priorities and trade offs<sup>155</sup>.

Proposals for policy reform must be technically and financially feasible. In other words, business managers need to understand how existing production systems or uses of resources can be modified, at reasonable cost, to achieve biodiversity benefits. This implies the need for biodiversity management and assessment tools that can deliver credible results at the level of individual enterprise.

There is also a need for consensus on the potential and desirability of market-based approaches to conservation. Both practical and ideological objections to the use of market-based mechanisms may be raised. Practical concerns mainly relate to capacity constraints for biodiversity policy analysis, design and implementation, particularly in developing countries. This implies the need for capacity strengthening in the use of market-based incentive mechanisms. Ideological arguments are more difficult to address, but imply the need for more information about the relative effectiveness, efficiency and equity impacts of alternative biodiversity policy mechanisms.

Where consensus is lacking to introduce mandatory policy reforms for biodiversity business, progress can be made (and useful lessons learned) using voluntary approaches. Voluntary enabling policies for biodiversity business tend to rely more heavily on ‘carrots’ than ‘sticks’, given their lack of robust compliance mechanisms (i.e. legal prosecution). The same applies at an international level, due to the absence of a global police force and the reluctance of most governments to impose or submit to international sanctions. Hence the heavy reliance on voluntary certification and reporting on business performance and processes with respect to biodiversity. An exception is *firm-level* biodiversity policy, which may be voluntary for the firm but is mandatory for employees or suppliers and can include significant ‘sticks’ as well as carrots. A key factor determining the choice of policy is the possibility of imposing sanctions for non-compliance, e.g. dismissal of staff or cancellation of contracts.

## 5.2.2 Biodiversity business tools

### 5.2.2 Biodiversity Business Tools – Summary

- Conservation organisations often lack basic business planning and management skills, while many businesses lack biodiversity management systems. Both needs can be addressed using new biodiversity business tools
- Business development assistance to biodiversity enterprise is most effective when linked to biodiversity management advice and financing, and vice versa. Such assistance should continue well beyond the set-up phase
- Biodiversity business tools have been developed to help companies to comply with environmental regulations, but also for business planning, management, governance and performance assessment
- Indicators and measurement tools to assess business biodiversity performance are in the early stage of development. They need to be credible but also cost-effective and adapted to the timeframe of business investment decisions

### **Introduction**

[Section 3](#) highlighted some deficiencies with conventional approaches to biodiversity conservation, including a lack of business planning and management skills. Much is known about general business planning and many organisations provide this as a service to non-profits and small business alike,

<sup>155</sup> Pagiola, S., von Ritter, K. and Bishop, J. 2004. *Assessing the Economic Value of Ecosystem Conservation*. Environment Department Paper No. 101. The World Bank: Washington, D.C. (October).

such as Technoserve<sup>156</sup> or GroFin<sup>157</sup>. There has been less success in applying such tools to conservation, although some recent efforts to address this gap centre on building alliances between conservation groups and the private sector to provide business planning support. An example is the business skills transfer programme conducted by Shell with IUCN and the Shell Foundation with UNESCO. Shell's affiliation with IUCN Asia focuses on strengthening skills in communication, external affairs and human resources skills, whilst the Shell Foundation / UNESCO programme has developed 3-year business plans with a number of select natural World Heritage Sites. The programme aims to produce a generic business planning toolkit for use by the wider conservation community<sup>158</sup>.

#### **Basic Business Tools**

Basic bookkeeping and accounting  
 Regulatory compliance (fiscal reporting)  
 Client and contract management  
 Marketing, branding and communication  
 Fundraising  
 Strategic Planning  
 Market/industry analysis  
 Management systems (e.g. ISO 9001 or 14001)  
 Business Plan development  
 Human resources management

One lesson emerging from the interviews is the critical importance of linking business support with financing. Often these are kept separate, with consultants brought in to prepare finance (but not business) plans and fund managers having limited understanding of the business risks that investees face. Furthermore, the costs of providing business development assistance should not be underestimated. As one informant stated, these costs are exacerbated in many developing countries by the absence of qualified individuals and organisations able to provide such assistance, leading to reliance on expensive international consultants. Another informant suggested that developing adequate financial management systems is a priority during the early phases of operation, as these would determine whether a project can be commercially viable and without which any potential biodiversity benefit may not materialise or be sustainable.

#### ***A typology of biodiversity business tools***

Most existing biodiversity business tools are project specific and focus on helping businesses comply with permitting processes – hence the large number of guidelines related to:

- Biodiversity and Impact Assessment<sup>159</sup>.
- Integrating biodiversity into management systems<sup>160</sup>.
- Integrating biodiversity into the oil / gas lifecycle<sup>161</sup>.
- Biodiversity Action Plans (BAPs)<sup>162</sup>.
- Biodiversity indicators for business<sup>163</sup>.

Draft tools to support businesses and investment processes that seek to deliver biodiversity benefits were developed by the IFC and IUCN to support several proposed biodiversity business initiatives (e.g. the European Conservation Farming Initiative, the Kijani Initiative). These “BioTools” (see [Table 5](#)) were intended to facilitate setting up, financing, managing or monitoring biodiversity business investments. Potential users include financial institutions, entrepreneurs and groups of

<sup>156</sup> [www.technoserve.org/](http://www.technoserve.org/).

<sup>157</sup> [www.grofin.com/](http://www.grofin.com/).

<sup>158</sup> The Shell Foundation's participation in this programme comes under the auspices of the Enhancing Our Heritage Project – a joint venture project between UNESCO, United Nations Foundation, The Nature Conservancy, World Commission on Protected Areas and University of Queensland (see [www.enhancingheritage.net/about.htm](http://www.enhancingheritage.net/about.htm)).

<sup>159</sup> [www.iaia.org/Non\\_Members/Pubs\\_Ref\\_Material/SP3.pdf](http://www.iaia.org/Non_Members/Pubs_Ref_Material/SP3.pdf); [www.theebi.org/products.html](http://www.theebi.org/products.html).

<sup>160</sup> [www.theebi.org/products.html](http://www.theebi.org/products.html).

<sup>161</sup> [www.ipieca.org/](http://www.ipieca.org/).

<sup>162</sup> [www.ipieca.org/](http://www.ipieca.org/).

<sup>163</sup> [www.theebi.org/products.html](http://www.theebi.org/products.html).

companies interested in biodiversity business opportunities, as well as other organisations, such as NGOs, PA authorities, or government agencies, interested in supporting biodiversity businesses.

The IFC / IUCN projects never came to fruition and the tools were never fully tested in practice, hence it is difficult to assess their efficacy. They appear to impose a heavy burden on project developers and managers and may not be cost-effective. Nevertheless, elements of the “BioTools” could be adapted for future biodiversity business initiatives, while the process of developing them offers useful lessons about collaboration between private investors and conservation groups.

**Table 5.** BioTools for biodiversity enterprise

<b>Tool</b>	<b>Purpose</b>
BioDefinition	To establish the biodiversity context of the business and identify potential linkages between the business and biodiversity in the bioregion. The BioDefinition tool is used to guide early decisions about creating or investing in a biodiversity business. It provides businesses and investors with an initial idea of the biodiversity-related risks and opportunities associated with the business. Potential investors and sponsors can use results to screen potential investments for their positive contribution to biodiversity.
BioSwot	To analyse the key strengths, weaknesses, opportunities and threats in the linkages between the business and the biodiversity in the bioregion. The BioSwot is used to guide the further development of a Biodiversity Business Plan (BBP) or to prepare a more detailed analysis of an investment opportunity.
Biodiversity Management Plan	To define a set of actions by which biodiversity performance of the business can be optimised, and to assist in integrating the Biodiversity Management Plan (BMP) with the business development plan. The BMP is usually developed during the later stages of business planning or as a key element of pre-investment appraisal, following the application of the BioDefinition and BioSwot tools.
BioGovernance	To put in place structures to preserve the biodiversity integrity of the business and to secure achievement of biodiversity performance. The BioGovernance tool is applied when institutional arrangements for the biodiversity business are developed and is closely linked to the development of the BMP and BBP.
BioPerformance Monitoring	To evaluate and report on the business’ achievement of objectives. The tool is applied throughout the life of the project from the time business activity commences or at any time during the lifetime of the biodiversity business, after the completion of the key inputs, namely determination of biodiversity objectives, and BMP completion.

VV is one of the few bio-enterprise investment funds with a well-developed, pre-investment biodiversity review process (supplemented by post-investment biodiversity monitoring using a pressure-state-response model). In the pre-investment stage, VV analyses the location of the enterprise and its contributions to biodiversity-related outcomes on PAs, threatened species and biological corridors. Only after these aspects have been reviewed is the proposal presented to a committee of CI scientists. VV tends to rely on grant funds to conduct biodiversity baseline studies. These cost, on average, US\$9,000 per baseline and take 8-12 months to prepare.

### ***Key lessons / challenges and opportunities***

One difficulty facing all conservation interventions is to define outcome indicators that can be assessed in a timely fashion, whether for pre-investment appraisal or ongoing performance monitoring and evaluation. This is a particular challenge for biodiversity business, where rapid decision-making is essential. For example, the average time taken by VV to close a deal (from conception) is between 8 and 12 weeks. A recent report<sup>164</sup> lists some factors related to developing appropriate indicators, shown in [Box 27](#).

<sup>164</sup> A Review of Biodiversity Conservation Performance Measures, Earthwatch Institute (Europe), March 2006.

Both investors in and managers of biodiversity business need reliable tools to determine their added value, i.e. the magnitude of their impact on biodiversity. This challenge is not to be under-estimated and requires:

- Screening criteria that provide an effective filter for financially attractive investment propositions while at the same time ‘weeding out’ those that are unlikely to deliver biodiversity benefit.
- Tools (e.g. criteria, indicators, checklists, etc.) that can also ensure benefits to the poor (or at least no adverse impact on vulnerable groups).
- Targets, criteria and indicators of biodiversity benefit adapted for use in different business contexts (e.g. commodity producers, service providers, etc).
- Cost-effective tools that match the level of effort required to implement them with the level of investment in a given enterprise.

**Box 27.** Indicators of biodiversity performance

- “performance evaluations should ... include an integrated assessment of responses to biodiversity conservation needs (i.e. the quantity and quality of actions and processes) and their impacts on pressures on biodiversity (i.e. threats).”
- “measures of conservation project performance should also assess impacts on control sites (i.e. representative areas outside the influence of the conservation activities) to assess additionality and displacement effects.”
- “ideally measurements should include a pre-project period to establish baseline trends in biodiversity and pressures, and extend to long-term monitoring of the entire period that the project may influence.”
- “most systems that have been developed or recommended for biodiversity conservation performance measurements have focused on indirect indicators that measure inputs, activities, processes or outputs, rather than impacts.”
- “independent verification and audit systems may ... be needed to ensure credibility with all stakeholders.”

Some key lessons learnt during the interviews are as follows.

- Business development assistance is critical to the success of any business; the key is to couple this assistance with financing and to continue assistance throughout project implementation.
- Similarly, biodiversity management expertise should be closely coordinated with business development / financial expertise.
- Biodiversity filters should be based on widely-agreed definitions and objectives (e.g. the CBD goals and indicators). Investors should seek to ensure there are no negatives on all dimensions of biodiversity related to a particular project.
- At the early stages of investment appraisal, it is often more appropriate to concentrate on process indicators than potential biodiversity outcomes.

### **Box 28. IFC and biodiversity**

#### *IFC's Operations in Biodiversity beyond compliance to performance standards*

In partnership with NGOs, the private sector, other financial institutions and a variety of donors, the IFC also pioneers new biodiversity-based business models. IFC has developed three approaches that combine conservation, risk mitigation, and business opportunity to achieve sustainable wealth creation for communities and the environment:

- Helping companies improve the efficiency of their operations or tap new business avenues, such as ecotourism and markets for sustainable products.
- Incubating new 'bio-businesses' and helping to develop markets for businesses that base their business platform on nature.
- Transforming large markets through the joint efforts by the private sector, governments, and other stakeholders.

As an example of operations using the above third approach, IFC has been working closely with WWF, other NGOs, and a number of agribusiness companies and investment banks, since 2003, to define Better Management Practices and affect large-scale changes in industries that have a high-impact on natural habitats, in particular commodity markets such as: palm oil, sugar, cotton, and soybeans.

#### *The IFC / GEF Portfolio*

The Global Environment Facility (GEF), the financing mechanism of the UN Convention on Biological Diversity, is the largest donor to the IFC biodiversity programme, and IFC is the executing agency with the largest private sector portfolio supported by the GEF. Leveraging GEF financing, IFC is able to provide various forms of funding, including grants, low interest or fully commercial loans, and equity, in order to support businesses with a biodiversity focus.

The IFC / GEF's biodiversity existing portfolio to date amounts to approximately US\$118 million, including co-financing and other instruments (grants, loans etc). The GEF funded portion amounts to US\$24 million; other donors provide around US\$31 million, while the private sector provides a further US\$63 million (including from IFC credit). A significant number of projects or programmes noted in this report were, are now or will be, part of this program, for example BACP (see [Box 4](#)), Komodo (see [Section 4.3.4](#)), VV (see [Section 5.2.2](#)) and Terra Capital (see [Box 29](#)). IFC has been a major partner in project design, in facilitating action at ground level and in sharing lessons learned.

### **5.2.3 Financing instruments**

#### 5.2.3 Financing Instruments – Summary

- Various financing instruments developed by mainstream investors have been adapted for use in biodiversity business; these cover the gamut from grant, partial grant, debt and equity finance
- Several specialised biodiversity investment funds have been set up in recent years; most are capitalised at under US\$10 million. A few funds or proposed funds have failed, generating useful lessons about the particular constraints of investing in biodiversity business
- There appears to be a tension between financial return and biodiversity benefit, with the most successful investments (in financial terms) reported in conventional sectors or businesses that generate indirect biodiversity benefits
- There is a trend in favour of debt finance over equity, to facilitate 'exit', as well as a strong preference for co-financing on the part of fund managers to spread risk and share information
- Financing for biodiversity management often requires an element of subsidy or grant finance, which commercial lenders and investors are disinclined to provide

An array of financing instruments is available to biodiversity-oriented investment funds, ranging from low-risk / short-term to high-risk / longer-term options, as depicted in [Table 6](#). The choice of instrument (or combination of instruments) for any given investment opportunity will depend on various factors, as discussed below.

**Table 6.** The financing instrument spectrum

Financial Instruments	Financial risk	Transaction costs	Ability to exit	Sustainability
Grant	L	L	H	L
Recoverable grant	L	L	H	L
Interest rate writedowns	L / M	M	H	L
Loan guarantees	L / M	M	H	L
Short-term loans	M	M	M	L
Medium- / long-term loans	M / H	M	M	H
Mezzanine finance (convertible long-term debt)	M / H	M	M	H
PRIs	M / H	H	M	M
Equity Investments (minority shareholder)	H	H	L	H
Majority / outright ownership	H	H	L	H
<i>Criteria description</i>	Risk of losing the investment	Staff time and other costs to implement the instrument	Ease of recouping investment within an acceptable timeframe	Likelihood of generating significant financial returns

Grants are not normally considered commercial financing instruments but are included here due to their current importance in biodiversity finance and to show the extreme end of the risk continuum. Other financing instruments listed in [Table 6](#) are more risky and typically more complex to implement. They tend to have higher transaction costs, which results in larger deals to justify the expense. Long-term financing is also more difficult to recoup and therefore the required financial returns tends to be significantly higher in order to compensate for the added risk. Conversely, higher expected financial returns reduce the need for subsidies from government or other donors.

Moving along the risk / return gradient from outright grants, ‘recoverable’ grants are effectively zero interest rate loans, where the principal is returned to the lender on either a short- or long-term basis. The advantage of this form of finance is that it can be structured like a grant, avoiding the exhaustive due diligence and legal costs associated with debt or equity finance. At the same time, requiring repayment creates a level of financial rigor that grants typically lack. Some investors see recoverable grants as a steppingstone to prepare relatively unsophisticated organisations to take on debt or equity finance at later stage. Recoverable grants can be particularly attractive when dealing with countries that have different legal codes and procedures, or significant foreign currency or other risks.

Interest rate ‘write-downs’ and loan guarantees are both designed to encourage financial institutions, typically commercial banks, to extend credit to clients they would otherwise refuse. Loan guarantees can be structured to cover all or a portion of the credit provided (typically only the principal), and to be drawn upon under varying circumstances (typically only after standard debt collection practices have been exhausted). Interest rate write-downs, or subsidies, can also be structured in many ways, but are typically designed to allow the borrower to pay a lower interest rate than the lender normally requires, with the entity providing the write-down paying the difference to the lender. One informant noted that banks are not short of cash, undermining the incentive for firms to borrow from those that

impose additional biodiversity management requirements. Loan guarantees and other ‘clever’ financing structures can help attract borrowers in such cases. Another informant stated that capital is a significant constraint for many ‘sustainable’ small companies, which cannot easily access conventional finance (because they can’t offer sufficient guarantees and / or because their financial needs often fall under the minimum lending threshold of most banks).

Short- and long-term loans are self explanatory, but can be structured in various ways, with subordinated debt having a higher risk than preferred debt (though lower risk than equity in the case of bankruptcy). Generally, long-term loans imply greater risk and thus higher interest rates.

Mezzanine finance is a hybrid between debt and equity, with many possible permutations. Generally, this consists of debt that is convertible to shares / equity within a specified period, and / or based on certain conditions or performance benchmarks.

Programme-related investments (PRIs) are typically provided by foundations or similar organisations that have endowments which are invested to produce income to support grant making. In some cases, instead of investing all of their endowment funds in conventional stocks, bonds and other instruments that generate ‘market’ returns, a portion of these funds may be invested in initiatives that will yield below-market returns, but generate ‘programmatic’ benefits in keeping with the foundations’ charitable mission. For example, a foundation or investment fund might invest some of its endowment in an eco-enterprise that yields less than a market rate of return but which also generates significant biodiversity benefits, thereby helping to achieve the funder’s larger goals. PRIs can be structured as debt or equity or a combination of the two.

Equity investments are, by definition, more long-term and risky than debt, with risk being proportional to the percentage of ownership in an enterprise. In general, the major exit strategies for equity investors are to sell the entire enterprise (if they have a controlling stake), or to sell their share to other investors via stock markets or through mergers or acquisitions by other companies or investors. In some cases, the company’s owners / managers may buy out the original investor(s).

All of these financing instruments face additional currency, political and other risks. In some instances, this risk can be insured (e.g. by the Overseas Private Investment Corporation (OPIC) in the US), although typically at fairly high cost.

The biodiversity-oriented investment funds currently active have typically been in existence for less than five years and have less than US\$10 million as loan or investment capital. Most focus on Latin America and the Caribbean, with relatively little involvement in Africa or Asia. Two large funds are no longer operational – Terra Capital Investors (see [Box 29](#)) and the Environmental Assistance Enterprise Fund (EEAF). Other proposed biodiversity business facilities such as the Kijani Initiative and the European Conservation Farming Initiative, which aimed to invest in biodiversity enterprise in Africa and central and eastern Europe respectively, failed to get off the ground<sup>165</sup>.

### ***Biodiversity applications***

The specialised funds consulted for this Scoping Study include: EcoEnterprises Fund (TNC), EF and VV (CI). In addition, several other organisations with broader investment and loan objectives that have significant involvement in natural resource-based sectors were also canvassed, notably: IFC, Corporación Andina de Fomento (CAF), Global Environment Fund, SEAF, EBRD, Rabobank, ABN-Amro, WB PEC. Some of these funds are profiled in [Appendix B](#).

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<sup>165</sup> In the latter case, the main financial sponsor – the IFC – decided to focus on mainstreaming biodiversity into its core investments rather than develop new stand-alone investment funds. This decision was in large part due to the perceived high risk of investing in small and medium size biodiversity business in remote rural areas of developing countries.

**Box 29.** Terra Capital Biodiversity Enterprise Fund for Latin America

The Terra Capital Biodiversity Enterprise Fund for Latin America (“Terra Capital”) was set up in 1996 with support from the International Finance Corporation and the Global Environment Facility (GEF). Terra Capital was designed as a private equity fund to invest in and catalyse private enterprises that generate conservation benefits through sustainable use of biodiversity in the region that have ratified the CBD. Terra Capital’s commercial objective was to realise long-term capital appreciation through equity or quasi-equity investments in biodiversity-benefiting enterprises and, thereby, demonstrate both to entrepreneurs and investors that such enterprises are viable.

An initial grant of US\$5 million from the GEF was intended to cover the higher-than average costs associated with the biodiversity-specific screening of the fund’s investments. Additional contributions were sought from private investors. The fund began operations in late 1999, with core capital of US\$15 million, and undertook investments in a range of commercial biodiversity-related projects, including organic agriculture, aquaculture, certified timber and non-timber forest products, and ecotourism ventures. The fund specifically targeted investments of US\$500,000 to US\$2.2 million, given that this range is typically too high for conservation NGOs and too low for the IFC and other institutional investors. Equity transactions were structured so that local entrepreneurs retained a majority of shares and management of the company. Terra Capital provided not only capital but also business assistance and technical advice on biodiversity management.

During its six years of operation, Terra Capital experienced difficulty in identifying investments that met both its financial return criteria and offered biodiversity benefits. Only four investments, totaling US\$6 million in commitments, were approved by the fund. After a mid-term review in 2003 found that most of the investments were performing poorly, the investors decided not to renew the management agreement with the fund manager and to stop making new investments. The reasons for this poor performance were deteriorating macro-economic conditions in Latin America resulting in high interest rates, which stifled alternative financing, and (according to GEF) unsatisfactory financial management by the fund manager. Moreover, the review found that companies invested in faced financial challenges from the outset, so biodiversity concerns were largely ignored. The IFC subsequently decided to cancel the project.

Adapted from: Ganzi, J., Seymour, F., and Buffett, S., with Navroz K. Dubash. 1998. *Leverage for the Environment: A Guide to the Private Financial Services Industry*. World Resources Institute: Washington, D.C.

[www.gefweb.org/Outreach/outreach-PUBlications/06 Status of GEF Projects.pdf](http://www.gefweb.org/Outreach/outreach-PUBlications/06%20Status%20of%20GEF%20Projects.pdf); and [www.ifc.org/ifcext/enviro.nsf/Content/TerraCapital](http://www.ifc.org/ifcext/enviro.nsf/Content/TerraCapital).

In general, the financial returns realised by biodiversity investment funds still in existence have been significantly lower than initially projected, and below those of conventional investment funds. In those cases where returns have been higher, the investments have tended to focus on certified plantation timber, agriculture, aquaculture or ecotourism operations, with well-developed market channels for the products in question. The biodiversity benefits generated by these investments, however, are of questionable significance.

***Key lessons / challenges and opportunities***

Commercial investment in biodiversity business is still very much in its infancy. Even so, some initial lessons are beginning to emerge based on experience to date:

- Both EcoEnterprises Fund and VV reported reducing their equity investments and focusing increasingly on debt financing, given the higher risks of the former, especially regarding feasible ‘exit strategies’ for equity investments.
- Both funds have adopted policies to disburse investment funds gradually, in tranches, based on business performance and the provision and analysis of financial and other information.

- EF provides debt financing and typically seeks repayment from the clients of developing country producers, rather than from producers themselves; more recently it has provided longer-term, equipment loans versus its usual provision of seasonal agricultural harvest finance.
- Several fund managers noted the benefits of co-investing in the same ventures, not only to help reduce their risk exposure and extend their limited capital, but also to improve their ability to monitor investments by sharing information gained during site visits and other interactions.
- SEAF suggested that the primary challenges faced by EEAF and Terra Capital were insufficient deal flow, due partly to the difficulties of trying to meet both financial and environmental criteria, and high transaction costs; this combination made it very hard to generate sufficient returns.
- Several organisations noted the benefits of focusing on one or a few sectors to develop expertise in these areas, rather than investing across a broad range of sectors.
- There is general agreement that technical assistance is often required to ensure both sound business management and the development of meaningful biodiversity conservation plans, though how best to pay for such assistance is not as clear.

### *Conclusions on business promotion mechanisms*

The review of business promotion mechanisms in this section indicates that there are many ways to develop markets for biodiversity conservation. The greatest potential appears to lie in creating policy incentives for the private sector to adopt improved management of both public and private natural resources. Efforts to promote biocarbon markets, potentially linked to the concept of forest conservation and specific certification standards, could also be productive.

Conversely, there are relatively few examples of practical tools and well-tested forms of assistance being used by environmentally-friendly businesses or related investment and loan funds to meet their specific needs. In particular, it will be important to determine cost-effective means for providing ongoing business development services to environmentally-friendly enterprise. Some portion of this assistance may need to be provided through grant support, at least initially, with recipient businesses assuming an increasing percentage of costs over time.

There is also a pressing need to develop and apply biodiversity management and monitoring and evaluation systems that are feasible for SME enterprises to use and which are also credible to the conservation community. In a related manner, it is necessary to ensure that certification and verification systems can demonstrate the biodiversity impact of the businesses they endorse. In addition, biodiversity monitoring and evaluation could be outsourced to credible third parties, at least those dimensions that are more technical and rigorous, or that need to occur at a landscape level. Again, there is a need to ensure that such systems are practical and cost effective and not so onerous that they deter potential businesses from adopting them.

Addressing both these arenas effectively is a precursor for ensuring that market-based approaches to conservation can go to scale and inspire confidence. One informant stated that without addressing the enabling environment, donors / investors will quickly run into problems, especially in some developing countries, due to weak institutions and regulations, poor enforcement, mispriced / undervalued natural resources, insecure land / resource tenure and use / access rights. He also believed that going to scale would not be possible without some focused attention to these issues.

In terms of the financial instruments employed by specialised ecoenterprise funds, there is clearly much more experimentation needed to determine which forms are most appropriate under various conditions. There is insufficient experience at present to draw strong conclusions about what forms of financing are most effective in this relatively new and specialised field. For example, while it seems likely that debt financing is more appropriate for small-scale enterprises, at least initially, mezzanine finance or equity investments might be more appropriate for medium- to large-scale companies that have the potential to generate biodiversity benefits. In addition, there may be opportunities to develop novel approaches to engage the financial community – including commercial banks, venture capital

funds, pension investment funds and insurance / re-insurance companies, among others – even though there are few examples of this occurring to date.

## 6. GENERAL CONCLUSIONS

### 6.1 Overview of the Scoping Study

This report has reviewed a number of different approaches and opportunities for significantly increasing private investment in biodiversity conservation. On the basis of this review, we believe that the most promising way to mobilise *significant* private investment in biodiversity is by making conservation a more viable business proposition. Through the intelligent use of market-based instruments, it is possible to align private and public interests. The rationale for our focus on biodiversity business is the enormous capacity of markets to drive change, as well as their potential to leverage new investment.

During this Scoping Study, we have:

- Taken a ‘snap-shot’ of the current biodiversity business landscape (starting with the ‘universe’ and focusing down to the ‘playing field’), in an attempt to understand what has and has not worked, where the bottlenecks or constraints lie, and where there are opportunities to expand market based biodiversity conservation.
- Reviewed the existing policy, legal and fiscal frameworks that enable biodiversity businesses to grow and develop, again highlighting the key weaknesses or deficiencies as well as what is required to move the agenda forward.
- Assessed the level of technical knowledge and material available with regards to biodiversity business tools.
- Analysed a range of approaches to financing biodiversity businesses and looked at some of the biodiversity funds in existence to identify lessons learned.
- Assessed the key components or critical success factors needed in order to deliver a step-change in both investments and positive conservation outcomes.
- Validated our preliminary findings at an expert workshop<sup>166</sup> and subsequently revised and refined this Scoping Study Report.

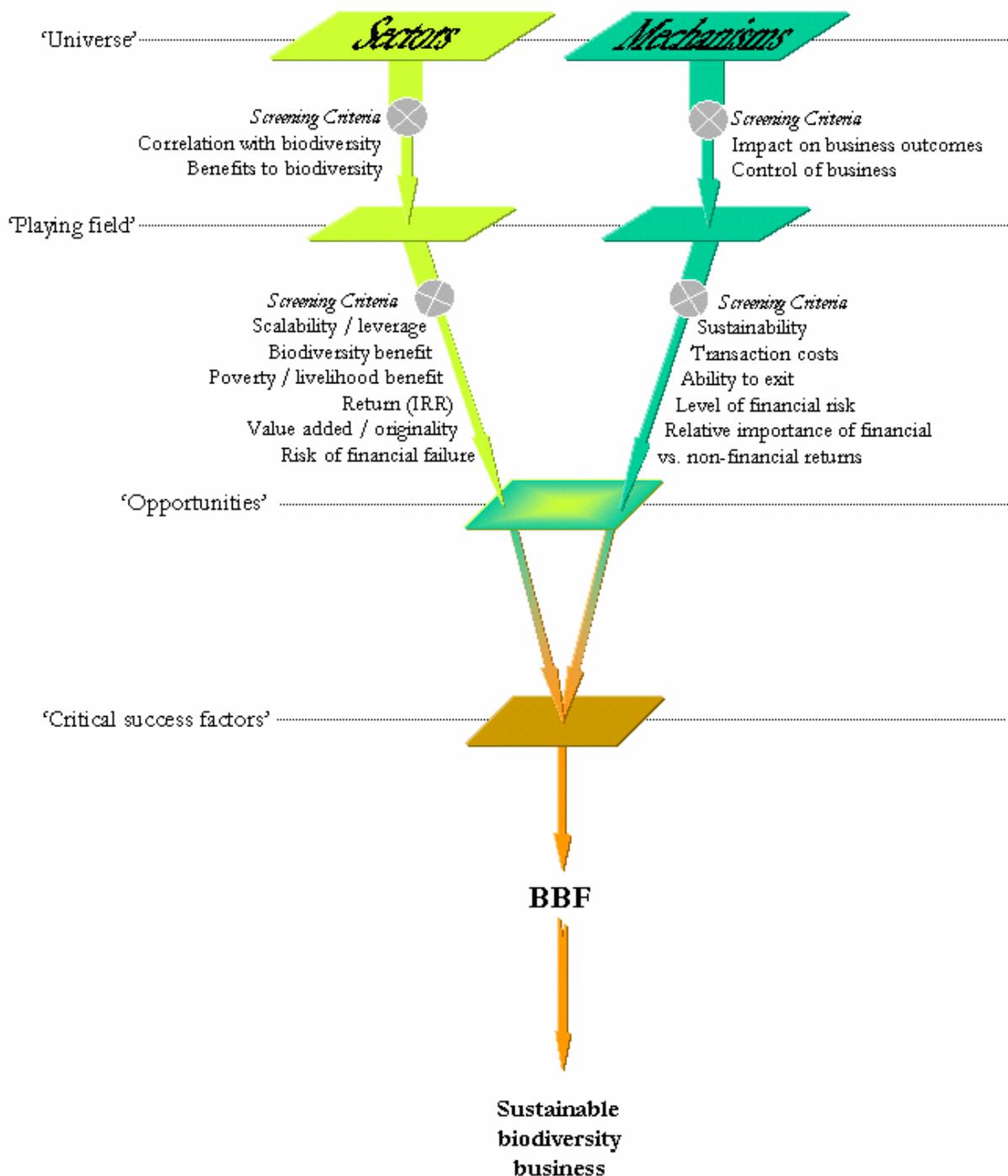
The process is encapsulated in [Figure 14](#).

So what have we learned? Our general conclusions are presented in [Section 6.2](#), including the identification of a number of critical success factors that need to be in place to realise the many opportunities that exist ([Section 6.3](#)). All this underpins a proposition to bring together some of these factors in the form of a ‘Biodiversity Business Facility’ (BBF), described in [Section 6.4](#). We then outline the steps required to move from this report to practical outcomes ([Section 6.5](#)). The report concludes with a few final remarks ([Section 6.6](#)).

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<sup>166</sup> In conjunction with Forest Trends, Shell and IUCN convened a *Biodiversity Business Opportunity Workshop*, held at the Aspen Wye Valley Conference Centre in Baltimore, USA on 30-31 May 2006. Attended by over 20 invited experts in biodiversity business and conservation finance, and building on the prior consultation and research, the workshop focused on developing a shared vision for a BBF (including the “value proposition” to different stakeholder groups) and potential for ‘fast-tracking’ options to nurture the BBF.

**Figure 14.** Summary of the Scoping Study process



## 6.2 Key Findings and Opportunities

In the preceding chapters we have touched upon various aspects of the biodiversity – business nexus. Our findings are based on research, stakeholder consultation and the authors’ own analysis, leading to some general conclusions and opportunities as listed below.

- Governments and philanthropy alone will not address the biodiversity challenge. Likewise Shell and IUCN can help move the agenda forward but their contribution is not enough. There is a need

to enlist wider support from both the conservation and business communities. In short, biodiversity conservation must become:

- Bigger – from US\$10 billion per year to US\$100 billion per year or more, from 12% of land area to 15% plus marine PAs;
  - Better – more cost-effective, socially equitable and wealth enhancing, and.
  - Faster – keep pace with issues such as land use change, biotechnology, climate change, as well as public / consumer preferences.
- There is general consensus and some recent experience to suggest that viable biodiversity business opportunities exist in most regions of the world, which are *not* fully realised, partly due to the limited scale and reach of existing support.
  - The emphasis should be on achieving large-scale change through ‘market transformation’, rather than replicating existing initiatives by creating another fund, to deliver technical support and finance to small-and-medium size eco-enterprise.
  - A key question is how to ‘commoditise’ biodiversity at a landscape scale, rather than at project or site level. It may be possible to ‘kick-start’ the biodiversity market by treating biodiversity as a tradable commodity and taking a trading position. In other words, treat biodiversity as a sector or product in its own right, rather than an ‘attribute’ of existing goods and services.
  - One option is to ‘un-bundle’ and market the biodiversity benefits of landscape-level activities, such as organic farming and aquaculture, sustainable forestry or carbon sequestration in the form of conservation credits or offsets. Similarly, there is also good potential for expanding markets for biodiversity-friendly climate mitigation, through support for forest, wetland and soil conservation and other activities that sequester carbon in biomass.
  - A related possibility is to create biodiversity ‘banks’, both terrestrial and marine / aquatic that can be used to offset environmental degradation by responsible companies. Shell companies could be the initial ‘buyers’ but could also be the ‘sellers’ of biodiversity credits (e.g. in the form of voluntary offsets) to other potential corporate buyers.
  - There are a number of options for stimulating biodiversity conservation by the private sector:
    - ‘Sticks’ – increasing the penalty for damage / loss of habitat;
    - ‘Carrots’ – increase the rewards for conservation efforts, and
    - Flexibility – consumers choose how much based on preferences and / or producers choose their level of performance based on costs.
  - There is plenty of liquidity in the market – i.e. capital is not the main constraint. The main bottleneck is finding projects that deliver a reasonable financial return as well as measurable biodiversity benefits.
  - ‘Viability’ in biodiversity business must be qualified by recognition that, for the most part, financial returns are likely to be modest (well under 20% internal rate of return and more likely to be in the 5-10% bracket). This implies the need for long-term grant finance, alongside commercial investment, at least until better institutional arrangements can be put in place to allow entrepreneurs to capture private willingness-to-pay for the public benefits of biodiversity.
  - Turning biodiversity benefit – a quintessential public good – into cash flow is a major challenge for most market-based approaches to conservation. Experience to date has largely focused on *indirect* approaches, which deliver biodiversity benefits alongside more ‘traditional’ goods and services (e.g. food, fibre, recreation). These approaches often rely on certification systems to inform consumers about what they are buying.

- Indirect approaches can be effective at achieving large scale-impact. However, they are sometimes constrained by the imperfect match between conserving biodiversity and producing other goods and services for the market (or reducing rural poverty). More work is needed to strengthen biodiversity monitoring and management systems in indirect biodiversity business models, while reducing certification costs and expanding market share for the companies involved. One person noted that certification has the potential to disenfranchise local communities because of the high costs – if these could be developed at low cost by local people for local people, great gains could be made.
- Direct payments for biodiversity avoid some of the problems associated with indirect approaches, but are less well-developed internationally. Experience in several countries, especially the USA, but also Australia, Brazil, Canada and some European nations, demonstrates that biodiversity, in the form of endangered species and / or natural habitat, can be effectively commoditised and traded under appropriate regulatory frameworks (e.g. mitigation or conservation banking or payments for ecosystem services). Such approaches can generate not only significant new business opportunities but also potentially large conservation gains.
- Extending direct market-based approaches to biodiversity conservation to other countries and ecosystems (e.g. marine) is another major need and opportunity. However, unfamiliarity with species / habitat payment and trading models in many countries suggests the need for an experimental phase of voluntary action, based on the willingness of some far-sighted companies and public agencies to pilot new approaches to biodiversity conservation. The main opportunities in the short-term include: one-off biodiversity offsets for site-specific development projects and on-going payments for ecosystem services.

### 6.3 Critical Success Factors

There are several reasons why private investment in biodiversity conservation has remained relatively limited to date. Perhaps the most important is the absence of adequate policy frameworks but many other factors also matter. This report argues that there is no one ‘silver bullet’ but rather several linked changes that need to take place in order to stimulate more business investment in biodiversity.

- ***Multi-stakeholder ownership***, particularly businesses but also government agencies and NGOs. A pre-requisite for involving others as this work proceeds will be to clarify the role and commitment of both Shell and IUCN. Several informants asked for a ‘structured process’ by which potential collaborators can get involved.
- ***The importance of public policy*** for stimulating biodiversity business and the need to involve governments. Voluntary action was recognised as valuable for awareness-raising and testing alternative approaches, and can be sufficient to drive major market changes where consumer preferences for ‘sustainable’ goods and services are strong. However, most informants agreed that regulatory reform is often required to ensure wide uptake, especially for intermediate goods (e.g. timber), or where consumers are unaware of the environmental implications of alternative production methods (e.g. biofuels).
- ***Coupling business development and / or technical assistance with appropriate finance***. The challenge is to integrate biodiversity management into standard due diligence and project implementation processes, while ensuring that these additional measures do not unduly constrain the market. Putting too many conditions on SMEs, especially in developing countries, may be impractical where there is little technical capacity or support.
- ***Flexible financial models***. Various financing instruments are used to promote biodiversity business, using combinations of debt and equity finance, on a commercial, non-commercial or ‘sub-commercial’ basis. Some practitioners indicate a preference for debt or quasi-debt finance,

due to concerns about barriers to exit by equity investors in biodiversity business, but there is no strong consensus on this point. More experimentation and analysis is required.

- **Performance indicators.** Both process and output indicators are critical to the success of biodiversity business. However, these must be fit-for-purpose, simple and cost-effective. Several informants cautioned against devoting disproportionate effort to elaborate monitoring and evaluation as opposed to implementation.

## 6.4 Towards a Biodiversity Business Facility

### 6.4.1 Why is a Biodiversity Business Facility needed?

The success factors listed above can equally be seen as obstacles to the development of biodiversity business. To help overcome these barriers, Shell and IUCN are continuing to explore the feasibility of establishing a Biodiversity Business Facility (BBF). Based on the analysis in this report, we believe that a BBF would need three main capacities or functions (see [Figure 15](#)):

- **‘Think-Tank’.** One of the main obstacles to biodiversity business identified in this report is a weak or missing enabling environment. A key task of a BBF would be to identify and promote opportunities to develop appropriate policy, legal and fiscal regimes, as well as issues such as trade barriers, biodiversity metrics and indicators, and the evaluation of various forms of technical assistance. Such a Think-Tank would need to be supported by grant funds and could also provide sub-grants, on a limited basis, to test and develop new business models (e.g. biodiversity offsets or payments for watershed services). Some of this work could be out-sourced or undertaken through collaborative agreements with existing research organisations, NGOs, policy units, etc. Successful pilots could be ‘spun-off’ as new business ventures, which could conceivably be sold to other investors or established firms that can take them to scale.

#### **Box 30.** Business incubators for eco-enterprise

*"There has been a dramatic increase in the number of business incubators specialising in developing clean energy companies, according to New Energy Finance (NEF). The London-based information provider identified some 114 incubators around the world that have, "as their only or significant focus, the building of businesses and commercialisation of clean energy technology from a very early stage". This is up 28% since August 2005, when the company last surveyed the area. The survey also found 217 clean energy companies either under incubation, or having successfully graduated from the incubation process, raising independent financing. This is up 75% on last year, NEF reports.*

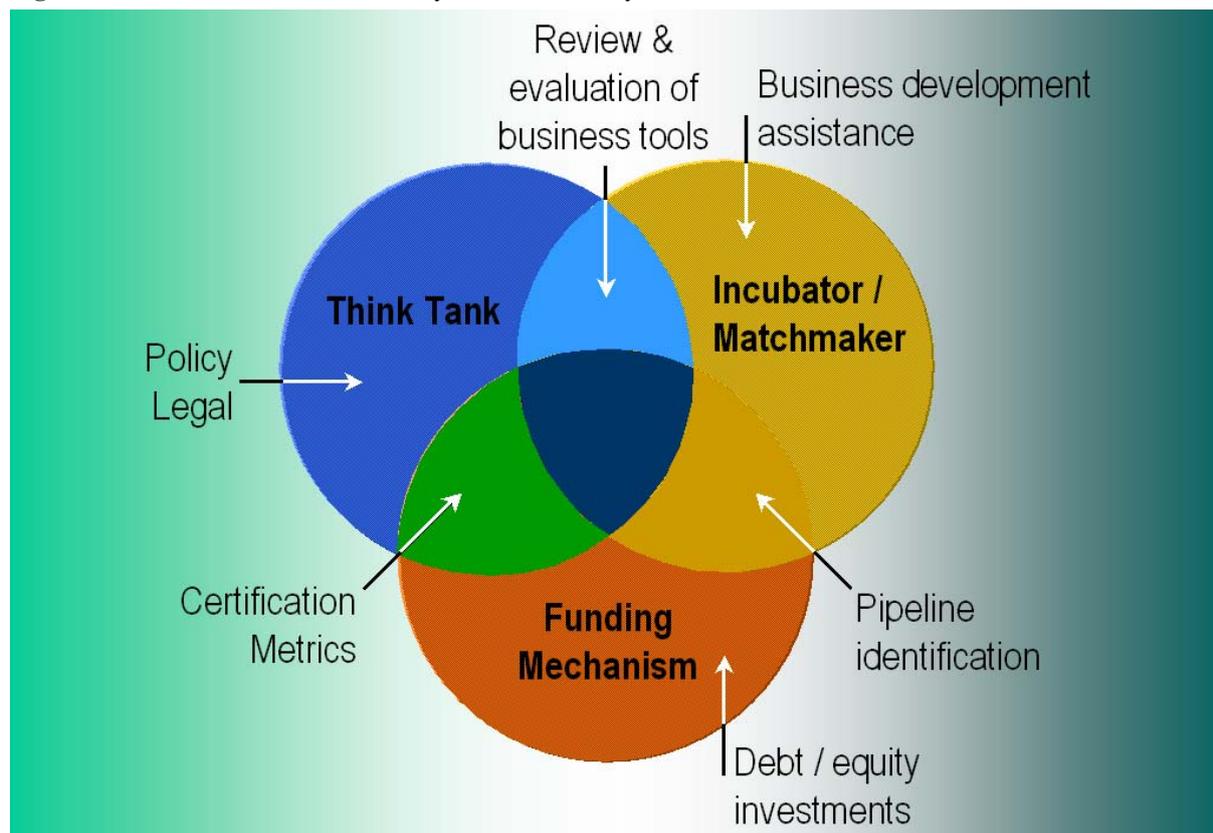
*"It is vital that there is a steady flow of innovation in renewable energy and low-carbon technologies, both big breakthroughs and continuous improvement," said NEF chief executive Michael Liebreich. "Given the difficulty of raising money for technologies that might take a decade to get into the market, and the lack of business-building skills among academics and scientists, our survey shows clean energy technology incubators have a vital role to play." Incubators specialise in taking research innovations, typically from universities or government-funded research laboratories, and moving them towards commercialisation. NEF argues that there are several reasons why incubators are particularly important in the development of clean energy technologies:*

- *Many such technologies are likely to take 10 years or more to become fully commercialised;*
- *Attractive returns on investment may not be possible within the usual three-to-five year timespan expected by most venture capitalists;*
- *Many new energy technologies are refinements of existing approaches, rather than the "disruptive" approaches, offering very high returns, typically favoured by early-stage investors; and*
- *There may be a lack of experienced entrepreneurs and investors who understand the dynamics of the industry".*

Source: Quote from New Energy Finance quoted on 08 June 2006 at [www.environmental-finance.com/online/news/08juninc.htm](http://www.environmental-finance.com/online/news/08juninc.htm)

- **‘Incubator / Matchmaker’**. Many new businesses, especially in novel sectors, require assistance to develop to the point where they can sustain themselves or attract mainstream finance. As well as providing a range of business development services, the Incubator could also conduct applied research on how to improve the effectiveness of such assistance. In addition, it could pilot promising business concepts to test their viability. [Box 30](#) highlights the growth of business incubators and some of the lessons learned in the field of clean energy. As with the Think-Tank, a Biodiversity Business Incubator would rely at least partly on grant funding, but could operate on a partial cost-recovery basis and, over time, spin off some services that provide financial returns (such as consultancy services). Similarly, some of this work could be outsourced or conducted in collaboration with other organisations.
- **‘Funding Mechanism’**. Access to capital is an important factor for any business, including biodiversity enterprise. This component of a BBF would invest in businesses that demonstrate potential to deliver both a financial return and biodiversity benefit. It would seek to attract co-investors, especially those that may not require commercial rates of return in the first instance but are keen to see this market develop. A portion of this function would deliver loans and / or grant finance to provide ongoing business development assistance and biodiversity management support to selected enterprises. Specialist skills will be required to match the level and type of finance with potential investment opportunities – using a combination of debt, equity and other blended financing instruments.

**Figure 15.** Overview of a Biodiversity Business Facility



The three components of the BBF are elaborated in [Table 7](#) against the following criteria:

- Scale / leverage.
- Biodiversity benefits.
- Financial return.
- Livelihood benefits.
- Value-added / innovation.

**Table 7.** Attributes of a Biodiversity Business Facility

Component / What is it?	Scale / leverage	Biodiversity benefits	Financial return	Livelihood benefits	Value-added
<p><b>Think-Tank</b></p> <ul style="list-style-type: none"> <li>~ Identify areas of additional research needed to support biodiversity business.</li> <li>~ Convene government agencies of trade and commerce, environment and agriculture to identify ways to remove barriers to develop market sectors.</li> <li>~ Activities might include developing certification methodologies, metrics or accreditation schemes for BAPs and offsets.</li> <li>~ A forum for discussion and generation of new ideas.</li> </ul>	<ul style="list-style-type: none"> <li>~ Options range from establishing a single Think-Tank (centrally located) or at selected hub locations, or investing in existing and respected Think-Tank organisations. The scale will depend on what option is chosen.</li> </ul>	<ul style="list-style-type: none"> <li>~ Not immediately realised or obvious – this is about developing a new generation of tools, metrics, information etc that will help sustain future markets and businesses.</li> </ul>	<ul style="list-style-type: none"> <li>~ It is not anticipated that the Think-Tank will generate a financial return in the short to mid term and will therefore need to be grant financed or cross-subsidised.</li> </ul>	<ul style="list-style-type: none"> <li>~ Provision of these services require specialist skills – it is difficult to estimate the knock-on effects in terms of jobs created or pro-poor benefits from companies or markets which may be established.</li> </ul>	<ul style="list-style-type: none"> <li>~ There are several well-known and respected Think-Tanks and individuals working on biodiversity business, albeit in a fragmented way. What is needed is to assemble a critical mass of expertise, backed by sufficient institutional support to attract resources and win attention from decision-makers in both public and private sectors.</li> </ul>
<p><b>Incubator</b></p> <ul style="list-style-type: none"> <li>~ Seek to grow companies that produce high-value products and services, based on the sustainable use of biological resources.</li> <li>~ Provide business, management and technical skills and / or training.</li> <li>~ Provide market information and improved market access.</li> </ul>	<ul style="list-style-type: none"> <li>~ Low potential for scale – may consider developing a number of incubation facilities in key locations (e.g. mega-biodiverse countries, or countries where capital markets are more sensitised to environmental issues such as London, New York, Hong Kong).</li> </ul>	<ul style="list-style-type: none"> <li>~ Not immediately realised or obvious – this is about supporting businesses with planning, management and technical skills so they can achieve both commercial and biodiversity objectives.</li> </ul>	<ul style="list-style-type: none"> <li>~ One option is that Incubator facility(s) do not realise a financial return but are grant financed by public agencies, foundations or NGOs.</li> <li>~ Another option is that Incubator(s) are run on a for-profit model by charging for services.</li> </ul>	<ul style="list-style-type: none"> <li>~ Incubator(s) will need skilled professionals with expertise in finance, legal, negotiation, business planning, communication, marketing and branding</li> <li>~ It is difficult to estimate the knock-on effects in terms of jobs created or pro-poor benefits from companies established.</li> </ul>	<ul style="list-style-type: none"> <li>~ Several small-scale biodiversity business incubators exist or are in development. The IFC also provides similar services. However, the range and depth of services are extremely limited, particularly in developing countries.</li> </ul>

**Table 7.** Attributes of a Biodiversity Business Facility (cont'd)

<b>Component / What is it?</b>	<b>Scale / leverage</b>	<b>Biodiversity benefits</b>	<b>Financial return</b>	<b>Livelihood benefits</b>	<b>Value-added</b>
<p><b>Funding Mechanism</b></p> <p>~ Identify potential investors ~ Develop fit-for-purpose financing for individual investments.</p>	<p>~ There is enormous potential to attract private capital through banks, high-net worth individuals, funds etc – this is of course dependant on there being a sufficient number of bankable projects.</p>	<p>~ The biodiversity benefits are indirectly associated with the investments made – they will only be realised if the appropriate level and type of financing is made and supported.</p>	<p>~ The intention is to invest in companies or entrepreneurs who can deliver a financial return. The IRR expected with such investments, however, may be lower than other typical investments (e.g. 5-10%).</p>	<p>~ The livelihood benefits are indirectly associated with the investments made – they will only be realised if the appropriate level and type of financing is made and supported.</p>	<p>~ There is not sufficient private capital being invested in biodiversity conservation at present and therefore the potential to add value is very high.</p>

## 6.4.2 What would a Biodiversity Business Facility do?

Participants at the Wye Meeting and others consulted for this report generally agreed on the three core functions that would be needed if biodiversity business is to grow (*Think-Tank, Incubator and Funding Mechanism*). More specifically, the Scoping Study has generated a number of ideas about how a BBF could help stimulate more market-oriented approaches to biodiversity conservation:

- One view is that the BBF should *focus its efforts on the ‘tough nuts’* that are not receiving sufficient attention currently, such as illegal logging, the fuelwood and charcoal trade, unsustainable bushmeat consumption, etc. While this would indeed provide a focus for the BBF, there are doubts about whether viable business models can be created, even on a cost-recovery basis, to tackle such challenges.
- A counter argument made by several informants was that a BBF should seek to *achieve some relatively easy and quick ‘wins’*, to create credibility and a sense of momentum, before seeking to scale-up and / or address more challenging opportunities.
- Informants noted a *tension between achieving biodiversity benefits and financial returns*. Some suggested that a BBF should focus initially on activities that generate good financial returns, even if these are not high conservation value investments. Others suggested that a BBF should identify potential co-investors seeking ‘blended’ returns (financial, social, biodiversity).
- There was wide consensus about the need to *develop clear targets and indicators of success* in terms of biodiversity, social benefits and financial performance. A BBF will need to show how it contributes to wider concerns about corporate ‘sustainability’ rather than just biodiversity.
- *Sell-on successful pilots*. Silicon Valley was mentioned as a model, where multiple small businesses are set up and successful ones are often sold to large investors or established firms that can take them to scale. However, some noted the risk of reduced credibility with existing customers when companies are sold (e.g. Ben & Jerry’s ice cream, The Body Shop cosmetics).

## 6.4.3 How to develop a Biodiversity Business Facility?

Two main options have been identified to establish a BBF:

- Develop the three components of a BBF simultaneously – establish the BBF as a stand-alone institution, recruit expertise, identify potential investors, collaborators and potential projects accordingly. This would probably require a proper Feasibility Study on the concept of the BBF before any specific investments could be undertaken; or
- Accelerate the process by selecting a small number of high-potential biodiversity business opportunities, based on the Scoping Study, and nurture the BBF through the implementation of these investments. This might include work on policy reform, finding (co-)investors to support specific investment ideas, and business, management and / or technical assistance (see [Figure 16](#)).

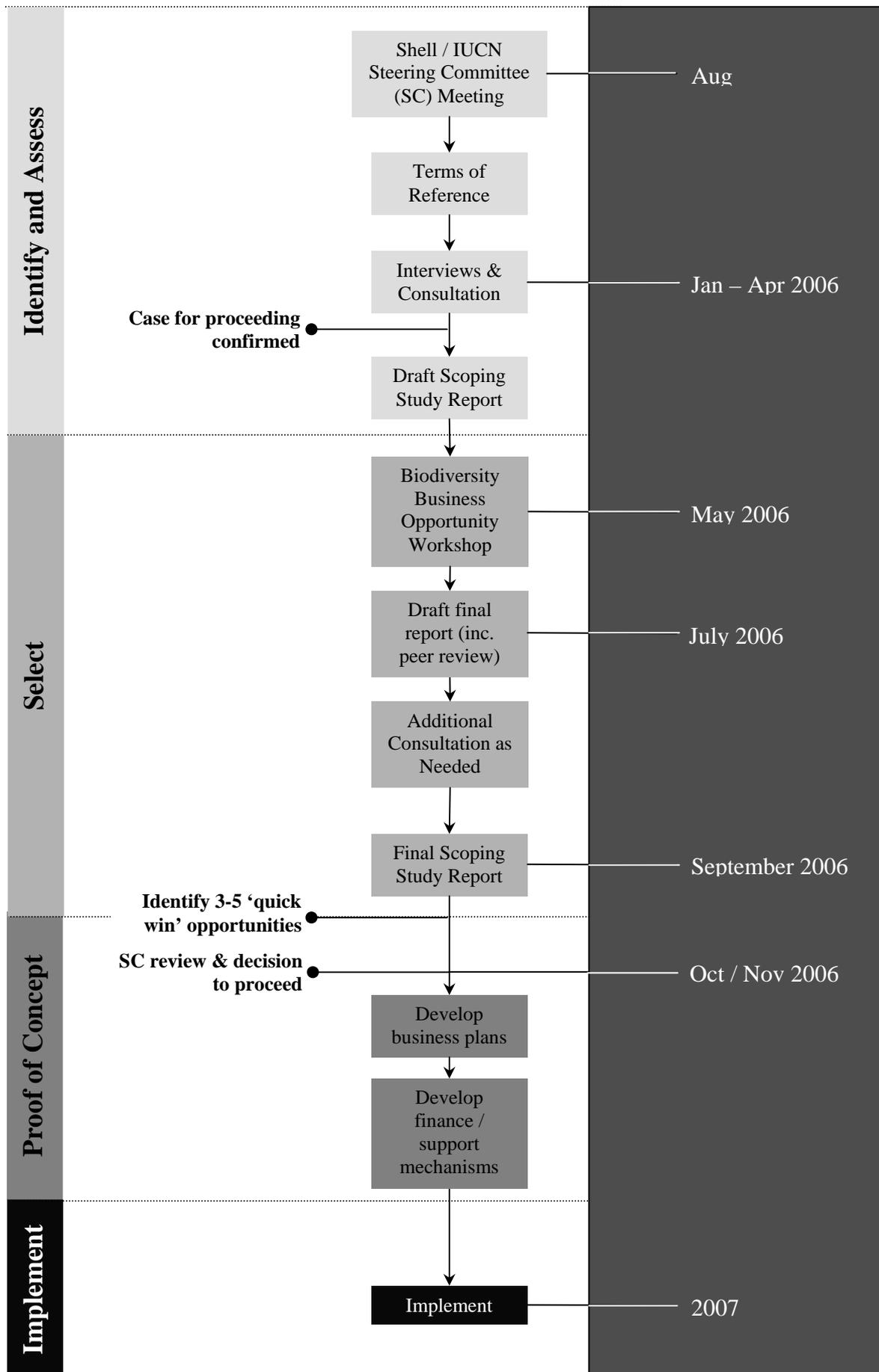
With respect to the second option, several potential investment opportunities were presented and discussed at the Wye River workshop (see [Appendix G](#)), namely:

- Integrated land-based conservation (investing in specific locations that can support multiple, sustainable economic activities).
- Biodiversity offsets (including habitat banking and trading).
- Biocarbon (payments for carbon sequestration using forestry / ecological assets).
- Biodiversity management services (providing professional services for Biodiversity Action Plans, biodiversity offsets, biodiversity data management etc).
- Sustainable biofuels.

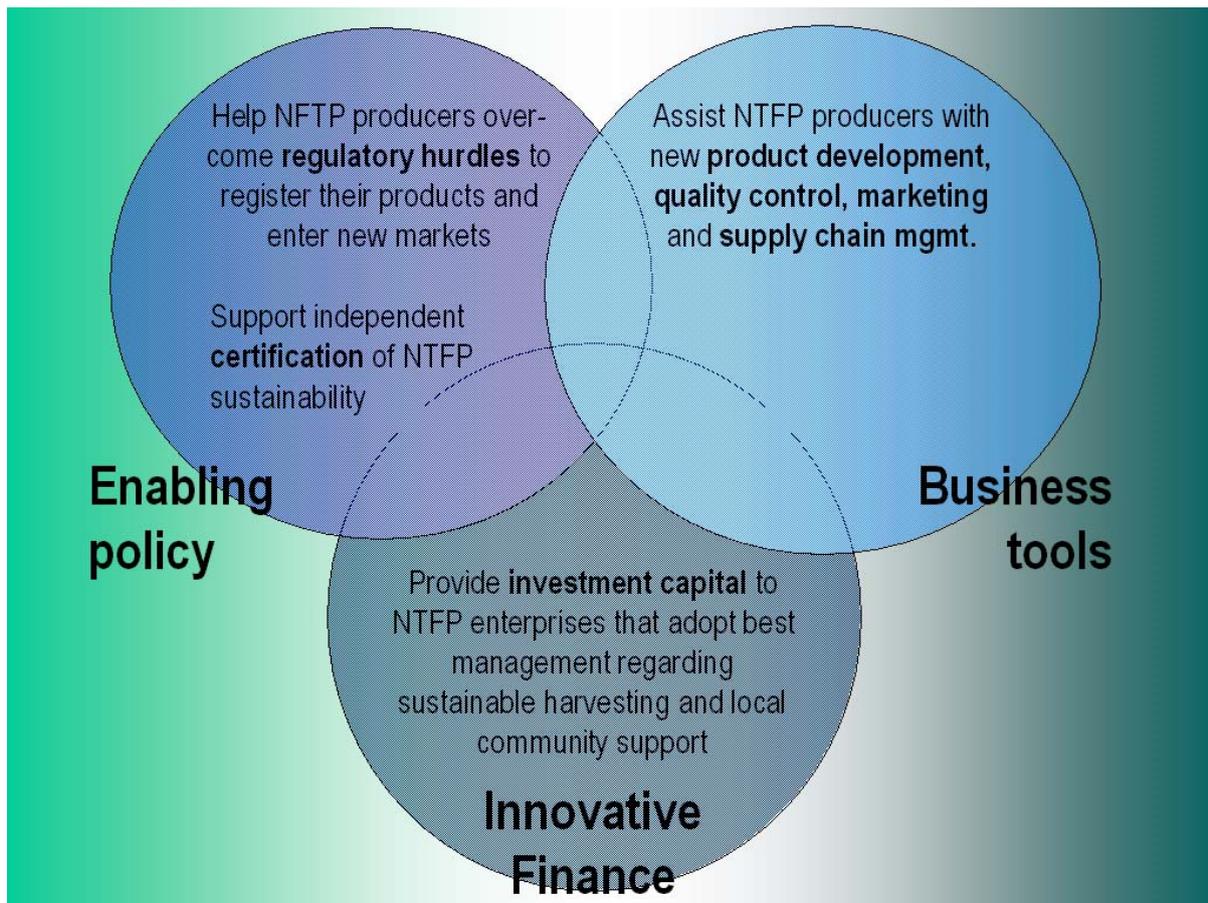
- Ecotourism enterprise.
- Non-timber forest products.
- Payments for watershed protection.
- Biobeef (focused on Africa).

At this stage it is too early to say which of these ideas will be developed in more detail during any subsequent phase of work. Moreover, other opportunities may come to light that merit consideration. Purely as an illustration, [Figure 17](#) highlights what the different components of a BBF might do if it were to focus on one of the ideas listed above, namely [NTFPs](#).

Figure 16. The 'fast track' process



**Figure 17.** What would a Biodiversity Business Facility do? An illustration for NTFPs



## 6.5 Next Steps

The Scoping Study documented in this report has provided an overview of opportunities and gaps related to market-based biodiversity conservation, as well as the key functions or capacities that need to be fulfilled (potentially by a Biodiversity Business Facility) if biodiversity enterprise is to thrive. The authors have undertaken a limited strengths-weaknesses-opportunities-threats (SWOT) analysis of the BBF (see [Table 8](#)) to better understand where any next steps could be focused – clearly on maximising and leverage the strengths and opportunities, whilst working towards addressing the weaknesses and dealing proactively with any threats.

Priorities moving forward are to:

- Develop collaborative links with existing biodiversity business initiatives;
- Recruit additional business collaborators and other sponsors, and
- Make the case for a BBF to the business, conservation and other constituencies.

The challenge is not conceptual or technical – there are numerous examples of successful business models and markets for biodiversity documented in the preceding sections. The real barriers to change are fixed ideas, habits and inertia, including the widespread notion that biodiversity is best conserved by non-profit organisations working in the public interest, rather than by people working for their own benefit (including both companies and communities). We need to persuade conservationists first of all, but also policy-makers, investors and the general public, that biodiversity and its component ecosystem services can effectively be conserved by treating them as tradable commodities.

The preceding section outlined two options for developing a BBF: (i) as a full-fledged, stand-alone institution, or (ii) as a suite of capacities nurtured on the back of a few high-potential investments. At this stage, the second option seems more practical and efficient. The next phase of work is therefore likely to involve more detailed analysis and development of some of these opportunities, based on further consultation within Shell, IUCN and with other potential collaborators.

**Table 8.** BBF SWOT analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Bringing all 3 elements together is a way to make a sizeable and significant impact</li> <li>• Innovative way to address long-term funding shortfall needed for global conservation efforts</li> <li>• Learn from past and ongoing efforts within the biodiversity finance domain to create leverage and scale</li> <li>• Potential to enhance the reputation of those involved</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Different components have very different time-frames associated with them</li> <li>• Not being able to drive through / influence policy and / or legal reform</li> <li>• Not being able to develop appropriate metrics to measure the conservation benefits on the ground within the timeframes involved</li> <li>• Not being able to deliver social benefits associated with the investments</li> <li>• The ability to raise sufficient capital – one interviewee noted that for a fund to stand on its own feet, it must have at least US\$40 million (based on a 3% management fee).</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Creates opportunity to attract private capital, develop new markets and make a real contribution to biodiversity conservation</li> <li>• If big ideas work, then real potential to attract and leverage significant sums of money.</li> <li>• Potential to attract wide ranging and large numbers of players / collaborators</li> <li>• Potential to really be a global player</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• BBF seen as direct competition to existing and ongoing efforts</li> <li>• BBF not being able to nurture big ideas to proof of concept stage (lack of investors, no real pipeline of projects, little willingness to pay, poor financial returns etc)</li> </ul>

This would include further analysis of the institutional landscape through more detailed assessment of new and forthcoming initiatives (see [Appendix F](#)) as well as a more detailed review of potential sources of business development assistance, finance and ‘deal flow’ (i.e. mechanisms and processes to identify prospective investments). Such analysis will also help to determine whether it is necessary to create new institutions to provide the functions of a BBF or, instead, whether it would be more efficient to support existing organisations, or some combination of the two. For example, it might be appropriate to create a Think-Tank and Incubator to complement existing investment funds in Latin America, while new financing mechanisms may be a higher priority in Africa and parts of Asia.

This next phase will require more input from both the conservation and business communities, as well as efforts to market the proposal to potential co-investors in the public and private sectors. Detailed business plans will be needed: i.e. who will drive the development of each specific investment opportunity? Who are the potential buyers? What are the milestones? In summary, the next phase will need to:

- Clarify Shell and IUCN’s role in, and commitment to, the development of a BBF.
- Further develop selected biodiversity business opportunities to identify synergies around which a BBF can be constructed.
- Establish an on-going process for enlisting new collaborators in this initiative, including members of the conservation and business communities together with governments.

## **6.6 Closing Remarks**

The challenge of halting biodiversity loss should not be underestimated. Agreeing on priorities is one challenge, whether that means setting aside more protected areas, securing existing areas, wider policy and regulatory reform, improved communication and awareness raising, etc. The other of course, is who will pay for it?

Biodiversity conservation desperately needs more resources, as well as more efficient allocation of existing budgets. This Report argues that current levels of financing are insufficient but also that the funding needed to halt biodiversity loss is far beyond the capacity of current donors and funding models.

A new biodiversity business model is needed – one that can deliver large and sustained financing even in the poorest countries. Attaining the levels of financing required for global biodiversity conservation will take time. What this has come across very clearly in this Report argues is that we will not get there by doing more of the same. The challenge is to convince governments and international policy makers, conservation organisations, multilateral agencies, private and investment banks, private companies and individual consumers to work together on a fundamental market transformation.

We believe that a Biodiversity Business Facility can demonstrate such a new model – a new way of working together, bringing private sector skills to bear, raising capital from new sources, combining finance, business support and biodiversity management assistance to fledgling enterprise, establishing more robust management systems to evaluate progress, creating new collaborations and partnerships and, ultimately, new markets.

Shell and IUCN remain committed to exploring the potential of such a venture and look forward to working with others to move the idea along. We reiterate our thanks to everyone who helped in the preparation of this Report and look forward to receiving people's comments and suggestions as we continue to develop this exciting initiative.

## **Appendix A. Terms of Reference**

### **Scoping Study for a Biodiversity Business Facility**

**26 January 2006**

#### **1. Purpose**

These Terms of Reference (ToR) outline a Scoping Study for a potential new Biodiversity Business Facility (BBF) which would support commercial projects and related market-based approaches to biodiversity conservation<sup>167</sup>. The Scoping Study shall be conducted by Sachin Kapila of Shell International Limited (Shell) and Joshua Bishop of The World Conservation Union (IUCN), with additional support provided by external consultants and advisors.

#### **2. Background**

Shell and IUCN have a long-standing collaboration which seeks to improve the integration of biodiversity conservation in the energy business, while at the same time improving conservation through the application of lessons from business. In the context of their collaboration, Shell and IUCN have agreed to explore the potential for developing a new international fund that would invest in market-based approaches to biodiversity conservation. Their effort is based on a shared conviction that international commitments to halt the loss of biodiversity cannot be achieved unless and until conservation becomes a positive business proposition. This premise is supported by numerous recent international reports and initiatives, most recently the MA.

Traditional approaches to biodiversity conservation rely heavily on PAs supported by central government / donor funding. Problems with this approach include insufficient / unreliable funding, especially in biodiversity-rich developing regions, weak links between consumer willingness-to-pay for biodiversity and financial mechanisms, and often, inefficient use of what funding does exist. The result is many poorly protected 'paper parks,' failure to conserve sufficient biodiversity, and in some cases conflict with local communities. Some recent efforts to go further (e.g. Integrated Conservation and Development Projects) have not been very successful.

Much of the world's biodiversity is to be found in the developing world where there are considerable challenges such as weak political and macroeconomic stability, widespread poverty, undeveloped local economies, lack of capacity and resources and institutional weaknesses in relevant public sector bodies. Innovative solutions and institutional arrangements for generating additional financial and managerial resources need to be found to address these challenges. Such initiatives can likewise contribute to wider efforts to achieve the UN Millennium Development Goals (especially goals 7 and 8).

Increasingly, business development and market creation are seen as viable mechanism to address these challenges. An important priority is to create 'space' for entrepreneurs to develop and test new biodiversity-business models. This will require support for a range of new financing mechanisms and business models, including:

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<sup>167</sup> For the purposes of these ToR, we refer to the definition of biodiversity contained within the Convention on Biological Diversity (available at [www.biodiv.org/doc/publications/guide.asp](http://www.biodiv.org/doc/publications/guide.asp)).

- Mechanisms that capture demand for biodiversity *directly*, e.g. conservation concessions and easements, ecotourism gate fees, bioprospecting access agreements, debt-for-nature swaps, biodiversity offsets and other payments for habitat conservation etc;
- Efforts to expand markets for goods and services that *indirectly* conserve biodiversity, e.g. organic agriculture, shade coffee, certified timber, payments for biomass-based carbon sequestration or watershed protection; and
- Mechanisms to guide investors or allocate finance more efficiently, e.g. biodiversity trust funds, biodiversity benchmarking for investors, performance-based incentives, competitive tendering of biodiversity delivery contracts etc.

### 3. Objectives and scope of the Scoping Study

Initial discussions between Shell and IUCN suggest that there is both a pressing need and significant potential value added from the creation of a new, international fund to support market-based approaches to biodiversity conservation. To test this proposition, the Scoping Study will:

- Review and assess past, existing or proposed biodiversity finance mechanisms, focusing on commercial initiatives and related efforts to create markets for biodiversity;
- Identify a preferred business model for the BBF and propose a process for its development and capitalisation; and
- Identify potential collaborators and partners in the BBF, including support for fund management as well as project selection and technical assistance to project implementers.

Any effort to promote market-based approaches to biodiversity conservation must start from an assessment of the main obstacles and risks which hamper the realisation of such a vision. Relevant constraints (and corresponding responses) might include: lack of knowledge about how to supply biodiversity through the market (implying the need for R&D), weak capacity (requiring a training response), lack of stable enabling policy (implying a need for analysis and advocacy), insufficient public consensus (requiring dialogue), weak or fickle consumer demand (to which the response might be marketing), and inadequate biodiversity supply (implying the need for investment).

One high potential aim of the BBF would be to support the establishment of Small-and-Medium scale Enterprises (SMEs) and entrepreneurs in the fields of biodiversity conservation. This could include the provision of business development assistance and working capital to finance the establishment or expansion of commercially-viable SMEs engaged in activities that contribute directly to biodiversity conservation, such as nature-based tourism, eco-agriculture or sustainable forestry. An explicit aim of this model would be to generate financial returns from project investments.

In addition, the BBF could support activities that build the foundations for biodiversity enterprise, such as market research and product development, pilot testing of biodiversity business concepts, pre-commercial purchase of biodiversity services based on competitive business principles and, as appropriate, policy advice on market creation for biodiversity. This model would not seek to earn financial returns but would focus support on market-based approaches to biodiversity conservation.

The Scoping Study will also take account of recent efforts in the public sphere to broaden the scope of biodiversity conservation across the landscape, both within and outside the network of PAs; to restore degraded ecosystems as well as conserving intact habitat; and to ensure positive impacts on local communities, both as an end in itself and because conservation is unlikely to be sustainable without their support.

An early step in the Scoping Study will be to identify key criteria for determining how any new funds would be used. These criteria will guide the assessment of alternative business models or objectives for the BBF, the review of existing initiatives, and the selection of a preferred option. Potential criteria include:

- Commercially attractive to investors (i.e. ability to deliver financial returns);
- A market-based vision of conservation (i.e. going beyond philanthropy and making biodiversity a positive business proposition);
- Cost-effective (in terms of conservation impact);
- Socially equitable (poverty-reducing);
- Non-bureaucratic (e.g. rapidly-disbursing);
- Inclusive (i.e. open to other potential contributors), and
- Selective / competitive (funding only the best proposals).

#### **4. Expected Outputs**

The main outputs of the Scoping Study will be an options paper and a final proposal. The options paper will provide a market and financial analysis of existing and proposed biodiversity finance initiatives, focusing on commercial initiatives and related efforts to create markets for biodiversity. The options paper will include interim recommendations on the proposed objectives, scale and structure of the BBF.

The final proposal will elaborate on the proposed recommendation of the options paper and lay out a follow-up process for a more detailed feasibility study and establishing a pilot BBF. The proposal will include the following elements:

- The business case for establishing the fund – what’s in it for Shell, Shell companies, IUCN and others, and what collaborators and partners in the BBF can expect from their involvement;
- Identification of a specialist fund manager with a track record who is also able to provide necessary business development assistance (BDA)<sup>168</sup>;
- Geographic region where the fund will focus;
- Potential sectors / markets in which the fund can invest;
- Establishment of investment criteria including biodiversity related indicators;
- Examples of projects that would meet the investment and other criteria;
- Proposed governance structure that is simple, effective, transparent and robust;
- Estimated size of the fund with typical investment range;
- Type of fund (closed or open-ended) and expected duration;
- Estimated Shell investment versus leveraged financing;
- Expected biodiversity outcomes and financial returns on the deals;
- Roles and responsibilities of Shell, IUCN and other potential collaborators and partners;
- Ideas for potential scale-up (regions, sectors, markets, projects, deal size etc)

#### **5. Activities and Timetable**

The feasibility study is expected to take five months to complete, in total. Activities and timings are as follows:

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<sup>168</sup> One of the key lessons learnt during the establishment of the Shell Foundation energy funds was the coupling of fund management with the provision of BDA. This increased the responsibility of the fund manager to ensure that they provided the appropriate level of BDA thereby improving the investment pipeline and the probability that those investments deliver viable financial returns.

Feb-March	Interviews and focus group discussions / brainstorming with key informants
Early April	Preparation and circulation of the options paper
Early May	Workshop to validate the preferred option (joint Shell and IUCN, with selected external experts)
End June	Final BBF concept

## **6. Oversight and Follow-up**

The Feasibility Study will be supervised by a joint oversight committee of drawn from Shell, Royal Dutch Shell, Shell Foundation and IUCN. Members of the committee will include:

- IUCN: Achim Steiner, Bill Jackson and Gabriel Lopez
- Royal Dutch Shell: Lex Holst
- Shell: Richard Sykes
- Shell Foundation: Kurt Hoffman

Following the preparation of the options paper and the expert workshop, it is expected that Achim Steiner and Jeroen van der Veer will meet to discuss the interim conclusions of the Feasibility Study and the potential establishment / launch of the BBF. It is expected that this meeting will take place in late April 2006.

If the BBF is given the green light, the next phase will encompass marketing the business plan to potential investors (including Development Finance Institutions, banks and private foundations). It is expected that this phase will take up to 1 year based on the experience of other funds and the Shell Foundation.

## Appendix B. Overview of selected biodiversity funds

	BioCarbon Fund (BioCF) Tranche 2 (World Bank)	Brazilian Biodiversity Fund (FUNBIO)	Natural Capital Investment Fund (NCIF)	EcoEnterprises Fund (EcoEmpresas, TNC)	Ecologic Finance (EF)	Sustainable Land Fund (EBX & Oxbow Land Management)	Verde Ventures Fund (CI)	Equator Ventures	Central American Markets for Biodiversity (CAMBio)	Corporación Financiera Ambiental (CFA)	Seachange
<b>Geographic Focus</b>	Global	Brazil	USA – Rural West Virginia	Latin America and Caribbean. 14 projects in TNC sites and 6 in World Heritage Sites	Mexico, Guatemala, Honduras, Belize, Nicaragua, Costa Rica, Ecuador, Peru, Bolivia, Brazil, Kenya, Uganda and Rwanda	USA	Latin America, Caribbean, Africa and Asia	Projects that contribute to biodiversity in CI and Equator Initiative priority areas are eligible.	Central America: Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua	Central America	Not known.
<b>Sectors Invested in</b>	LULUCF. Window 1 (consistent with the Kyoto Protocol rules): afforestation and reforestation in developing countries; any LULUCF activity in economies in transition. Window 2: any LULUCF activity beyond afforestation and reforestation in the CDM, e.g. forest restoration or management, revegetation, avoided deforestation, and agriculture.	In 2004: 44% non-timber forest management; 41% agro-biodiversity; 10.3% conservation and environmental education; 3.97% management of fish and animal resources; 0.59% timber forest management. 37% invested in community and producers' associations and cooperatives, 42% in NGOs, 16% in private companies and 5% in government organisations.	Sectors of particular interest include: heritage and recreation-based tourism, value-added and sustainable agriculture, water / wastewater treatment, sustainable forestry and forest products, integrated waste management, and recycling.	Focused on 'green' sectors, such as sustainable agriculture, aquaculture, forestry, ecotourism and NTFPs.	Target sectors include agroforestry (shade-grown and sustainable agriculture), wild-harvested products, certified wood, sustainable fisheries, and ecotourism.	Market-based and incentive programs: Wetland Mitigation Banking, Stream Mitigation Banking, Conservation (Endangered Species) Banking, water leases and water quality trades, sustainable (certified) timber and agriculture, recreation – hunting, fishing, tourism, limited development, conservation easement sales, CO <sub>2</sub> sequestration – forestry	Coffee, cocoa, tourism, NTFPs. Looking at other sectors such as cotton and carbon.	Viable small and medium sized biodiversity businesses.	SMEs that sustainably use or protect natural resources – these may include renewable energy, energy efficiency, sustainable forestry, alternative / organic agriculture and aquaculture, ecotourism, and recycling.	Environmental businesses in the following sectors: -Organic agriculture. Sustainable forestry, -Renewable energy -Energy efficiency. -Recycling, reduction and treatment of pollution, in addition to clean technologies and products. -Sustainable tourism, esp related to biodiversity.	Companies that avoid: - Damage to aquatic habitats through the use of destructive fishing gear, pollution, the introduction of invasive species; - Mismanagement through overfishing of targeted stocks or a lack of regulatory oversight and enforcement; - Wasteful use of marine resources (e.g. bycatch or for aquaculture); and, - Accidental threats to species of special concern

	<b>BioCarbon Fund (BioCF) Tranche 2 (World Bank)</b>	<b>Brazilian Biodiversity Fund (FUNBIO)</b>	<b>Natural Capital Investment Fund (NCIF)</b>	<b>EcoEnterprises Fund (EcoEmpresas, TNC)</b>	<b>Ecologic Finance (EF)</b>	<b>Sustainable Land Fund (EBX &amp; Oxbow Land Management)</b>	<b>Verde Ventures Fund (CI)</b>	<b>Equator Ventures</b>	<b>Central American Markets for Biodiversity (CAMBio)</b>	<b>Corporación Financiera Ambiental (CFA)</b>	<b>Seachange</b>
<b>Fund size (US\$)</b>	Tranche 2 would be declared operational at a minimum of approximately US\$10M. Maximum size of ~ US\$50M. Participant chooses in which Window to participate. The minimum contribution to a Window is US\$1 million.	FUNBIO received a US\$20M grant from GEF. GEF resources complemented by fundraising and partnership with private sector to ensure long-term activities. FUNBIO can receive donations from corporations & other institutions.	Fund size not known. NCIF will consider loans in the range of US\$15,000 to US\$250,000. NCIF equity investments range from US\$50,000 to US\$250,000.	There is US\$5.2m risk capital in the 10 year closed-in fund made up with US\$2.6M IADB and US\$2.6M TNC money; generated US\$20M (leveraged finance).	Not known	US\$125M – not yet operational	US\$6.5M - would like to grown this to a US\$15M fund in the next 2 years.	launched in January of 2005 with a US\$1M million pilot fund. Pending success of the pilot, the fund will be expanded.	US\$30M	US\$10M	Not known

	BioCarbon Fund (BioCF) Tranche 2 (World Bank)	Brazilian Biodiversity Fund (FUNBIO)	Natural Capital Investment Fund (NCIF)	EcoEnterprises Fund (EcoEmpresas, TNC)	Ecologic Finance (EF)	Sustainable Land Fund (EBX & Oxbow Land Management)	Verde Ventures Fund (CI)	Equator Ventures	Central American Markets for Biodiversity (CAMBio)	Corporación Financiera Ambiental (CFA)	Seachange
<b>Amount invested to date (US\$)</b>	Not known	US\$11M, of which 60% invested through the 'Partnership programme', in which FUNBIO's contributes a maximum of 50% of the funding for a given project.	Not known	Invested > US\$4M in 10 countries. Recently funded 20 <sup>th</sup> project (reviewed >370); provided follow-on financing to 3 portfolio companies; 3 projects to be financed within 6 months. 16 debt instruments; 6 equity investments. Investments range from US\$50,000 - 500,000 (average investment US\$325,000). Six projects repaid to date.	Since its inception in late 1999, EF has provided over 130 loans totalling over \$20M to village-based enterprises with a real stake in conserving local habitats.	Investment Period of 3 – 5 years; 15-20 investments; Range of deal size: US\$3M – \$10M	Invested S\$7.8M (as of May 2006)	Not known	Only very recently established.	Not known	Not known
<b>IRR (%)<sup>169</sup></b>	NA	Non-profit	Not known	20 Projects with an IRR of 1% (projected = 6%).	Not known	NA	Getting 8% returns across the fund	Not known – currently in pilot phase.	Not known	Rate of return on investments 25-30%. 12% debt w / conversion features. Rate of return on fund 9.5%	Not known

<sup>169</sup> It is important to consider that a high IRR is not always the primary target and that some funds may have a substantial grant based funding element. Also, each fund “pitches” its returns differently depending upon whether operating costs and / or “subsidies” are included. For example, in the 1% IRR noted for EcoEnterprises, more than one-third of the fund’s operating expenses. Without these costs, the IRR jumps to 11%.

	<b>BioCarbon Fund (BioCF) Tranche 2 (World Bank)</b>	<b>Brazilian Biodiversity Fund (FUNBIO)</b>	<b>Natural Capital Investment Fund (NCIF)</b>	<b>EcoEnterprises Fund (EcoEmpresas, TNC)</b>	<b>Ecologic Finance (EF)</b>	<b>Sustainable Land Fund (EBX &amp; Oxbow Land Management)</b>	<b>Verde Ventures Fund (CI)</b>	<b>Equator Ventures</b>	<b>Central American Markets for Biodiversity (CAMBio)</b>	<b>Corporación Financiera Ambiental (CFA)</b>	<b>Seachange</b>
<b>Term of Fund</b>	Tranche 2 is currently expected to remain open for subscriptions until end of 2007 (tentative).	Not known	Not known	Fondo EcoEmpresas, S.A. is a Panamanian investment company with a 10 year-life. Fund wind down in 2008 / 2009.	Not known	10 – 12 years	Rotating fund – no exit date.	Not known – currently in pilot phase.	7 years	Not known	Not known
<b>Type of Fund</b>	Closed	Maximum 50% loans	NCIF is certified as a 'Community Development Financial Institution Fund' (CDFI) by the U.S. Department of the Treasury's CDFI Fund. NCIF offers loans to businesses with at least five years of operating history. Loan proceeds can be used for inventory, machinery and equipment, real estate acquisition, or other working capital purposes. Loan amounts range from \$50,000 to \$150,000; terms are 10 to 15 years with interest rates tied to prime.	Fund is a closed-end fund to wind down in 2009. Fund only provides financing for up to 50% of any single venture. Clients paying back on quarterly basis – payments go back into fund.  Technical Assistance: US\$1.75m from TNC / IADB (US\$1M from IFC) – this also covers operating costs. Total: US\$8.7m	EF manages a portfolio of \$25,000 to \$500,000 loans to small- and medium-sized enterprises that do not meet traditional requirements to access loans from local financial institutions. With few exceptions, Ecologic lends to rural producer organisations with established market linkages to values-driven buyers engaged in direct commerce with their suppliers.	Standard Private Equity Structure	The fund is structured using subordinated debt with observer's rights. A scoring system that determines pricing. If BD / social targets are met clients, incentives are provided (e.g. increased capital flow or lower interest rates). Exits are established using equity kickers (price warrants), share buy-back deals, management buy-outs and royalties (e.g. % of sales); good upsides to this as one is able to grow with the company.	Its mission is to provide a 'blended' offer of debt finance and enterprise development support. Loans between US\$30,000 to US\$500,000	Will work with Central American Bank for Economic Integration, (CABEI) & network of financial intermediaries. Aim is to increase lending to biodiversity-friendly SMEs. CABEI will provide credit lines to its financial partners. GEF funds will cover bank risk through the provision of partial risk guarantees and other loan enhancements.	\$100,000 - \$750,000 equity and long term debt, mainly subordinated debt & expansion capital for established companies.	The Fund is capitalised with a PRI from the David and Lucile Packard Foundation, matched by a private equity investment.

	BioCarbon Fund (BioCF) Tranche 2 (World Bank)	Brazilian Biodiversity Fund (FUNBIO)	Natural Capital Investment Fund (NCIF)	EcoEnterprises Fund (EcoEmpresas, TNC)	Ecologic Finance (EF)	Sustainable Land Fund (EBX & Oxbow Land Management)	Verde Ventures Fund (CI)	Equator Ventures	Central American Markets for Biodiversity (CAMBio)	Corporación Financiera Ambiental (CFA)	Seachange
<b>Biodiversity Metrics / Screens</b>	Tranche 2 is expected to seek projects that achieve multiple benefits, namely carbon sequestration or conservation coupled with social and environmental enhancements. Social and environmental enhancements could be paid for separately or, absent a separate payment system, receive a premium embedded in the price of a ton of carbon dioxide equivalent. The price of a ton of carbon dioxide would then include the value of carbon sequestration / conservation, plus that of the social service and the environmental service. The premium would depend on the quality of the social and environmental services.	Funds used to support: - Biodiversity conservation - Sustainable use associated to conservation of biological diversity - Applied research in conservation and sustainable use of biodiversity	Not present	No Biodiversity specific metrics - Fund has an environmental and social monitoring and evaluation system which sets priorities and benchmarks to measure overtime.	Preference is given to businesses that: - Demonstrate the ability to provide meaningful employment and increases in household income to disadvantaged groups, especially farmers, women, and indigenous people. - Operate in threatened habitats; provide sustainable economic alternatives to environmental destruction; and act as responsible stewards of wildlife, forests, rivers, coasts, and other resources. - Are unable to secure financing from conventional commercial sources	Not known	BD review process specifically related to desired CI outcomes. They use the IFC grant money to do the BD baselines (average cost is \$9k per baseline) and take on average 8-12 months (after the deal is done)	Five core principles: -Integrate biodiversity conservation and poverty alleviation into enterprise delivery; -Enhance capacity for impact, scaling-up and repayment; -Measure and report to share learning; -Build an active public-private community that is supportive of environmentally sustainable entrepreneurship; -Achieve financial sustainability.	Not known	Environmental entrepreneurs interested in obtaining CFA funds must: • Manage an established SME, or have plans to undertake a new project; • Have the financial capacity to co-invest with CFA. • Provide a brief business proposal, with emphasis on the environmental and financial qualities	Sea Change invests in seafood companies which meet conservation criteria based on those of the MSC & Monterey Bay Aquarium's Seafood Watch Program. Fund's objective is to expand market for environmentally-preferable seafood by demonstrating that sustainable seafood is good business for the seafood industry and for investors. The Sea Change Investment Fund provides capital for the industry to expand the market for environmentally-preferable seafood.

	<b>BioCarbon Fund (BioCF) Tranche 2 (World Bank)</b>	<b>Brazilian Biodiversity Fund (FUNBIO)</b>	<b>Natural Capital Investment Fund (NCIF)</b>	<b>EcoEnterprises Fund (EcoEmpresas, TNC)</b>	<b>Ecologic Finance (EF)</b>	<b>Sustainable Land Fund (EBX &amp; Oxbow Land Management)</b>	<b>Verde Ventures Fund (CI)</b>	<b>Equator Ventures</b>	<b>Central American Markets for Biodiversity (CAMBio)</b>	<b>Corporación Financiera Ambiental (CFA)</b>	<b>Seachange</b>
<b>Link</b>	<a href="http://www.biocarbonfund.org">www.biocarbonfund.org</a>	<a href="http://www.funbio.org.br">www.funbio.org.br</a>	<a href="http://www.wvncif.org/">www.wvncif.org/</a>	<a href="http://www.ecoenterprisesfund.com/">www.ecoenterprisesfund.com/</a>	<a href="http://www.ecologicfinance.org/">www.ecologicfinance.org/</a>	<a href="http://www.ebxusa.com/alliances/">www.ebxusa.com/alliances/</a> and <a href="http://www.conservativofund.org/">www.conservativofund.org/</a>	<a href="http://www.conservativofund.org/xp/verdeventures/">www.conservativofund.org/xp/verdeventures/</a>	<a href="http://www.undp.org/equatorinitiative/EquatorVentures.htm">www.undp.org/equatorinitiative/EquatorVentures.htm</a>	<a href="http://www.cfa-fund.com">www.cfa-fund.com</a>	<a href="http://www.cfa-fund.com/">www.cfa-fund.com/</a>	<a href="http://www.seachangefund.com/">www.seachangefund.com/</a>
<b>Funding Agencies / Sources</b>	National and sub-national governments; private sector entities having at least \$5 million in assets and otherwise acceptable to the Trustee.	World Bank (GEF), Private sector partners (e.g. Ford Foundation), NGOs (e.g. WWF) and government	NCIF obtains operating capital, technical assistance funding, and loan funds from a variety of State and Federal Agencies, Private Foundations, and Financial Institutions.	Fund's shareholders include Inter-American Development Bank (IADB) – Multilateral Investment Fund, socially responsible investors, foundations and TNC. TNC investment was made with donor funding. Fund's grant-based support for technical assistance is from IADB, IFC/ GEF, foundations, Conservancy donors.	EF is an alternative investment vehicle for over 50 investors, including individuals, SRI firms, foundations, faith-based investment funds and coffee roasters. EF partners with loan guarantors to serve higher-risk, high-impact applicants. E.g., the Development Credit Authority of the U.S. Agency for International Development provides the fund with a 50% guarantee on disbursements of up to \$4 million.	Bunting Management Group (Family Office)	IFC (\$1.75M), OPIC (\$2.5M) and Starbucks (\$2.5M)	Partners include Gov of Canada, CI, the German Federal Ministry for Economic Cooperation and Development (BMZ), the International Development Research Centre, IUCN, TNC, Television Trust for the Environment (TVE) and the United Nations Foundation	CABEI (US\$17M), GEF (US\$10M) and associated financing (US\$11M) via 'select' financial intermediaries.	Multilateral Investment Fund, managed by the Inter-American Development Bank. Shareholders: Swiss Office of Foreign and Economic Affairs, Swedfund Int. AB, FINNFUND Stichting Hivos/Triodos Fonds Environmental Enterprises Assistance Fund Citizen's Energy Corporation Global Partners LLC, Private investor	David and Lucile Packard Foundation plus private investors

## Appendix C. Overview of Selected Think-Tanks and Incubators

Organisation	Primary Interests / Expertise; Comments
CIFOR	Think-Tank / Research Institution: Sustainable forestry / NTFPs regarding a wide range of issues from management to policy
CI / CELB	Think-Tank / Incubator: focus on policy issues and company-specific new approaches to Agriculture & Fisheries, Forestry, Energy & Mining, Travel & Leisure industries, and Climate Change
CSIRO, Australia	Think-Tank / Research Institution: broad involvement in the agriculture, mining, sustainable energy and environmental sectors; leading expertise in environmental service mechanisms and payments
EcoAgriculture Partners	Think-Tank / Incubator: sustainable agriculture, environmental service payments, pilot sites to test landscape-level approaches
Environmental Defense	Think-Tank: US focus on influencing governmental and corporate environmental policy and practice; international programs focus on large infrastructure projects and indigenous peoples
Forest Trends	Think-Tank / Incubator; sustainable forestry, environmental service payments, biodiversity offsets; combining these approaches with corporate partners
IIED, UK	Think-Tank: Sustainable Agriculture, Natural Resource Management, Participatory Appraisal; major focus in Africa and South Asia
IMAZON, Brazil	Think-Tank / Research Institution: within the Amazon – applied research and policy advocacy on the impact of private and public land use and environmentally-friendly alternatives
IUCN	Think-Tank; broad involvement in an array of environmental and conservation issues; particular emphasis on linking research to policy
NBI, South Africa	Think-Tank / Research Institute; within South Africa, research and policy advocacy re plant ecology and conservation, conservation farming, climate change, invasive species and desertification
RECOFTC	Think-Tank; Sustainable Forestry / NTFPs; East / SE Asia focus
Resources for the Future	Think-Tank / Research Institute; involved in applied research on a broad array of environmental issues with a focus on informing U.S. Public Policy
Thailand Environmental Institute	Think-Tank / Research Institute: applied research and policy advocacy on a variety of environmental issues focused on Thailand; a focus on engaging the business community and energy sector
TIES	Think-Tank / Association: Ecotourism, promoting lesson sharing and best management practices; global
TNC	Think-Tank / Conservation NGO: policy advocacy on a broad range of conservation topics in developing countries; expertise in conservation on private lands and conservation finance mechanisms
WBCSD	Think-Tank / Business Forum; the largest business forum dedicated to promoting sustainable practices and policies by its large corporate members; covers a range of market-based approaches to conservation
WRI, New Ventures	Think-Tank / Incubator; broad involvement in many environmental issues; incubator of small-scale eco-enterprises in Latin America
Worldwatch Institute	Think-Tank / Research Institute: interdisciplinary research on global environmental, social, and economic trends; advocacy re how to transition to an environmentally sustainable and socially just society
WWF	Think-Tank / Conservation NGO: its forest, marine, freshwater, climate change and agriculture and biodiversity programmes all include market-based approaches to conservation

**Note:** this list excludes university centres and departments due to the large numbers of such institutions

## Appendix D. Glossary and list of acronyms

### Glossary

1. *Biodiversity business tools (Bio-tools)*  
A set of tools for use by those involved in setting up, financing, managing or monitoring biodiversity investments, or determining biodiversity outcomes resulting from such investments.
2. *Biodiversity enterprises*  
Defined by the Conservation Finance Guide ([guide.conservationfinance.org/chapter/index.cfm?Page=1](http://guide.conservationfinance.org/chapter/index.cfm?Page=1)) as ‘Small- and Medium-Scale Enterprises engaged in site-based compatible economic development (development posing no-impact or low-impact to biodiversity) and activities that contribute significantly to biodiversity conservation’, but extended here to also include other, larger, enterprises.
3. *Biodiversity offset*  
Biodiversity offsets are conservation actions intended to compensate for the residual, unavoidable impact on biodiversity caused by development projects, to ensure at least no net loss of biodiversity and, where possible, a net gain.
4. *Biodiversity management services*  
The multitude of professional activities and services undertaken by public and private entities that directly and deliberately deliver benefits for biodiversity conservation and for which a commercial fee is received by the service provider.
5. *Downstream business*  
For oil and gas, those activities that take place between the loading of crude oil at the export terminal and the use of the oil by the end user. This encompasses the ocean transportation of crude oil, supply and trading, refining and distribution and marketing of the oil products.
6. *Ecosystem Services*  
Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth.  
From the MA report “*Ecosystems and Human Well-being: A Framework for Assessment*”(available from [www.millenniumassessment.org/en/Products.EHWP.aspx\\_downloads](http://www.millenniumassessment.org/en/Products.EHWP.aspx_downloads)).
7. *Enabling framework*  
Frameworks encompassing mandatory property and use rights, legal liabilities, social norms, fiscal policy, and voluntary agreements such as voluntary certification standards or sector-wide biodiversity performance and reporting commitments that can be used by government, business and other key players to promote biodiversity businesses.
8. *Endowment Fund*  
An account that is managed to preserve capital while providing high current income through investment.

9. *Environmental Impact Assessment*  
Environmental Impact Assessment can be defined as the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made (International Association for Impact Assessment – [www.iaia.org/](http://www.iaia.org/))
10. *Equity investment*  
Refers to the acquisition of equity (ownership) participation in a private company or a newly created start-up company.
11. *Impact mitigation*  
Measures and actions taken to avoid, minimise, reduce, remedy and / or compensate for the adverse impacts of development. In general, a hierarchy of ‘avoid – reduce – remedy – compensate’ is used to establish an order of preference (beginning with avoid) for mitigation measures ([www.theebi.org/pdfs/glossary.pdf](http://www.theebi.org/pdfs/glossary.pdf)).
12. *Incubator*  
A means of providing various forms of assistance to potential investment opportunities in order to develop them to the point where they could be funded as viable businesses, for example a range of business development services, piloting of promising business concepts to demonstrate their viability (or otherwise). An incubator would receive grant funds, but could operate on a partial cost-recovery basis.
13. *Intellectual property rights (IPR)*  
Collectively IPR refers to issues including patents, trademarks, design rights, copyright and business names. Generally, IPR are the rights of an inventor or assignee to develop and commercialise an invention and / or licence it to other manufacturers.
14. *Loan guarantees*  
A legal obligation to compensate a lender if the borrower fails to repay a loan. This reduces the risk of lending, allowing the borrower to receive funds on more favourable terms. Loan guarantees can be structured to cover all or a percentage of the credit provided (typically only the principal), and to be drawn upon under varying circumstances (typically only after standard debt collection practices have been exhausted).
15. *Market-based approach*  
An approach that takes as its focus the development and expansion of profitable business models for biodiversity conservation, including those businesses that conserve biodiversity indirectly and those that capture demand for biodiversity directly. A market-based approach can complement the existing contemporary approaches to biodiversity conservation by developing innovative solutions, including new institutional arrangements for generating financial and managerial resources.
16. *Mezzanine finance*  
Mezzanine finance is a hybrid between debt and equity, with many possible permutations in terms of how it is structured. Generally, this consists of debt that is convertible to shares / equity within a specified period, and / or based on certain conditions or performance benchmarks.
17. *Non-timber forest products (NTFPs)*  
Natural products other than wood derived from forests or wooded land. Examples of NTFPs include edible nuts, mushrooms, fruits, herbs, spices, honey, gums and resins, rattan, bamboo, thatch, cork, ornamental plants and flowers, and an array of plant and animal products used for medicinal, cosmetic or cultural purposes.

18. *Payments for watershed protection*

Positive financial incentives for forestry, soil and water conservation and other forms of watershed protection.

19. *Program-related investments (PRIs)*

PRIs are typically provided by foundations, or similar organisations, that have endowments invested to produce funds that support annual grant-making. Instead of investing all of the endowment funds in stocks, bonds and other instruments that have 'market rate' returns, a portion of these funds can be invested in initiatives that will yield below-market rate returns, but generate 'programmatically' benefits in keeping with the foundations' (charitable) principles.

20. *Recoverable grants*

Recoverable grants are, in essence, zero interest rate loans, in which the principal is returned to the donor / lender, on either a short- or long-term basis depending upon the objectives and circumstances.

21. *Think-Tank*

A physical or virtual facility that can undertake a number of advisory roles that support the promotion of biodiversity businesses at the company and policy / strategy level (e.g. regulatory advice; education; knowledge management and transfer and facilitating access to relevant business tools).

## **Acronyms**

BACP – Biodiversity Agriculture Commodities Program

BAP – Biodiversity Action Plan

BBF – Biodiversity Business Facility

BBOP – Business and Biodiversity Offset Program

BBP – Biodiversity Business Plan

BioCF – BioCarbon Fund

BMS – Biodiversity management services

BMP – Biodiversity management plan

BNI – Biodiversity Neutral Initiative

CABEI – Central American Bank for Economic Integration

CAF – Corporación Andina de Fomento

CAMBio – Central American Markets for Biodiversity

CAMPFIRE – Communal Areas Management Program for Indigenous Resources

CBD – Convention on Biological Diversity

CBDS – Convenio Bilateral de Desarrollo Sostenible

CCB – Climate, Community and Biodiversity

CCBA – Climate, Community and Biodiversity Alliance

CDFI – Community Development Financial Institution Fund

CDM – Clean Development Mechanism

CELB – Center for Environmental Leadership in Business (a CI department)

CI – Conservation International

CIFOR – Center for International Forestry Research

CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora

CSERGE – The Centre for Social and Economic Research on the Global Environment

CSIRO – The Commonwealth Scientific and Industrial Research Organization, Australia

DU – Ducks Unlimited

EBRD – European Bank for Reconstruction and Development

EEAF – Environmental Assistance Enterprise Fund

EF – Ecologic Finance  
EIA – Environmental Impact Assessment  
ETS – Emission Trading Scheme  
EU – European Union  
FAO – Food and Agriculture Organization  
FAOSTAT – FAO Statistical Databases  
FFI – Fauna & Flora International  
FONAFIFO – National Fund for Forest Financing  
FSC – Forestry Stewardship Council  
FUNBIO – The Brazilian Biodiversity Fund  
FVCT – Flower Valley Conservation Trust  
GEF – Global Environment Facility  
GHG – Greenhouse gas  
GRI – Global Reporting Initiative  
HSEMS – Health, Safety and Environmental Management System  
IBLF – International Business Leaders Forum  
ICMM – International Council on Mining and Metals  
IIED – International Institute for Environment and Development  
IFC – International Finance Corporation  
IFOAM – International Federation of Organic Agriculture Movements  
IMAZON – The Amazon Institute of People and the Environment  
INBio – National Institute of Biodiversity  
IPIECA – International Petroleum Industry Environmental Conservation Association  
IRR – internal rate of return  
ITTO – International Tropical Timber Organization  
IUCN – The World Conservation Union  
JFM – Joint Forestry Management  
LEI – The Indonesian Ecolabelling Institute  
LULUCF – land use, land-use change and forestry  
M&S – Marks & Spencer  
MA – Millennium Ecosystem Assessment  
MAMTI – Marine Aquarium Market Transformative Initiative  
MSC – Marine Stewardship Council  
MTCC – Malaysian Timber Certification Council  
NBI – National Biodiversity Institute, South Africa  
NCIF – Natural Capital Investment Fund  
NGO – non-governmental organisation  
NTFPs – Non-timber forest products  
ODI – Overseas Development Institute  
OECD – Organisation for Economic Co-operation and Development  
OPIC – The Overseas Private Investment Corporation  
PA – protected area  
PEFC – Pan European Forest Council  
PENSA – Program for Eastern Indonesia Small and Medium Enterprise Assistance  
PES – Payment for Environmental Services  
PRI – Program-related investments  
RA – Rainforest Alliance  
RECOFTC – Regional Community Forestry Training Center for Asia and the Pacific  
RFE – Rainforest Expeditions  
RPPN – Programme for Private Reserves of Natural Heritage  
RSPO – Roundtable on Sustainable Palm Oil  
RUPES – Rewarding Upland Poor for Environmental Services  
SFI – Sustainable Forest Initiatives  
SMART – Specific, measurable, achievable, relevant and timely  
SME – Small and medium sized enterprise

STSC – Sustainable Tourism Stewardship Council  
SWOT – Strengths – weaknesses – opportunities – threats  
TIES – The International Ecotourism Society  
TNC – The Nature Conservancy  
TREES – Training Research, Extension, Education and Systems program  
UNCLOS – United Nations Convention on the Law of the Sea  
UNCTAD – United Nations Conference on Trade and Development  
UNEP – United Nations Environment Programme  
UNESCO – United Nations Educational, Scientific and Cultural Organisation  
UNU-IAS – United Nations University Institute of Advanced Studies  
VBDO – Vereniging van Beleggers voor Duurzame Ontwikkeling  
VV – Verde Ventures  
WBCSD – The World Business Council for Sustainable Development  
WCS – Wildlife Conservation Society  
WEC – World Environment Center  
WRI – World Resources Institute

## Appendix E. List of informants

FUND / FACILITY / ORGANISATION	CONTACT NAME(S)	TITLE
<b>BANKS / INVESTMENT HOUSES</b>		
ABN Amro	Richard Burrett	Managing Director – Sustainable Development
Citigroup	Bruce Schlein	Vice President – Environmental Affairs
F&C Asset Management	Robert Barrington	Director of Governance & Socially Responsible Investment
Goldman Sachs	Larry Linden Sonal Shah Mark R. Tercek	Advisory Director Vice President Managing Director
Henderson Global Investors	Mark Campanale	Head, SRI Business Development
HSBC	Francis Sullivan	
Insight Investment	Kerry ten Kate	Director, Investor Responsibility
JPMorganChase	Amy Davidsen	Director of Environmental Affairs

<b>MULTI- &amp; BI-LATERAL AGENCIES / UN AGENCIES</b>		
European Bank for Reconstruction and Development (EBRD)	Jean-Marie Frenzt Mark Hughes	Environmental Specialist / Project Preparation Committee (PPC) Officer Principal Environmental Specialist, Environment Department
Global Environment Facility (GEF)	Nicole Glineur	Program Manager Biodiversity and Private Sector
IADB Multi-lateral Investment Fund	Daniel Sheppard Santiago Carrizosa Susana Garcia-Robles Sandra Darville	Senior Investment Officer, Multilateral Investment Fund Senior Investment Coordinator, Investment Unit, MIF
IFC	Dan Siddy Dafna Tapeiro Juan J Dada Ghada Teima Shilpa Patel Catherine Cassagne Miguel Martins Hany Assaad Patricia Miller Lisa M Da Silva Shir Ashar Naveh Maurice Biron	Senior Environmental Specialist Manager – CommDev, IFC / WB Oil, Gas, Mining and Chemicals Department Projects Officer – Biodiversity Sustainability Business Innovation Group Investment Officer, Environmental Business Finance Program Manager, Sustainability Business Innovation Group Programme Manager, Biodiversity Sustainability Business Innovation Group Investment Officer, Financial Markets Sustainability Group Program Manager, Financial Markets Sustainability Group Principal Environmental Specialist & Team Leader Program Manager, Environmental Business Finance Program Monitoring and Evaluation Officer, Environmental Business Finance Program Senior Projects Officer
OECD	Philip Bagnoli	Principal Administrator, ENV / GSP

<b>FUND / FACILITY / ORGANISATION</b>	<b>CONTACT NAME(S)</b>	<b>TITLE</b>
<b>UNCTAD BioTrade</b>	Lucas Assuncao Rik Kutsch Lojenga Alexander Kasterine	Coordinator – Climate Change & Biodiversity Programme Manager, BioTrade Facilitation Programme, BioTrade Initiative Senior Market Development Adviser, Market Development Section, Division of Product and Market Development
<b>UNDP – Equator Initiative / Equator Ventures</b>	Philip Kauffman Sean Southey Terence Hay-Edie	Biodiversity Programme Officer, GEF Small Grants Programme
<b>UNEP Finance Initiative</b>	Paul Clements-Hunt	Head of Unit
<b>World Bank</b>	Stefano Pagiola Benoit Bosquet	Senior Environmental Economist, Policy and Economics Team BioCarbon Fund Manager, Carbon Finance Business

#### **GOVERNMENT DEPARTMENTS**

<b>USAID</b>	Chip Barber Diane Russell  Chris Kosnik  Hannah Fairbank	Biodiversity and Social Science Specialist Sustainable Agriculture & Natural Resources Management Advisor, Land Resources team, Office of Natural Resources Management Biodiversity and Natural Resource Specialist
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#### **FOUNDATIONS**

<b>Esmee Fairbairn Foundation</b>	Danyal Sattar	Programme Director – Environment
<b>Fiorello H. LaGuardia Foundation</b>	Patrick J. D’Addario	President, Fiorello H. LaGuardia Foundation
<b>Foundation Strategy Group</b>	Marc Pfitzer Karin Jestin	Managing Director Senior Consultant
<b>Gordon &amp; Betty Moore Foundation</b>	Terry Vogt	
<b>Macarthur Foundation</b>	Michael Wright	Conservation Director
<b>The Rockefeller Foundation</b>	Jacob Werksman	Senior Advisor, Global Inclusion
<b>Shell Foundation</b>	Chris West Hastings Stewart Kurt Hoffman	Deputy Director Vice President, Shell Foundation & Director, Social Investment Director

#### **BIODIVERSITY & OTHER FUNDS / INVESTMENT COMPANIES**

<b>Actis</b>	Mark Goldsmith	Head Business Principles Unit / Investment Principal
<b>Aureos Advisers Ltd</b>	Noah Beckwith	Partner
<b>AVIVA</b>	Anthony Sampson	Director of Corporate Social Responsibility
<b>Brazilian Biodiversity Fund</b>	Pedro Leitao	
<b>Conservation Capital</b>	Giles Davies	
<b>EcoEnterprise Fund (TNC)</b>	Tammy Newark	President

<b>FUND / FACILITY / ORGANISATION</b>	<b>CONTACT NAME(S)</b>	<b>TITLE</b>
	Michele Pena	Director of Operations
<b>EcoLogic Finance</b>	William F. Foote Namrita Kapur	Founding President & Executive Director Director of Operations & Business Development
<b>(Ex IFC / IUCN biodiversity business partnership) Kijani Initiative European Conservation Farming Initiative Vilanculos Coastal Wildlife Sanctuary Agricultural Development and Environmental Protection in Transylvania</b>	Frank Vorhies	
<b>Ex-Kijani Initiative</b>	Deborah Vorhies Zeke Oman	
<b>Mexican Environmental Fund</b>	Lorenzo Swasenswaig	
<b>Verde Ventures</b>	Jennifer Morris Adriana Madrigal Deborah Aragao	Senior Managing Director

<b>ENVIRONMENTAL FUNDS</b>		
<b>Acumen Fund</b>	Jacqueline Novogratz	CEO
<b>Capital for Development (CDC)</b>	Samir Abhyankar	Director of Strategy & Risk
<b>Climate Change Capital</b>	David Tepper Ken Newcombe James Cameron	
<b>E+Co</b>	Steve Cunningham	
<b>Environmental Bank and Exchange, Sustainable Land Fund</b>	Nick Dilks Dixon Harvey	
<b>Environmental Investment Partners</b>	Adam Pool	Chief Executive
<b>Global Environment Fund</b>	John Earhart Jeffrey Leonard Barry T Ulrich Kevin Tidwell	Chairman  Managing Director Associate
<b>New Philanthropy Capital</b>	Bernard Mercer Nigel Harris	
<b>Small Enterprise Assistance Fund (SEAF)</b>	Hebertus van der Vaart Mildred O Callar	President & Chief Executive Officer Executive Vice President & Chief Operating Officer
<b>Sustainable Forestry Management</b>	Alan Bernstein	CEO

<b>NGOs</b>		
<b>African Parks Foundation of America</b>	Nicholas Lapham	President
<b>Forest Trends</b>	Michael Jenkins Ricardo Bayon Matthew Arnold	President  Sustainable Finance
<b>IUCN HQ</b>	Jeffrey McNeely Mohammad Rafiq Simon Rietbergen	Chief Scientist BBP EMP

<b>FUND / FACILITY / ORGANISATION</b>	<b>CONTACT NAME(S)</b>	<b>TITLE</b>
	Francois Rogers Andrea Athanas	SEED BBP
<b>IUCN USA</b>	Scott Hajost James Marrant	Executive Director Senior Adviser
<b>London Zoological Society</b>	Glyn Davies	
<b>Rainforest Alliance</b>	Richard Donovan Tensie Whelan	Executive Director
<b>RSPB</b>	Paul Morling	Economist – Environmental Policy Division
<b>The Seed Initiative</b>	Francois Rogers	Project Coordinator, The Seed Initiative
<b>Technoserve</b>	Susan Bornstein Charity Hanif	Deputy Director, Africa Programs Director of Corporate Support & Partnerships
<b>TNC</b>	Nigel Purviss Bruce Boggs Randy Curtis Lynne Zeitlin Hale Marlon Patricio Flores Josh Edward Knights Sheldon Cohen	Director, The Nature Conservancy Conservation Learning Group  Director, Global Marine Initiative Senior Advisor, Conservation Finance & Policy, External Affairs Division Director – Corporate Partnerships
<b>WWF US</b>	Pablo Gutman Bruce Bunting  Esteban Brenes  Robin Naidoo  Eric Swanson  Jason Clay	Senior Policy Adviser  Senior Program Officer, Center for Conservation Finance Conservation Scientist – Biodiversity & Economics Conservation Science Program Director, Large Conservation Program Management / Endangered Spaces Program

<b>ACADEMIC INSTITUTIONS / THINK-TANKS / NETWORKS</b>		
<b>Environmental Defense</b>	Robert Bonnie	Managing Director, Center for Conservation Incentives
<b>Heinz Centre for Science</b>	Tom Lovejoy	President
<b>International Centre for Trade and Sustainable Development (ICTSD)</b>	Robert Oman Deborah Vorhies	Finance and Management Systems Manager Managing Director
<b>IIED</b>	Ivan Bond Marie Anne Griegan	Senior Research Associate, Forestry and Land Use Programme
<b>MOSAICO</b>	Diane Edgerton Miller	President and CEO
<b>New Ventures (World Resources Institute)</b>	Luiz Carlos Ros Virginia Barreiro Mareike Hussels	Global Manager, Markets and Sustainable Enterprise Director, New Ventures, Sustainable Enterprise Program (SEP) Associate, New Ventures, Sustainable Enterprise Program (SEP)
<b>University College London</b>	Tim Swanson	Chair of Law + Economics
<b>University of Colombia, Colombia Business School</b>	Geoffrey Heal	Professor, Paul Garret Professor of Public Policy and Corporate Responsibility
<b>WBCSD</b>	James Griffiths	

<b>FUND / FACILITY / ORGANISATION</b>	<b>CONTACT NAME(S)</b>	<b>TITLE</b>
<b>World Resources Institute</b>	Paul Faeth Craig Hanson	Executive Vice President and Managing Director Senior Associate – Sustainable Enterprise Program

### **JOURNALS & MAGAZINES**

<b>Environmental Finance</b>	Mark Nicholls	Editor
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### **CONSULTANTS / SERVICE COMPANIES / OTHER COMPANIES**

<b>Shell Global Solutions</b>	Dave Sands	START Business Manager
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## Appendix F. Potential, new and forthcoming initiatives

In addition to existing programmes, a number of regional or global initiatives are at various stages of development (from nascent to nearing implementation or recently deployed). These include:

- The formulation of policies to incorporate environmental services into the future strategies of both the US Agriculture Department (USDA) and Forestry Service (USFS), driven in part by the World Trade Organization's policies.
- The Sierra de las Minas Water Fund in Guatemala – WWF and Defensores de la Naturaleza are addressing water quality and quantity issues by promoting sustainable resource use via user payments for environmental services (see [www.wwf.org.uk/filelibrary/pdf/thegreenbuck.pdf](http://www.wwf.org.uk/filelibrary/pdf/thegreenbuck.pdf), Case Study 2).
- In 2005, EcoLogic Finance joined Calvert Foundation in founding the Finance Alliance for Sustainable Trade (FAST), the members of which leverage each other's resources to identify coffee producer needs, raise loan capital, and mitigate the risks involved in lending (see, for example, [usinfo.state.gov/special/Archive/2006/May/17-28540.html](http://usinfo.state.gov/special/Archive/2006/May/17-28540.html)).
- The EBRD is a partner with Flora and Fauna International (FFI) in a biodiversity project being funded by the Dutch DOEN Foundation. FFI is working in Hungary and Poland to develop a pipeline of projects requiring loan financing, and which will have a positive impact on biodiversity (see, for example, [www.iiied.org/Gov/mdgs/documents/MDG2-ch7.pdf](http://www.iiied.org/Gov/mdgs/documents/MDG2-ch7.pdf) and [www.efmd.org/attachments/tmpl\\_1\\_art\\_060626zxc\\_att\\_060626rrlf.pdf](http://www.efmd.org/attachments/tmpl_1_art_060626zxc_att_060626rrlf.pdf)).
- In January 2006, the new Environment and Safeguards Compliance Policy was approved by IADB, which establishes clear directives consistent with international benchmarks set by other multilateral development banks and private sector banks. The new policy supports biodiversity by focusing on transboundary areas, conservation, and protection from all significant threats to biodiversity.
- Collaboration between UNEP FI and the World Resources Institute on a multi-year funding proposal (to be submitted to GEF and other donors) for the development of biodiversity focused risk management tools for the financial services sector.
- New 'principles for responsible investment' to be launched in 2006 by UNEP-FI (see [www.unglobalcompact.org/NewsAndEvents/news\\_archives/2006\\_04\\_27.html](http://www.unglobalcompact.org/NewsAndEvents/news_archives/2006_04_27.html)).
- FSG is planning a study in 2006, with funding from the Packard Foundation, to assess returns to 'social assets' that blend commercial and non-commercial objectives, including the allocation of foundations' core endowment funds (i.e. mainstreaming the mission into the endowment).
- Recent launch of the Jupiter Green Investment Trust on the London Stock Exchange by Winslow Management Company and the socially responsible investing (SRI) team at Jupiter Investment Management. The Trust focuses exclusively on positive criteria in six environmental themes (clean energy, green transport, environmental services, sustainable living, waste management, and water management), screening companies in for positive actions, rather than screening out on the basis of negative impacts.
- An outline developed by TNC for a multi-stakeholder Global Marine Ecosystem Management Fund that could aggregate and leverage its owners' resources and influence, identify and develop new sources of funding, and finance an integrated set of activities to sustain ecosystem services in ten globally representative and significant marine ecoregions around the world by 2015. The Fund would also support work to extend tools and experiences from these ecoregions to other regions worldwide and use its 'convening power' to catalyse efforts to build long-term political and public support for effective marine conservation.
- The Global Institute For Sustainable Development is an international non-profit knowledge management, networking and capacity-building institute that facilitates an

iterative learning dialog between (i) local communities, (ii) their governments, (iii) NGOs and (iv) concerned business corporations. The GISD will focus mainly on providing sustainable agribusiness solutions for rural populations. Activities will encompass: (i) stakeholder dialog and facilitation, (ii) knowledge networking, (iii) technical consulting, (iv) technical training, (v) institutional capacity building and (vi) project oversight.

- ProNatura International has proposed an industry facility, working with ABN AMRO, IFC and other partners.
- Plans to set up a biodiversity business incubator in Brazil (by an as-yet confidential institution), which will develop a new generation of biodiversity enterprises focused on high-value products and sophisticated services from the sustainable use biological resources.
- A potential deal between TNC and the World Bank to create a US\$250 million fund to support avoided deforestation projects.
- Plans by BP to spend US\$500 million setting up a biofuels research centre – the BP Energy Biosciences Institute. Attached to a major US or UK university, the centre will work to improve the efficiency of biofuels through publicly accessible research and commercial projects that support BP’s own biofuels business. Researchers will also investigate the application of bioscience to oil recovery, coal bed methane and carbon sequestration.
- A new project with SMEs entitled ‘Probioprise’ running from October 2005 – August 2007 (see [www.efmd.org/biodiversity](http://www.efmd.org/biodiversity) for further information).
- The formation of an International Forum of Certification Bodies in 2006 to enhance cooperation among organic certification bodies and ensure integrity and continuous improvement of a system that underpins the worldwide organic certification of over 31 million hectares with a market value of nearly US\$30 billion.
- Activities by Kenyan Development Network Consortium as an incubator for mission based enterprises (these are businesses that have an explicit mission for promoting social, environmental, and economic well-being in Kenya through their business activities, or social entrepreneurial efforts focused in these areas) (see [kdnc.org/](http://kdnc.org/)).
- Disbursement of €2.2 million by the Renewable Energy and Energy Efficiency Partnership (REEEP) for 32 New Clean Energy Projects, the largest funding round in REEEP’s three-year history. REEEP has also been able to leverage further funding by attracting co-financing from other agencies.
- An EU call in 2006 for proposals on biodiversity business entitled “*Supporting Business for Biodiversity – A Biodiversity Technical Assistance Facility*”.
- GEF strategy to enhance engagement with the private sector, presently (mid-2006) being discussed by the Council.

## **Appendix G. Workshop report and list of participants**

# **BUILDING BIODIVERSITY BUSINESS AND MARKETS TO SUPPORT THEM**

Summary Report of a Workshop at the  
Aspen Wye River Conference Center  
*30 – 31 May 2006*

## **Compilers**

Joshua Bishop – World Conservation Union, IUCN

Sachin Kapila – Shell International Limited

Frank Hicks – Independent consultant

Paul Mitchell – Independent consultant

Linda McKane – Workshop facilitator

## **Acknowledgments**

The material in this report is based on the knowledge and experience of the workshop participants, which they generously shared both during and after the meeting. Forest Trends provided invaluable assistance by co-hosting and co-organising the workshop. The staff of the Aspen Wye River Conference Centre offered excellent logistical support.

## **Report Outline**

1. Background and context
2. Workshop objectives
3. Process and discussions
4. Key messages
5. Next steps

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### **Disclaimers**

The findings, interpretations and conclusions expressed here are those of the authors and do not necessarily reflect the views of Shell International Limited, Royal Dutch Shell, IUCN or those attending the workshop. Any errors are purely the responsibility of the authors.

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This workshop report should not be used as the basis for investments or related actions and activities.

## Executive Summary

In mid-2005, Shell International Limited<sup>170</sup> and The World Conservation Union (IUCN) agreed to explore measures that can positively influence biodiversity conservation on a significant scale, focusing on the potential of market-based approaches to biodiversity conservation. Following a Scoping Study involving research, analysis and consultation with 160 practitioners and proponents of 'biodiversity business' from approximately 50 organisations, IUCN and Shell produced a Draft Report. The report described the existing biodiversity business landscape, assessed what has worked (or not), constraints and opportunities in the expansion of market-based biodiversity conservation, as well as the policy frameworks, technical resources and financing mechanisms that enable biodiversity businesses to grow. The report highlighted the conditions that need to be fulfilled in order to mobilise private investment in biodiversity conservation on a significant scale. The draft report concludes with a discussion of how market-based conservation could be advanced through the development of a 'Biodiversity Business Facility' (BBF).

In conjunction with Forest Trends, IUCN and Shell subsequently convened a *Biodiversity Business Opportunity Workshop*. Attended by over 20 invited experts in biodiversity business and conservation finance, the workshop provided an opportunity for both thinkers and doers to develop a shared vision of how to promote market-based biodiversity conservation. Some key messages from the workshop are as follows:

### *The draft Scoping Study Report*

- There was general endorsement of the draft Scoping Study report, which many participants described as a valuable contribution to the field, as well as the process by which IUCN and Shell conducted the study.
- The report should distinguish more clearly between biodiversity as a business risk and biodiversity as a market opportunity.
- Participants congratulated Shell and IUCN for sharing their ideas at a relatively early stage, in order to solicit input from others working on these issues.

### *The biodiversity business challenge*

- Existing efforts to promote biodiversity business are encouraging but insufficient, due to the modest scale of investments to-date, which limits their contribution to biodiversity conservation.
- The challenge and opportunity is to develop strategies that can transform entire market sectors, rather than simply providing more support to individual biodiversity businesses.
- There is a strong case for treating biodiversity as a platform for building new business models. The question is: (a) how to transform biodiversity from being an attribute or impact of business to being a sector or product in its own right, and (b) how to move beyond the current 'mitigation and compliance' approach taken by most companies?
- If credible biodiversity assets can be created, can buyers be found for them? Too many recent initiatives have been supply-led rather than demand-driven. Most 'low-hanging-fruit', in terms of biodiversity business opportunities, is already being harvested.

### *Defining a Biodiversity Business Facility*

- While there was general validation of the key components and competencies of a BBF, questions remain regarding its scope / remit, structure, governance, links to existing initiatives and initial focus.

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<sup>170</sup> Hereafter referred to as Shell. All other Shell companies are referred to by specific name.

- The consensus view was that a BBF should promote large-scale change or ‘market transformation’, rather than replicating existing initiatives.
- A BBF should focus on the main constraints to biodiversity market development. Some participants questioned whether access to finance is a major constraint, compared to weak demand for biodiversity-friendly products and services or high transaction costs. Others asked if there is a sufficient ‘pipeline’ of viable investment opportunities to attract significant private capital.
- Public policy plays a key role in stimulating biodiversity business. There is a need to help governments develop regulatory frameworks that encourage businesses to go beyond compliance. While voluntary action was recognised as valuable for learning, participants agreed that a BBF should seek regulatory reform to ensure wide uptake.

#### *Piloting a BBF*

- Most participants agreed that a BBF could be nurtured and tested by piloting a few ‘big ideas’. This was seen as an alternative to conducting a detailed feasibility study to plan all aspects of a BBF prior to launch.
- A key criterion for selecting ‘big ideas’ for pilot projects is how quickly they can generate returns (financial, social and biodiversity). However, participants noted the tension between achieving large biodiversity benefits and high financial returns.

#### *Building a partnership for biodiversity business*

- While IUCN and Shell can help move the agenda forward, they will not get far alone. There is a need to enlist wider support for this initiative from both conservation and business communities. Several participants stressed the importance of involving large, mainstream companies and investment institutions, as well as SMEs and entrepreneurs, to provide business input and ensure significant market impact.

#### **Next Steps**

- a. Finalise and circulate the Workshop report
- b. Revise and publish the Final Scoping Study Report
- c. IUCN / Shell to conduct Steering Committee Meeting to confirm budget and personnel for next phase:
  - i. Promote the initiative within Shell and IUCN;
  - ii. Promote and develop the initiative with other potential collaborators and partners;
  - iii. Develop business plans for ‘quick-win’ investments.
- d. Explore the potential to reconvene the Workshop participants and / or engage them as an on-going advisory group

# 1. Background and context

In mid-2005, Shell and The World Conservation Union (IUCN) agreed to explore measures that can positively influence biodiversity conservation on a significant scale, focusing on the potential of market-based approaches to biodiversity conservation.

Following a Scoping Study involving research, analysis and consultation with 160 practitioners and proponents of 'biodiversity business' from approximately 50 organisations, IUCN and Shell produced a draft report in May 2006 entitled *Building Biodiversity Business*<sup>171</sup>. The Scoping Study report described the existing biodiversity business landscape, assessed what has worked (or not), constraints and opportunities in the expansion of market-based biodiversity conservation, as well as the policy frameworks, technical resources and financing mechanisms that enable biodiversity businesses to grow.

The report highlighted the conditions that need to be fulfilled in order to mobilise private investment in biodiversity conservation on a significant scale. The draft report concludes with a discussion of how market-based conservation could be advanced through the development of a 'Biodiversity Business Facility' (BBF). Completion of the Scoping Study report marks the end of the first phase (Identify and Assess) outlined in *Figure 1*.

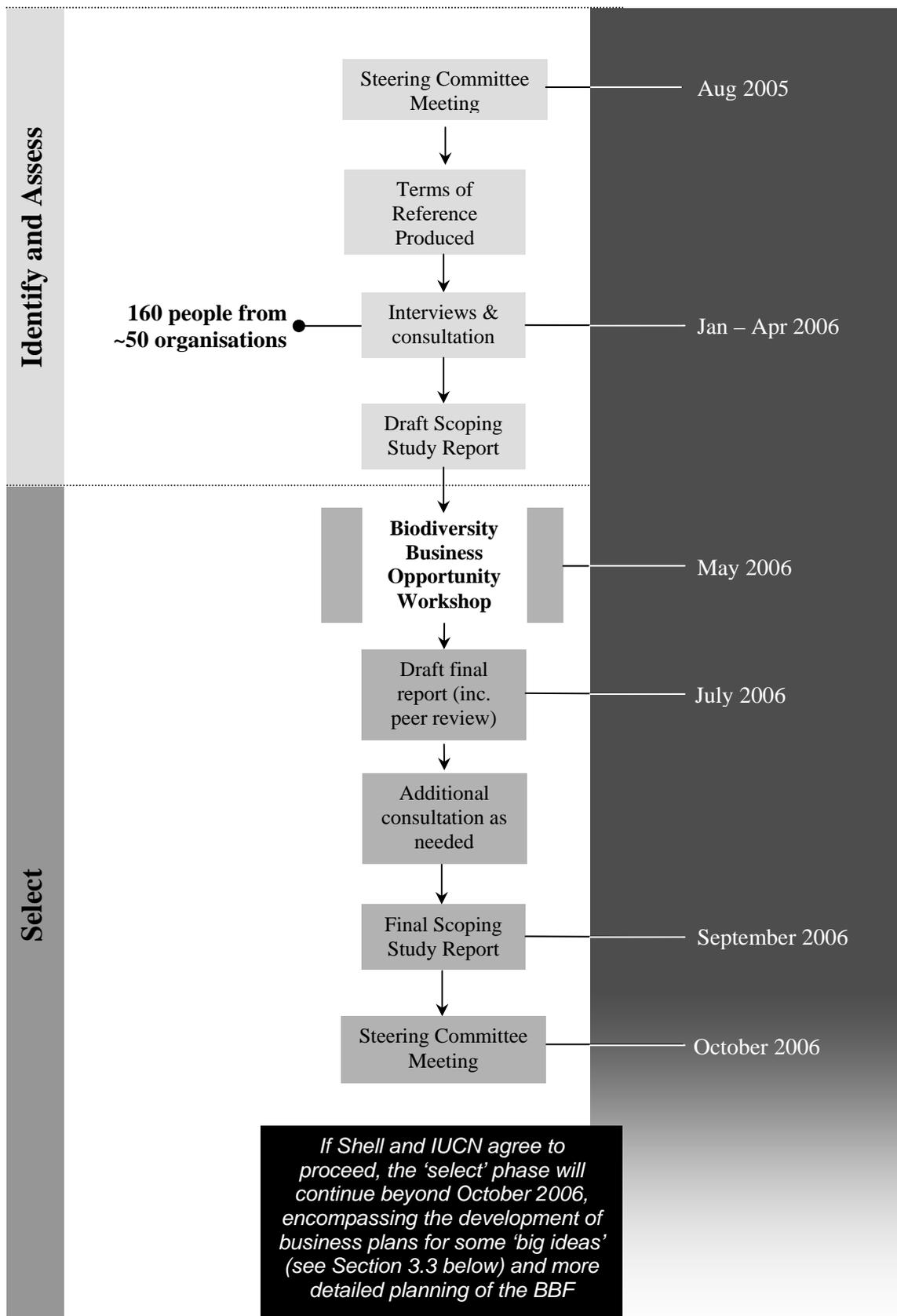
In conjunction with Forest Trends, IUCN and Shell subsequently convened a *Biodiversity Business Opportunity Workshop*, held at the Aspen Wye Valley Conference Centre near Baltimore, USA, on 30-31 May 2006. Attended by over 20 invited experts in biodiversity business and conservation finance, the workshop marked the beginning of the second phase of work (Select, in *Figure 1*). Building on the prior consultation and research, the workshop focused on developing a shared vision for a BBF, including the value proposition to different stakeholders and the potential of alternative biodiversity business opportunities.

The workshop was designed to encourage dialogue and create a neutral space to examine potential biodiversity business opportunities as well as the market 'infrastructure' needed to support them. The discussion focused in part on a number of 'big ideas' (drawn from nearly 40 potential business opportunities identified in the draft report) which could be developed as 'quick-win' investments. Undertaking these investments could eliminate the need for a long drawn-out feasibility study, help to nurture and inform the development of the BBF, and thus accelerate the potential delivery of positive results for biodiversity.

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<sup>171</sup> The report uses the short-hand term 'biodiversity business' to refer to a range of commercial ventures, including businesses that conserve biodiversity indirectly, through the production of related goods and services, as well as businesses that capture demand for biodiversity directly.

**Figure 1.** 'Building biodiversity business' – Proposed work plan to October 2006



## 2. Workshop objectives

The initial objectives of the workshop were to:

- Present the findings of a global review of market-based approaches to biodiversity conservation (the draft Scoping Study report);
- Discuss and debate the preliminary conclusions of the report; and
- Identify high-potential options for increasing private sector investment in conservation.

More detailed objectives defined during the final preparations and initial sessions of the workshop were to:

- **Validate** the work to-date and the main findings of the draft Scoping Study report;
- Identify any important **gaps** in the analysis and / or consultation process;
- Present and debate several opportunities (**'big ideas'**) for biodiversity business;
- **Select** the most promising opportunities and begin more detailed **business planning**;
- Explore the potential of a **Biodiversity Business Facility** to develop these opportunities;
- Agree the priority **next steps** for IUCN and Shell, workshop participants and others; and
- Secure **commitments** from participants to support the next phase of work.

## 3. Process and discussions

### 3.1 Process

To facilitate the discussions, the number of people invited to the workshop was limited to around 25. Participants included both 'thinkers' and 'doers' in the field of business and biodiversity finance, with experts from several biodiversity investment funds including the International Finance Corporation, private foundations, think-tanks and NGOs, as well as individual entrepreneurs and senior staff from IUCN and Shell. A list of participants and their affiliations is presented in [Appendix I](#). The agenda of the workshop is listed in [Appendix II](#).

Opening presentations on 30 May provided background for the workshop. Richard Sykes (Shell) and William Jackson (IUCN) summarised the history of collaboration between Shell and IUCN and the motivation for the joint Scoping Study and the workshop. Michael Jenkins of Forest Trends outlined the context, highlighting the need to scale up efforts to build biodiversity business. Sachin Kapila (Shell) and Joshua Bishop (IUCN) presented the process and findings of the Scoping Study.

Following an initial question-and-answer session on the background presentations, the workshop undertook a series of exercises in 'break-out groups' and plenary sessions, led by the Workshop Facilitator (Linda McKane). The aims of these exercises were to:

- Define the value proposition of a BBF to different stakeholder groups;
- Present and debate several biodiversity business opportunities ('big ideas'), based on 'templates' developed by the organisers before the workshop; and
- Select and elaborate four of these business opportunities, focusing on how they could be developed in a way that tests and nurtures the BBF.

The process and outcomes of these exercises are summarised in the following sections.

### **3.2 Value proposition of a BBF to different stakeholder groups**

For this exercise the participants split into four groups, each taking the perspective of a particular stakeholder group: the investment community, government, business, and the NGO community. Each stakeholder group was asked to define, from its perspective, the value proposition for a BBF. This included describing what services a BBF would provide by the year 2010 with respect to biodiversity conservation, as well as the distinguishing features of a BBF that would add value to existing initiatives to promote biodiversity business. A summary of the results is provided below.

#### **3.2.1 Investment community**

- The group tried to reflect the perspectives of both for-profit and philanthropic investors, including development finance institutions and the SRI community.
- Key elements that the investment community is likely to look for in a BBF:
  - Co-finance for projects;
  - Positive financial returns;
  - Non-financial benefits (i.e. supporting market transformation by creating structures that can ultimately generate financial returns); and
  - Evidence that the BBF is ‘close to the market’ (this included discussion of the relative merits of a central BBF and / or regional hubs).
- Matchmaking big buyers with SMEs / exporters (networking role).
- BBF as a major mover and shaker, the ‘person-in-the-know’.
- Provide opportunities to invest in biodiversity across a spectrum of risk and return.
- If the deadline is 2010, it is unrealistic to appeal to purely profit-oriented investors.
- Biodiversity metrics and indicators are necessary (e.g. for SRI community).
- BBF should stand out due to the credibility of its backers and technical expertise.
- BBF should not try to compete on price alone.
- Need to maximise financial returns if a BBF intends to enlist major financial institutions (e.g. Barclays, HSBC), perhaps by 2015.
- BBF needs to develop strong links with governments in order to create situations in which biodiversity business can prosper.

#### **3.2.2 Government**

- Public policy makers and administrators seek rigorous analytical work and clear lesson learning, including at sub-national levels.
- BBF should demonstrate how voluntary approaches can work in practice.
- BBF could provide legislative / regulatory information and help to implement policies (however, the group noted a potential conflict of interest between BBF policy analysis and trading activities).
- Mobilise private enterprise to influence policy change.
- Raise awareness (e.g. study tours for government agencies and / or other organisations).
- The group felt the BBF should focus on providing ‘think tank’ services.
- Lots of biodiversity is public property, hence there is a need to help governments realise the value of those assets by enlisting the private sector (e.g. through tenure reform or other regulatory mechanisms).
- BBF could sell services to both donor governments (providing aid) and governments of beneficiary (developing) countries.
- BBF should recognise / capitalise on the fact that many governments are more receptive to policy advice from business than from think-tanks.

### 3.2.3 Business

- BBF should have a visible ‘storefront’ and could trade under the name of ‘Earth bank’.
- BBF could be a one-stop shop / matchmaker for biodiversity business.
- Aim to be opportunity-driven rather than risk-driven (i.e. how to make ideas better).
- Convene events (e.g. trade fairs, workshops, training courses).
- Results driven, not just a forum for talking heads.
- Run the BBF like a business by people with entrepreneurial background.
- Help clients develop business plans.
- Need to be open to both big and small business clients.
- Don’t try to do everything from day one – initially may need subsidy / grant finance. However, try to establish quickly a financially viable structure for delivering services.
- Need to explain why clients would come to a BBF instead of chasing grant finance.
- Note a tension between creating a profitable business (i.e. BBF as commercial enterprise) versus a BBF that enables other businesses to prosper.
- Tension between a low-cost BBF that can cover its costs, versus something-for-everybody, all-singing, all-dancing service based on burning grant money.
- Don’t just set up another investment fund!

### 3.2.4 NGOs

- The group endorsed the three-component model of the BBF outlined in the draft Scoping Study report (i.e. helping to create an enabling environment, providing business tools and mobilising finance for biodiversity businesses).
- BBF should offer a stepwise programme of improvement for client businesses.
- Want funding for NGO goals, as well as for the BBF Think-Tank and Incubator.
- Need to consider how governments and multilateral institutions can be enlisted as collaborators in a BBF.

### 3.2.5 Conclusion – what do the different value propositions tell us?

The perspectives represented by the four groups had much in common. However, the exercise also revealed potential conflicting demands and expectations between different groups.

- Commonalities:
  - A BBF should be catalytic, seeking to create or transform entire markets / sectors, rather than focusing on developing additional biodiversity-friendly businesses.
  - Don’t waste time and resources creating an ‘all-singing / all-dancing’ BBF without first assessing the demand / willingness to pay of potential customers.
  - Start by developing a ‘pipeline’ of projects that are likely to deliver financial returns.
  - Metrics and indicators for measuring biodiversity performance are essential.
  - A BBF should be run along business lines, not as an NGO or public agency.
  - Strong links with government are essential in order to develop the enabling conditions for biodiversity business to prosper.
  - The three-component model (enabling environment, business tools and finance) is appropriate to the demands likely to be placed on a BBF.
  - There is a need to establish more clearly why potential customers would come to a BBF as opposed to other service and financial providers.
- Conflicts / tensions:
  - Potential competition between the BBF and existing initiatives.
  - Relative emphasis on financial versus non-financial returns.
  - Relative emphasis on each of the three components of the BBF.

- Potential conflict of interest between the provision of ‘neutral’ policy advice and investing in commercial activities.
- Tension between ‘all-singing / all-dancing’ BBF versus a low cost approach.

Implications for the design of a BBF:

- A robust business plan is needed, underpinned by a clear vision and mission statement.
- The target market needs to be defined more clearly – what, where and who are the key players (e.g. individual entrepreneurs / SMEs, large companies, governments, NGOs or some mixture of these)?
- The target stakeholder group(s) which a BBF aims to service will in turn determine its design and structure as well as the degree of operational flexibility that is required.
- Meeting the needs and expectations of (a range of) different stakeholders all at once will impose major challenges for a BBF and may not be feasible or sustainable.

### **3.3 Identifying some ‘big ideas’ to nurture the development of a BBF**

To stimulate further discussion of potential concrete business ventures that a BBF could support, individual participants (‘sponsors’) with relevant experience delivered brief ‘sales pitches’ for several business opportunities (‘big ideas’). These were based on suggestions by the authors of the Scoping Study report, plus proposals from invited participants, and were developed in schematic form prior to the workshop. They included:

- ‘Bio beef’ – with a focus on Africa;
- Biodiversity management services;
- Biodiversity offsets: from site-specific to landscape-level mitigation;
- Ecotourism enterprise;
- Integrated biodiversity conservation and sustainable use program;
- Integrated land-based conservation;
- Payments for carbon sequestration, especially biocarbon;
- Payments for watershed protection; and
- Sustainable biofuels.

To facilitate comparison, a one-page template for each ‘big idea’ was provided in advance to all workshop participants. The templates (presented in [Appendix III](#) of this report) were prepared based on the analysis in the draft Scoping Study report and the experience of the ‘sponsor’. Each template provided the following information:

- *Description* – a brief summary of the business opportunity;
- *Ease of Implementation / Time* – facility and rapidity of developing the business;
- *Scale* – how big the opportunity could become;
- *Biodiversity Benefit* – potential contribution to biodiversity conservation;
- *\$/ Internal Rate of Return* – financial benefits including the basis for the estimate;
- *Pro-Poor Rating* – extent to which the business will help to reduce poverty;
- *Risk of Failure* – major constraints, obstacles and risks; and
- *Ownership* – types of organisations that might invest in the opportunity.

After presentations by the ‘sponsors’ and a brief general discussion, the workshop selected four ‘big ideas’ for further development in break-out groups. These were: (i) biodiversity

management services, (ii) biodiversity offsets, (iii) integrated land-based conservation and (iv) sustainable biofuels.

The following sections summarise the discussions of how these four opportunities might be developed as viable business ventures. This in turn has implications for how a BBF might be designed and implemented. Note that the four ideas were chosen for the purpose of the workshop; they have not been subject to rigorous assessment as potential investments. A potential avenue for follow-up by Shell and IUCN is to undertake such assessments.

### *3.3.1 Integrated land based conservation*

This business opportunity would aim to generate an integrated revenue stream from a mix of biodiversity-friendly goods and services in selected landscapes (e.g. sustainable forestry and / or agriculture plus ecotourism, aquaculture, recreational hunting and fishing, etc.). The break-out group concluded that such a business venture could:

- Help identify / confirm biodiversity conservation priorities at a landscape level (focusing on locations where businesses are already or plan to be established).
- Develop or adopt biodiversity metrics for baseline assessment and performance monitoring, based on best-practice guidelines and / or certification processes.
- Facilitate access by investors and producers to new markets (e.g. transferring successful models to Africa from other regions).
- Support the establishment of appropriate regulations to stimulate investment.
- Focus on businesses that generate biodiversity benefits directly, rather than supporting businesses that might help biodiversity indirectly.
- Provide capital directly or facilitate access to capital for entrepreneurs.

### *3.3.2 Biodiversity management services*

This business opportunity would provide a range of technical consulting and advisory services to public and private clients, on a commercial basis, focusing on how to measure and manage biodiversity at the level of an organisation / enterprise. The break-out group concluded that such a business venture could:

- Define and communicate clearly its role / niche vis-à-vis NGOs and the private sector (i.e. as a partner, consultant, client and / or competitor). A key question in this regard is how to leverage the brand / credibility of NGOs, which is attractive to many private companies.
- Aim to be a demand-led matchmaker, linking conservation expertise with market demand. This will require market surveys as well as a strategy to distinguish the offering from existing (subsidised) providers of biodiversity management services.
- Define standards for organisational Biodiversity Action Plans and reporting / indicators, or convene the relevant actors to set appropriate standards.
- Establish a system to communicate the credibility of the services / advice provided (e.g. use eBay-style register of customer satisfaction).
- Invest in established consulting companies to expand their biodiversity capacity (including training new environmental consultants), focusing on consulting firms that target national companies in developing countries. This could include developing partnerships with established environmental consulting firms.

### *3.3.3 Sustainable biofuels*

This business opportunity would promote the supply of and demand for biodiversity-friendly biofuels, as an alternative, renewable energy source. The break-out group concluded that such a business venture could:

- Capitalise on the significant concentration of current output in certain regions.

- Complement existing initiatives, e.g. the Roundtable on Sustainable Palm Oil ([www.sustainable-palmoil.org/](http://www.sustainable-palmoil.org/)), perhaps by focusing on small-scale producers.
- Clarify how the venture would add value to existing / ongoing activities (i.e. helping to make them bigger, better and faster).
- Develop certification standards and processes for biofuels, focusing on biodiversity.

#### 3.3.4 Biodiversity offsets

This business opportunity would provide site-based, biodiversity offsets (compensation for habitat loss) in a range of new contexts (e.g. marine, developing countries), while also piloting landscape-level and international biodiversity offsets. The break-out group concluded that such a business venture could:

- Mobilise new private funding for biodiversity conservation and ecosystem restoration in priority landscapes / countries.
- Complement existing investment funds by ‘buying down’ the risk of undertaking offsets and other conservation interventions, e.g. for sustainable forestry operations.
- Focus on market facilitation by:
  - Convening expertise in high-biodiversity sites with major extractive uses;
  - Communicating the potential of offsets to industry and governments; and
  - Working with local, corporate and national policy makers to put the right rules in place (e.g. ‘no net loss’ of habitat or ‘net positive impact’ of company operations on biodiversity);
- Develop biodiversity offset / trading methods (e.g. metrics, pricing, registries) to demonstrate how offsets can become a tradable commodity.
- Build on the bio-carbon market to demonstrate the potential of avoided deforestation as a source of carbon and biodiversity credits (i.e. set up shop as a buyer / trader of Forest Conservation Carbon and Biodiversity Credits).

## 4. Key messages

The workshop provided an opportunity for both thinkers and doers to develop a shared vision of how to promote market-based biodiversity conservation. Some key messages from the workshop are as follows:

### 4.1 The Shell-IUCN Scoping Study

- There was general endorsement of the draft Scoping Study report, which many participants described as a valuable contribution to the field, as well as the process by which IUCN and Shell conducted the study.
- The report should distinguish more clearly between biodiversity as a business risk and biodiversity as a market opportunity. The report should also locate biodiversity business more clearly within the overall context of corporate sustainability.
- Participants congratulated Shell and IUCN for sharing their ideas at a relatively early stage, in order to solicit input from others working on these issues.

### 4.2 The biodiversity business challenge

- Existing efforts to promote biodiversity business (including those undertaken by participants and their institutions) are encouraging but insufficient, due to the modest scale of investments to-date, which limits their contribution to biodiversity conservation.

- There is a need to build on existing initiatives, recruit additional collaborators and increase the scale of investment in biodiversity business, while also reducing costs. The challenge and opportunity is to develop strategies that can transform entire market sectors, rather than simply providing more support to individual biodiversity businesses.
- There is a strong case for treating biodiversity as a platform for building new business models. The question is: (a) how to transform biodiversity from being an attribute or impact of business to being a sector or product in its own right, and (b) how to move beyond the current ‘mitigation and compliance’ approach taken by most companies?
- If credible biodiversity assets can be created, can buyers be found for them? Too many recent initiatives have been supply-led rather than demand-driven. Most ‘low-hanging-fruit’, in terms of biodiversity business opportunities, is already being harvested. Others questioned the capacity of the market to absorb significant new investments.

### 4.3 Defining a Biodiversity Business Facility

- Participants endorsed the three component model of a BBF, as outlined in the draft Scoping Study report (i.e. a *Think-Tank* to facilitate the establishment of enabling frameworks, a *Business Incubator* to provide practical business tools and match-making services, and a *Financial Mechanism* to facilitate access of biodiversity business ventures to investment and working capital). There was general agreement that all three components were needed to:
  - Synchronise supply of and demand for biodiversity in the market;
  - Develop and promote robust biodiversity performance standards and harmonised certification processes for use by businesses and consumers;
  - Intervene on a sufficiently large geographic scale to conserve biodiversity effectively, while developing tools that can accommodate long-term land use change;
  - Help new biodiversity businesses to develop by linking supply and demand;
  - Promote the idea of markets for biodiversity to industry and governments, and help mobilise additional investment as well as new sources of demand;
  - Convene relevant expertise, especially in high-conservation-priority locations;
  - Work with policy makers to establish enabling frameworks for biodiversity business; and
  - Develop and test new business models for markets that are not yet well-established (e.g. biodiversity offsets, biocarbon).
- While there was general validation of the key components and competencies of a BBF, questions remain regarding its scope / remit, structure, governance, links to existing initiatives and initial focus.
- The consensus view was that a BBF should promote large-scale change or ‘market transformation’, rather than replicating existing initiatives (e.g. creating another fund to deliver technical support and finance to small-and-medium size biodiversity enterprise). Two questions in this regard are how to ‘commoditise’ biodiversity at a landscape scale, rather than at project or site level, and how to identify where there is (maximum) absorptive capacity for new investments.
- A BBF should focus on the main constraints to biodiversity market development. Some participants questioned whether access to finance is a major constraint, compared to weak demand for biodiversity-friendly products and services or high transaction costs. Others asked if there is a sufficient ‘pipe line’ of viable investment opportunities to attract significant private capital.

- Public policy plays a key role in stimulating biodiversity business. There is a need to help governments develop regulatory frameworks that encourage businesses to go beyond compliance. While voluntary action was recognised as valuable for learning, participants agreed that a BBF should seek regulatory reform to ensure wide uptake. However, some also noted the potential conflict of interest of a BBF seeking regulatory change that would favour its trading arm.

#### **4.4 Piloting a BBF**

- Most participants agreed that a BBF could be nurtured and tested by piloting a few ‘big ideas’ (such as those discussed in [Section 3.3](#)). This was seen as an alternative to conducting a detailed feasibility study to plan all aspects of a BBF prior to launch. Participants recognised that a pilot project approach entails greater risk but stressed the benefits of immediacy. A timeline for developing the ‘big ideas’ is needed.
- Further development of the four ‘big ideas’ discussed at the workshop (or other ideas), through the elaboration of business plans, discussion with potential investors and market testing, can help to identify key functions and synergies around which a BBF can be built.
- A key criterion for selecting ‘big ideas’ for pilot projects is how quickly they can generate returns (financial, social and biodiversity). However, participants noted the tension between achieving large biodiversity benefits and high financial returns. Some suggested that a BBF should focus initially on activities that generate good financial returns, even if these are not high conservation value investments. Others disagreed and suggested that a BBF should identify potential co-investors seeking ‘blended’ returns (financial, social, biodiversity). One participant also suggested that a BBF should try to identify sectors ‘in crisis’ which may be more receptive to innovation.
- One option for a BBF which generated enthusiasm among participants would be to ‘kick-start’ the biodiversity market by treating biodiversity as a tradable commodity and adopting a trading position. In other words, treat biodiversity as a business sector and product in its own right, rather than simply as an ‘attribute’ of existing goods and services. In this scenario, Shell companies and / or other companies could be the initial ‘buyer’ but could also market biodiversity credits (e.g. in the form of voluntary offsets) to other potential corporate buyers.

#### **4.5 Building a partnership for biodiversity business**

- While IUCN and Shell can help move the agenda forward, they will not get far alone. There is a need to enlist wider support for this initiative from both conservation and business communities. IUCN and Shell likewise need to show how their collaboration on a BBF will complement existing initiatives.
- Several participants stressed the importance of involving large, mainstream companies and investment institutions, as well as SMEs and entrepreneurs, to provide business input and ensure significant market impact.
- All agreed that Shell’s role in, and commitment to, the subsequent development of a BBF needs to be crystal clear. In particular, Shell may need to clarify how this initiative relates to the Shell Group’s core energy business, and what it hopes to gain from involvement. This may help address the questions of some stakeholders regarding the participation of a major energy company in biodiversity conservation.
- Other (major / international) businesses as well as governments and NGOs should be consulted urgently regarding their perspective on a BBF and potential interest in joining /

supporting the initiative. A pre-requisite for such outreach is to clarify the role of Shell and IUCN in this initiative and the process and opportunity for other collaborators to become involved. In this regard, several participants expressed their willingness to continue the dialogue with Shell and IUCN, and to assist in developing links with other potential institutional collaborators and partners in a BBF or related initiatives.

## **5. Next steps**

- Finalise and circulate the Workshop report
- Revise and publish the Final Scoping Study Report
- IUCN / Shell / Royal Dutch Shell to conduct Steering Committee Meeting to confirm budget and personnel for next phase:
  - Promote the initiative within Shell and IUCN;
  - Promote and develop the initiative with other potential collaborators;
  - Develop business plans for ‘quick-win’ investments.
- Explore the potential to reconvene the Workshop participants and / or engage them as an on-going advisory group

In response to positive support and feedback from the Workshop participants, the authors of this report are very keen to continue engaging both those that participated in the workshop and those that were consulted during the preparation of the Scoping Study Report.

## Appendix I. Workshop Participants

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## Appendix II. Workshop Agenda



### Day 1 – Tuesday 30<sup>th</sup> May

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Timing	Topic
<b>1200 – 1300</b>	<b>Lunch</b>
1300 – 1330	Welcome & Introductions / Icebreaker
1330 – 1430	Grounding presentation <ul style="list-style-type: none"><li>» The Challenge</li><li>» Shell &amp; IUCN Motivations</li><li>» Scoping study process</li><li>» Key conclusions</li></ul>
1430 – 1500	Questions & Answers/Clarifications
<b>1500 – 1515</b>	<b>Break</b>
1515 – 1615	Biodiversity Business Opportunities (“Big Ideas”) <ul style="list-style-type: none"><li>» 4-5 minute overview x 10 business opportunities</li><li>» Explanation of “traffic light” selection system</li></ul>
1615 – 1730	Selection session - table top discussion
1730 – 1800	Endorsement of top 5 opportunities
1800	Close
<b>1830</b>	<b>Drinks Reception</b>
<b>1930</b>	<b>Dinner</b>



### Day 2 – Wednesday 31<sup>st</sup> May

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Timing	Topic
0830 – 0900	Reflections on day 1 / Icebreaker
0900 – 1030	Business Opportunities ‘Visioning’ Session <ul style="list-style-type: none"><li>» What are the boundary conditions?</li><li>» What does business success look like?</li><li>» What are the main obstacles?</li><li>» How can we overcome them?</li></ul>
<b>1030 – 1045</b>	<b>Break</b>
1045 – 1115	Identification of common themes
1115 – 1200	Defining the opportunity <ul style="list-style-type: none"><li>» Table top discussions</li></ul>
1200 – 1230	Feedback & alignment
<b>1230 – 1330</b>	<b>Lunch</b>
1330 – 1430	Action Planning for the top 5 business opportunities
1430 – 1500	Feedback
1500 – 1600	Re-alignment of action plans
1600 – 1630	Plenary
1630 – 1700	Endorsement & next steps
<b>1700</b>	<b>Close</b>

## Appendix III. Templates for the ‘Big Ideas’

### Biobeef (focus on Africa)

<p><b>Description</b></p> <p>A highly scaleable business opportunity based on the successful convergence of rural development objectives, organic cattle farming practices and the conservation of the savannah and forest ecosystems within which the cattle farming takes place</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Moderate ease of implementation over several years</li> <li>▪ Extensive organic cattle farming skills development</li> <li>▪ Central farming hub(s) and decentralised satellite farms</li> <li>▪ Rural locations across southern and eastern Africa</li> </ul>	<p><b>Scale</b></p> <ul style="list-style-type: none"> <li>▪ Medium to large – from a base of 40,000 hectares to a regional medium-scale target of 400,000 hectares to vast coverage across Africa</li> <li>▪ Focus on both domestic and European markets</li> <li>▪ Potential involvement of thousands of small scale, indigenous cattle farmers</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Conservation: ecosystem management practices to preserve native savannah and forest biodiversity</li> <li>▪ Sustainable use: organic cattle farming of traditional and speciality breeds, plus farming of native medicinal plants for cattle, plus organic feed for fattening processes</li> <li>▪ Benefit sharing: extensive skills development and business opportunities for thousands of small and medium-scale farmers across Africa; protection of a highly regarded cultural-economic resource – cattle</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ Positive and sustainable returns from supplying local, regional (African) and international (European) demand for responsible beef</li> <li>▪ Effective management of the value chain from satellite farms to retailers to capture added values</li> <li>▪ Proven returns in operations to date</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Very high</li> <li>▪ Rural skill enhancement</li> <li>▪ Rural employment creation</li> <li>▪ Rural economic empowerment</li> <li>▪ Sustainable rural development</li> <li>▪ Potential continent-wide impacts</li> <li>▪ Alignment of critical cultural, environmental and economic values through responsible cattle farming across Africa</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Medium</li> <li>▪ Natural risks: draught, disease, climate change</li> <li>▪ Market risks: export barriers, domestic regulations, exchange rate fluctuations</li> <li>▪ Political risks: corruption</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Commercial privately-owned central farming hub(s)</li> <li>▪ Network(s) of hundreds of indigenous, locally owned / community owned satellite farms</li> <li>▪ Possibility of listing private central farms</li> <li>▪ Possibility of ‘cooperatives’ of networks of satellite farms</li> </ul>	<p><b>Investment opportunity</b></p> <ul style="list-style-type: none"> <li>▪ Equity / debt finance for central farming hub(s) and value chain opportunities</li> <li>▪ ‘Soft’ loans for indigenous satellite farmers</li> <li>▪ Grants for R&amp;D, training, standards setting, biodiversity / ecosystem monitoring, socio-economic impacts monitoring</li> </ul>

## Biodiversity offsets: from site-specific to landscape-level mitigation

<p><b>Description</b></p> <p>This business would provide site-based, biodiversity offsets<sup>172</sup> in new contexts (e.g. marine, developing countries), while also piloting landscape-level and international biodiversity offsets</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Immediate opportunity to sell site-based, voluntary offsets to Shell companies, using established methods</li> <li>▪ 1-2 years to negotiate similar offsets for other companies</li> <li>▪ 2-4 years to pilot landscape-level and international offsets (requires new methods)</li> </ul>	<p><b>Scalability</b></p> <ul style="list-style-type: none"> <li>▪ US\$250 million p.a. current private offsets market in USA.</li> <li>▪ Biodiversity offsets limited by public acceptance of and private demand for ecological compensation. Some countries require offsets by law.</li> <li>▪ Supply of offset services to voluntary buyers – motivated by CSR – is a small market with major growth potential</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Can generate new / additional funding for habitat restoration and conservation</li> <li>▪ Site-based offsets can help maintain ecosystem services in the face of land use change</li> <li>▪ Landscape- and international offsets could mobilise funds for conservation more widely, including places where local demand for offsets is lacking</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ US experience shows offsets can be profitable, especially where required by law and there is a level playing field for private providers</li> <li>▪ Offsets reduce the costs of conservation, by focusing efforts on low cost / high conservation value areas</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Can create jobs in rural areas, especially during initial restoration but also for on-going management</li> <li>▪ May create less employment than alternative resource uses</li> <li>▪ Local offsets are more likely to address local concerns</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ May fail to provide adequate compensation for habitat loss</li> <li>▪ May facilitate development projects that should not proceed in any case</li> <li>▪ Offsets may be compromised by subsequent development, if legal protections and financial resources are not sufficient</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Public agencies and / or private companies that need offsets for regulatory compliance or to meet voluntary 'no net loss' commitments</li> <li>▪ Conservation groups that seek to produce and sell offsets</li> </ul>	

<sup>172</sup> Biodiversity offsets are conservation activities intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects. See: ten Kate, K., Bishop, J. and Bayon, R. 2004. *Biodiversity offsets: Views, experience, and the business case*. IUCN, Gland, Switzerland and Cambridge, UK.

## Ecotourism enterprise

<p><b>Description</b></p> <p>This business would promote ecotourism<sup>173</sup> within regions where ecotourism is currently quite modest but holds significant promise, if designed, managed and promoted effectively</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Low ease of implementation</li> <li>▪ Skills intensive</li> <li>▪ Decentralised</li> <li>▪ Remote location</li> </ul>	<p><b>Scale</b></p> <ul style="list-style-type: none"> <li>▪ Medium</li> <li>▪ Focus initially on certain niche markets</li> <li>▪ Relatively few developing countries are major ecotourism destinations in terms of total visitor numbers or tourism revenues</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ High</li> <li>▪ Education</li> <li>▪ Habitat expansion / protection</li> <li>▪ Improve area management</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ Higher than normal tourism</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Employment – lower numbers / higher skills</li> <li>▪ High local content potential (materials / people)</li> <li>▪ Local communities rarely involved in management and evaluation of associated biodiversity conservation</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Medium</li> <li>▪ Thousands of hotels, travel companies, tour operators, tourist guide businesses and others describe themselves as ecotourism companies</li> <li>▪ Rationalised certification becoming necessary</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Hotel chains</li> <li>▪ Boutique tour operators</li> </ul>	

<sup>173</sup> Ecotourism can be defined as “responsible travel to natural areas that conserves the environment and improves the well-being of local people.” See The International Ecotourism Society (TIES) at [www.ecotourism.org/](http://www.ecotourism.org/)

## Integrated land-based conservation

<p><b>Description</b></p> <p>The business proposition is to provide an integrated revenue stream from a combination of biodiversity-friendly goods and services in selected landscapes. Sustainable forestry and / or agriculture could be complemented by ecotourism, aquaculture, recreational hunting and fishing, etc., and payment for various environmental services</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Immediate opportunity to promote this concept to multinational forestry and agriculture companies</li> <li>▪ Could promote strategic alliances between such companies and tourism chains</li> <li>▪ All the elements are in place for certified forestry, agriculture / aquaculture firms; 1-2 years to obtain certification in new locations</li> </ul>	<p><b>Scalability</b></p> <ul style="list-style-type: none"> <li>▪ Large-scale forestry &amp; agriculture operations are already widespread in high-value biodiversity landscapes</li> <li>▪ Ecotourism is global and growing rapidly</li> <li>▪ Good potential for ‘piggy-backing’ payments for other environmentally-friendly goods &amp; services on these well-established industries.</li> <li>▪ Easier in L. America initially</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Certification can prevent expansion into forests or protection of primary / old growth forests</li> <li>▪ PES can provide incentives for rehabilitation / reforestation and agroforestry systems – improved habitat</li> <li>▪ Also protection of watersheds, creation of biodiversity offsets, etc</li> <li>▪ Potential to promote this approach in multiple, large, high biodiversity value sites</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ These businesses are already profitable; additional revenue from PES, etc., can increase returns over time</li> <li>▪ Carbon certification could provide access to new markets and / or help to maintain market share</li> <li>▪ Initial certification costs and investments can be high</li> <li>▪ The experience of organisations such as Forest Trends with Precious Woods, etc., indicates strong IRR</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Can create jobs in rural areas, especially if afforestation is involved.</li> <li>▪ New enterprises, such as ecotourism, recreational hunting and fishing, aquaculture, etc., can also create employment and have a multiplier effect on local economies</li> <li>▪ More intensive farming / forestry practices could create additional jobs</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Companies may not comply with improved management and conservation practices; risk mitigated by existing certification systems</li> <li>▪ CCBA could reduce risk further</li> <li>▪ Certification requirements and costs could prove prohibitive; especially for small producers</li> <li>▪ PES may be limited in some countries</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ FSC-certified Forestry operations could be pioneers</li> <li>▪ Large Forest Products, Food &amp; Agriculture, and Tourism MNCs could embrace the concept</li> <li>▪ Could be promoted by Rainforest Coalition Nations, linked to ‘avoided deforestation’</li> <li>▪ Conservation organisations could champion the concept</li> </ul>	

## Payments for carbon sequestration, especially biocarbon

<p><b>Description</b></p> <p>There is an opportunity to dramatically expand the size of the payments for carbon sequestration linked to biodiversity conservation both by influencing how and where payments for carbon fixation are applied and by promoting the purchase of bio-carbon credits</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Carbon sequestration markets are large and growing rapidly</li> <li>▪ Increasingly, corporations are making commitments to be carbon neutral or even +ve</li> <li>▪ Gathering momentum to recognise 'avoided deforestation' under CDM</li> <li>▪ Voluntary markets embracing bio-carbon payments</li> </ul>	<p><b>Scalability</b></p> <ul style="list-style-type: none"> <li>▪ Carbon payments are completely scaleable</li> <li>▪ They're also flexible regarding geographic location; can be applied anywhere</li> <li>▪ Potential for large-scale sequestration tied to reforestation and avoided deforestation projects</li> <li>▪ Various markets and brokers already operational</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Climate Community and Biodiversity Alliance (CCBA) standards are designed to ensure biodiversity</li> <li>▪ Companies purchasing carbon credits can be encouraged to buy bio-carbon credits in areas with high biodiversity value</li> <li>▪ Purchase of bio-carbon credits can be linked to watershed protection and biodiversity offsets to leverage the impact</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ Less than for alternative energy, but bio-carbon is still sufficiently positive to be attractive to producers / sellers</li> <li>▪ The market is expanding; several brokers are active in this arena</li> <li>▪ There is a need to streamline certification and reduce associated expenses</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ CCBA certification can help to ensure that the poor and indigenous people benefit from sequestration</li> <li>▪ Could create jobs in rural areas if assisted regeneration / afforestation is a major focus</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Low, given the growing demand and supply</li> <li>▪ Relatively low price for bio-carbon certificates and the complex certification requirements could serve as disincentives for potential providers; going to scale quickly may be difficult</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Shell companies could become major buyers of bio-carbon emission reduction credits</li> <li>▪ Utility companies, and other large energy sector corporations could become major players in bio-carbon</li> <li>▪ Rainforest Coalition Nations</li> <li>▪ World Bank / UNEP / UNDP / GEF and Regional Development Banks, e.g. IADB, ADB, EBRD etc</li> </ul>	

## Payments for watershed protection

<p><b>Description</b></p> <p>The business opportunity is to dramatically expand the scale of payments for watershed protection where they already exist and to extend these payments to additional regions / countries</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Payments for improved water quantity and quality are becoming increasingly common, especially in Europe, N. America and Latin America</li> <li>▪ Existing national programs in Mexico and Costa Rica; pilot projects in several countries / cities, e.g. Guatemala, Colombia, Ecuador</li> <li>▪ The elements are all in place to go to scale</li> </ul>	<p><b>Scalability</b></p> <ul style="list-style-type: none"> <li>▪ Payments for watershed protection, can be applied anywhere where there is demand by commercial or domestic users payments are completely scaleable</li> <li>▪ Complicated by the need to involve various national and local agencies and</li> <li>▪ Several existing experiences can serve as models for others</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Watersheds with high biodiversity benefit could be targeted as priority areas</li> <li>▪ Demand will probably be highest close to large cities and agro-industrial areas; the biodiversity value of nearby watersheds may not be high due to degradation</li> <li>▪ The stabilisation / protection / filtration value of mangroves and wetlands is becoming more recognised; PES could be extended to cover these systems / services</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ Still an 'emerging market'; returns appear sufficient to interest upstream communities in existing programs</li> <li>▪ Most attractive where protection is the least expensive option</li> <li>▪ There is good scope to test the 'willingness to pay' of various downstream communities</li> <li>▪ Payments not currently linked to area protected versus water quantity and quality in some sites; need to refine metrics</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Upstream communities are typically poor, especially in remote areas</li> <li>▪ Need to ensure effective / equitable mechanisms for making payments to the poor</li> <li>▪ Potential for a 'CCBA-like' certification systems to help ensure such PES meet various social (and environmental)</li> <li>▪ Could create jobs in rural areas if assisted regeneration / afforestation, and infrastructure are major foci.</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Low, given the growing demand and the existence of functional models</li> <li>▪ Higher risk of payments being 'hijacked' by governmental agencies and rural elites</li> <li>▪ High risk of bureaucratic interference</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ MNC in the hydroelectric energy sector</li> <li>▪ MNC beverage companies</li> <li>▪ MNC food and agriculture companies; irrigated agriculture in general</li> <li>▪ National and local governments</li> <li>▪ World Bank / IFC, UNEP, UNDP, GEF, Regional Development Banks, e.g. IADB, ADB, EBRD etc</li> </ul>	

## Biodiversity management services

<p><b>Description</b></p> <p>The professional activities and services undertaken by public and private entities that directly and deliberately deliver benefits for biodiversity conservation and for which a commercial fee is received by the service provider. Examples include:</p> <ul style="list-style-type: none"> <li>▪ Restoration and rehabilitation</li> <li>▪ Preparation / certification of Biodiversity Action Plans</li> <li>▪ Biodiversity Impact Assessments</li> <li>▪ Development of biodiversity policies and strategies for companies</li> <li>▪ Certification of small scale agricultural producers</li> </ul>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Market already exists and is growing</li> <li>▪ Capacity building in service providers is essential</li> </ul>	<p><b>Scale</b></p> <ul style="list-style-type: none"> <li>▪ Niche market</li> <li>▪ Potential for scale as more and more companies begin viewing biodiversity as a risk and start implementing biodiversity strategies including BAPs but has potential global coverage</li> <li>▪ Critical need to develop specialist biodiversity service providers. Space currently occupied by environmental consultants and conservation NGOs</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Bringing specialist knowledge and expertise into the marketplace</li> <li>▪ Raising the bar for company's performance</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ Small-medium scale companies or consultancies (&lt;10 employees) therefore low-medium yielding opportunities (US\$100,000–500,000 / year gross yielding ~ US\$10,000–50,000 profit)</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Low-medium job opportunities- specialist skills required (educated professionals), except for restoration and rehabilitation work where less educated labour force could be deployed.</li> <li>▪ View this as space for SME / entrepreneurs and not really pro-poor</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Current provision is sub-optimal, but environmental consultants / other providers are well positioned to potentially 'stifle' new entrants through cost / reputational factors</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ SMEs</li> <li>▪ Entrepreneurs</li> <li>▪ Government (regulation)</li> <li>▪ Civil society (standards and certification)</li> </ul>	

## Sustainable biofuels

<p><b>Description</b></p> <p>This business would promote supply of and demand for biodiversity-friendly biofuel<sup>174</sup> as an alternative, renewable energy source</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Adapt existing models for sustainable agriculture and certification</li> <li>▪ Many governments offer economic incentives</li> <li>▪ Rapid return on investment</li> <li>▪ Technology in place</li> </ul>	<p><b>Scale</b></p> <ul style="list-style-type: none"> <li>▪ Demand for biofuels is set to grow (e.g. EU Directive calls for increase from 2.3 to 5.7% organic feedstock by 2010)</li> <li>▪ Favour countries with good agricultural potential and available areas for cultivation</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ Enlist energy consumers in demand for sustainable agriculture</li> <li>▪ Replace fossil fuels and reduce climate change</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ 9 - 22% in Brazilian projects for conventional biofuels</li> <li>▪ Biodiversity-friendly biofuels may be more costly to produce</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Considerable potential to create steady jobs in agricultural areas</li> <li>▪ May favour large-scale agriculture</li> <li>▪ May displace food crops and / or 'waste' land valuable to the rural poor</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ May lead to concentration of land ownership</li> <li>▪ May promote large-scale monoculture of feedstocks</li> <li>▪ May exacerbate rural unemployment if capital-intensive</li> <li>▪ May promote deforestation</li> <li>▪ Potential price volatility</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Agribusiness</li> <li>▪ Energy industry</li> <li>▪ Government (incentives and regulation)</li> <li>▪ Civil society (standards and certification)</li> </ul>	

<sup>174</sup> Biofuels are renewable energy sources, derived of agricultural products, oleaginous plants, forest biomass and other organic matter sources. They can be used individually as well as added to conventional fuels. Biodiesel is a biodegradable fuel derived of renewable sources and can be produced from animal fat or vegetal oils, used in vehicles (fuel) and for the heat and energy generation in isolated communities.

## Integrated Biodiversity Conservation and Sustainable Use Program

<p><b>Description</b></p> <p>PICUS aims to increase the impact of biodiversity conservation and sustainable use strategic actions on a regional scale, based on entrepreneurial social responsibility, with the objective of promoting innovative ideas, supporting processes that may catalyse and sustain conservation-oriented results, from short to long term.</p>	<p><b>Timing / Implementation</b></p> <ul style="list-style-type: none"> <li>▪ Support processes that can catalyse and sustain conservation oriented results, from short to long term.</li> <li>▪ Definition of a regional sustainable development agenda</li> <li>▪ Payment for environmental services for economic activities that promote and conserve biodiversity</li> <li>▪ Development of growth 'poles'</li> </ul>	<p><b>Scale</b></p> <ul style="list-style-type: none"> <li>▪ Adoption of actions focused on the development of territories that have strategic value for the conservation of the biodiversity in Brazil, integrating and articulating efforts for the conservation and sustainable use of the natural resources, in a way that generates positive impacts over the long term</li> </ul>
<p><b>Biodiversity Benefit</b></p> <ul style="list-style-type: none"> <li>▪ High</li> <li>▪ Benefits distribution</li> <li>▪ Contribute to the recovery of modified areas</li> <li>▪ Conservation and Sustainable use of biodiversity</li> </ul>	<p><b>\$ / Internal Rate of Return</b></p> <ul style="list-style-type: none"> <li>▪ To be defined</li> </ul>	<p><b>Pro-Poor Rating</b></p> <ul style="list-style-type: none"> <li>▪ Strengthen Local Productive Arrangements (LPAs)</li> <li>▪ Strengthening social, political, economic and institutional interactions</li> <li>▪ Generate income and jobs in the region</li> </ul>
<p><b>Risk of Failure</b></p> <ul style="list-style-type: none"> <li>▪ Need behavioural changes and reorganisation of business sectors</li> <li>▪ Difficulties to analyse issues in an integrated way</li> <li>▪ Depends on the maturity of the stakeholders to deal with obstacles such as: lack of participatory culture, lack of information about the region, etc</li> </ul>	<p><b>Ownership</b></p> <ul style="list-style-type: none"> <li>▪ Business sector</li> <li>▪ Public institutions, non-governmental organisations,</li> <li>▪ Direct users of environmental services</li> </ul>	