Conference Paper: “Boosting investments in Biodiversity and Ecosystem Services”

Amsterdam 11 – 12 November, 2009

Reference Code: Nyenrode- IUCN-ECNC, Conference paper "Boosting Investments in Biodiversity and Ecosystem Services" Amsterdam 11-12 November 2009.

The research for this report closed at 1 October 2009.

This project was initiated by Nyenrode Business Universiteit, Center for Sustainability and IUCN-NL. It was carried out by these parties and ECNC-European Centre for Nature Conservation. The project was financially supported by the Dutch Ministry of Housing, Spatial Planning and the Environment, DFID – i.e. the UK Department for International Development, and the Swiss Government (Federal Department of the Environment, Transport, Energy and Communications, Federal Office for the Environment). APG, a large pension fund asset manager, has assisted in setting out the strategy of the project.

The project team members are: Tineke Lambooy, Ard Hordijk, Irene Jonkers, Julia Levashova **(**Center for Sustainability, Nyenrode Business Universiteit); Sjef Gussenhoven (IUCN-NL) and Vineta Goba (ECNC). The principle authors of this report are Julia Levashova and Tineke Lambooy.

The project team thanks the Steering Committee for their inspiration and sharing their experience**.** The members of the Steering Committee are: Arthur Eijs (Senior policy advisor Biodiversity, Dutch Ministry of Housing, Spatial Planning and the Environment), Rob Lake (Head of Sustainability APG Asset Management), Mark Campanale (Four Elements Capital Ltd), Sachin Kapila (Group Biodiversity Adviser Shell) and Joshua Bishop (Chief Economist IUCN).

Table of Contents

Abbreviations List: 4
Executive Summary....5
INTRODUCTION....6
1. THE BUSINESS CASE FOR BIODIVERSITY 7
2. THE BIODIVERSITY BUSINESS CASE FOR INVESTORS 8
3. INVESTMENT OPPORTUNITIES....9
3.1 Sustainable Forestry 10
3.2 REDD (Reducing Emissions through Deforestation and Forest Degradation) 14
3.3 Nature Conservation 16
3.4 Eco-Tourism 21
3.5 Watershed Management 24
3.6 PES from Agriculture 27
4. BARRIERS....29
5. SOLUTIONS 31
CONCLUSION 32
Literature List: 33
Appendix 1: Scope of the project 35
Appendix 2: Ecosystem Services 36
Appendix 3: Forestry-related initiatives, Brazil 37
Appendix 4: TFF Terms 38
Appendix 5: Structure of Malua Bio Bank....39
Appendix 6: Structure of Timber Opportunities Fund 40
Appendix 7: Principles of Biodiversity Offsets....41
Appendix 8: Mitigation Hierarchy: Biodiversity Offsets 43
Appendix 9: Business Model of the African Parks Network 44

Abbreviations List:

AFOLU	Agriculture, forestry and other land use
BES	Biodiversity and Ecosystem Services
BBOP	Business and Biodiversity Offsets Programme
CBD	Convention on Biological Diversity
EIP	Ecosystem Investment Partners
EU	European Union
ESG	Environmental, Social and Governance
INRA	French National Agricultural Institute
NTPF	Non-Forest Timber Products
PES	Payment for ecosystem services
REDD	Reducing Emissions through Deforestation and Forest Degradation
TCF	The Conservation Fund
TIES	The International Ecotourism Society
TFF	Tropical Forest Fund
TFD	The Forest Dialogue
US	United States
UN	United Nations
UN PRI	United Nations Principles for Responsible Investment
VCS	Voluntary Carbon Standard
VCUs	Voluntary Carbon Units

Executive Summary

Biodiversity represents a variety of all forms of life. Ecosystems sustain biodiversity. Biodiversity is pivotal for the life of every living organism and ecosystems provide the basis for life. We all depend on them. Business is not an exception. The rapid decline and loss of biodiversity has, and will in the future have, a great impact on the private sector and its profitability. The commercial sector can contribute to nature conservation, and can also profit from its enhancement. One of the ways to contribute to and profit from biodiversity conservation is to invest in it.

An increasing number of biodiversity-related business opportunities is based on the development of innovative investment funds that (1) support biodiversity conservation and (2) have risk-return characteristics that make them attractive for institutional and other investors. Investment opportunities are multiple since new markets and innovative trading systems based on 'Payment for Ecosystem Services' (PES) are rapidly developing. Examples of PES schemes include the emerging markets for carbon sequestration and watershed protection.

This report gives an overview of the new markets and BES related investment opportunities concerning: (1) sustainable forestry; (2) REDD (Reducing Emissions through Deforestation and Forest Degradation); (3) nature conservation including (a) wetland banking and (b) off set programs; (4) ecotourism; (5) watershed management; and (6) PES schemes from agricultural landscapes. The goal of this report is to demonstrate that financing biodiversity-relevant projects has a commercial potential, in particular for institutional investors because of their long term perspective. A new marketable approach will transform biodiversity into a viable and profit-generated business opportunity.

Boosting Investments in Biodiversity and Ecosystem Services

"The awareness that your business is fundamentally dependent on the ecosystems around it for its livelihood is crucial for starting to address these issues. Without that, you are really only scratching on the surface." Edmund Blamey, Interface Europe[1]

INTRODUCTION

Biodiversity loss is a reality of the 21st century. The fight against it has become a priority for governments and nature conservation organisations all over the world. However, their efforts have proved to be insufficient. Governments and environmentalists are not the only actors that need to be engaged. The corporate sector is a key player for ecological balance. The activities of business have a huge impact on goods and services produced by or dependent on biodiversity. As a consequence, the private sector plays an important (negative or positive) role in its preservation. From a business perspective, one of the solutions to fight the loss of biodiversity is the reorientation of the economic incentives that drive private investment. The development of market-based tools for the protection of biodiversity can be translated into innovative business opportunities. The goal of this report is to show that investing into biodiversity business will not only contribute to the building of a more sustainable world, but will also bring an opportunity for investors to occupy a new profitable niche of the growing biodiversity business landscape.

The report will provide information on the current status of the market for investing in 'Biodiversity and Ecosystem Services' (BES). *Firstly*, a business case for biodiversity will be defined. *Secondly*, the report will highlight existing opportunities for BES investments and describe developing initiatives. *Thirdly*, the report will identify the main barriers that prevent investors from exploring pro-biodiversity business. *Fourthly*, possible solutions to overcome existing obstacles will be offered. *Finally*, the conclusion will summarize the main ideas emphasized in the report.

What is biodiversity and why is it important?

Biodiversity is a central element of sustainable development that affects the life of every living organism on the earth. It is a term used to describe a variety of genetically distinct populations within species and the natural communities and ecosystems of which they are a part. Ecosystems are defined as "a dynamic complex of plant, animal and micro–organism communities and their non–living environment interacting as a functional unit."[2] An incredible diversity of life, ranging from tropical savannah to ice-covered Antarctica with animals and plants of all sizes and shapes, represents an enormous array of biodiversity existing on this planet. The livelihood of everyone depends on biodiversity: the trees help to purify the air we breathe and absorb greenhouse gasses, the diverse species of animals and plants provide people with food and medicine, and watersheds supply us with clean drinking water.

The rapid decline and loss of biodiversity undermines the richness and variety of species and threatens our future. This deterioration also has a great impact on the private sector. Even though biodiversity is considered to be a public good, both business and society share a responsibility for the preservation of the environment. Business directly interacts with biodiversity in two important ways: (1) companies depend on ecosystem services for raw materials rendered by biodiversity and (2) they contribute to the change in these services (both positively and

[1] Interface Europe Network <http://www.interfaceurope.eu/pages/interface_europe_network> accessed on 2 August 2009.
[2] United Nations Convention on Biological Diversity (CBD), 29 December 1993.

negatively).[3] Furthermore, the commercial sector, apart from playing a vital role in the conservation of biodiversity, can also profit from its enhancement.

1. THE BUSINESS CASE FOR BIODIVERSITY

From a business perspective there are two reasons why the preservation of biodiversity should become a priority for the private sector. Firstly, the prosperity of companies depends on biodiversity. Secondly, investment into biodiversity can bring respective financial returns and new business opportunities. The business sector depends on biodiversity, specifically on so-called 'biodiversity or ecosystem services'. Biodiversity services refer to raw materials and regulatory services (Appendix 2). Consequently, independently of the company's business activity - whether it counts on pharmaceutical raw materials for the production of medicine, or produces cat food made of fish - it depends on the maintenance of biodiversity. Its deterioration, such as the loss of ecosystem services, threatens business opportunities and reduces profits.

For many companies, profits directly depend on the health and resilience of ecosystems and the ecosystem services that they provide. One example is nature-based tourism. Profit generation in this case depends directly on the health of surrounding ecosystems and their maintenance. Another example is water-dependent industries. Breweries, the agricultural sector and energy companies are examples of businesses that are heavily dependent on a sufficient supply of (clean) water. Presently, depending on the region, 5-20% of freshwater use exceeds long-term sustainable supply and 15-35% of irrigation is not set up in a sustainable way.[4] The impact of water scarcity on water-related businesses will cause an increased competition for supply. In addition, operational costs for water-dependent services will rise. Therefore, for most businesses preserving biodiversity makes good business sense.

Research on business and biodiversity suggests that higher profits for businesses and greater biodiversity are generally interdependent.[5] The facts suggest that: (1) biologically diverse soils are generally more productive for agriculture; (2) various tropical forests are the main locations in which to discover novel genes and compounds for agricultural, industrial and pharmaceutical uses; (3) tourists prefer more diverse ecosystems; and (4) marine biodiversity is associated with increased productivity of fisheries. In addition, the reputation of a company often depends on their attitude towards biodiversity and the environment in general. Reputation is important for a company's relations with customers and employees. Every year, billions of Euros are spent by businesses on improving their corporate images and "no company can afford to be seen as contributing to the destruction of nature"[6]. Being good for nature uplifts the reputation of a company and gives a competitive advantage that ultimately will help to generate more profits.[7] For instance, nowadays, as a developing trend, companies which are known for their

[3] 'Business & biodiversity' IUCN, 2007 and see also 'Biodiversity and Ecosystem Services: Bloom or bust' UNEP FI, 2008.
[4] Footnote 3.
[5] Bishop, J., Kapila S., Building Biodiversity Business (2008). See: Tilman, D., Reich, P.B. and Knops, J.M.H., Biodiversity and Ecosystem Stability in a Decade-Long Grassland Experiment (2006) *Nature* 441, p. 629–632; Worm, B., Barbier, E.B., 2006. Impacts of Biodiversity Loss on Ocean Ecosystem Services. *Science* 314, p. 787–790; Naidoo, R. and Adamowicz, W.L., Economic Benefits of Biodiversity Exceed the Costs of Conservation at an African Rainforest Reserve (2005) *The National Academy of Sciences of the USA*, available at <www.pnas.org/cgi/doi/10.1073/pnas.0508036102> accessed on 3 August 2009.
[6] High Level Conference on Business and Biodiversity, European Initiative on Business and Biodiversity, Lisbon 12-13 November 2007
[7] Covalence, Rating Agency, Food & Beverages Report, 2008.

unsustainable catching or production methods risk being de-listed by grocery stores and boycotted by consumers.[8]

The other reason for conserving biodiversity is the possibility of making a profit by investing in it. Traditionally companies perceived biodiversity as a barrier or risk that they had to overcome in order to do business. This perception is changing. A private sector acknowledges that biodiversity can be a vital element for the success of the company because it translates into an excellent reputation of the firm, an increased quality of products and new business opportunities. The emerging markets[9] for the goods and services of ecosystems, emerging through the creation of new property rights, can bring about a change to the business world. As awareness concerning these markets expands, companies that reduce environmental impacts improve eco-performance and employ innovative services and strategies will benefit. They will acquire competitive advantage and reduce costs and liabilities related to ecosystem damage.[10]

2. THE BIODIVERSITY BUSINESS CASE FOR INVESTORS

Presently, an increasing number of biodiversity-related business opportunities is based on the development of innovative investment funds that (1) support biodiversity conservation and (2) have risk-return characteristics that make them attractive for institutional and other investors. A variety of financial instruments, developed by mainstream investors, are correctly being applied to these investments, such as grants, partial grants and debt and equity finance. Innovative investment models are also being explored in this field. Investors with a long term horizon, such as pension funds, will find investments in protected ecosystems and BES services a profitable business opportunity. The reason is that the demand of various resources is growing over time due to increasing scarcities. A growing interest in investments directly contributing to conservation and the sustainable use of BES reflects a tendency to sustainable business practices (Box 1).

Box 1: Socially Responsible Investment

The concern for conservation of biodiversity is not any longer the sole responsibility of the states. In recent years, the business sector, including financial institutions, has recognized the importance of a sustainable environment. Since the launch of the United Nations Principles for Responsible Investment (UN PRI) in 2006, the number of institutional investors and pensions funds that took an interest in responsible investment, especially, in environmental, social and governance (ESG) issues has increased significantly. Pension funds and other institutional investors began to pay more attention to social and environmental behaviour of the companies in which they invest. As Rob Lake,[11] a head of the sustainability department of APG – a large Dutch asset manager specialised in pension funds, has stated: "ABP firmly believes that integrating environmental, social and governance (ESG) factors into its investment processes will help to improve risk-adjusted financial returns. Engaging with companies to improve their management of ESG risks is an integral part of this. We have expanded our resources in this area recently and plan to do so further in the future."[12]

[8] Eurosif, Biodiversity, Theme Report – 2nd in a series, 2009.

[9] Examples of these markets are markets for carbon credits, markets for watershed management pricing schemes, markets for sustainable agricultural products.

[10] Business and Biodiversity, power point presentation of Mike Packer and David Macdonald, prepared under the WildCRU's Jerwood Business and Biodiversity Initiative. This presentation is a part of *Business & Biodiversity: The Handbook for Corporate Action* (2002), produced collaboratively by Earthwatch Europe, IUCN and WBCSD.

[11] APG advises ABP, the second largest pension fund of the world. For more information see: <http://www.apg.nl/apgsite/pages/default.asp> and <http://www.abp.nl/abp/abp/english/about_abp/>.

[12] Report 'Responsible Investments in Focus: How Leading Public Pension Funds are Meeting the Challenge (2007), prepared by UNEP FI and UKSIF. PDF available at <http://www.unepfi.org/fileadmin/documents/infocus.pdf>.

According to a survey among institutional investors in the Netherlands, France and the UK, more than 70% of surveyed investors believe the ESG policies to be their responsibility as shareholders in a company.[13] Unfortunately, a survey also shows that only a few investors rank biodiversity conservation as a main concern at the top of their list of shareholder priorities.[14] For instance, only 5% of French institutional investors have indicated that they see 'protecting biodiversity' as a priority. There are two reasons for this. Firstly, investors have little knowledge of investment possibilities linked to biodiversity. Secondly, on a more fundamental level, there is a lack of understanding that ecosystem degradation and species loss are directly interlinked to human well being and 'normal' business activities. However, the perception regarding biodiversity is changing. New markets that support and reward biodiversity and ecosystem services, are developing.[15] New investment opportunities will be presented in the next section.

3. INVESTMENT OPPORTUNITIES

The general perception that biodiversity and ecosystem services have no monetary value is disputable. In fact, there is numerous finance mechanisms used for the financing of ecosystems services and biodiversity. Investment opportunities in the field of biodiversity are multiple. Rapidly developing systems based on 'Payment for Ecosystem Services' (PES)[16] offer new financial perspectives. Institutional investors appear to be interested in buying PES portfolios (see Box 2). Whereas the decline of ecosystem services poses risks to corporate performance, it also provides business opportunities through ecosystem restoration. The financial participation in the emerging markets for carbon sequestration and watershed protection are only few examples of PES schemes. This report presents a number of investment opportunities that support conservation and use of BES. For clarity, the array of investment opportunities will be classified according to the following sectors: (1) sustainable forestry; (2) REDD (Reducing Emissions through Deforestation and Forest Degradation); (3) nature conservation including (a) wetland banking and (b) off set programs; (4) ecotourism; (5) watershed management; and (6) PES schemes from agricultural landscapes.

[13] Survey of institutional investors on their responsibility for corporate ESG policies, conducted by Novethic, with the support of BNP Paribas Investment Partners (2009). Available at
< http://www.novethic.com/novethic/v3_uk/upload/ESG_Study.pdf> accessed on 21 July 2009.
[14] Thomson Extel & UKSif SRI & Extra-financial survey (2006). Based on the Extra-financial survey 2006. One of the questions was to rate the importance of the following types of environmental data: (1) pollution incidents, (2) contaminated land, (3) greenhouse gas emissions, (4) resource efficiency, (5) prosecutions and fines, (6) biodiversity). Biodiversity was rated 6 out of 6 being the least important. The report available at:
<http://www.innovestgroup.com/pdfs/2006-07-13_THOMSON_EXTEL.pdf> accessed 3 July 2009.
[15] The Economics of Ecosystems and Biodiversity, Interim Report, UNEP, 2008. Available at
< http://www.bmu.de/files/pdfs/allgemein/application/pdf/sukhdev_interim_report.pdf> accessed on 3 August 2009.
[16] i.e. flexible compensation mechanism in which ecosystem service providers are compensated by service users.

Box 2: Payment for Ecosystem Services

Payment for ecosystem services (PES) is a flexible compensation mechanism in which service providers are compensated by service users. The ecosystem payment schemes have proved to be the most viable in the provision of carbon sequestration, biodiversity conservation, water management services and landscape protection. There are different markets for ecosystem services.[17] The main categories include: (1) carbon markets; (2) water markets;[18] (3) biodiversity markets;[19] and (4) bundled payments.[20] The markets for ecosystem services can be differentiated in accordance with payment types. They entail: (1) compliance markets; (2) voluntary markets; and (3) government – mediated markets.[21]
Many PES efforts, like the emerging carbon markets, already channel billions of dollars into projects constructed in order to keep the planet's ecosystem infrastructure alive. Other markets have not yet been fully developed.

3.1 Sustainable Forestry

Forest degradation is a day-to-day occurrence. In particular, tropical rain forests are disappearing from the face of the earth with an immense speed; at present being destroyed at a pace exceeding 32.000 hectares per day.[22] The consequences of this are severe. In the short run deforestation would result to loss of the ecological services provided by tropical rainforests and related ecosystems. It means: (1) the reduction of renewable resources, like medical plants and timber; and (2) the loss of valuable services that rainforests provide, such as water treatment, flood control, etc.[23] Over the longer term, the effect of deforestation has irreversible impact on climate and biodiversity. Although the rainforests cover less than 2% of the planet's surface, they provide habitat for 50% of the variety of life on the planet.[24] Deforestation therefore has a direct effect on the loss and degradation of biodiversity.

Sustainable forest management[25] offers investors opportunities for profit generation along with environmental benefits. The amount of financing and diversity of investors who invest to the sustainable forest management has risen rapidly in the past years. Not only direct investments,

[17] Carroll, N., Jenkins, M., The Matrix: Mapping Ecosystem Service Markets, Katoomba Group's Ecosystem Marketplace, 17 June 2008.
[18] Water markets provide payments for nature's hydrological services – primarily the filtering of water through wetlands. Definition taken from website: Katoomba Group's Ecosystem Marketplace; see footnote 17.
[19] Biodiversity markets design incentive for preservation and managing of biodiversity including habitat and species. Definition taken from website: Katoomba Group's Ecosystem Marketplace; see footnote 17.
[20] Bundled payments secure all or a combination of carbon, water, and biodiversity services. Bundled payments also include those in which the ecosystem service payment is built into the price of the product, such as certified timber or certified produce. Definition taken from website: Katoomba Group's Ecosystem Marketplace; see footnote 17.
[21] Government-mediated markets are publicly-administered programs that use public funds to pay private landowners for the stewardship of ecosystem services on their property. Definition taken from website: Katoomba Group's Ecosystem Marketplace; see footnote 17.
[22] Butler, R., Another look at global rainforest conservation: Are rainforests still in need of saving? (2005).
[23] Chapter 9: Consequences of Deforestation, Environmental Science and Conservation News site: Mongbay.com. Available at < http://rainforests.mongabay.com/0901.htm> accessed on 6 August 2009.
[24] Mongbay.com 'Rainforests Diversity – Origins and Implications
< http://rainforests.mongabay.com/0301.htm> accessed on 7 August 2009.
[25] According to Asia Pacific Forestry Commission "it is the stewardship and use of forests and forest lands in a way, an at a rate, that maintains their biological diversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological economic and social functions, at local, national and global levels, and that does not cause damage on other ecosystems". Available at <http://www.fao.org/forestry/33711/en/> accessed on 2 August 2009.

but also indirect investments in forestry products are increasing in their significance.[26] Funds focusing on socially responsible and green investments are another source of private sector finance.[27] Furthermore, the mechanism for PES has proven to generate financial returns from sustainable forest management.[28] Through PES, "those that benefit from these outputs can pay forest managers and owners directly to manage their forests for the production or protection of these outputs"[29]. There are many opportunities for businesses to manage forestry by optimizing benefits such as selling certified wood products, ecotourism, tapping into emerging markets for environmental services, non-timber forest products (NTFP) and other 'green' products and services.[30] In fact, forest-related initiatives have proven to be the most successful. For instance, timber related investments have been growing rapidly in the last decade, because of the attractive returns that they can deliver. Timber investments have outperformed other asset classes over the last 20 years.[31]

To illustrate this, some examples of diverse forestry-related initiatives will be presented below. As a common denominator they combine conservation activity with commercial profitability. It concerns: (1) New Forests Tropical Forest Fund LP; (2) Malua Bio Bank project; and (3) Timber Opportunities Fund. In addition, the Brazilian innovative forestry-related projects can be found in Appendix 3 of this report.

(1) New Forests Tropical Forest Fund LP

Tropical Forest Fund LP ("TFF") is a 100 million dollars 'closed-end equity fund'[32] launched by New Forests Asset Management Pty Limited ("New Forests"). New Forests is a forestry investment management and advisory firm that makes equity and equity-related investments in sustainably managed natural forests, timber plantations and forestry-related assets. By 2008 New Forests managed 200 million dollars in assets throughout Australia, New Zealand, the US and the Asia Pacific region.

TFF is designed to target opportunities in land and forestry assets, generating a mix of return from timber and environmental markets in the Asia Pacific region.[33] More specifically its aims are: (1) to generate returns from sale timber and energy products; (2) to manage land and forestry assets sustainably; and (3) to earn environmental credits such as carbon and biodiversity credits. TFF will focus on existing plantations and forestry assets (50-80%) and greenfield plantations (20-50%). The primary revenues of TFF are expected to come from sales of hardwood tropical timbers and latex. TFF also expects to generate other revenue income streams through investments in processing facilities (<10%), carbon credits (<10%), and natural forest management (<5%). TFF has a pipeline of approximately 20 projects in nine countries that in total account for 200,000 hectares.[34] For details of TFF terms, see Appendix 4.

---

[26] An example of an indirect investment product is a forest-backed security. The value of these securities relates to expected future profits of commercial forest activities. For instance, in Brazil, the Environmental and Social Stock Exchange (BVS&A) was established. Its goal is to bring together all relevant actors, such as NGOs that require funds and social investors willing to support their programmes and projects. Over 60 projects have been already fully funded. Available at < http://www.fao.org/forestry/media/16559/1/0> accessed on 2 August 2009.

[27] Financing Sustainable Forest Management – Forest Policy Brief, PDF available at <http://www.fao.org/forestry/media/16559/1/0/> accessed on 2 August 2009.

[28] Footnote 27.

[29] Footnote 27.

[30] Non-timber forest products (NTFP) are products other than wood derived from forests or wooded land.

[31] Caudex Capital, Timber Opportunities Fund, internal document (2009).

[32] Closed-end fund is the investment company which shares are listed on a stock exchange or traded on over-the-counter market. Its assets are professionally managed according to fund's investment objectives.

[33] The main focus is on Solomon Islands and in South East Asia, namely in Indonesia, Malaysia, Vietnam, and the Philippines.

[34] Tropical Forest Fund L.P., Summary of Proposed Investment, International Finance Corporation, 2009.

According to New Forests, forests are attractive assets for institutional investors, because they contribute to portfolio diversification. In addition, when the forests are managed in a sustainable way, there are other income opportunities such as those related to emerging environmental markets; e.g. carbon credits and biodiversity offsets.

(2) Malua Bio Bank

Deforestation can be addressed in many ways. One of the business solutions was developed by the investment company New Forests and Equator LLC, which offer innovative ways of doing business by combining sustainability and a commercial approach to conservation.[35] In comparison to the New Forests project, this initiative is in a developing stage. However it presents an interesting voluntary biodiversity PES model that combines sustainable forestry with vegetation conservation eligible for carbon trading and conservation certificates.

New Forests and the Government of Sabah in Malaysia together manage a private equity fund, ECO Products Fund LP, which launched the "Malua Wildlife Habitat Conservation Bank" ("Malua Bio Bank"). According to David Brand, Managing Director of New Forests Pty Limited, the innovative business model of this venture is that Malua Bio Bank will translate rainforest protection into a market product so that biodiversity conservation can compete with other land uses on a commercial basis. The Malua Forest Reserve is home to the rarest species of animals, birds and plants. In addition, it is one the main source of palm oil, of which Malaysia is the main exporter. The Malua Bio Bank received a multimillion dollar investment from Eco Products Fund L.P. to restore and to protect 34,000 hectares of previously logged forest. The business plans that Malua Bio Bank will issue Biodiversity Conservation Certificates by Malua Bio Bank, each Certificate representing 100 square meters of rainforest restoration and protection.

Malua Bio Bank is a partnership between private and public entities (Appendix 5)[36]. In 2007, the Sabah Government signed a 'memorandum of understanding' with New Forests Pty to set up the Malua Bio Bank.[37] The Malua Bio Bank implements the business plan as follows: (1) in 2007, the company (owned by the Sabah Government) that holds the concession licenses to the Malua Forest Reserve ceased all logging operations; (2) the ECO Products Fund LP invested up to 10 million dollars to rehabilitate the Malua Forest Reserve and in exchange has obtained the right to create and to market Biodiversity Conservation Certificates to interested parties;[38] and (3) the Malua Trust has been empowered to oversee and finance the conservation management of the Malua Forest Reserve in the future. The revenues from the sale of Biodiversity Conservation Certificates are shared between parties, and will serve the project in three ways: (1) an endowment will be made to Malua Trust that will fund long-term conservation management by Malua Bio Bank; (2) funds will be invested in a foundation, established by the Sabah Government, to improve the livelihoods of local people; and (3) Malua Bio Bank investors.

[35] New Forests News: Malua Wildlife Habitat Conservation Bank Launches in Sabah, Malaysia (2008). Available at <http://www.newforests.com.au/news/pdf/press/20080814_malua_biobank_release.php> accessed on 3 June 2009.
[36] The scheme was taken from: Malua Forest Reserve: Conservation Management Plan 2008-2013. Available at < http://www.maluabank.com/malua_cmp_08192008.pdf> accessed on 23 July 2009.
[37] Malua Brochure, Malua Wildlife Habitat Conservation Bank. Available at < http://www.maluabank.com/> accessed on 3 September 2009.
[38] Interested parties are e.g. (1) cosmetics, energy and food companies, whose complicated supply chains structure may contain the use of palm oil as a key component of their products; (2) Malaysian companies - with a strong government support can align themselves with a conservation venture and ultimately build an image of Malaysia as a world leader in conservation; (3) palm oil growers and processors, for whom the purchase of Certificates is a direct and measurable contribution to conservation; and (4) conservation – oriented organizations.

(3) Timber Opportunities Fund

The Timber Opportunities Fund (TOF) invests in a diversified portfolio of sustainable timber projects in Latin America (Panama, Costa Rica, Argentina, etc). An investment advisory and service provider, Caudex Capital Timber Investments GmbH, consults TOF on new timber investments and manages the portfolio (Appendix 6). Caudex Capital Timber Investments GmbH is a joint venture between Futuro Forestal S.A.[39] and Caudex Capital GmbH.[40]

TOF invests in: (1) timber concessions; (2) natural forest; (3) avoided deforestation projects and (4) reforestation:[41]

(1) *Timber concessions*: The concessions give the right to harvest in a certain area of forest for a number of years (usually 20 years). Timber concessions require less capital than the purchase of forest. Upon the construction of sound infrastructure, immediate harvests along with early cash flow are possible. A mix of low initial investment and fast cash flow result in attractive returns. Moreover, it should be emphasised that TOF is convinced about the necessity of forest certification, according to sustainability standards.

(2) *Natural grown forest:* It provides fast financial returns. However, more capital is required than in timber concessions. At the same time, the certified ownership of land offers more security and no time limits.

(3) *Investment in avoided deforestation projects*: Whilst no or low income from timber harvests will be achieved, noticeable revenue can, in time, be generated from the emerging market for forest-based carbon certificates. The advisors will be seeking to develop appropriate schemes that are REDD ready (Reduced Emissions from Deforestation and Degradation)."

(4) *Reforestation projects*: These are long term investments with negative cash flow in the first years. However, the sustainable forest management during the growth phase would secure a higher return in the longer run in comparison to natural forests or timber concessions. The other advantages of reforestation projects are secured land ownership and potential capital appreciation of the forest and the land.

TOF aims at realising 'above average returns.' According to the unique nature of the fund, the success rate is determined by a range of factors.[42] Firstly, a clear focus (Latin America). Secondly, the pipeline contains a substantial number of projects covering a volume of approximately 500 million dollars. Thirdly, high standards regarding ESG, biodiversity and sustainable forestry are incorporated as part of the risk management strategy. Lastly, it entails the combination of local ground forestry management experience and expertise in capital markets, private equity and portfolio management.

To conclude this section, it is important to realize that one of the strategies to reduce deforestation is to encourage investments in sustainable forest management. It would deliver conservation benefits and financial returns for investors. Even though forestry-related initiatives are becoming more and more popular among the private sector, certain constraints prevent them

[39] Futuro Forestal S.A. is a German-Panamanian Reforestation and Service Company. It claims to be one of the leaders among key timber investment management organisations. For more information see: < http://www.futuroforestal.com/en/page_type0.php>.

[40] Caduex Capital GmbH is an independent investment boutique that focuses on structuring sustainable commodity investment products especially for institutional investors. See footnote 31.

[41] Footnote 31.

[42] Timber Opportunities Fund, Geneva Forum for Sustainable Investment, 26 March, 2009. Available at <http://www.gfsi.ch/admin/wp-content/uploads/caudex-capital_ateliers.pdf> accessed on 2 September 2009.

from attracting substantial financing. The main obstacles that were identified during international, multi-stakeholder The Forests Dialogue (TFD) are: (1) constraints of institutional capacity; (2) an uneven allocation of costs associated with conservation investments; (3) a limited demand from consumers for certified forest products; (4) tax policies unfavourable to sustainable forest management; and (5) a lack of a common vision for allocation of resources to high priority areas.[43] In contrast with other BES, the forest sector has a unique investment profile, which is especially attractive for institutional investors.[44] The long-term nature of forestry matches with interests of pension funds that usually have a long term liability, such as pension obligations.[45]

3.2 REDD (Reducing Emissions through Deforestation and Forest Degradation)

Deforestation contributes significantly to carbon emissions from forest ecosystems. One of the mechanisms created to address deforestation, forest degradation and associated emissions of greenhouse gasses is REDD. The idea behind this concept is to provide financial incentives for forest owners, companies or governments of developing countries for keeping their forests intact instead of logging them down. The REDD initiative was developed in 2005 by a group of states that named themselves the 'Coalition of Rainforest Nations'.[46] Two years later the idea of REDD was taken up at the Conference of the Parties to the UNFCCC[47] in Bali (COP-13).[48] The participants of the Conference came to a consensus on a road map that should eventually lead to a regulatory system for REDD. It was agreed to include forest conservation in the further discussions. The final accord regarding REDD is planned to be made at the Conference in Copenhagen (COP-15) in December 2009. It is expected that REDD would become a part of the larger post-Kyoto negotiations and would not be enforced until 2013.[49] The proposed funding methods for REDD are: (1) carbon credits; (2) a fund; or (3) a mixture of both. The carbon trading potential of avoided deforestation credits depends very much on what a future REDD system will look like. In spite of not yet reaching a final result, REDD already has important implications for the regulatory and voluntary markets. However, it appears that the development of those is accelerating (see Box 3).

---

[43] The Forests Dialogue (TFD), Forest and Biodiversity Conservation, 9-11 October 2003. Available at <http://www.wbcsd.org/DocRoot/Vw7SkDboMwrW9poaloHc/tfd-dialogue-review.pdf> accessed on 21 July 2009.

[44] Attractive investment characteristics include strong physical asset backing in the form of land, standing timber and milling assets. Such assets are typically financially stable. Forest Investment Review, 2009. Chapter 2, Exploring Characteristics of Existing Forestry Investment Vehicles.

[45] Forest Re, An Insurance Contribution to Sustainable Forestry Investment, ITTO Presentation 26-27 April 2006.

[46] REDD Monitor, NGO Networks news site. Its goal to share information about the way REDD is developing. Available at < http://www.redd-monitor.org/redd-an-introduction/> accessed on 2 August 2009.

[47] United Nations (UN) Framework Convention on Climate Change, 1992. FCCC/INFORMAL/84. Available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> accessed on 21 July 2009.

[48] During the Climate Change Conference of 2007, the Bali Action Plan was drafted. Available at < http://unfccc.int/meetings/cop_13/items/4049.php> accessed on 10 August 2009. Paragraph 1b(iii) is referring to the advanced concept "REDD+" and calls for "policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries". REDD+ activities include: conservation, sustainable management of forests and enhancement of forest carbon stocks.

[49] A Report for the Secretariat of the CBD: 'Challenges for a Business Case for High Biodiversity REDD Projects and Schemes,' Eco Securities Ltd. February 2009, p.18.

Box 3: Voluntary Carbon Standard

The Voluntary Carbon Standard (VCS) Program provides a global standard and program for approval of credible voluntary offsets. Originally, the VCS Program was initiated in 2005 by the Climate Group, the International Emissions Trading Association and the World Economic Forum. In 2008, VCS introduced a standardized approach for forestry and agriculture. REDD then became accessible to all market players. Starting from 18 November 2008, land use projects including forestry and agriculture can be validated and verified against VCS. New VCS rules allow agriculture, forestry and other land use (AFOLU) activities to generate permanent voluntary carbon units (VCUs) that can be easily substituted with other carbon credits generated by non–AFOLU activities, such as industrial and energy projects. It was estimated that forestry projects are especially attractive for investors, not only because of carbon credit benefits, but also because of their unique potential to preserve biodiversity and to create sustainable livelihoods in developing countries.[50]

Currently, voluntary forest offsets is one the largest sectors in the voluntary markets. It counted for 36% of all voluntary market transactions in 2006.[51] There is a potential for voluntary markets for REDD for the following reasons: (1) a demand for conservation credits can be created by voluntary markets; (2) voluntary markets will be an alternative in case an international agreement regarding REDD will not be reached or will be substantively delayed; and (3) voluntary markets serve as a crossing point between purely voluntarily and pre-compliance emission reduction efforts for many companies that are moving towards regulatory caps, e.g. aviation companies in the EU.[52] In comparison to the situation five years ago, when forestry credits were generated almost entirely from reforestation activity, there is evidence that the sector is changing, particularly into REDD, but also to improved forest management practices.[53] The market analysts repeatedly came to the conclusion that the buyers of the carbon credits on voluntary markets are willing to pay higher prices for forestry and REDD projects with co-benefits (biodiversity conservation).[54] In spite of REDD projects being usually perceived to contain a substantial share of risk in contrast to other non-forestry offset projects, the market players frequently tend to attach higher importance to the quality of offsets than to their price. The projects can be sold at substantially higher rates if it comprises a combination of high quality carbon standard and a 'preservation part.' There are already examples of REDD projects that have been certified against the Climate, Community and Biodiversity Project Design Standards (CCB Standards).[55] One of them is Juma Sustainable Development Reserve Project in the Amazon Forest in Brazil (see Box 4).

[50] Voluntary Carbon Standards, more information available at: <http://www.v-c-s.org/181108redd.html> accessed on 1 October 2009.
[51] Footnote 50.
[52] Footnote 50.
[53] Forest News, Forest Carbon Markets Grows Despite REDD Barriers, 27 May 2009.
[54] See: Ashford, L., Barker, J., Davey C., Dikeman N., Harris, J., Mountain, R. Thorubrn, N., Wheeland, N. (2008). Carbon Offsetting Trends Survey 2008 and Hamilton, K., Sjardin, M., Marcello, T., Xu, G., 2008 - Forging a Frontier: State of the Voluntary. Carbon Markets 2008 - *A report by* Ecosystem Marketplace & New Carbon Finance.
[55] CCB standards evaluate land-based carbon mitigation projects in the early stages of development. For more information see: < http://www.climate-standards.org/standards/index.html> accessed on 2 September 2009.

Box 4: Juma Sustainable Development Reserve Project in the Amazon Forest, Brazil

Juma Sustainable Development Reserve in the Amazon Forest suffers from high deforestation as a result of agricultural practices and general economic development. The project began in 2008 and is due to be finish in 2050. The goals of the project are: (1) to generate carbon credits out of 189,767,027 tones of CO2 emissions; (2) to avoid the degradation of 366,151 hectares of rainforest and the emission of 210,885,604 million tones of CO2 into the atmosphere by 2050; (3) to stop the progress of deforestation in a forest area that is under severe land conservation pressure; and (4) to improve the livelihoods of indigenous inhabitants of Juma Sustainable Development Reserve and its surroundings. The structure of the project is the following: (1) it is supervised by the Sustainable Amazon Foundation (Fundacao Amazonas Sustentavel, FAS), established in December 2007 by the Amazonas Government and Bradesco Bank; (2) the project is audited by the German Tuv-Sud company, which will follow the Voluntary Carbon Standard (VCS); and (3) the project received the stewardship of the Climate, Community and Biodiversity Alliance (CCBA). Finally, the resources generated by avoided CO2 emissions through controlling deforestation will be invested in the Juma reserve by the Amazonas State. It is expected to boost sustainable economic activities in the region and to improve the living standards of local people. It is a landmark project, the goal of which is to stop deforestation caused by land conversion pressure in the Brazilian Amazon basin. The instrument used is the creation of financial mechanisms to generate carbon credits under REDD. Evidently, the government of Amazonas State see REDD as the only option to protect the region's forest from economic pressure.[56]

To conclude this section, REDD is an interesting opportunity because it offers a number of benefits such as: (1) mitigation of climate change; (2) the conservation of biodiversity (preservation of biodiversity through forest conservation); (3) an equitable and sustainable development (the REDD approach is able to provide high financial flows to some of the world's poorest countries with an estimate of 53 billion dollars per year for halving deforestation rates);[57] and (4) stabilising rain required for a productive agriculture in a vast area around the preserved forests. As one of the leading biologists and specialists in REDD, Dr. Laurance from the Smithsonian Tropical Research Institute, has stated: "the costs of forest conservation are modest and deforestation is a massive source of emissions, so slowing deforestation is like plucking the low-hanging fruit - there's a lot of benefit for not a lot of cost. And of course we're not just storing carbon; we're also saving the world's most biologically important real estate, providing a place for local and indigenous peoples, and helping to stabilize delicate soils and reduce catastrophic flooding."[58]

3.3 Nature Conservation

The mechanisms and financial products that have been developed to cope with environmental liabilities ultimately serve the purpose of nature conservation. The wetland, habitat banking and biodiversity offsets are among the most innovative instruments, providing tradable credits.[59] Environmental mitigation is on the rise. To illustrate innovate opportunities in this field, the examples of wetland banking and biodiversity offsets will be discussed in this section.

[56] Brazil's Juma Sustainable Development Reserve Project for REDD Implementation, Case Study: Forest Now. Org, November 2008. Available at < http://www.forestsnow.org/casestudies_full.php?csid=15> accessed on 2 October 2009.
[57] Brown, D., Bird, N., the REDD Road to Copenhagen: Readiness for what? Overseas Development Institute, Opinion, December 2008.
[58] 'Bali Delegates Agree to Support Forest-for-Climate (REDD) Plan', 16 December 2007.
[59] Footnote 56.

(1) Wetland banking

One of the ways to generate biodiversity benefits is by means of mitigation banking. A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or (in certain circumstances) preserved for the purpose of providing compensation for unavoidable impacts.[60] The demand for climate mitigation services, such as wetland banking,[61] is very high.[62] Although wetlands only cover 6% of the total world surface, they form hotspots for biodiversity and deliver ecosystem services to billions of people.[63]

Wetland banking is a well-developed mechanism that originated in the US under the Clean Water Act 1972 of the US Army Corps of Engineers regulations. The creation of regulated wetland banking was inspired as a measure of protection for America's disappearing rivers, lakes, swamps, and other wetlands. The Clean Water Act established limits on how these different types of waters could be developed. After the Clean Water Act entered into force, it became illegal to fill, dredge, or in any other way damage a wetland without permit from the US government, specifically from the US Army Corps of Engineers. In order to obtain such a permit, the Corps of Engineers first determines whether the damage can be avoided and then, in cases where the damage is unavoidable, whether it can be mitigated or minimized.[64] Different actors, e.g. private companies, public entities and public work agencies can establish and maintain wetland banks. In most cases of mitigation banking, a third party entrepreneur ('the mitigation banker') gains authorisation from regulators to create or restore a relatively large area of wetlands. Afterwards, these wetlands are used as a 'bank' of credits and are sold to developers that use them to satisfy their mitigation obligations to regulators.[65] Wetland mitigation banking is now largely an entrepreneurial activity: "77% of 454 approved or proposed banks identified in a 2006 report by the US Army Corps of Engineers involve the private third-party production of wetland credits for sale."[66] It was estimated that the wetland market is worth over 3 billion dollars; in 2007 transactions exceeded a value of 750 million dollars.[67]

The main objectives of wetland banking are to restore, create, enhance, or in some cases to preserve, wetlands by providing compensatory mitigation in advance of proposed discharges into wetlands.[68] It is therefore required that: (1) the developer should at first evade, and afterwards

[60] United States Environmental Protection Agency (EPA), Compensatory Mitigation Fact Sheet. Available at < http://www.epa.gov/owow/wetlands/facts/fact16.html> accessed on 12 August 2009.
[61] In the commercial sense, the wetland banking should be understood as "regulatory arrangement by which a private firm will restore a former wetlands area to a sufficiently functional and diverse condition. People required to perform compensatory mitigation can then purchase "wetland credits" from this firm, instead of creating the wetland themselves; Robertson, M., The Neoliberalization of Ecosystem Services: Wetland Mitigation Banking and Problems in Environmental Governance, Geoforum, Volume 35, Issue 3, May 2004, pp. 361-373.
[62] The profit motive for biodiversity, Frog Matters, 1 June 2008. Available at <http://frogmatters.wordpress.com/2008/06/01/the-profit-motive-of-biodiversity/> accessed on 5 July 2009.
[63] See website of Wetlands International, a science-based organisation. Available at <http://www.wetlands.org/NewsandEvents/NewsPressreleases/tabid/60/articleType/ArticleView/articleId/1830/Default.aspx> accessed on 10 August 2009.
[64] Bayon, R., Making Environmental Markets Work: Lessons from Early Experience with Sulfur, Carbon, Wetlands, and Other Related Markets, Forest Trends, 25 August 2004
[65] Bendor, T., A Dynamic Analysis of the Wetland Mitigation Process and its Effects on the Net Loss Policy, Landscape and Urban Planning, Volume 89, Issues 1-2, August 2007, pp.17-27.
[66] Robertson, M., The Work of Wetland Credit Markets: Two Cases in Entrepreneurial Wetland Banking, Wetlands Ecol Manage (2009) 17:pp.35–51.
[67] Bishop, J., The Economics of Ecosystem and Biodiversity (TEEB): A Step Forward towards Biodiversity Markets? 10 September 2008, Rüschlikon. Available at < http://ec.europa.eu/environment/nature/biodiversity/economics/pdf/teeb_report.pdf> accessed on 12 August 2009.
[68] Silverstein, J., 'Taking wetlands to the bank: The role of wetland mitigation banking in a comprehensive approach to wetlands protection', Boston College Environmental Affairs Law Review, 01907034, Fall 94, Vol. 22, Issue 1.

ensure the restoration of prior wetlands, enhancement of low quality wetlands or creation of new wetlands; and (2) make sure that each hectare of wetland damaged or destroyed is replaced. The developers can be companies, agencies and individuals.

Wetland banking creates an attractive investment opportunity that not only generates returns for investors, but also restores losses of wetlands and provides a habitat for endangered species. In instances when impacts on wetlands cannot be avoided or minimized, wetlands have to be replaced. The process of replacement provides for restoration or creation of any number of wetlands in order to obtain replacement credit for future wetland impacts. The value of a bank is defined in 'compensatory mitigation credits.' The US Corps of Engineers, which is the regulatory governmental agency that supervises the wetland bank certification, decides on the number of 'credits' a certain bank is worth, and determines the number of credits that are made available to the banker. Bank credits are released by the agency when "a bank project achieves its pre-determined performance standards."[69] The bankers can sell or use these credits for unavoidable impacts to another wetland. It is important to note that the wetland banking credits can be sold in an open market. For instance, Ecosystem Investment Partners (EIP), a private equity fund manager that acquires and manages high priority conservation properties across the US, invested 27,5 million dollars into Wetland, Stream Mitigation Banking and Conservation (Endangered Species) Banking across a variety of landscapes. EIP claims that the investments generate multiple revenue flows (Box 5).

Box 5: Ecosystem Investment Partners: Nanticoke Headwaters Project[70]

In 2007, Ecosystem Investment Partners (EIP), together with The Conservation Fund (TCF) and the State of Delaware developed a project that aims at the conservation of the last-remaining massive forest area in the state of Delaware, in the US. For the past two centuries this area has been significantly changed. The impact of intensive agriculture and the development of monoculture pine plantations resulted into the loss of over 50 % of Delaware's pre-settlement wetlands. In partnership with TCF, EIP was able to save 2,300 acres of the forest area that otherwise would be converted into residential subdivision. By using private investment capital, market based conservation mechanisms and the support of conversationalists, EIP was able to reverse the negative impacts and bring back the rich biodiversity and ecological benefits once bestowed by these rich wetland ecosystems. Collaborating with the "US Fish & Wildlife Service, the State of Delaware and the US Army Corps of Engineers, EIP is utilizing the strong demand for ecosystem service credits found in Southern Delaware (needed to offset unavoidable impacts to wetlands and streams) to pay for the conservation and restoration of the Daisey and James Tracts, as well as to generate an attractive return for EIP's investors". Moreover, through the establishment of Delaware's first private wetland mitigation bank, the credits are being generated and over 350 acres of the property's original wetlands are being restored. The profit generation comes from selling mitigation credits; they will be sold either to the State Forest or Wildlife Management Areas, or to a private conservation buyer.

Wetland banking has become a truly entrepreneurial activity. In the US, since the first permit for an entrepreneurial bank was submitted in 1991, wetland banking has developed into a multimillion dollar annual market. It became the first successful and major environmental credit market that sells products certified using metrics of ecological function.[71] Wetland banking is a particular phenomenon from the perspective of environmental markets, and quite distinct from

[69] Washington Department of Ecology, Status Report: Status of the Wetland Mitigation Banking Pilot Program, December 2006. Available at <http://www.ecy.wa.gov/pubs/0606026.pdf> accessed on 20 September 2009.
[70] Ecosystem Investment Partners, Project Summary: Nanticoke Headwaters, 2007. Available at < http://www.ecosystempartners.com/projects_nh.htm> accessed on 12 August 2009.
[71] Footnote 66.

carbon markets. What "is being traded isn't so much the right to pollute, but rather, in a complicated and oblique fashion, the right to develop."[72] The environmental 'development markets'[73] have spread already in different countries. Puerto Rico has created a market in the right to develop beachfront property, New Zealand has established a market for the right to exploit fisheries, etc.[74] The concept of wetland banking has proved to be a viable business opportunity.

(2) Biodiversity offsets

Similar to wetland and habitat banking, biodiversity offsets constitutes a mechanism that is based on the 'like-for-like' compensation concept. It can be applied in case of loss of nature areas because of land conservation, e.g. for residual purposes, or in case of other types of damage caused by economic development. Biodiversity offsets is an instrument to balance the impacts of development activities with the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of its benefits.[75] The goal of biodiversity offsets is "no net loss."[76] Biodiversity offsets have to be differentiated between: (1) 'regulatory' or 'complied biodiversity offsets'; and (2) 'voluntary biodiversity offsets'. The regulated biodiversity offsets are driven by the need to comply with governmental regulations or legislation.[77]

Regulatory biodiversity offsets can only be realised by legislation. In the US it was done through the Federal Clean Water Act and the Endangered Species Act. In the EU, the biodiversity offsets are regulated by the Habitats Directive (92/43/EEC)[78] and the Environmental Liability Directive (2004/35/EC).[79] The Habitats Directive applies before damage has occurred. According to Article 6.4, the Member States can only proceed with the development of a plan or project that might override public interests, including those of a social or economic nature, if compensatory measures have been taken. The Environmental Liability Directive, in contrast to the Habitats Directive, applies after the damage has taken place. This Directive is based on the 'polluter pays' principle. The goal of this legislation is to hold the polluter, who caused environmental damage, responsible. The Directive regulates prevention and remedy damage to animals, plants, natural habitats, water resources and damage affecting the land. The examples of the measures introduced by both Directives serve as an incentive for businesses not to pollute. Moreover, it stimulates the development of an insurance market that will secure the companies' activities and this can act as an incentive (through differentiated premiums) to minimize risk. Furthermore, it encourages the development of markets for biodiversity offsets and wetland or habitats banking.[80]

In addition to mandatory offsets regulated by law, voluntary offsets are a rapidly growing industry. The mainstream investors such as ABN AMRO, Henderson Investors, BNP Paribas

[72] Footnote 66.
[73] It refers to 'the right to develop'
[74] Footnote 66.
[75] Business and Biodiversity Offsets Programme (BBOP). 2009. Business, Biodiversity Offsets and BBOP: An Overview. BBOP, Washington, D.C.
[76] 'No net loss' means that a biodiversity offset should be planned and realized to achieve *in situ,* measurable conservation outcomes that can be expected to transform in no net loss and if possible a net gain of biodiversity.
[77] 'Payments for Ecosystem Services: Market Profiles' Forest Trends and Ecosystem Marketplace, May 2008
[78] Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, Official Journal L 206 , 22/07/1992 P. 0007 – 0050.
[79] Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.
[80] Brauer, I., Mussner, R., Oosterhuis, F., 'The Use of Market Incentives to Preserve Biodiversity' Final Project under the Framework contract for economic analysis ENV.G.1/FRA/2004/0081.

Bank, ISIS Asset Management, the World Bank Group and the International Finance Corporation all consider biodiversity offsets as a profitable business opportunity with a high potential. According to Cortex Consultants Inc., numerous firms have committed to offset the harm they cause to biodiversity on a voluntary basis. Multinational companies such as BHP Billiton, Wal-Mart and Rio Tinto, which are using voluntary biodiversity offsets, have reported that their economic activities have *no negative impact* on biodiversity.[81] For example in 2006, Wal-Mart made 10 years commitment and spent 35 million dollars on the creation of permanently created reserves. Wal-Mart's project "Acres for America" aims to ensure that the company preserves one acre of priority wildlife habitat for every acre developed by the company. Wal-Mart cooperates closely with the National Fish and Wildlife Foundation for the creation of permanently protected reserves. At the present moment over 140,000 acres of land have been protected.[82]

The obvious question that arises regarding voluntary biodiversity offsets is: what are the advantages of using them and ultimately to invest in them? There is a simple and straightforward reason: it is good for business. To be more specific, the incentive for business to use voluntary biodiversity offsets can be summarized as follows:

- access to licenses to operate;
- access to capital and its associated competitive advantage;
- a practical tool for management of social and environmental risks and liabilities;
- managing reputational risk; and
- new market opportunities.

A number of projects in the field of biodiversity offsets have now been developed. One of them is the Business and Biodiversity Offsets Programme (BBOP).[83] BBOP is a partnership that consists of 40 leading organizations and individuals including governments, financial institutions, companies and conservation experts. This initiative was launched in 2004 by the NGO Forest Trends with support of Conservation International and the Wildlife Conservation Society. The essence of the program is: (1) to demonstrate conservation and livelihood outcomes in a portfolio of biodiversity offset pilot projects; (2) to develop, test and disseminate best practice on biodiversity offsets; and (3) to contribute to policy and corporate developments on biodiversity offsets so that they can meet conservation and business objectives.[84]

BBOP is a cooperative programme based on consensus between a wide range of participants regarding the principles required to support best practice in voluntary biodiversity offsets. In the framework of this programme the guidelines for offset design and implementation were developed to include core principles that provide guidance for all BBOP products (Appendix 7 and 8). The principles and guidelines developed are then tested in a portfolio of pilot projects in a range of contexts and industry sectors (See Box 6). The testing aimed at demonstrating that the programme enhances additional conservation and business outcomes.[85]

Box 6: Example of biodiversity offsets case study 'Basslink'

[81] Howard, B.K., Cortex Consultants Inc., Voluntary Biodiversity Offsets: Improving the Environmental Management Toolbox, December 2007 <http://www.cortex.org/d-Cortex-%20Biodiversity%20Offsets_01Dec07.pdf> accessed on 25 September 2009.
[82] See footnote 81, p. 4.
[83] Business and Biodiversity Offsets Programme < http://bbop.forest-trends.org/index.php> accessed on 21 August 2009.
[84] See footnote 83.
[85] Business and Biodiversity Offsets Programme (BBOP). 2009. *Compensatory Conservation Case Studies*. BBOP, Washington, D.C.

In Australia, the company Basslink Under-sea Power Cable ('Basslink') was constructing a cable and infrastructure to link Tasmania with the State of Victoria in mainland Australia. The company purchased a property with similar, albeit degraded vegetation as the main impact site of the project, for purposes of restoration, maintenance and improvement of the habitat. The impacted area is located within the Special Protection Zone of a State Forest. The 'habitat hectares approach' was adopted. This approach constitutes a precise, quantitative method for assessing the quality of vegetation. Furthermore, the risk and other factors were addressed in order to indicate the total number of habitat hectares needed to compensate for the area which was negatively impacted by Basslink. Basslink's objective was to achieve a 'net gain' for native vegetation. It succeeded by using an explicit, systematic and transparent approach to establish compensatory conservation measures commensurate with the loss of biodiversity.[86]

The investment in biodiversity offsets is stated to comprise numerous benefits. One of them is that investment in biodiversity offsets can be a cost effective means to show that society should continue to trust them, when they need access to land or sea for their business activities.[87] Biodiversity offsets also constitute a new business opportunity for investors. The development of conservation trade 'credits' has a business potential, especially in the areas where there is a significant demand for offsets, or in places where the demand can be easily stimulated. The examples are local ecosystem banks, for example the Malua Bio Bank, ecosystem service 'brokers', and biodiversity 'offsets' for imports.[88] Certainly, investment in voluntarily biodiversity offsets entails a share of risk equivalent to any other business venture at the development stage. Possible set-backs can be identified as follows: (1) a company can be disappointed by the results, e.g. conservation outcomes, good public relations and reputational benefits; (this risk can be minimized by closely attending the design of biodiversity offsets programme); and (2) any involvement in innovative projects can lead to criticism. NGOs focussed on nature conservation will probably be positive about participating in a biodiversity offset programme.

To conclude, there are indications that the application of biodiversity offsets as part of economic development projects is accepted as best practice by businesses, governments and NGOs. However, there is a long way ahead before more countries will introduce biodiversity offsets as a requirement according to law.[89] Voluntary biodiversity offsets markets represent a new sector that is challenging, and at the same time very promising.

3.4 Eco-Tourism

Eco-tourism is the fastest growing sector of the largest industry in the world, with annual exports up to 100 billion US dollars, and growing three times faster than other segments of the tourism sector.[90] According to The International Ecotourism Society (TIES), eco-tourism can be defined as "*responsible travel to natural areas that conserves the environment and improves the well-being of local people.*"[91] To better understand what the notion of eco-tourism entails and how it is different from regular "mass" tourism, TIES developed the following eco-tourism principles:

[86] See footnote 85.
[87] IUCN, Insight Investment 'Biodiversity Offsets: Views, Experience and the Business Case' (2004) <http://cmsdata.iucn.org/downloads/bdoffsets.pdf > accessed on 25 July 2009.
[88] Bishop, J., Kapila S., Building Biodiversity Business, 2008
[89] 30 states have introduced regulatory measures for biodiversity offsets.
[90] Bishop, J., The Economics of Ecosystem and Biodiversity (TEEB): A Step Forward towards Biodiversity Markets? 10 September 2008, Rüschlikon and see also www.ecotourism.org.
[91] See: <http://www.ecotourism.org/site/c.orLQKXPCLmF/b.4835241/k.18B9/About_TIES.htm > accessed on 7 July 2009.

- minimize impact;
- build environmental and cultural awareness and respect;
- provide positive experiences for both visitors and hosts;
- provide direct financial benefits for conservation;
- provide financial benefits and empowerment for local people;
- raise sensitivity to host countries' political, environmental, and social climate.

In principle, eco-tourism provides funds for the preservation of lands, water areas and biodiversity in general. Eco-tourism is a tool that helps to minimize the environmental effects of regular tourism or economic development in general, and it offers the possibility of compatible economic development to local and indigenous people. There is a direct link between biodiversity conservation and ecotourism. The collected revenues from visiting the protected areas support their preservation. South Africa, the country with the largest national parks, receives up to 80 percent of its annual budget from tourism receipts.[92] In more than 150 countries, tourism is one of the top five export earners, and in 60 countries it is the top earner.[93] Tourism seems particularly important for developing countries: it is a principle income generator for 83% of developing countries and the leading one for 1/3 of poorest countries.[94]

Eco-tourism as an economic activity is becoming mature. However, for a large part it is still a grass-root movement concentrated in a small number of regions and facilities.[95]The market for eco-tourism products remains fragmented. There are relatively few developing countries that have become main ecotourism destinations in terms of revenues and number of tourists. Despite the problems, ecotourism products have a large potential. To illustrate this, a description of two ecotourism projects will be offered in this report: the Pan Parks Foundation and the African Parks Foundation. Both of them are in the developing stage, meaning that they are not yet completely commercially viable and investable. However, these initiatives present themselves as examples of successful cases of ecotourism business with the potential to bring adequate financial returns.

(1) The Pan Parks Foundation

The Pan (Protected Area Network) Parks Foundation (Pan Parks), although in the developing stage, represents an interesting eco-tourism business initiative. Pan Parks is a joint creation of WWF and its business partner, the Dutch company Molecaten B.V. It is a unique alliance between the tourism industry and a nature conservation organization. It was established in 1997 and launched its first project in 2001. Currently, it is managing eleven projects. The main goal of Pan Parks is to establish a network where protected areas and businesses can work together to conserve both nature and support local communities in a sustainable way.[96] Pan Parks Foundation focuses on developing high quality ecotourism products based on the nature characteristics of the particular protected area. This innovative project pursues the ambition to develop partnerships with the private sector and investors to facilitate sustainable development and raise additional funds for nature conservation. The scope of Pan Parks focuses on the

[92] Bishop, J., Kapila S., Building Biodiversity Business (2008) < http://data.iucn.org/dbtw-wpd/edocs/2008-002.pdf> accessed on 21 September 2009.
[93] See footnote 92.
[94] International Ecotourism Society (Global Ecotourism Fact Sheet) 2006. Available at < http://www.ecotourism.org/atf/cf/%7B82a87c8d-0b56-4149-8b0a-c4aaced1cd38%7D/TIES%20GLOBAL%20ECOTOURISM%20FACT%20SHEET.PDF> accessed on 21 September 2009.
[95] Heher, S., Ecotourism Investment and Development Models: Donors, NGOs and Private Entrepreneurs, Johnson Graduate School of Management School of Hotel Administration, Cornell University, 2003.
[96] Pan Parks Foundation Business Plan– Summary for External Use and also see website <http://www.panparks.org/Introduction/Vision> accessed on 21 September 2009.

European natural landscape. Pan Parks allocates resources through the 'Pan Parks Small Grants Fund' to support 'Certified Pan Parks'.[97]

This project indicates that it has commercial potential and selling points that can be interesting for institutional investors. Firstly, Pan Parks is the WWF sub-branding that adds value from a business point of view. Secondly, Pan Parks follows the 'wilderness management concept,' meaning that an area can only qualify as a 'protected area' if there are at least 10,000 hectares designated for untouched nature. Thirdly, Pan Parks offers a high quality tourism package including local services and facilities provided by local partners. Finally, the most distinguished feature of Pan Parks is that it combines high quality tourism product and nature conservation. Pan Parks has begun to shift from a non-profit conservation organisation to a more business model structure. According to their report of 2007, Pan Parks aims to pursue a financially sustainable approach, and to seek diverse sources of income.

(2) African Parks Network

African Parks Network (APN) is another example of a successful combination of nature conservation and business opportunity. APN was established in 2000. In six years, this organisation acquired responsibility for the management of five protected areas in three different countries, covering a total area in excess of 2,500,000 hectares. APN is structured through a trust fund. It has incorporated operating companies in several source-countries (Appendix 9). The head office is located in South Africa. Each park is managed by a separate legal entity registered in the host country. These legal entities are created in order to implement an agreement with the government for the management of a specific national park. It is the first private park management institution in Africa. Its task is to provide long-term management to the national parks. APN is in fact a public private partnership. APN has combined development of the parks and stimulation of responsible tourism. The goal of the project is to achieve financial sustainability of the parks as well as to provide a foundation for sustainable economic development and poverty reduction.[98] The financing of African Parks Network comes from private (non-profit) investors, environmental funds, governments and commercial ventures with operations in or near the parks.

For the purpose of achieving financial sustainability, African Parks Foundation aims at: (1) ecotourism; and (2) non-timber forest products, as business alternatives to sustain the biodiversity resources in the protected park areas and livelihood of park dwellers. According to the business model of African Parks Network, it does not make any significant investments in tourism infrastructure itself. As its website states: "the ones who make investments should be specialised organisations which have the skills, capital and marketing channels to make a success of it". The role of African Parks Network in this respect is to create the right investment climate and conclude agreements with tourism companies. Consequently, African Parks Network, with the support of the African Park Foundations,[99] can play an important role in attracting other investors, either non-profit or commercial.

---

[97] Pan Parks, Annual Report 2007, available at <http://www.panparks.org/index.php> accessed on 21 September 2009.

[98] The African Parks Network,
< http://www.african-parks.org/apffoundation/index.php?option=com_wrapper&Itemid=129> accessed on 12 August 2009.

[99] The Board of African Parks Network is supported by a number of affiliate organizations. They are: (1) African Parks Foundation of America; (2) Stitching African Parks Foundation, Netherlands; and (3) African Parks Foundation (UK). Their role is to facilitate the establishment of partnerships with individuals, institutions and companies in their respective host countries, who are willing to become involved in and support the work of African Parks Network.

With the presence of African Parks Network, investor confidence was significantly improved. It developed a strategy on how to deal with investors. In addition to guaranteeing an appropriate flow of income to the park, investment agreements also require the protection of the integrity of the park and its ecology, thereby ensuring a positive socio-economic impact for the people in the region. Parks under African Parks Network management are capable of generating a portfolio of sustainable income streams, with sufficient funds to pay for recurrent running costs and capital replacements. Income streams include local commercial revenues (concession fees, entrance fees, game sales and filming fees) and grants for particular projects, activities performed and paid for by wildlife and environmental NGOs, endowment income and payment systems for ecosystem services.[100]

Eco-tourism has been marked as 'the future of tourism'. More and more people every year wish to visit ecologically sustainable places that comprise beautiful nature and habitats. Presently, eco-tourism is a fragmented industry that needs further development. However, the above examples illustrate that 'eco-tourism' as a business has an interesting potential.

3.5 Watershed Management

According to the definition of the Center for Watershed Protection, a watershed is: "the area of land where all the water that drains off goes into the same stream, lake or other water body. A watershed can cross country and state lines. We all live in a watershed."[101] Watershed protection serves as a mechanism for protecting a lake, river or stream by managing the entire watershed that drains into it.[102] The payment system for watershed protection is a growing industry. It is ranging from payments by private water users to environmental agencies and NGOs, to direct payments by central government to private landowners.[103] Despite successful examples of watershed protection services business, the potential to finance conservation through payments for water services has not yet been sufficiently developed. Finding a willing buyer for watershed protection is a challenge and hence appears to be the main barrier to introducing watershed schemes and to maintain them in the long run. However, this barrier will be overcome in the future. Water becomes scarcer and more valuable as a resource, which leads to more business prospects in watershed management, including opportunities for long term investments. From a business point of view, an emerging water demand comprises new business opportunities. Some examples of this development are:[104]

- increasing access to drinking water by employing market mechanisms such as water quality trading;
- improving a corporate image and reputation by participating in water management with different stakeholders;
- designing products and processes that are less water-dependent/use less water.

Water-related business opportunities can also be identified in the fields of water supply, pollution control and flooding management.[105]

---

[100] The African Parks Network, Business Model <http://www.african-parks.org/apffoundation/index.php?option=com_content&task=view&id=34&Itemid=72> accessed on 12 August 2009.
[101] Center for Watershed Protection < http://www.cwp.org/Resource_Library/Why_Watersheds/index.htm> accessed on 12 September 2009.
[102] See website: <https://engineering.purdue.edu/SafeWater/watershed/> accessed on 12 September 2009.
[103] Ibid., Bishop, p. 64.
[104] Earthwatch Institute, IUCN, World Business Council for Sustainable Development and World Resources Institute 'Business and Ecosystems, Issue Brief 'Ecosystem Challenges and Business Implications', November 2006
[105] UNEP FI ' Biodiversity and Ecosystem Services: Bloom or Boost? 2008.

PES schemes for watershed management can be divided in two categories. The first category usually comprises the implementation of financial mechanisms to compensate upstream landowners in order to maintain a certain land use, in order to positively affect the quality and availability of the downstream water resources. In this case, the upstream landowners usually get paid in order not to build roads, plant trees or perform other activities that have an impact on the quality of water. The second type of PES schemes entails compensation for global environmental services such as biodiversity conservation and carbon sequestration.[106]

The involvement of the private sector in the PES schemes for watershed management has not yet developed on a large scale. In fact, only 5% of global private investments were directed to the water sector.[107] The SNS REAAL Water Fund gave the following explanation for this. A lack of involvement is related to the ideas of investors about water investments, such as: (1) complexity of water issues; (2) high risk-low return profile; and (3) the presumption of high overhead and transaction costs.[108]

However, there are positive examples of front-runners who achieved their goals by investing in watershed management. In Latin-American countries, the system for payments for watershed protection has gained popularity in recent years.[109] The scarcity of water and water-related conflicts have played a role in setting up PES water schemes in Costa Rica and Colombia [110](See Box 7). These are usually public schemes with external financing or are constructed in the form of public-private partnerships. In Latin America, as well as in other developing countries, these projects are supported by loans, grants and the expertise of international NGOs and development agencies.

In order to improve the financial capacity of watershed protection business, private water users who have a higher ability to pay have to be involved. An example of such a private user is the French company Perrier Vittel S.A. It acted as an initiator and beneficiary of watershed protection services. The Vittel case will illustrate a PES scheme, which has been implemented successfully by a company.

(1) Vittel

Perrier Vittel S.A. (Vittel) is the world's largest bottler of natural mineral water. The maintenance of water quality is vital for a water bottling business. Generally, water bottling companies move on to the next water source when the quality of the current one degrades. Vittel has chosen another path. Vittel discovered that the protection of water sources is more cost effective than building new filtration plants or transferring its operations to new sources.[111] Vittel therefore decided to finance 'quality drinking water' through compensation for services of landholders located around the springs. The services provided by farmers and forest landholders entailed the improvement of agricultural practices and reforestation of sensitive infiltration zones. The farmers agreed to adopt less intensive farming practices in order to reduce

[106] Kiersch, B., Hermans, L.,'Payment Schemes for Water-Related Environmental Services: A Financial Mechanism for Natural Resources Management Experiences from Latin America and Caribbean.' Seminar on Environmental Services and Financing for the Protection and Sustainable Use of Ecosystems, Genenva, 10-11 October 2005.
[107] SNS REAAL Water Fund, SNS REAAL Bank invests in small and medium-sized water projects in different parts of the world.
[108] High transaction costs should be understood in relation to the acquisition of legal title or use rights and capacity building in order to change unsustainable land-use practices.
[109] In 2002, in Latin America 18 PES water–related schemes were in place. Now this number has at least doubled (this information based o the study of Landell-Mills and Porras (2002)).
[110] Footnote 106.
[111] Perrot-Maitre, D., Davis, P., Case Studies of Markets and Innovative Financial Mechanisms for Water Services from Forests, May 2001.

agricultural runoff of herbicides and other pollutants. The idea behind this is that the enhancement of farming activities eventually restores and keeps the water quality to a desired level. This project is a success story, because the goal of Vittel was achieved. The level of non-point source pollution[112] has been reduced significantly and, according to the French National Agricultural Institute (INRA), a cost-benefit analysis study of the Vittel case, the project was economically justifiable.

Vittel has financed the program[113] with support of INRA and the French Water Agencies. This example illustrates the potential of these types of PES schemes. Financial institutions can play an important role as intermediaries in designing and implementing similar market-based instruments. As analyzed in one of the studies, the Vittel model can be a profitable opportunity for industries with a rapidly growing demand for water, or for highly profitable industries, since the level of initial investment is considerably high.[114] The Vittel model might however be difficult to implement in a large geographical area or in a region with many farmers but without the support of governmental institutions.

Box 7: Costa Rica

The government of Costa Rica has developed a nationwide PES scheme where the service providers, private owners of forest lands, are paid by the users, i.e. hydropower companies, for the maintenance of forest cover in watersheds. The programme was developed in 1996 (*Forest Law No. 7575*) as a response to the country's rapidly increasing rates of deforestation. Forest Law No. 7575 was enacted in order to legally set up a PES scheme in Costa Rica.[115] The law provides a regulatory framework for the adoption of financial incentives for maintaining forest lands and a legal basis for the government to contract property owners to provide services originated from their land. One of the PES schemes in the framework of this national programme is Costa Rica – Energia Global project. This initiative is a public-private partnership in which the following parties participate: the hydropower company- Energia Global (the main investor), the 'Government of Costa Rica Fund' (income source: mostly fuel tax revenues) and the National Fund for Forestry Financing (FONAFIFO) that acts as a national intermediary. The ecosystem services that are being financed are: (1) continuity of water flow for hydroelectricity generation; and (2) biodiversity protection. Energia Global is heavily dependent on the storage of water. Two small reservoirs can only store an amount of water sufficient for 5 hours generation. It is therefore fundamental for the company to increase the stream flow regularity, especially in the dry season, when prices for electricity production are highest. It is also important to reduce reservoir sedimentation.[116] It was estimated that an increase in forest cover upstream will provide for these services. At first Energia Global was focused on an increase of water quantity, however, after renewal of the contract the emphasis was on the water quality. The company is interested in the protection of the basins that drain into the San Fernando and Volcan rivers, which feed their plants. The company's ambition is to protect 1,818 hectares in San Fernando area and 2,493 hectares around the Rio Volcan area.

[112] Non – point source pollution usually occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into rivers, lakes, and coastal waters or introduces them into ground water. Definition is taken from website <http://www.sourcemolecular.com/definitions/definitionnonpointsourcepollution.htm> accessed on 12 August 2009.

[113] A total cost for the first seven years was about 24,5 million dollars

[114] Footnote 111.

[115] Bennet, K., Henninger, R.,Payments for Ecosystem Services in Costa Rica and Forest Law No. 7575: Key Lessons for Legislators, 2008. Available at < http://www.e-parl.net/eparlimages/general/pdf/090422%20e-Parliament%20Forests%20Initiative.pdf> accessed on 2 October 2009.

[116] Watershed Markets ' Costa Rica – Energia Global' < http://www.watershedmarkets.org/casestudies/Costa_Rica_Energia_Global.html> accessed on 2 September 2009.

Energia Gobal calculated that its investment in watershed management would be a profitable venture if they would be able to obtain an extra 460,000 cubic meters of water. There are no records whether this goal was achieved. However, the company's willingness in 2003 to prolong the contract for another 5 years suggests that both the farmers and the company perceive net benefits from their PES arrangement.[117]

The system of claiming payments for watershed protection has a large capacity for development. It is clear that a water-related scheme can be beneficial for the private sector. Government involvement and support will be beneficial for setting up such types of schemes. Since many projects show a lack of complete information regarding the impact of land use on hydrological services further research in this field is required. Overall, the benefits of a well-balanced scheme can be significant. Firstly, financial returns can be achieved, particularly in areas where the watershed protection is an optimal and cost effective option. Secondly, biodiversity benefits can be significant, but depending on the types of land uses that are supported by the payments and their impacts on water supply. Thirdly, the social benefits, such as contribution to poverty reduction by compensating farmers, can be an extra 'selling point' for these types of products.

3.6 PES from Agriculture

Agricultural ecosystems are vital for human existence. They provide us with drinking water and food, preserve and regenerate soils, recycle nutrients and maintain a library of genetic resources. Presently, agricultural ecosystems are the largest managed ecosystems in the world. Of the total land area of about 13 billion hectares, crops and pasture occupy almost 5 billion hectares. Forests and woodland are another 4 billion hectares; and inland, coastal and marine fisheries ecosystems also generate crucial services for humans.[118] The quality and preservation of these ecosystem services depends directly on the decisions and measures taken by farmers, forest managers and fishermen.[119] The provision of ecosystem services by a particular agricultural site is affected by land management practices on that site. Agricultural PES schemes serve as an economic tool projected to provide incentives to land users or fishermen for the management of agricultural land, marine and coastal territories on behalf of service beneficiaries. As a result, an improvement of these areas will bring benefits to service beneficiaries, and also to society as a whole. Although the general definition of PES has already been given in section 2, for clarity it is important to define PES concept in the framework of agriculture. PES from agriculture has the following characteristics: (1) it concerns a voluntary transaction; where (2) a service provider is paid by, or on behalf of service beneficiaries; (3) for agricultural land, forestry, coastal or marine management practices; and (4) that are expected to result in continued or improved service provision beyond that which has been provided without the payment.[120]

Existing PES schemes concentrate on carbon, water and biodiversity. Presently, the main buyer of PES schemes is the public sector. However, the private sector has already emerged as a source of finance for PES schemes. Two main environmental service markets, especially interesting for business, are: (1) carbon sequestration; and (2) biodiversity conservation. These two sectors have the biggest potential to attract new streams of finance into the agricultural

[117] Footnote 116.
[118] UN Food and Agriculture Organisation, Report: The State of Food and Agriculture: Paying Farmers for Environmental Services, 2007, p.3. Available at <https://www.cbd.int/doc/external/fao/fao-2007-report-en.pdf> accessed on 22 September 2009.
[119] Payments for Environmental Services from Agricultural Landscapes, Food and Agriculture Organization of the United Nations. See website <http://www.fao.org/ES/ESA/pesal/index.html> accessed on 21 September 2009.
[120] Footnote 119.

sector, including the developing countries.[121] Already now, "around 100 megatons of carbon have been sequestered through voluntary payments to landowners in the framework of private-sector programmes, many of whom are in developing countries."[122] Biodiversity conservation or "agricultural biodiversity" has also acquired a prominent position. Agricultural biodiversity refers to agricultural ecosystems and is defined as the multitude of plants, micro-organisms and animals crucial for sustaining major functions in the production process of food.[123] Agrobiodiversity loss is primarily caused by land cover change, extensive land use and the consequent transformation of habitats. Agricultural biodiversity has to be managed in sustainable way; otherwise the key functions of the agro-ecosystem, e.g. maintenance of water cycles and nutrient, pollination, land erosion control, pest and disease regulation can be lost.[124] In order to conserve biodiversity, land mangers should refrain from using land and water resources that are rich in biodiversity. In this framework these areas, for example, can be transformed into the national parks. Preservation efforts can also include the improvement of agricultural production practices and land management. One of the solutions to halting the further loss of agrobiodiversity is to employ market mechanisms, e.g. the PES schemes that entail payments to farmers for the improvement of agricultural practices that will positively contribute to biodiversity conservation.

The Market for Carbon Sequestration

Agriculture plays a major role in climate change mitigation by: (1) reducing its own emissions; and (2) by increasing the storage of carbon in plants and the soil. Agriculture is the main cause of three main greenhouse gases. It adds to "about one third of the total carbon dioxide emissions and is the largest source of methane (from livestock and flood rice production) and nitrous oxides (primarily from application of inorganic nitrogenous fertilizer)."[125] Consequently, the agricultural sector should aim at reduction of its own emissions, thus positively contributing to climate change mitigation.

Moreover, agriculture plays an important role in carbon storage, storing carbon in plant matter and the soil. Presently, the efforts to use agriculture to manage greenhouse gases focus on an increase in above-ground sequestration. This process involves the absorption of carbon dioxide from atmosphere through trees, plants and crops and ultimately storing it as carbon in biomass. Land–use changes such as to grasslands and no-till agriculture can absorb or sequester carbon.[126] For example, when infertile lands are transformed into forest, growing trees sequester CO2 from the atmosphere and store it as woody biomass and soil organic matter; as a result carbon is being sequestered.

The private sector is becoming increasingly involved in payments for voluntary carbon sequestration. The global demand for carbon sequestration is motivated by the Kyoto Protocol[127] and national legislation implementing policies and trading schemes of this international document. The market for carbon sequestration services has two dimensions: (1) legislative[128];

[121] Footnote 119.
[122] Footnote 118.
[123] Convention on Biological Diversity, 2000. Review of Phase 1of the Program of Work and Adoption of Multi-Year Work Program. COP V/5. 15-26 May 2000, Nairobi.
[124] Footnote 118, p. 24.
[125] Footnote 119.
[126] Jindal, R., Kerr, J., Payments for Carbon Sequestration Services, United States Agency for International Development, 2007, p.1.
[127] United Nations (UN) Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1998 <http://unfccc.int/resource/docs/convkp/kpeng.pdf> accessed on 12 August 2009.
[128] Only a small share of the markets is represented by emissions from carbon sequestration because the largest market – the EU Emissions Trading Scheme (ETS) - does not permit credits from forest carbon.

and (2) voluntary. Both dimensions can entail either a project-based transaction between the end-buyer and the producer or trading in carbon sequestration offsets. The latter involves the offsetting of carbon. A corporation or even an individual can invest in projects that sequester carbon on their behalf. Thus, they buy carbon offsets (or as they are also called 'carbon credits').[129] The idea behind it is that farmers and landowners can receive payments for land use practices that generate carbon offsets for these investors (buyers).[130] The companies are willing to buy carbon offsets in the framework of 'cap and trade' programmes. The PES schemes are often used by the governments to reduce 'caps' on the amount of emissions permitted in the area. The firm therefore purchases carbon credits from farmers or forest companies that are either planting trees that sequester carbon or protecting natural forests. This system is now highly developed in the US. It is therefore not surprising that the biggest voluntary, legally-binding, rules-based greenhouse gas emissions reduction and trading system - the Chicago Climate Exchange (CCX) – is located there.[131] This system is based on voluntary membership; the members sign up voluntarily for a reduction policy that usually requires a 1% reduction of their carbon emissions per year. In 2006, CCX traded 10 million CO2 credits that accounted for more than 30 million dollars, including carbon sequestration offsets from farmers.[132] The Ecosystem Marketplace has estimated that voluntary carbon credits up to the present amounted to 84 million dollars.[133]

4. BARRIERS

The market for investing in BES has a large potential. Some markets have become mature e.g. market for carbon sequestration, REDD, etc. There is a range of BES-products, such PES schemes, which deliver a positive net-impact on biodiversity and ecosystems and have positive financial results. However, the BES market is still in its early stages. One of the main obstacles to 'biodiversity business' is the general perception that biodiversity and components related to it are a 'public good'; that is to say, are not viable from a business perspective. Companies often perceive ecosystem services as 'free of cost'. The above-mentioned initiatives support the fact that this is not necessarily true. However, there are a range of risks and obstacles concerning BES products that have to be taken into account by investors.

The risks and obstacles are:

(1) *Lack of information and knowledge*: There is a lack of information about existing and developing biodiversity business opportunities among investors. Furthermore, there is a deficiency in expertise and experience in developing BES projects that comply with strict investment criteria and programs of institutional investors or financial institutions. There is a need for information, training and the encouragement of a market framework that facilitates biodiversity business opportunities.[134] In addition, the biodiversity sector (including NGOs) should engage in more commercial opportunities in order to develop a strong portfolio of bankable biodiversity projects.[135] The knowledge gaps effectively prevent investment in biodiversity projects.

[129] Each offset is equivalent to a ton of CO2 removed from atmosphere.
[130] Footnote 126.
[131] The Chicago Climate Exchange. Available at < http://www.chicagoclimatex.com/> accessed on 2 October 2009.
[132] Footnote 125, p.3.
[133] See: < http://ecosystemmarketplace.com/index.php> accessed 2 October 2009.
[134] BTAU ' Handbook for Developing and Implementing Pro-Biodiversity Business Projects' 2009 (this report can be obtained from BTAU website).
[135] Footnote 134.

(2) *High risks*: Different risks are involved when investing in BES. One of them is the lack of predictability of the outcome. This is related to the fact that only a few front runners have been successfully engaged in the pro-biodiversity business. For example, the involvement of the private sector in PES is still relatively limited. Consequently, a lack of successful case studies in this field prevents large investors from considering biodiversity as a profitable business opportunity. Another risk relates to the implementation of pro-biodiversity projects. There are many BES businesses that are located in developing countries with a weak government and an underdeveloped law enforcement system. Therefore, in sustainable forest practices, land tenure and enforcement of compliance are often not properly handled, which generates risks and uncertainties regarding the investment.

(3) High transaction cost: A main impediment to BES is the relatively high cost of financial and technical due diligence required to meet biodiversity criteria. Short-term financial transactions usually preclude an adequate due diligence. Most BES projects are aiming at a long-term life cycle and require adequate assesments. The finance sector has often demonstrated its inability to estimate the size of transaction costs. It is important to address this issue in bidiversity business projects.

(4) *Lack of management capacity and entrepreneurs:* In order to manage pro-biodiversity business - and especially to develop an effective system of payments for environmental services, like sustainable forestry and water services - project management needs to be knowledgeable and efficient. It was estimated that well-designed and implemented pro-biodiversity businesses seem to deliver biodiversity objectives cost-efficiently.[136]

(5) *Small projects/low revenues:* Voluntary mechanisms of biodiveristy business, with a few exceptions such as the voluntary carbon market, tend to be small and have relatively high transaction costs. Considering the fact that investors, especially institutional investors, generally are looking for a long-term investment of a substantial volume this can constitute an obstacle to participation. As was mentioned before, most of the projects are too small for direct financing and need to be bundled to make them interesting for large investors. Investors are also suspicious that pro-biodiversity business is not economically viable because of the ongoing degradation of ecosystems.[137]

(6) *Lack of enabling environment:* In order for business to prosper, the environment where it operates has to be favourable for commercial activities. An enabling environment includes an effective regulatory structure that reflects public expectations about the rights and responsibilities of business and society.[138] In the context of business and biodiversity, the enabling climate is often underdeveloped. Based on the perception that biodiversity is a public good; businesses consider that all related problems are the responsibility of the government and society in general. For most financial institutions and fund managers, biodiversity is not more than an environmental responsibility or a resource that they can exploit. Presently, the private sector does not see biodiversity as a business asset that ought to be conserved and managed in its own right.[139]

(7) *Inability to think 'long-term':* Financial institutions lack an understanding of what biodiversity loss means for them. The investment in biodiversity can be a risk today which however will be turned into long-term benefits and profits tomorrow. The financial returns and conservatory benefits at the early stage of commitment to pro-biodiversity business might not be as impressive as expected. Strict criteria in this respect should be avoided. Investors have to take into account the long-term nature of biodiversity business development.

[136] Brauer "The use of market incentives to preserve biodiversity" Ecologic, 2006.
[137] Footnote 3.
[138] Footnote 5.
[139] Footnote 5.

5. SOLUTIONS

The critical question is how to overcome the barriers mentioned above, which prevent investors from financing biodiversity businesses. The key concern for investors is to secure financial returns. Many initiatives discussed in this report have shown that well-structured biodiversity ventures can be very rewarding. For example, creating a mechanism for payment for ecosystem services is a promising way to make investments in biodiversity profitable. On the basis of substantive research and the lessons learned, there are a few aspects of BES that can be transformed into visible solutions in order to make an investment in pro-biodiversity business successful.

The solutions are:

(1) *Encouragement of multi-stakeholder cooperation:* All parties interested in biodiversity preservation have to work together in order to make it a priority issue. Governments, individuals, religious groups and local communities, who are usually initiators of biodiversity conservation projects, should work closely with investors and other stakeholders.[140] The collaboration of actors also means shared responsibilities., Governments, as participants, therefore have to provide finance for research in the field of biodiversity and business, to provide financial contributions such as subsidies, grants and guarantees, to stimulate start-up pro-biodiversity initiatives, and to set up or maintain a sound regulatory framework that can support and stimulate a BES market (property rights, cap and trade liability). On the part of investors, clarification and consistency has to be achieved regarding companies BES dependence and impacts through lending and investment requirements addressing these concerns. The identification and recognition of risks and opportunities related to BES markets can thereby assist. Other actors should generate knowledge and share expertise in relation to biodiversity and ecosystem services that will help to trigger finance into biodiversity. Moreover, they have to actively develop initiatives and monitor projects about biodiversity value.

(2) *Sharing information:* One of the main barriers that prevent investment into biodiversity is a lack of information. Information regarding the loss of biodiversity in general, and ecosystem degradation in particular, therefore needs to be available and widely accessible. The new business risks and opportunities arising from a company's dependence and impact on ecosystem services have to be clearly mapped. Transparency will help businesses and investors to produce sound business planning and response strategies.

(3) *New tools:* According to the meeting of business leaders and other interested actors organised by Earthwatch Institute in 2006, further actions should include the development of new tools that can help businesses to manage ecosystems. These new tools will facilitate the recognition of the true value of the ecosystem services and to internalise the costs of public goods and service usage in business operations.[141] On the part of investors, a risk assessment mechanism should also include the assessment of

[140] Other stakeholders refer to NGOs, foundations, local authorities, farmers, forest landholders, consultants, companies and universities.
[141] Footnote 76.

transactions or projects that contain BES risks. A profound due diligence will provide information about possible impacts. One of the recommendations for institutional investors[142] is to encourage sell-side analysts to consider other issues besides finance, such as BES, when making investment recommendations. Participation in the Enhanced Analysts Initiative might be worth consideration.[143]

(4) *Creating a good investment climate:* This is primarily a task for (inter)national governments. Innovative biodiversity initiatives are usually successful in countries that have a favourable investment climate. It includes: good governance; a developed legal system; and supportive policies and institutions.

CONCLUSION

Biodiversity is the source of our common livelihood. The loss and degradation of biodiversity comprises a major threat to the sustainability of our society. Presently, the vast majority of financial decision makers are not aware of biodiversity-related problems. In particular, fund managers have limited ideas about the concept of biodiversity and as a result most of them do not consider it relevant enough in order to implement these concerns in their investment decisions. History repeats itself, as a similar pattern could be observed with climate change five years ago. In contrast, nowadays a fund manager would estimate the value of a European utilities company by taking into account the European Emission Trading Scheme.[144] The change of prices in the carbon market can influence fund managers to buy or sell affected companies. Although: "global warming may dominate headlines today, ecosystem degradation will do so tomorrow."[145] As a result, biodiversity loss shall be our concern today before the consequences of human economies are irreversible. It is especially relevant considering that 2010 has been proclaimed by the UN is the 'International Year of Biodiversity.'

The goal of this report is to demonstrate that financing biodiversity-relevant projects has commercial potential, in particular for institutional investors because of their long term perspectives. The business case for biodiversity is in a development stage. However, markets for such ecological goods as ecotourism, forest products and watershed management are already being marked out as prospective business opportunities. There are aspects of biodiversity that are marketable and in fact currently being marketed.[146] Interesting BES markets (illustrated with examples) that have investable potential were briefly outlined in this report. They include: (1) sustainable forestry; (2) REDD; (3) nature conservation (wetland banking and biodiversity offsets); (4) ecotourism; and (5) watershed management. In addition, the main barriers to pro-biodiversity business have been identified. The obstacles are mostly related to the lack of knowledge and entrepreneurial spirit. However, these obstacles can be overcome. From past experience and extensive research, this report offers tangible solutions that can assist the financial sector in transforming biodiversity, which used to be a risk and a liability problem, into a viable and profit-generated business opportunity.

---

[142] This recommendation is proposed by UNEP FI in its report see foot.3

[143] Enhanced Analysts Initiative is cooperation between asset owners and managers on the international level. The target of this initiative is to promote better investment research that also consists of extra-financial issues.

[144] Business 2010 Newsletter: Financial Services, Volume 2, Issue 4, October 2007 < http://www.cbd.int/doc/newsletters/news-biz-2007-10/?articleid=64> accessed on 10 August 2009.

[145] Corporate Ecosystems Services Review, WRI et al. March 2008.

[146] Footnote 134.

Literature List:

Asia – Pacific Forestry Commission: Annex 6 Definitions and Basic Principles of Sustainable Forest Management in Relation to Criteria and Indicators <http://www.fao.org/docrep/003/x6896e/x6896e0e.htm> .

Ashford, L., Barker, J., Davey C., Dikeman N., Harris, J., Mountain, R.,. *Thorubrn,* N., Wheeland, N. *(*2008*)*. Carbon Offsetting Trends Survey 2008.

Bayon, R., Making Environmental Markets Work: Lessons from Early Experience with Sulfur, Carbon, Wetlands, and Other Related Markets, Forest Trends, 25 August 2004.

Bendor, T., A Dynamic Analysis of the Wetland Mitigation Process and its Effects on the Net Loss Policy, Landscape and Urban Planning, Volume 89, Issues 1-2, pp.17-27, August 2007.

Brauer, I., Mussner, R., Oosterhuis, F., 'The Use of Market Incentives to Preserve Biodiversity' Final Project under the Framework contract for economic analysis ENV.G.1/FRA/2004/0081.

Brown, D., Bird, N., 'The REDD Road to Copenhagen: Readiness for what?' Overseas Development Institute, Opinion, December 2008.

Business and Biodiversity Offsets Programme (BBOP). 2009 Business, Biodiversity Offsets and BBOP: An Overview. BBOP, Washington DC.

Business and Biodiversity Offsets Programme (BBOP). 2009. *Compensatory Conservation Case Studies*. BBOP, Washington, D.C.

Business 2010 Newsletter: Financial Services, Volume 2, Issue 4, October 2007
< http://www.cbd.int/doc/newsletters/news-biz-2007-10/?articleid=64> .

Bishop, J., The Economics of Ecosystem and Biodiversity (TEEB): A Step Forward towards Biodiversity Markets? 10 September 2008, Rüschlikon.

BTAU ' Handbook for Developing and Implementing Pro-Biodiversity Business Projects' 2009.

Corporate Ecosystems Services Review, WRI et al. March 2008.

Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, Official Journal L 206, 22/07/1992 P. 0007 – 0050

Earthwatch Institute, IUCN, World Business Council for Sustainable Development and World Resources Institute 'Business and Ecosystems, Issue Brief 'Ecosystem Challenges and Business Implications', November 2006.

EU Council and EU Commission, EU Initiative on Business and Biodiversity, Background Paper, High Level Conference on Business and Biodiversity, Lisbon, 2007.

Ecosystem Investment Partners, Project Summary: Nanticoke Headwaters, 2008
< http://www.ecosystempartners.com/projects_nh.htm>

Forest Carbon Portal 'Rio's Atlantic Forest Fund: Spreading the Environmental Wealth' 2009
<http://www.forestcarbonportal.com/article.php?item=306>.

Frog Matters, The profit motive for biodiversity,1 June 2008, <http://frogmatters.wordpress.com/2008/06/01/the-profit-motive-of-biodiversity/>.

Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.

Hamilton, K., Sjardin, M., Marcello, T., Xu, G., 2008 - Forging a Frontier*:* State of the Voluntary. Carbon Markets 2008 - *A report by* Ecosystem Marketplace *&* New Carbon Finance.

Heher, S., Ecotourism Investment and Development Models: Donors, NGOs and Private Entrepreneurs, Johnson Graduate School of Management School of Hotel Administration, Cornell University, 2003.

Howard, B.K., Cortex Consultants Inc., Voluntary Biodiversity Offsets: Improving the Environmental Management Toolbox, December 2007, PDF file < http://www.cortex.org/d-Cortex-%20Biodiversity%20Offsets_01Dec07.pdf>.

High Level Conference on Business and Biodiversity, European Initiative on Business and Biodiversity, Lisbon 12-13 November 2007.

Hulm, P., Business and Biodiversity, International Trade Forum – Issue – 1/2008.

IUCN, Insight Investment 'Biodiversity Offsets: Views, Experience and the Business Case' (2004) <http://cmsdata.iucn.org/downloads/bdoffsets.pdf >.

Ferraro P., Kiss A., Direct Payments to Conserve Biodiversity, Science' Compass, Policy Forum, 2004.

Financing Sustainable Forest Management – Forest Policy Brief, PDF at <http://www.fao.org/forestry/media/16559/1/0/>.

Mongbay.com 'Rainforests Diversity – Origins and Implications < http://rainforests.mongabay.com/0301.htm>.

Kate, K., Biodiversity Offsets: good for business and biodiversity? PPP to IPIECA Biodiversity Working Group, 2005.

Kate, K., Bishop, J., Bayon, R., ' Biodiversity Offsets: Views, Experience and the Business Case' IUCN, Insight Investment, 2004.

Kiersch, B., Hermans, L., 'Payment Schemes for Water-Related Environmental Services: A Financial Mechanism for Natural Resources Management Experiences from Latin America and Caribbean' 2005.

Perrot-Maitre 'The Vittel payments for ecosystem services: a "perfect" PES Case? DFID, September 2006.

Pan Parks, Annual Report 2007, it can be found at http://www.panparks.org/index.php.

Perrot-Maitre, D., Davis, P.,'Case Studies of Markets and Innovative Financial Mechanisms for Water Services from Forests, May 2001.

PPP Business and Biodiversity, Mike Packer and David Macdonald, prepared under the WildCRU's Jerwood Business and Biodiversity Initiative, this presentation is a part of Business & Biodiversity: The Handbook for Corporate Action (2002) produced collaboratively by Earthwatch Europe, IUCN and WBCSD.

Report of the Forest Investment Forum – 22-23 October 2003.

Robertson, M., The neoliberalization of ecosystem services: wetland mitigation banking and problems in environmental governance, Geoforum, Volume 35, Issue 3, May 2004, pp. 361 – 373.

REDD Monitor < http://www.redd-monitor.org/redd-an-introduction/>

Robertson, M., 'The Work of Wetland Credit Markets: Two Cases in Entrepreneurial Wetland Banking', Wetlands Ecol Manage (2009) 17: 35 – 51.

Report for the Secretariat of the CBD: 'Challenges for a Business Case for High Biodiversity REDD Projects and Schemes,' Eco Securities Ltd. February 2009, p.18.

Silverstein, J., 'Taking wetlands to the bank: The role of wetland mitigation banking in a comprehensive approach to wetlands protection', Boston College Environmental Affairs Law Review, 01907034, Fall94, Vol. 22, Issue 1.

The African Parks Network <http://www.african-parks.org/apffoundation/index.php?option=com_wrapper&Itemid=129>.

The Forests Dialogue (TFD), Forest and Biodiversity Conservation, 9-11 October 2003
Watershed Markets ' Costa Rica – Energia Global'< http://www.watershedmarkets.org/casestudies/Costa_Rica_Energia_Global.html>.

The Economics of Ecosystems and Biodiversity, Interim Report, UNEP, 2008.

Appendix 1: Scope of the project

The overall goal of the project is to expand investments that support conservation and sustainable use of biodiversity. This is clearly a broad formulation, hence the need to define more precisely the scope of the project in terms of the type of investments or activities, target groups, and coverage of ecosystems and geographic regions. However, the project will take a pragmatic approach and will avoid the application of too many and too strict criteria.

Type of activities/investments: The project will focus on investments that directly support the conservation and sustainable use of biodiversity and ecosystem services (abbreviated as BES). Typical examples include sustainable forestry, fisheries and agriculture, ecotourism, and nature conservation (associated revenues); and also the evolving carbon market through REDD (Reducing Emissions through Deforestation and forest Degradation), a new mechanism being developed under the post-Kyoto climate agreement.

A main criterion is that biodiversity and the provision of ecosystem services needs to be (directly) enhanced or at least maintained. For example, investments in monoculture plantation forestry using exotic species are excluded from the scope. Important in this respect is also the reference situation in the 'area of investment'. For instance, organic agriculture may lead, in terms of BES, to an improvement compared to large scale intensive agriculture, but is certainly a decline compared to the original, natural vegetation.

Activities or investments that contribute more indirectly to conservation of BES will be excluded. Examples include the development of sustainable energy sources (e.g. wind and solar energy), innovations that contribute to more efficient use of natural resources (e.g. Cradle to Cradle concept), and reduction of pollution.

Revenue stream/rates of return: Another major criterion is that the projects and investments need to deliver revenue streams and ultimately become profitable. The type of investments may range from purely private to commercial investments. A mix of private and public investments (or a mix of commercial and philanthropic investments) will also be addressed.

Target groups: The primary target groups of the project are major European institutional investors (i.e. pension funds) and commercial banks that operate internationally. These are the key players required to establish the necessary changes. Other target groups include governments (EU and the Dutch Government) and conservation NGOs. Regulatory authorities and NGOs also have a role to play, respectively by creating a supportive enabling environment (e.g. though fiscal measures, regulations) and by providing knowledge and guidance on BES issues.

In terms of project partners, collaboration will be sought with leading players/initiatives, including UNEP FI and EUROSIF.

Ecosystem coverage: In principle, investments or activities in all types of ecosystems – terrestrial, marine natural, semi-natural or cultivated systems - are included (a key criterion is the positive contribution to BES).

Geographic coverage: Coverage of the investments is global; coverage of target groups is Europe and the Netherlands.

Appendix 2: Ecosystem Services

Raw materials	Including food, biomass & biofuels, drinking water, genetic resources, biochemicals and pharmaceutical raw materials.
Regulatory services	Including services relating to water, soil, sediment and air quality, climate protection, soil & coast erosion and flood protection.
Cultural value	Including amenity, aesthetic value of nature, outdoor recreation & tourism, mental & physical health and wellbeing, national traditions.

Appendix 3: Forestry-related initiatives, Brazil

SVPS Parana Brazil

An interesting initiative in the field of restoration and protection of Atlantic rainforest in Parana State[147] in Brazil was developed by a national NGO, the Society for Wildlife Research and Environmental Education (SVPS). The investors in the project are three major American multinationals: AEP (energy producer), General Motors and Chevron. With the investor's money 17,000 acres of former buffalo ranches were acquired. The revenue generation for investors comes from ownership of the land and aspects related to that. AEP invested 5.4 million dollars in purchasing the land and to create an endowment fund for maintenance costs. As a result, CO_2 credits will be owned by AEP, under US voluntary CO_2 compensation schemes. The project is in the mature stage.

Atlantic Forest Fund, Brazil

An interesting approach was developed by the NGO Brazilian Biodiversity Fund (FUNBIO). The scheme for investment in all protected areas in Brazil originated from an idea of the Minister for the Environment, Mr. Carlos Minc, to set up a mechanism for distributing funds to worthwhile environmental projects under the Brazilian Environmental Compensation Law.[148] FUNBIO was asked to test a new innovative method for the distribution of funds accumulated under the Environmental Compensation Law.

The project, established in this framework, is known as the 'Atlantic Forest Fund'. An inventive aspect of the Atlantic Forest Fund, in comparison to the majority of other PES schemes, is that Brazil's Environmental Compensation Law does not determine price linked to the market cost of replacing damaged areas. Instead it requires "*the assessment of a licensing fee based on the un-mitigatable impact of the project development, the proceeds of which are then channelled to conservation projects in protected areas*".[149] The ambitious project was set up as a state-wide ecosystem marketplace. The main goal of the Fund is to channel private money into ecosystem development projects disregarding the source of the money: either from PES or philanthropic organisations or individuals. The project has a wide scope. The funds are invested in all protected areas. The organization structure has few components. The main one is the 'compensation fund' that administrates money collected under the Environmental Compensation Law and the other one is the 'donation fund' that administrates money from philanthropic donors. Presently, 3.1 million dollars compensation payment schemes come from the German steel and engineering giant Thyssen-Krupp, while a donation of 510,000 dollars has been made available by Germany's KfW Bank Group (formerly the *Kreditanstalt für Wiederaufbau*, or Reconstruction CreditInstitute).

[147] Paraná's coast is part of the biggest remnant of the Atlantic Rainforest biome, which once covered nearly all of Brazil's coast and is now reduced to less than 7% of its original extent (see: PDF file at <http://www.spvs.org.br/download/SPVS_Profile_Opportunities.pdf>)

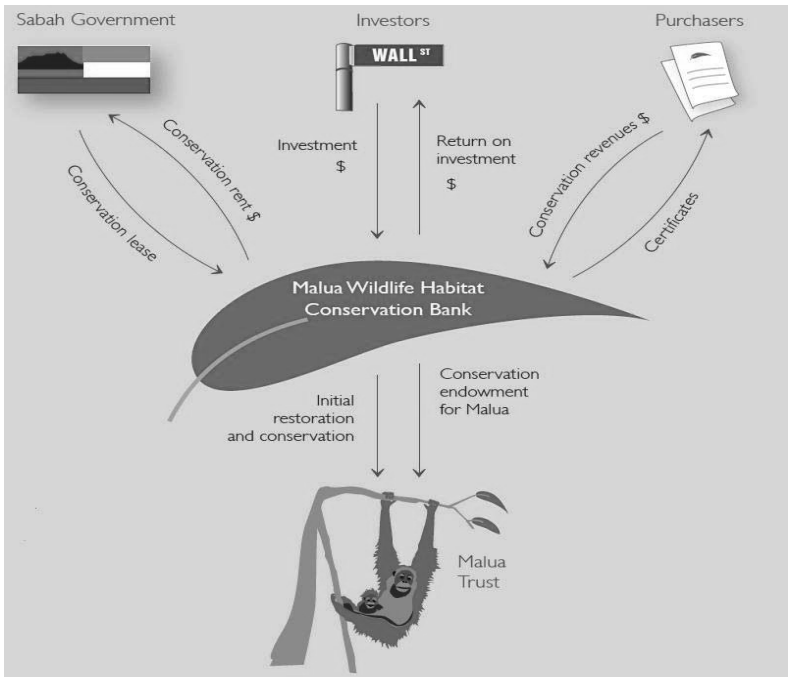
[148] Brazilian Compensation Environmental Law came into force in 2000. The idea behind is to compensate for the environment that one have damaged.

[149] Forest Carbon Portal 'Rio's Atlantic Forest Fund: Spreading the Environmental Wealth' 2009 < http://www.forestcarbonportal.com/article.php?item=306> (last visited 4 august 2009)

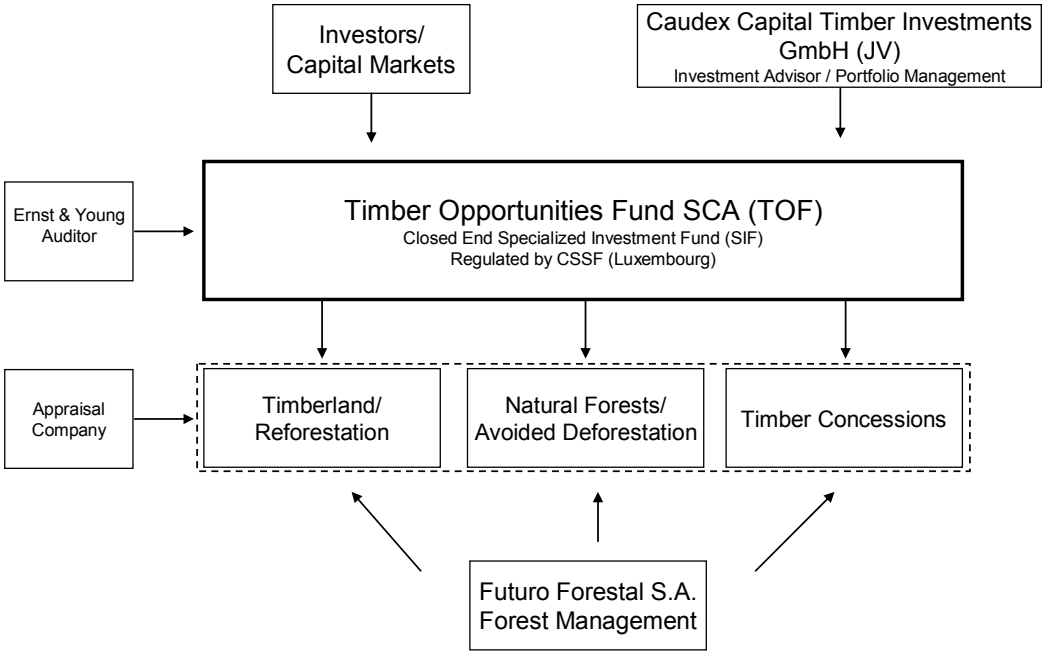
Appendix 4: TFF Terms

Purpose	TFF aims to establish a portfolio of assets located in the Asia Pacific region that: a. generates returns from the sale of timber and energy products, b. is managed on an environmentally and socially sustainable basis, and c. has potential to earn environmental credits such as carbon and biodiversity.
Target Returns	Contained in the detailed Investment Memorandum
Investment vehicle	Cayman Island Limited Partnership; 10 year term.
General Partner	New Forests Advisory Pty Ltd (Australian Financial Services License 301556)
Manager	New Forests Asset Management Pty Ltd.
Fees	Management fee as a percentage of capital committed, or (once capital is invested), the NAV of TFF. The manager is entitled to a performance fee as a percentage of excess returns once a target real internal rate of return is exceeded.
Capital raising	An initial close of at least US$25,000,000 with a minimum subscription amount of US$5,000,000. Total capital raising to be no more than US$100,000,000.
Initial Close	Aiming for 31 October 2009.
Final Close	The earlier of: the date at which USD$100,000,000 is committed, or 31 March 2010.

Appendix 5: Structure of Malua Bio Bank



Appendix 6: Structure of Timber Opportunities Fund



Appendix 7: Principles of Biodiversity Offsets

Principles of Biodiversity Offsets supported by the BBOP Advisory Committee

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

These principles establish a framework for designing and implementing biodiversity offsets and verifying their success. Biodiversity offsets should be designed to comply with all relevant national and international law, and planned and implemented in accordance with the Convention on Biological Diversity and its ecosystem approach, as articulated in National Biodiversity Strategies and Action Plans.

1. **No net loss:** A biodiversity offset should be designed and implemented to achieve in situ, measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity.

2. **Additional conservation outcomes:** A biodiversity offset should achieve conservation outcomes above and beyond results that would have occurred if the offset had not taken place. Offset design and implementation should avoid displacing activities harmful to biodiversity to other locations.

3. **Adherence to the mitigation hierarchy:** A biodiversity offset is a commitment to compensate for significant residual adverse impacts on biodiversity identified after appropriate avoidance, minimization and on-site rehabilitation measures have been taken according to the mitigation hierarchy.

4. **Limits to what can be offset:** There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected.

5. **Landscape context:** A biodiversity offset should be designed and implemented in a landscape context to achieve the expected measurable conservation outcomes taking into account available information on the full range of biological, social and cultural values of biodiversity and supporting an ecosystem approach.

6. **Stakeholder participation:** In areas affected by the project and by the biodiversity offset, the effective participation of stakeholders should be ensured in decision-making about biodiversity offsets, including their evaluation, selection, design, implementation and monitoring.

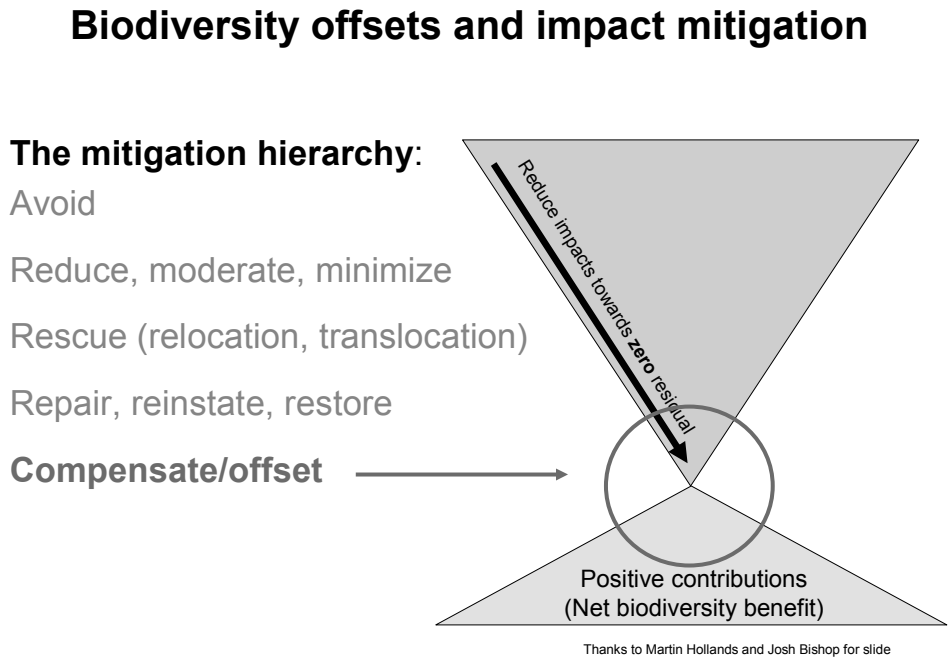
7. **Equity:** A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a project and offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration should be given to respecting both internationally and nationally recognised rights of indigenous peoples and local communities.

8. **Long-term outcomes:** The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the project's impacts and preferably in perpetuity.

9. **Transparency:** The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner.

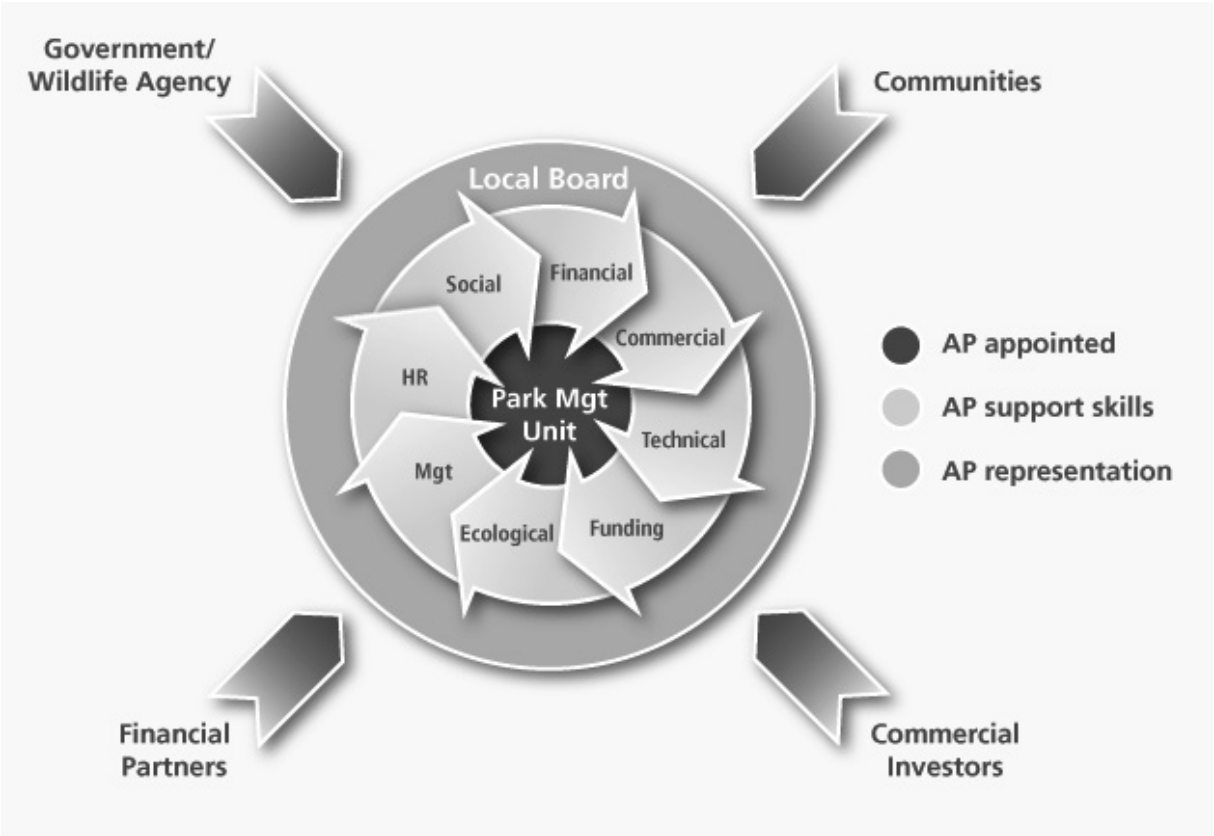
10. **Science and traditional knowledge:** The design and implementation of a biodiversity offset should be a documented process informed by sound science, including an appropriate consideration of traditional knowledge.

Appendix 8: Mitigation Hierarchy: Biodiversity Offsets



Source: Forest Trends: Business and Biodiversity Offsets Program

Appendix 9: Business Model of the African Parks Network



Source: African Parks Foundation