Biodiversity Business from India to Peru

Insights into successes and challenges

Bart Vollaard & Pita Verweij

Hivos is a Dutch non-governmental organisation, inspired by humanist values. Together with local organisations in development countries, Hivos seeks to contribute to a free, fair and sustainable world. A world in which citizens – women and men – have equal access to resources, opportunities and markets and can participate actively and equally in decision-making processes that determine their lives, their society and their future.

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GREEN ENTREPRENEURSHIP REPORT 2013
Preface

Biodiversity is of crucial importance for humankind and even more so for poorer people who often depend directly on biodiversity for their daily lives. It is inherent in their crops and livestock and diversity of species ensures the availability of different off-farm resources such as food, medicines, building materials, and various sources of income. Biodiversity not only reduces people's vulnerability, it also provides important services such as natural pest control, water recycling, and climate regulation. Economic development is frequently associated with a loss of biodiversity and it is mostly poorer people who suffer the direct consequences. An important question to answer in this respect is what are successful development strategies in agriculture, fisheries or forestry that are sustainable and lead to economic, social as well as environmental benefits?

Hivos is an international development agency with a strong interest in fair and sustainable development. Our green entrepreneurship programme aims to improve the economic position of entrepreneurial men and women in rural areas and to ensure that this is based on sound management of natural resources. Given the importance of small and medium-sized enterprises (SMEs) to economic growth in general and for the development of agriculture and rural areas in particular, we need to gain insights into their possible role in sustainable biodiversity management.

The University of Utrecht's Copernicus Institute was already researching biodiversity-friendly value chains. Adding a new focus on SMEs was of interest to both Hivos and the Institute, and provides Hivos a wealth of insights into biodiversity businesses that we will use in developing our strategies. This research project includes thirty cases that examine the nature of biodiversity businesses and their products. These businesses not only deliver in conventional economic terms, but also in social and ecological terms.

Interest in this topic is clearly growing. A workshop organised in March 2012 in the Netherlands as part of the research programme brought together a large and diverse group of people. One of the most striking outcomes was that the businesses participating in the research often lack access to suitable finance, which seriously hinders their expansion.

The Business meets Biodiversity conference at Rabobank in the Netherlands in June 2012 also illustrated a growing interest in the biodiversity aspects of doing business, not just among small and medium-sized enterprises but also among larger companies such as Unilever, DSM, and Dow Chemical. The business and finance sector was well represented at this conference, as were government and research institutes. We are clearly at the first stage of biodiversity business development and may expect fast expansion in the coming years.

What Hivos takes from this research is that to further strengthen biodiversity businesses, we need to develop innovative approaches in two key areas: finance and capacity development. These fit well with our green entrepreneurship programme, where we foresee more collaboration with financial institutions and with business-development service providers both in the North and the South. These focal areas are of course critical for any start-up, but the research shows that biodiversity businesses face more difficulties in overcoming them, and therefore require specific attention.

We hope this report will inspire other organisations and help develop tools and products that will stimulate further growth of biodiversity business that is environmentally, economically, and socially viable.

We would like to congratulate Bart Vollaard and Pita Verweij on this fascinating report.

Ben Witjes
Director programmes and projects, Hivos
The Copernicus Institute of Sustainable Development, Utrecht University, and the authors of this report would like to express their sincere thanks to all those who contributed to the content and publication of this study. First of all, we thank the representatives of the 30 biodiversity businesses who participated in this study for their time and willingness to share their experiences, knowledge, and views, which make up such an important part of this study. The dedication they show to the cause of sustainable development in their enterprise activities is a great source of inspiration.

Our thanks are also extended to the various organisations that helped us contact the biodiversity businesses involved or assisted in fine-tuning the research methodology, in particular Progreso Foundation, Proamo, PhytoTrade Africa, and the EcoEnterprises Fund.

We are grateful to Hivos, and in particular to Willy Douma and John van Duursen of the Hivos Green Entrepreneurship team for their excellent guidance during the research and the reviewing of the report.
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1. Introduction

Biodiversity business is increasingly being promoted as a promising approach to deal with the twin challenges of biodiversity conservation and local development. Shade-grown organic coffee, sustainable forestry, and the carbon-offset market are examples of commercial activities that have the potential to provide substantial biodiversity and socio-economic benefits in addition to financial returns. The expectations are particularly high in the context of smallholder enterprise in the global South, where resource-poor communities and concentrations of biodiversity often coincide and are mutually dependent. Despite the growing attention, however, the effectiveness of and lessons learned from creating biodiversity business have not been well documented. To address the lack of comparative analysis, this study systematically assesses the socio-economic and biodiversity benefits created by smallholder biodiversity business in the South, as well as its main success factors and challenges. The ultimate purpose herein is to support the further development of the pro-biodiversity market as an integrated approach for sustainable development.

Biodiversity business is increasingly being promoted as a promising approach to deal with the twin challenges of biodiversity conservation and local development. Shade-grown organic coffee, sustainable forestry, and the carbon-offset market are examples of commercial activities that have the potential to provide substantial biodiversity and socio-economic benefits in addition to financial returns. The expectations are particularly high in the context of smallholder enterprise in the global South, where resource-poor communities and concentrations of biodiversity often coincide and are mutually dependent. Despite the growing attention, however, the effectiveness of and lessons learned from creating biodiversity business have not been well documented. To address the lack of comparative analysis, this study systematically assesses the socio-economic and biodiversity benefits created by smallholder biodiversity business in the South, as well as its main success factors and challenges. The ultimate purpose herein is to support the further development of the pro-biodiversity market as an integrated approach for sustainable development.

Biodiversity is the variety of genes, species, and ecosystems that constitute life on earth. It is this diversity and abundance of life that is the source of numerous goods and services vital for human well-being. These so-called ecosystem services range from material goods such as food, fibre, and timber, to regulating and supporting services including climate regulation, flood control, and crop pollination (Millennium Ecosystem Assessment 2005). Furthermore, biologically diverse ecosystems supply a greater flow of ecosystem services, increase biological productivity, and improve system resilience (Hooper et al. 2005; Díaz et al. 2006; Flombaum & Sala 2008). Biodiversity therefore plays an essential role in livelihoods and economies at multiple scales.

Despite its social and economic importance, however, biodiversity continues to decline at an alarming rate (Butchart et al. 2010). The continuous conversion and degradation of natural ecosystems by humanity is one of the reasons that the current rate of species loss is estimated to be as much as 1,000 times higher than the ‘natural’ rate typical of the Earth’s long-term geological history (Millennium Ecosystem Assessment 2005). This global biodiversity loss comes at a high economic and social cost. In 2010, biodiversity loss amounted to EUR 545 billion, in comparison to the year 2000. If the current rate of decline continues, the cumulative costs are expected to increase to EUR 14 trillion by 2050 (Bishop et al. 2006).

The severity of the on-going decline in biodiversity does not go unnoticed. Governments, business, civil society: all demonstrate growing recognition of human dependency on biodiversity and the urgent need to preserve natural riches for future generations. Worldwide, biodiversity conservation efforts are increasing – as is the variety in conservation approaches and practices (Rands et al. 2010). Over the past decades, the biodiversity conservation toolbox has grown substantially and nowadays ranges from traditional approaches such as the creation of protected areas and public policies to more recent market-based instruments. An important example of the latter is the creation of biodiversity businesses.

A biodiversity business is generally defined as a commercial enterprise aimed at generating profit while conserving biodiversity, using biological resources sustainably and sharing the benefits arising from this use equitably (Bishop et al. 2008). The biodiversity business concept aligns commercial, conservation, and development interests into one goal, containing opportunities for each of the domains. From the perspective of biodiversity conservation, the business-oriented approach can generate additional investments in conservation activities implemented at a larger scale than would happen based on conventional approaches alone. For business, the reasons to include biodiversity management in their strategies are manifold. Opportunities may lay in improving reputation, liability, relationships with investors and local communities as well
as tapping into the growing biodiversity-friendly market. Nevertheless, the clearest business case for biodiversity is made for companies that directly depend upon biodiversity for their core business. For them to invest in the preservation and sustainable use of biodiversity is to secure their future supply of resources. Accordingly, most biodiversity businesses operate in the sectors of agriculture, fisheries and aquaculture, forestry, non-timber forest products (NTFPs), tourism, and ecosystem services (Bisho et al. 2008; RSPB 2009). Biodiversity business in these sectors also entails great potential for socio-economic development, particularly in the South, where levels of poverty, inequality, and biodiversity are relatively high. Not only can it create employment, diversification of income, and development of skills, it often also stimulates a flow of funds from wealthier urban centres to rural areas, as well as from industrialised countries to developing nations (Bishop et al. 2006).

The prominence of biodiversity business as an integrated approach to sustainable development has gained growing interest in recent years. Nonetheless, little effort has been invested in documenting the effectiveness and lessons learned from creating biodiversity business (Borges 2009). Most attempts are limited to project documents and grey literature, where the lack of good and comparable data and the variety in goals and evaluation criteria make it difficult to draw general conclusions about the success of biodiversity business (Lele et al. 2010). To date, quantitative and comparative evaluations of the strategy are extremely scarce (Salafsky et al. 2001; Brooks et al. 2006). The current study addresses the lack of comparative analysis of biodiversity business success by systematically assessing the socio-economic and biodiversity benefits generated by biodiversity business, as well as its main success factors and challenges. The particular focus herein is on small- and medium-sized enterprises and producer organisations in the South that operate in the sectors of agriculture, fisheries and aquaculture, forestry, NTFPs, and ecosystem services.

**Research objectives**

1. Systematically evaluate the performance of biodiversity businesses operating in the South, in terms of:
   - Socio-economic benefits
   - Biodiversity conservation
2. Identify key success factors and challenges to biodiversity businesses.

Chapter 2 sketches the biodiversity-business landscape by describing the types of cases that are characteristic for the different sectors. The methodology of this study is briefly outlined in chapter 3. Results of the research are presented in chapters 4, 5 and 6. Chapter 4 focuses on the socio-economic benefits of biodiversity business; chapter 5 describes the benefits to biodiversity conservation; and chapter 6 summarises the key success factors and challenges of biodiversity business. Finally, the conclusions and recommendations are discussed in chapter 7.

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**BASIC TERMS USED IN THIS REPORT**

**Biodiversity**: the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity 1992).

**Biodiversity business**: Commercial enterprise aimed at generating profit while 1) conserving biodiversity, 2) using biological resources sustainably and 3) sharing the benefits arising from this use equitably (Bishop et al 2008). In this study, the term is limited to SMEs and producer organisations in the South that operate in the sectors of agriculture, fisheries and aquaculture, forestry, NTFPs, and ecosystem services.

**Small- to medium-sized enterprises (SMEs)**: Definitions of what constitutes an SME vary greatly from country to country, as does the nature of SMEs: from smallholder farmers selling surplus produce in local markets to entrepreneur-led business in processed goods with refined market networks. In this report, the term SME refers to business of up to 150 employees. Producer organisations such as cooperatives – although they can consist of more than 150 people – are also included in this study, since they often face the same challenges as SMEs (Bovarnick & Gupta 2003).

**The South**: Developing countries as defined by the UNDP as those countries with a Human Development Index below 0.9 (UNDP 2011). This applies to large parts of Africa, Central and Latin America, most of Asia and the Caribbean as well as Oceania excluding Australia and New Zealand.
2. The spectrum of biodiversity business

In the introduction, biodiversity business is defined as commercial enterprise aimed at generating profit while conserving biodiversity, using biological resources sustainably, and sharing the benefits arising from this use equitably. When compared to a conventional enterprise, biodiversity business distinguishes itself by including biodiversity conservation and sustainable use as a core business concern. This broad definition includes a range of commercial enterprises that can be categorised in multiple ways. The most common approach is a sector-based categorisation with a specific focus on sectors that directly depend on and (possibly) benefit biodiversity (Bishop et al. 2008; RSPB 2009). In this report, we follow the sector-based categories to illustrate the concept and range of biodiversity businesses in more detail. Special attention is paid to the focus sectors of the current study:

- Agriculture
- Fisheries and aquaculture
- Forestry
- Non-timber forest products (NTFPs)
- Ecosystem services

Other sectors and markets that have the potential for biodiversity business creation, such as ecotourism, recreational hunting, and sport fishing, are outside the scope of this report.

Agriculture
Traditionally, agriculture has been a major driver of biodiversity decline through habitat conversion, degradation, and pollution. Nowadays, society increasingly demands that farmers reduce the environmental footprint of their operations. By applying improved management systems and adopting environmentally friendlier technologies and practices, agriculture has the potential to provide substantial biodiversity benefits (Batáry et al. 2011; Gomiero et al. 2011). The promotion of biodiversity-friendly agriculture usually involves a selection or all of the following practices (Scherr & McNeely 2008) (not in any particular order):

Coffee beans and birds
Unión de Cooperativas Agropecuarias San Juan del Río Coco (UCA San Juan), Nicaragua

The union of smallholder coffee cooperatives UCA San Juan is dedicated to the production and marketing of organic, Fairtrade certified coffee. While organic coffee already comes with substantial benefits for biodiversity compared to conventionally farmed coffee, a group of 128 UCA San Juan smallholder farmers decided to go a step further by cultivating Bird Friendly certified coffee. This means that besides meeting the requirements for organic certification, the coffee farmers meet additional criteria to ensure they are maintaining a forest cover that provides habitats for birds and wildlife. Examples of the additional criteria are a minimum of 40 percent shade cover on the coffee plantations as well as requirements in terms of the diversity, size and structure of the trees that constitute the forest canopy. In return, the farmers benefit from higher coffee prices as a result of the premium paid for their certified produce.

The Baltimore oriole is one of the Neotropical migratory bird species that benefit from shade-providing native trees on coffee farms
• Create on-farm biodiversity reserves that benefit farming communities
• Develop habitat networks around and between farmed areas to serve as biological corridors
• Reduce local land conversion by increasing farm productivity and creating priority areas such as wetlands and forest fragments with high conservation value
• Diversify farming systems to mimic natural ecosystems
• Minimise agricultural pollution
• Manage soil, water, and vegetation resources to sustain biodiversity, for example through terracing, improved planting and ploughing techniques, use of vegetation as windbreak, and natural fertilisers (e.g., leguminous species).

A growing number of certification standards and labels are being developed, aimed at helping consumers to distinguish products grown under such biodiversity-friendly practices from conventional agricultural products. Examples of these certification standards and labels are ‘Bird Friendly’, ‘Rainforest Alliance’, ‘Organic’, and ‘UTZ Certified’. Although the current market share of certified or verified sustainable agricultural products is typically less than 5 percent, its growth as compared to conventional products is relatively fast (Rainforest Alliance 2011; Willer & Kilcher 2012).

**Fisheries and aquaculture**
Fish – including finfish, molluscs, and crustaceans – are the largest source of wild food in both the developing and developed world. Over the past decades, the increasing demand for fish combined with an ever more efficient, large-scale and far-reaching fishing industry has put global fish stocks in serious peril. Current estimates are that 87 percent of commercially important marine fish, and most freshwater species, are being overexploited or are on the verge of becoming so (FAO 2012). Moreover, there is growing concern regarding the effect of fishing practices on the wider aquatic environment, including issues such as unintentional by-catch and the use of bottom trawling and poison.

Aquaculture is sometimes seen as a possible solution for the current depletion of wild fish stocks. The recent growth of this industry has come with its own set of biodiversity issues, however, such as the loss of coastal habitat, increased demand for fishmeal from capture fish, environmental pollution, and the introduction of invasive species (Levin & Stevenson 2012). Various management interventions exist to improve the sustainability and effect on biodiversity of both the fishery and aquaculture sectors. For fisheries, improved practices include the following interventions (Bishop et al. 2008; Marine Stewardship Council 2010; Levin & Stevenson 2012):

- Establishing and enforcing catch levels that ensure sustainable fish stocks of the target species
- Minimizing environmental effect of fishing operations in order to maintain ecosystem integrity, e.g., by opting for practices that reduce by-catch and habitat destruction
- Linking sustainable fishery management with marine and aquatic protected areas or limited-use zones in priority marine ecosystems.

Biodiversity-friendly practices in aquaculture are also meeting with increasing interest. In 2012, we witnessed the launch of the Aquaculture Stewardship Council (ASC), which promotes environmental sustainability and social responsibility in the sector. ASC criteria provide several examples of biodiversity-friendly practices, including:

- Conservation of natural habitat and biodiversity
- Conservation of water resources
- Conservation of species diversity and wild population through prevention of escapes
- Use of feed and other inputs that are sourced responsibly
- Good animal health (no unnecessary use of antibiotics and chemicals).

**Forestry**
Forestry is one of the several natural-resource-based industries with the potential to provide significant biodiversity benefits through sustainable management
practices. Sustainable management in forestry means that ‘forest-related activities should not damage the forest to the extent that its capacity to deliver products and services – such as timber, water and biodiversity conservation – is significantly reduced. Forest management should also aim to balance the need of different forest users so that its benefits and costs are shared equitably’ (International Tropical Timber Organization 2011). To achieve these objectives, sustainable forestry and associated low-impact logging practices are designed to minimise negative effects on forests and water bodies, protect important habitats, and preserve the different ecosystem services provided by forests. An important tool in sustainable forestry is the identification of High Conservation Value (HCV) areas and their strict management. Sustainable forestry schemes also include socio-economic standards on benefit sharing, empowerment, and poverty reduction.

Sustainability claims in the forestry sector are increasingly being validated by certification standards such as those of the Forestry Stewardship Council (FSC), the Program for the Endorsement of Forest Certification (PEFC) and the Sustainable Forest Initiative (SFI). Although the area of certified forest is growing worldwide, only 11 percent of the total area of certified forests is found in the southern hemisphere, and less than 2 percent of tropical forests is certified (UNECE/FAO 2011). Other approaches to sustainable forestry are also known in the South, however, such as Joint Forestry Management and Community Forestry – most common in South Asia – and community-owned forestry businesses – most widespread in Latin America (Molnar et al. 2004).

Non-timber forest products

NTFPs are any product other than timber that is produced by forests and wooded lands. They include fruits, nuts, medicinal plants, foliage, flowers, resins, honey, bamboo, rattans, game, and a host of other plants and animal species that are used for medicinal, cosmetics, gastronomic, or other purposes. Worldwide, NTFPs provide an important contribution to the subsistence and cash income of close to 1 billion people (Molnar et al. 2004).

The commercialisation of NTFPs has been promoted as a means of improving rural livelihoods while also contributing to conservation objectives. One of the important underlying assumptions herein is that increasing

Commercial reforestation

*Form, Ghana*

Form Ghana is a reforestation company established in Ghana in 2007. The company aims at large-scale reforestation of degraded forest reserves into well-managed forest reserves while conserving and restoring natural, riparian forest. They intend to contribute to the quality of life of people related to or affected by the company. Currently, Form Ghana has reforested over 4,000 ha in the degraded Asubima Forest Reserve in the Ashanti Region. The aim is to increase this to a total area of 20,000 ha by 2020. The main timber species is teak but at least 10 percent of the area is replanted with a variety of indigenous tree species. Form Ghana operates in compliance with the principles and criteria of the Forest Stewardship Council (FSC). These standards include flora and fauna monitoring and High Conservation Value analyses.

Bees at business

*Guiding Hope, Cameroon*

Guiding Hope is a Cameroonian enterprise in environmentally responsible, fairly-traded bee products, such as honey and bees’ wax. Enterprise activities are centered on organising and training beekeepers and linking their high-value apiculture products to equitable international markets. Production is certified organic and best beekeeping practices with minimal environmental impact are promoted. Other benefits for biodiversity are realised through forest protection, awareness-raising, and the replanting of hive material. Socio-economic benefits of the business – such as improved selling prices (up to 25 percent), a secure and diversified income, and empowerment – accrue to around 1,000 beekeeper households.
the value of NTFPs earned by local people offers an incentive for conserving the ecosystems that provide them. A potential negative effect of the commercialisation, however, is that increasing harvesting and management intensity could result in adverse biodiversity impacts (Belcher et al. 2005). A key element of sustainable NTFP management is therefore the development and enforcement of practical harvesting guidelines for NTFP collection that ensure resource maintenance. These guidelines can include sustainable harvest volumes as well as environmentally friendly harvesting techniques. Stimulating the regeneration of the valued species and its production is another practice to safeguard resource-extraction sustainability. In recent years, organisations such as the Union for Ethical BioTrade, FairWild Foundation, and FSC have developed standards and certification that promote and verify the sustainable harvest and trade of NTFPs, including requirements concerning biodiversity conservation (UNEP-WCMC 2011).

Certification of NTFPs faces several challenges, such as the wide array of products encompassed by the term ‘NTFP’, the complexity of supply chains, and their wide range of end use. Furthermore, the market-based approach to certification is expected to be of little relevance for the large amount of NTFPs that are consumed on a local basis. Research suggests that species with large, established markets are the best candidates for the market-based incentive of NTFP certification (Shanley et al. 2008).

Ecosystem services
In the introduction to this report, we saw how biodiversity underpins a variety of ecosystem services that are essential to humanity. In recent years, the business sector has come to recognise the economic importance and tangible benefits that are provided by these ecosystem services. The fact that these benefits have long gone without being either quantified or paid for – while their provisioning ecosystems declined – has stimulated the development of a correcting market-based mechanism: Payments for Ecosystem Services (PES). To date, PES schemes have mainly been established around three types of ecosystem services (FAO 2010; Ecosystem Marketplace 2012):

- Climate stabilisation through carbon sequestration and the protection of carbon storage in biomass (e.g., trees)
- Hydrological regulation concerning water quality and quantity, often including soil conservation measures for erosion control and to reduce risks of flooding and land slides
- Biodiversity conservation, mainly by compliance biodiversity-offset programs.

The vast majority of payment schemes for water and biodiversity operational today are compliance or government-mediated. The largest share of the carbon market, on the other hand, is voluntary and private-driven. The carbon market is currently growing at a much faster rate than the other ecosystem service markets (Ecosystem Marketplace 2012). Due to this relative prominence, the current study focuses particularly on the carbon market when considering payment schemes for ecosystem services.

Carbon markets reward the sequestration of carbon dioxide from the atmosphere into biomass. The ultimate goal is to reduce global greenhouse gas emissions, thereby mitigating climate change. The carbon-offset market is divided into a compliance-driven market, such as projects operating under the Clean Development Mechanism of the Kyoto Protocol or the European Union Greenhouse Gas Emissions Trading Scheme, and a voluntary market in which businesses offset their own emissions and contribute to internal emission reduction targets as part of their Corporate Social Responsibility (CSR) strategies. The worldwide volume of the carbon market continues to grow, largely due to voluntary carbon offsets, and reached an estimated value of contracted credits totalling US$178 million in 2010 (Diaz et al. 2011).

The reforestation activities as well as the conservation of forest and other ecosystems which form the base

Carbon financed reforestation and livelihoods
Araku Valley Livelihood Project, India

The Araku Valley Livelihoods Project is a carbon-financed social enterprise initiative of the Naandi Foundation and Livelihoods Fund. The project entails the reforestation of 6,000 hectares of degraded land with very low plant cover (more than 57 percent of the land is classified as barren). The horticultural plantations turn a low-carbon landscape into a high-carbon, multiple use landscape while improving food security and generating additional income for the small and marginalised communities of the Araku Valley of Andhra Pradesh, India. The additional trees in the landscape will enhance wildlife habit value and biodiversity. In addition, the soil water storage capacity will be enhanced and soil erosion will be reduced. Livelihoods Fund investors will benefit from the generated high social and ecological impact credits for their offset policies.
of carbon-offset credits provide many possibilities for biodiversity conservation. Examples are the reforestation of degraded habitats with the use of native species, and the prevention of deforestation in the tropics under the REDD+ mechanism (Reduced Emissions from Deforestation and Forest Degradation). An important step towards linking carbon standards with biodiversity performance indicators is made by the Climate, Community and Biodiversity Alliance (CCBA). The CCBA identifies land-based carbon mitigation projects that simultaneously provide climate, biodiversity, and sustainable-development benefits. There is a unique set of supplementary ‘co-benefit’ standards for project certification which, in isolation, do not lead to verification or issuance of carbon-offset credits. Carbon projects that seek verified offset credits must apply a separate carbon accounting standard such as VCS, CarbonFix, or Plan Vivo. Developments are promising, as in 2010 nearly 60 percent of the verified carbon-offset market applied the CCBA Standards (Diaz et al. 2011).
3. Approach

In order to answer the research questions, this study collected and analysed data from a total of 30 established biodiversity businesses operating in different sectors and countries in the South. The list of participating businesses is included in Annex 1.

Prior to data collection, a list of key performance indicators and possible determinants for success were selected from the literature and existing reporting frameworks to allow for the systematic assessment of the socioeconomic and biodiversity benefits generated by the enterprise, as well as to identify the main success factors and challenges. Selection criteria for the indicators included relevance, ease of interpretation for the enterprise, universality, quantification, and the ready availability of the requested information. The final selection of performance indicators is summarised in Table 1. The selection of determinant variables is included in Annex 2.

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<th>Table 1</th>
<th>Summarised selection of performance indicators used in this study, classified by category (socio-economic, biodiversity, financial)</th>
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<td>Category</td>
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<td>Socio-economic performance</td>
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<td>Biodiversity conservation performance</td>
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<td>Threat Reduction Assessment Index$^1$ (TRA Index)</td>
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<td>Financial performance$^1$</td>
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<td>Profitability</td>
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1. Financial performance is solely included to check for possible correlation with determinant variables, no results on enterprise financial performance are presented in this report. The same holds for the TRA Index.
2. In case of cooperatives and other producer organisations.
3. In case of ecosystem service providers.
For each of the 30 participating enterprises, indicator information was collected by means of a structured online survey and subsequent interviews with enterprise representatives. Available enterprise documentation was a complementary source of information. The survey and interview included open questions on performance and success factors to allow for qualitative analysis, as well. Since the research relies for a substantial part of its information on self-reporting by the enterprises, a certain bias is to be expected. Nevertheless, due to the great lack and variety of available enterprise performance documentation, self-reporting was regarded as the most viable way to assess performance with a standardised set of indicators in a relative short time. Furthermore, a comparison with the performance of conventional business was outside the scope of this study; the focus of research was to assess whether and how biodiversity businesses are able to reconcile biodiversity and socioeconomic benefits, and what factors contribute to their success.

The first step in the data analyses was the descriptive presentation of both quantitative and qualitative data of enterprise performance on socio-economic benefits and biodiversity conservation as well as the main success factors for and challenges to biodiversity business. Secondly, the totality of information gathered on performance indicators was aggregated into a single index per domain (socio-economic, biodiversity and financial) through a process of expert ranking. This allowed statistical testing of the relation between determinant variables (possible success factors) gathered in the survey with socio-economic benefits, biodiversity conservation, and financial performance of biodiversity business. Finally, the research outcomes were translated into practical lessons learned on biodiversity business performance and its specific enabling conditions. The research results also led to recommendations with the ultimate purpose of promoting the development of biodiversity businesses and markets.
4. Socio-economic benefits

4.1 Beneficiaries

Direct beneficiaries
When monitoring the socioeconomic benefits of an enterprise, one of the first questions is to whom these benefits accrue. In this study, direct beneficiaries of a biodiversity business comprise its permanent employees, smallholder cooperative members (in the case of cooperatives), and ecosystem service providers (in the case of payment schemes for ecosystem services). The range in number of direct beneficiaries of the interviewed biodiversity businesses is shown in Figure 1. This shows that the number of direct beneficiaries varies widely among enterprises. On average, the companies in this research involve 1,718 employees, smallholder cooperative members, or service providers, with minimum and maximum values ranging between 19 and 11,316. The reach of socio-economic benefits provided by each enterprise is expected to vary accordingly.

Figure 1
Range in number of direct beneficiaries

The range in direct beneficiaries of biodiversity businesses involved in this study in logarithmic categories. The mean number of direct beneficiaries per enterprise is 1,718. Minimum and maximum values range from 19 to 11,316 direct beneficiaries.

Female beneficiaries: Gender equality
Gender equality within each of the biodiversity businesses is measured as the percentage of female direct beneficiaries. Mean gender equality is 33 percent; on average, one third of the direct beneficiaries of biodiversity businesses is female. Gender equality varies greatly among different enterprises, however. The study sample includes both enterprises without a single female beneficiary (0 percent) and enterprises with only female beneficiaries (100 percent).

Participants rated the existence and degree of promotion of a women-empowerment strategy within their enterprise on a 5-point scale (none/very low – very high). On average, enterprises report a high degree of promotion of women empowerment. Statistical testing revealed that gender equality within the enterprises is not significantly related to this reported degree of promotion, however.\(^1\)

Indirect beneficiaries
Besides employees, cooperative members and ecosystem service providers, there are other groups of people benefitting from biodiversity business in a more indirect manner. Examples of indirect beneficiaries are family members of the direct beneficiaries, community members who enjoy additional services provided by the business (e.g., education, health care, and drinking water access), or persons involved in product transportation, transformation, or the supply of material other than the primary raw material/service. Only 20 percent of participants reported the number of indirect beneficiaries of their business. The type of indirect beneficiaries reported varied greatly among enterprises, and included family members, beneficiaries of specific social programs, non-member farmers, and other organisations.

\(^1\) \(H (3) = 5.59, p < .05. (\text{Asymp. Sig.}=0.133)\).
4.2 INCOME

Income contribution
This study captures the economic dimension of socio-economic benefits of biodiversity business by the income they provide to their direct beneficiaries. Enterprises expressed the provided income to their direct beneficiaries as a percentage of the total household income of direct beneficiaries: the contribution to total household income. This measure represents the relative importance of the provided income to direct beneficiaries and enables a comparison between enterprises operating in different currencies and contexts.

On average, the contribution to direct beneficiaries’ total household income amounted 62.5 percent. Figure 2 compares the mean contribution to total household income per sector. The graph demonstrates clear differences between the sectors. Direct beneficiaries of enterprises in agriculture, forestry, and fisheries depend for the largest share of their household income upon the particular enterprises. Income provided by enterprises in the ecosystem services and NTFP sectors are rather an additional source of household income to direct beneficiaries; their contributions to total household income amount to 50 percent and 32 percent, respectively. Please note that these results need to be interpreted with care due to the relatively low sample numbers, especially in the fisheries/aquaculture and ecosystem services sectors.

Income improvement
All biodiversity businesses indicate an improvement in the average household income of their direct beneficiaries due to the enterprise establishment. Fewer than half of the enterprises (45 percent) are able to support their statements with quantitative data. Those that do report on income-related indicators, report quantified increases in yield levels, premiums, and absolute wage and income levels.

Multiple causes of income improvement were reported. Table 2 shows the variety in causes of income improvement as well as the percentage of total enterprises that mentioned each cause.

### Table 2

<table>
<thead>
<tr>
<th>Cause of income improvement</th>
<th>Reporting frequency (% of total enterprises)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher price per product</td>
<td>63%</td>
</tr>
<tr>
<td>➞ Premium</td>
<td>56%</td>
</tr>
<tr>
<td>➞ Shorter/organised value chains</td>
<td>15%</td>
</tr>
<tr>
<td>➞ Marketing improvement</td>
<td>11%</td>
</tr>
<tr>
<td>➞ Quality improvement</td>
<td>7%</td>
</tr>
<tr>
<td>➞ Lower input costs</td>
<td>7%</td>
</tr>
<tr>
<td>➞ Value addition</td>
<td>4%</td>
</tr>
<tr>
<td>Additional/new income</td>
<td>48%</td>
</tr>
<tr>
<td>Higher productivity</td>
<td>26%</td>
</tr>
<tr>
<td>Higher wage</td>
<td>7%</td>
</tr>
</tbody>
</table>

The higher price received by enterprises for their biodiversity-friendly product is the most frequently reported cause of income improvement channelled back to direct beneficiaries. The higher price per product is most commonly mentioned as an effect of the premium paid for sustainable produce and can thus be regarded as a ‘green premium’. According to participating enterprises, circumvention of middle-men, improved producer organisation and bargaining power, and direct access to (inter)national markets also explain a higher price per product, since they result in shorter and better-organised value chains. A smaller percentage of enterprises mentioned their improvements in marketing, product quality, and value addition as important factors for gaining access to more lucrative high-quality markets with corresponding higher prices per product.

Almost half of all biodiversity businesses improve the income of their direct beneficiaries by providing additional or new income sources. This is the case for many enterprises in the NTFP or ecosystem service sectors that create and provide access to new markets that do not compete with the traditional sources of income. Product diversification within agricultural systems is also mentioned in this regard.

A quarter of all enterprises report higher earnings for their beneficiaries from increased productivity. This concerns agricultural cooperatives that, through technical and organisational assistance, increase the yield per unit of land by cooperative members. The respective enterprises...
indicated that these higher yields resulted in improved earnings for smallholder cooperative members.

A few enterprises (7 percent) indicated a wage rise – either over time or compared to conventional business – for their employees.

4.3 NON-CASH BENEFITS

The non-cash benefits reported by this study cover the human and political dimensions of socio-economic effects of biodiversity-friendly enterprise. Enterprises indicated and described the type of direct non-cash benefits they provide to their direct beneficiaries and to the local community.

All participating enterprises provided at least one kind of non-cash benefit to their direct beneficiaries and the local community. Figure 3 shows the main types of non-cash benefits reported as well as the percentage of total enterprises that provide the particular benefit.

Figure 3
Enterprises providing non-cash benefits to direct beneficiaries and/or local community

The different types of non-cash benefits that biodiversity businesses deliver to their direct beneficiaries and/or the local community. The amount of enterprises contributing to each type of non-cash benefit is indicated in percentages of the total sample

Organisational and technical support to employees, cooperative members, and services providers is by far the most frequently reported service offered by biodiversity businesses (83 percent of all enterprises). Examples of technical support are training in sustainable agricultural practices, harvesting practices, and processing techniques to increase quality, productivity, and environmental management. Organisational support involves training in business management and administration, accounting, leadership, and organisation, often with the explicit goal of improving stakeholder involvement, self-governance, and institutional development.

Health care services are provided by almost half of the interviewed enterprises. These services range from setting up health care clinics and medical dispensaries, to free provision of – or substantial contribution to – medical care. Health campaigns on issues such as sexually transmitted diseases and sanitation also belong to this category.

Educational services and drinking water facilities are both provided by approximately 40 percent of all enterprises. Concerning education, enterprises contribute, inter alia, by building schools, funding scholarships and student fees, paying teachers, and providing school materials. Drinking water facilities include boreholes, wells, water tanks, and other clean-water delivery systems that are provided or financed by enterprises for use by the local community.
A smaller percentage – 29 percent of biodiversity businesses – actively promote control of natural resources by local stakeholders and communities. Some of these enterprises obtain land rights for the local community by supporting land adjudication and legalisation procedures; other companies support the formalisation of NTFP-user rights for local communities.

Enterprises promoting food security do so by creating intercropping schemes to safeguard the cultivation of food crops in combination with (non-edible) cash crops and timber.
This study assesses the biodiversity benefits generated by biodiversity businesses through the descriptions and metrics that enterprises provide concerning their biodiversity conservation strategies. Biodiversity conservation strategies are divided into four main categories, partly following the CBD definition: those related to habitat, species, or genetic resources; and indirect strategies. The habitat (or ecosystem) strategies include actions directly affecting natural habitat or habitat features in the operating area of the enterprise. Species strategies involve actions that target particular wild animal and plant species populations as well as species diversity. The strategies related to genetic resources aim to safeguard genetic variety within a certain species, either wild or domesticated. Indirect strategies consist of all other environmental measures that do not directly target biodiversity as such, but are expected to benefit biodiversity indirectly.

Figure 4 shows the percentage of enterprises applying different strategies. From this figure we can deduce that indirect strategies for biodiversity conservation are most commonly used by enterprises, followed by strategies directed to habitat and habitat features. Strategies that specifically target certain species or species diversity are less frequent; in total 60 percent of all enterprises apply species-related actions. The number of enterprises focusing explicitly on the conservation of genetic diversity is particularly low.

The descriptions of tangible examples of biodiversity conservation strategies provide valuable insights into the possible actions for different types of strategies. Furthermore, the metrics used by particular enterprises to report on specific conservation actions can serve as a source of inspiration to other enterprises and organisations that wish to monitor their conservation efforts. Table 3 provides examples of biodiversity conservation actions and metrics resulting from the survey.

Most enterprises use multiple actions belonging to different strategies to protect biodiversity at their operating sites and the land used for the production of raw materials (see the Box ‘Biodiversity conservation: strategy diversity’ for illustrations).

When rating the type and number of actions used by enterprises, significant differences in the performance are found between – as well as within – the different sectors. On average, the agricultural sector scores significantly lower on biodiversity conservation performance when compared to the fisheries, forestry, NTFP, and ecosystem services sectors. This is not surprising, as the sustainable production and management systems of the latter sectors more closely resemble natural ecosystems and would thus allow for a higher degree of biodiversity conservation.

Figure 4

Enterprise strategies used for biodiversity conservation

The different types of biodiversity conservation strategies used by biodiversity business. Per strategy, the percentage of total enterprises that apply is indicated.
<table>
<thead>
<tr>
<th>Strategy type</th>
<th>Example of actions</th>
<th>Examples of metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HABITAT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habitat conservation</td>
<td>Direct conservation of natural habitat</td>
<td>- # ha of natural habitat protected</td>
</tr>
<tr>
<td></td>
<td>Habitat set-asides</td>
<td>- # ha or relative percentage of buffer zones (agriculture/forestry) or no-take areas (NTFP/fisheries)</td>
</tr>
<tr>
<td>Restoration of habitat and habitat features</td>
<td>Reforestation (to natural habitat)</td>
<td>- # ha reforested</td>
</tr>
<tr>
<td></td>
<td>Replanting trees (for shade provision, living fence or resource use)</td>
<td>- # trees per ha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- # trees</td>
</tr>
<tr>
<td>Habitat management</td>
<td>Policies on land conversion</td>
<td>- Non-expansion policies into HCVA or natural habitat</td>
</tr>
<tr>
<td></td>
<td>Control of illegal hunting and fishing</td>
<td>- # interventions in illegal practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Patrolling efforts</td>
</tr>
<tr>
<td></td>
<td>Natural habitat under sustainable management</td>
<td>- # ha with sustainable management plans implemented</td>
</tr>
<tr>
<td><strong>SPECIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species Management</td>
<td>Sustainable harvest plans (concerning seeds, fruits, timber, fish, honey, etc.)</td>
<td>- Harvest quota (e.g., 60% of available fruits)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Fishing quota (Catch per Unit of Effort)</td>
</tr>
<tr>
<td></td>
<td>Minimum requirements for diversity of shade tree species on plantation</td>
<td>- ≥ 10 woody species in addition to main ‘backbone’ shade tree species</td>
</tr>
<tr>
<td></td>
<td>Monitor flora and fauna</td>
<td>- Abundance of certain (e.g., Red List) species</td>
</tr>
<tr>
<td>Control of invasive species</td>
<td>Actively removing invasive species</td>
<td>- # ha cleared of invasive species</td>
</tr>
<tr>
<td></td>
<td>Exclusive use of native species</td>
<td>- Ban on introduction and use of exotic species</td>
</tr>
<tr>
<td>Species recovery &amp; reintroduction</td>
<td>Actively restoring threatened species on operating site (e.g., Red List tree and animal species)</td>
<td>- # individuals of threatened species restored/reintroduced</td>
</tr>
<tr>
<td><strong>GENETIC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safeguard genetic diversity</td>
<td>Recovering and reintroducing local crop varieties</td>
<td>- # local crop varieties (re)introduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ban on non-local crop varieties or GMOs</td>
</tr>
<tr>
<td><strong>INDIRECT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of pollution</td>
<td>No or restricted use of agrochemicals</td>
<td>- # ha without use of agrochemicals or under Integrated Crop and Pest Management</td>
</tr>
<tr>
<td></td>
<td>Solid waste management</td>
<td>- List of banned agrochemicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Implemented solid waste management plans</td>
</tr>
<tr>
<td>Soil conservation</td>
<td>Terracing, mulching, mixed cropping and other soil conserving practices</td>
<td>- # ha with improved soil management</td>
</tr>
<tr>
<td></td>
<td>Reforesting water borders</td>
<td>- Reforested buffer distance to waterways</td>
</tr>
<tr>
<td>Awareness raising</td>
<td>Training or education in sustainable management and biodiversity conservation</td>
<td>- # people receiving training or education</td>
</tr>
<tr>
<td>Linked enterprise &amp; livelihood alternatives</td>
<td>Income generation from natural habitat as incentive for conservation</td>
<td>- # people involved in linked enterprise activities</td>
</tr>
<tr>
<td></td>
<td>Job generation as alternative to biodiversity-harming livelihoods</td>
<td>- # jobs created for local community</td>
</tr>
</tbody>
</table>
Wildlife Works, Kenya
Strategy types: habitat protection, restoration, and management; species management; awareness raising; linked enterprise and livelihood alternatives

Through the sale of carbon offset credits for REDD (Reduced Emissions from Deforestation and Degradation) and eco-friendly apparel, Wildlife Works is able directly to protect 200,000 hectares of dryland forest in southeastern Kenya, which forms a corridor between two National Parks, Tsavo East and Tsavo West. The jobs they generate now provide forest- and wildlife-friendly alternatives to the local community, thereby reducing the pressures on biodiversity from wildlife hunting and deforestation. Rangers and patrol groups physically protect and monitor wildlife and the protected ecosystem. Furthermore, Wildlife Works invests in agricultural intensification, reforestation projects, and educational projects further to reduce forest conversion and damage to wildlife.

Cauqueva, Argentina
Strategy types: safeguard genetic diversity; reduction of pollution; awareness raising

The Cauqueva cooperative, based in the Jujuy Province of Argentina, consists of 109 smallholder farmers who cultivate local Andean crops. To reintroduce and preserve the region’s rich genetic resources, the cooperative actively identifies and multiplies local crop varieties, distributes their seeds to its member farmers, and incorporates them into commercial channels. So far, Cauqueva has done this with 54 varieties of Andean potato, 6 varieties of oca, 4 Ulluco varieties, 80 varieties of corn and 47 of common bean. Moreover, Cauqueva provides its farmers with training and technical assistance in support of their sustainable ancestral agricultural practices with reduced agrochemical use. Marketing efforts, a museum and a small restaurant run by the cooperative help to communicate on the way of life of the indigenous farmers and the traditional crops.

Swazi Indigenous Products, Swaziland
Strategy types: species management; habitat restoration; linked enterprise; awareness raising

Swazi Indigenous Products (SIP) is a community-owned company in Mpaka, Swaziland, that produces natural cosmetic products based on indigenous plant seeds, mainly marula and trichilia. Tree seeds are harvested from indigenous forest and bush veld, communal grazing lands, fields, and homesteads by over 2,400 rural women. The income derived from seed collection provides a direct incentive for the preservation of the trees. To preserve the natural resources on which rural households depend, SIP addresses sustainable harvesting volumes and methods for the respective tree species, enrichment tree planting, and environmental training programs.
Within the agricultural sector there is also a wide range in biodiversity conservation performance between enterprises. Commodities such as shade-grown coffee or cocoa can be put on a par with enterprises from other sectors, due to a higher similarity of the associated agroforestry systems to natural habitats in comparison with agricultural management systems. In addition, many shade-grown coffee or cocoa producers stimulate biodiversity via other actions as well (e.g., expansion policies, shade tree species diversity requirements, no or reduced pesticide use, awareness raising). Most other agricultural commodities simply cannot be cultivated in combination with a high density of natural habitat or habitat features (such as trees) due to the disproportionate losses in crop yields this would imply. Still, some participating producers of such commodities showed a relatively high biodiversity performance, for example by actively promoting the preservation of genetic variety of crops, natural buffer zones, reduction of or ban on agrochemical use, and soil conservation. The lowest-scoring enterprises are the organic farming initiatives that restrict themselves to indirect biodiversity measures alone, such as reduction of pollution, soil conservation, and training in organic principles. Although these comparisons within and across the different biodiversity-business sectors reveal interesting insights, the comparison across sectors in particular has obvious limitations due to the different natures of the businesses involved.
6. Key success factors and challenges

6.1 SUCCESS FACTORS

The most frequently reported success factors for biodiversity businesses in the South are presented in Table 4. The success factors are grouped by themes and set in order of the frequency at which they were mentioned by different enterprises.

Smallholders & local community
The vast majority of biodiversity businesses underline the importance of capacity building for their success. Enterprises use technical and organisational support and training to professionalise both their own businesses as well as those of related smallholders and smallholder organisations. Technical assistance is provided to smallholders in order to boost productivity and improve product quality and processing as well as to live up to certification criteria, all positively affecting financial returns and related income improvements (see ‘Socio-economic benefits’). Organisational support mostly involves training in business and management skills, (financial) administration, and organisation. Results of the current study support the importance of such business and organisation skills in achieving financial and socio-economic success: a positive relation is found between the expertise in business planning, business management, and market analysis and the financial and socio-economic performance of biodiversity businesses.

Local community involvement in enterprise management and ownership is frequently mentioned as another important success factor of biodiversity businesses in related literature (Salafsky et al. 2001; Borges 2009; EcoEnterprises Fund 2010; Fauna & Flora International 2010; Elliott & Sumba 2011; Evans et al. 2011; Hargreaves-Allen et al. 2011). The survey outcomes support this notion, since the commitment, trust, and goodwill of smallholders and the local community is one of the most frequently mentioned success factors. Enterprises indicate to create commitment and trust by engaging smallholders and the local community in day-to-day enterprise decision-making and by providing tangible benefits. Examples are democratic control by or participation of smallholder members in...
a cooperative’s management board or an enterprise’s support of community education and health programs. The study’s quantitative results confirm the perception of an on-average high degree of local ownership and management of biodiversity business. Interestingly enough, however, quantitative analysis also indicates that very high levels of local ownership and management are negatively related to business planning and management quality and hence to socio-economic and financial performance of an enterprise. This suggests that a challenge exists in maintaining a proper balance between local community and smallholder engagement and a sufficient level of business and management skills at the core of enterprise decision-making. It requires well-considered management to let both factors go hand in hand instead of at the expense of one another.

Market
Several market factors are reported by biodiversity businesses as key to their success. Obtaining and securing access to international markets is most frequently mentioned in this context. A number of enterprises indicated that they achieved this by obtaining their own export licenses, granting them direct access to international markets and higher prices. Others saw their access to markets secured through strategic alliances with and long-term commitments by buyers. The ever-growing market demand for high-value biodiversity-friendly products is mentioned as another positive factor. These qualitative findings for market factors are in line with the quantitative analysis of the study: a positive relation is found between the level of integration in the global market and the financial and socio-economic performance of a biodiversity business. The importance of market integration corresponds with other studies’ findings (Tekelenburg et al. 2009; Fauna & Flora International 2010).

Product
A quarter of all enterprises stressed the importance of delivering high-quality products and services. High quality is realised by, for example, the definition of quality standards, improvements in processing techniques, or investing in technical training. Technological innovations and developments are also applied in this context. By increasing product quality, enterprises gain access to high-value markets with higher returns. Several enterprises indicate further increasing their success in these high-value markets by investing in and improving their marketing and branding. Their advice: position the product as a premium and sustainable brand and use its uniqueness and biodiversity-friendliness as unique selling points. The favourable effect of marketing also follows from the quantitative analysis, which found a significant positive correlation between the marketing quality and the financial performance of biodiversity businesses.

Partnerships
Partnerships and alliances are the rule rather than the exception when it comes to biodiversity business. Table 5 shows the high percentages of all surveyed biodiversity businesses that have some form of established partnership or cooperation with NGOs, community organisations, other private sector parties, and government institutions. The biodiversity businesses value their partners mostly for the business and management skills and advice they provide. The assistance that partner organisations provide in establishing market links is also mentioned as a factor of success.

Institutions
Favourable policies on the use of natural resources and access to land can be of crucial importance to biodiversity businesses. Examples arising from the survey are supportive regulatory frameworks on the use of NTFPs in protected areas, clear land-tenure legislation at the national level, and ensured access to land for both the enterprise and local community. An interesting outcome of the quantitative analysis is that a positive correlation exists between the enterprise’s access to natural resources and its biodiversity conservation performance. This suggests that enterprises with secured access to land or the natural resources they depend upon are able to deliver more biodiversity conservation benefits. A positive relation also exists between a favourable nature policy context and the biodiversity conservation performance of an enterprise. A small number of enterprises mentioned the establishment and maintenance of good working relations with local authorities as a success factor, mainly because these enable them to achieve the necessary institutional support to develop certain enterprise activities.

Finance
Quantitative research results reveal that increasing access to finance is related to improved financial performance among biodiversity businesses. The number of biodiversity businesses with sufficient access to finance is limited, however, as shown in Table 4 by the small number that list finance under their success factors. Those with access are enterprises that obtained the necessary equity and (low-interest) debt financing at a scale large enough to carry out investment plans or to provide pre-financing loans to suppliers. Success stories include investments from impact-investment funds and upfront financing on a large scale through carbon funding. Some success factors in accessing low-interest loans from banks include guarantees from Northern trading partners and improvements in financial

Table 5
Partnerships and cooperation in biodiversity business in the South

<table>
<thead>
<tr>
<th>Type of partner organisation</th>
<th>Reporting rate (% of total enterprises)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGOs</td>
<td>79%</td>
</tr>
<tr>
<td>Community institutions/ organisations</td>
<td>72%</td>
</tr>
<tr>
<td>Other private sector parties</td>
<td>66%</td>
</tr>
<tr>
<td>Government &amp; government agencies</td>
<td>62%</td>
</tr>
</tbody>
</table>
management and accounting as a result of capacity-building efforts.

Altogether, reading the summarised success factors in Table 4, it is important to note that these determinants of success are not necessarily exclusive to biodiversity business. Several of the mentioned key factors could – to a greater or lesser degree – apply to the success of conventional smallholder business in the South, as well. One can nevertheless consider certain success factors from Table 4 specific to biodiversity business alone. The most obvious is probably the growing biodiversity-friendly market, which offers enterprises the prospect of growing future demand for their products. Access to international markets, where the demands for responsible produce are highest, therefore becomes an important factor of success in many cases. Furthermore, quality improvement and the positioning of the end product as ‘sustainable’ or ‘premium quality’ – for example by certification and marketing efforts – are mentioned as factors that improve the success of biodiversity-friendly produce on high-quality markets. Higher prices for the product, either because of ‘green’ premiums or higher quality, are the result. Capacity building remains a crucial factor, in particular with regard to environmental- and biodiversity-friendly management methods at the smallholder level, combined with sensitisation to the biodiversity conservation agenda. Partnerships that can complement the lack of skills or know-how on the abovementioned issues can prove to be very valuable. Finally, concerning access to finance, there are growing opportunities for biodiversity businesses to procure investments from impact-investment funds directed specifically to green SMEs as well as the ecosystem services (carbon) market.

### 6.2 CHALLENGES

Besides the key success factors, the study also mapped the main challenges experienced by Southern biodiversity businesses. The most frequently reported challenges are grouped and ordered in Table 6. The table can be considered complementary to the list of success factors; some issues are new, others are reoccurring and may therefore confirm success factors mentioned earlier.

#### Access to finance

Whereas access to finance is a factor of success to some companies, more than 60 percent of biodiversity businesses report it as a central challenge for their business. Many companies, especially cooperatives, mention that their limited access to finance leads to reduced working capital and the inability to provide their smallholder suppliers with upfront payments, thereby threatening supply security. The finance issue also results in a lack of investment possibilities for many companies, preventing further improvement in productivity and up-scaling of business activities. A frequently mentioned cause of limited access to finance, especially among smaller cooperatives and enterprises, is the inability to provide the collateral and guarantees requested by financial institutions. Several participants suggested that international (Northern) buyers and traders could provide a solution by committing either to purchase contracts or to trade funds that enable upfront payments. Several biodiversity businesses experience reluctance to such commitments from their buyers, however. Strikingly, this is also noted by cooperatives operating under Fairtrade schemes. According to one of the Southern cooperatives, the problem is that ‘although the Fairtrade scheme promotes pre-financing schemes, it does not include regulations on the terms under which this should happen’. Limited access to debt and equity finance could be an explanation for the fact that biodiversity businesses rely to a large extent on own capital and grants to develop their enterprise. This fact is further illustrated by Table 7, which shows the average degree to which Southern biodiversity businesses depend on different sources of finance. On average, more than 60 percent of total financial needs are covered by own capital and grants (more than 30 percent each). Not only does this figure demonstrate the challenge in accessing debt and equity finance, it also underlines the relatively high dependency on grants and soft loans for the development of this business type so far.

#### Table 6

<table>
<thead>
<tr>
<th>Main challenges to biodiversity-friendly smallholder business in the South, and the number of times these factors were mentioned (#)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to finance</strong></td>
</tr>
<tr>
<td>• Limited working capital, investment possibilities and up-scaling (13)</td>
</tr>
<tr>
<td>• Requested collateral (8)</td>
</tr>
<tr>
<td>• Limited buyer commitment (3)</td>
</tr>
<tr>
<td><strong>Institutional barriers</strong></td>
</tr>
<tr>
<td>• Lacking or counteracting regulatory framework (9)</td>
</tr>
<tr>
<td>• Poor governance (7)</td>
</tr>
<tr>
<td><strong>Production</strong></td>
</tr>
<tr>
<td>• High production costs (capacity building, certification, and relatively low outputs) (10)</td>
</tr>
<tr>
<td>• Fierce competition with conventional producers/traders (6)</td>
</tr>
<tr>
<td>• Limitations of niche markets (2)</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
</tr>
<tr>
<td>• Non-reliable services and infrastructure (4)</td>
</tr>
<tr>
<td>• Remoteness from main markets (2)</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
</tr>
<tr>
<td>• Need for new technology and product innovations (3)</td>
</tr>
<tr>
<td>• Need for ecological and social monitoring (2)</td>
</tr>
</tbody>
</table>
Institutional barriers
Nearly half of the interviewed enterprises experienced institutional barriers, often in the form of lacking or counteracting regulatory frameworks. Examples of regulatory issues in the home country include the non-existence of quality and export standards for NTFPs and lengthy procedures for approval of organic agricultural inputs. Foreign or international barriers exist, for example, in the form of protective measures in Northern markets, such as stringent import requirements or the European Novel Food Regulation, and the UN forest definition that excludes most African dryland forest from applying for REDD+.

Table 7
Sources of finance for biodiversity business in the South

<table>
<thead>
<tr>
<th>Finance source</th>
<th>Average share in total financial capital (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner/Founder</td>
<td>34.00%</td>
</tr>
<tr>
<td>Grants</td>
<td>31.30%</td>
</tr>
<tr>
<td>Equity</td>
<td>12.40%</td>
</tr>
<tr>
<td>Debt</td>
<td>19.30%</td>
</tr>
<tr>
<td>Other</td>
<td>3.00%</td>
</tr>
</tbody>
</table>

Poor governance by local and national institutions is another obstacle. Several enterprises indicate being hindered by a climate of slow business development as a result of an unstable economy and politics in their countries of operation. Corruption is also mentioned. The absence of a strong and coherent political will to support new developments and products in organic agriculture or REDD+ is another cause of frustration.

Production
Improvements in product quality, socio-economic and environmental performance often result in higher production costs for biodiversity businesses. Numerous enterprises indicated being challenged by the high costs involved in capacity building and certification procedures. A positive note is that many of them can count on contributions and support from partner organisations in this respect. Furthermore, enterprises indicated they faced lower outputs from their biodiversity-friendly operations compared to conventional practice. Although the relatively higher production costs and – in some case – lower yields are usually overcome by higher prices received for their products, it makes competition with (cheaper) conventional producers and traders fiercer as well as ‘unfair’ in the eyes of some biodiversity businesses. Harmful subsidies for, among other things, chemical pesticides also add to this problem, according to some of the interviewed enterprises.

Concerning certification, an interesting observation is that the majority of enterprises considered in this research operate under at least one kind of sustainable label (e.g., Organic, UTZ, Rainforest Alliance, Bird Friendly, Fairtrade). The only exception is the NTFP sector, where the majority of enterprises mention the absence of relevant labels for their products or the insufficient added value of certification compared to the high costs.

Infrastructure, innovation and monitoring
Challenges concerning infrastructure, innovation, and monitoring are mentioned by a small minority of companies. Non-reliable electricity supply frustrates automated processing, while poor infrastructure and remote locations increase transportation costs for some enterprises. Slow development of technologies, such as organic pesticides and complex carbon inventories, are also preventing more rapid development in certain biodiversity-business sectors.

Two companies mentioned the difficulties they experience in setting up ecological and social monitoring, particularly the establishment of baselines. The importance of monitoring is underlined by the quantitative results of this study, which shows a weak positive relation between the efforts and quality of ecological monitoring by enterprises and their eventual performance in terms of biodiversity conservation.
7. Conclusions and recommendations

7.1 CONCLUSIONS

This study systematically assessed the performance of established smallholder biodiversity businesses in the South in terms of socio-economic benefits and biodiversity conservation, as well as their main success factors. The objective was to demonstrate whether the goals of local development and biodiversity conservation can be reconciled and which factors are important in that regard. Because a comparison with conventional enterprises is outside the scope of this study, the conclusions and recommendations concern biodiversity business, but could partly apply to conventional business as well.

The research findings demonstrate that biodiversity business in the South can provide substantial socio-economic benefits to direct beneficiaries and local communities, while contributing to biodiversity conservation. Furthermore, the results show an interdependency of biodiversity conservation efforts, socio-economic improvements, and the financial performance of biodiversity businesses. In summary, the assessment of socio-economic and biodiversity benefits of investigated biodiversity businesses resulted in the following:

- Biodiversity businesses provide an increase of income to their direct beneficiaries, mainly as a result of the premium received for biodiversity-friendly produce and – to a smaller extent – by offering additional income, higher wages, and increased productivity.
- The contribution of biodiversity business to the total household income of direct beneficiaries varies significantly among different sectors. On average, income contribution equals 63 percent of total household income.
- The reach of economic benefits of biodiversity business varies widely, as reflected by the differences in total numbers of direct beneficiaries per enterprise. Women constitute, on average, 33 percent of all direct beneficiaries.
- All biodiversity businesses provide one or more non-cash benefit to their direct beneficiaries or the local community, ranging from improved access to education, health care, drinking water, and natural resources, to the provision of organisational or technical assistance and food security.
- From the perspective of biodiversity, enterprises display a wide array of strategies and actions that promote biodiversity conservation. Indirect actions such as reducing pollution and raising awareness are most common, but businesses also engage in a range of actions that directly benefit genetic and species diversity as well as natural habitats and habitat features.
- The variety of conservation actions complicates the systematic comparison of biodiversity conservation performance among enterprises, even though metrics on actions are often provided.

The main success factors and challenges reported by biodiversity business in the South are summarised in tables 4 and 6 in chapter 6.

7.2 RECOMMENDATIONS

The findings on key success factors and challenges, together with the main conclusions concerning socio-economic benefits and biodiversity conservation, lead to the following recommendations for policymakers, NGOs, financial institutions, the business sector, and others engaged in the further development and promotion of smallholder biodiversity business in the South:

Finance
The study identified access to finance as one of the main challenges to biodiversity business in the South. Recommendations therefore include:

- Increase investments and create eco-investment funds with a focus on SMEs in order to increase their support for biodiversity-friendly enterprise in the South.
Examples of such impact-investment funds are Verde Ventures, EcoEnterprises Fund and Root Capital.

- Support on-going business development services to biodiversity businesses, with a particular focus on financial accounting and management.
- Explore and promote the leverage of the carbon and water markets as additional sources of finance. There is potential for bundled payments that secure a combination of carbon, water, and biodiversity services, as well as for the incorporation of payments for ecosystem services into the price of certified agricultural produce or timber.
- Address the role and responsibility of international buyers and traders of biodiversity-friendly products in the provision of value-chain finance to, guarantees for, and purchase agreements with Southern biodiversity SMEs.

**Capacity building & Partnerships**

- Continue building both organisational and technical capacity among biodiversity businesses.
- Stimulate the establishment of partnerships between biodiversity businesses and other businesses, NGOs, local community institutions, and governments. Partnerships offer valuable business and management skills, market links, and technical innovation to biodiversity businesses.
- Balance the engagement of local communities in enterprise management and ownership with high-level business and management skills at the core of enterprise decision-making.

**Enabling environment**

- Address regulatory and policy barriers such as absence of quality standards, and export and import barriers for biodiversity business; remove harmful subsidies and transform these into incentives for biodiversity business.
- Support the development of policies that improve and secure access to land and natural resources for biodiversity-friendly SMEs and local communities.
- Develop coherent national and international policies in support of new biodiversity-friendly markets and opportunities.

**Integrated monitoring of business performance**

- Stimulate the adoption of integrated and more standardised monitoring of biodiversity business performance in the domains of finance, socio-economic effects, and biodiversity conservation. Concerning biodiversity, mainstreaming natural capital accounting should help businesses along the entire value chain to demonstrate and work towards ‘no-net-loss’.
- Aim for practical and cost-effective monitoring and evaluation methodologies, along with a set of agreed, validated indicators and metrics. From the perspective of biodiversity, a practical solution might be a combination of action indicators as used in the current study, and simple and accessible impact approaches focusing on reducing threats to species and habitat.
References


RSPB (2009). *Handbook for developing and implementing pro-biodiversity projects – an output from the EC biodiversity technical assistance unit project, Sandy, UK.*


## Annex 1. List of participating enterprises

<table>
<thead>
<tr>
<th>Company/organisation</th>
<th>Country</th>
<th>Sector</th>
<th>Main Product/Service</th>
<th>Contact</th>
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<tr>
<td>Asociación de Productores Orgánicos de Dulce (ASOPROODULCE)</td>
<td>Costa Rica</td>
<td>Agriculture</td>
<td>Organic sugar and panela</td>
<td>María Elena Hernández <a href="mailto:gerencia@asoproodulce.org">gerencia@asoproodulce.org</a></td>
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<tr>
<td>Asociación de Productores Orgánicos de Alfaro Ruiz (APODAR)</td>
<td>Costa Rica</td>
<td>Agriculture</td>
<td>Organic horticulture</td>
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<td>Araku Livelihood Project (Naandi &amp; Livelihoods Fund)</td>
<td>India</td>
<td>Ecosystem Services/Agroforestry</td>
<td>Carbon credits from reforestation</td>
<td>David Hogg <a href="mailto:david@naandi.org">david@naandi.org</a></td>
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<td></td>
<td>Bernard Giraud <a href="mailto:bgiraud@livelihoods-venture.com">bgiraud@livelihoods-venture.com</a></td>
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<td>Asociación Cooperativa de Productores Orgánicos (ACOPO)</td>
<td>El Salvador</td>
<td>Agriculture</td>
<td>Organic horticulture</td>
<td>Adelmo Antonio Arriaga <a href="mailto:adelmoarriaga@hotmail.com">adelmoarriaga@hotmail.com</a></td>
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<td>Bio Madidi</td>
<td>Bolivia</td>
<td>NTFPs</td>
<td>Juices, ice, oils, and meal from native palm fruits</td>
<td>José Luis Lahore <a href="mailto:jllahore@yahoo.es">jllahore@yahoo.es</a></td>
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<tr>
<td>BioCentinela</td>
<td>Ecuador</td>
<td>Fisheries/aquaculture</td>
<td>Organic certified shrimp</td>
<td>Javier Barragan <a href="mailto:javier@biocentinela.com">javier@biocentinela.com</a></td>
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<td>BioRe India</td>
<td>India</td>
<td>Agriculture</td>
<td>Organic cotton</td>
<td>Rajeev Baruah <a href="mailto:rajeev.baruah@gmail.com">rajeev.baruah@gmail.com</a></td>
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<td>Organic cotton</td>
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<td>Central Piurana de Cafetaleros (Cepicafe)</td>
<td>Peru</td>
<td>Agriculture</td>
<td>Organic and shade-grown coffee</td>
<td>José Fernando Reyes Córdova <a href="mailto:freyes@cepicafe.com.pe">freyes@cepicafe.com.pe</a></td>
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<td>Cooperativa Agraria Cafetalera Oro Verde</td>
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<td>Cooperativa Agropecuaria y Artesanal – Unión Quebrada y Valles (Cauqueva)</td>
<td>Argentina</td>
<td>Agriculture</td>
<td>Horticulture with local varieties (potato, corn, quinoa, and kiwicha)</td>
<td>Javier Rodríguez <a href="mailto:javierrodriguez@cauqueva.org.ar">javierrodriguez@cauqueva.org.ar</a></td>
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<td>Fisheries/aquaculture</td>
<td>Fish</td>
<td>Gilberto Naranjo Venegas <a href="mailto:glnv20@yahoo.com">glnv20@yahoo.com</a></td>
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<td>NTFPs</td>
<td>Maya nut</td>
<td>Christine Woda <a href="mailto:cwoda@web.de">cwoda@web.de</a></td>
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<td>Forestry</td>
<td>Timber</td>
<td>Paul Hol <a href="mailto:p.hol@forminternational.nl">p.hol@forminternational.nl</a></td>
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<td>Green Oil</td>
<td>India</td>
<td>NTFPs</td>
<td>Biofuel from native oil seeds</td>
<td>Jayant Sarnaik <a href="mailto:jayantsarnaik@aerfindia.org">jayantsarnaik@aerfindia.org</a></td>
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<td>Guiding Hope</td>
<td>Cameroon</td>
<td>NTFPs</td>
<td>Organic beeswax and honey</td>
<td>Verina Ingram <a href="mailto:verina_gram@hotmail.com">verina_gram@hotmail.com</a></td>
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<td>Gulf Aquatics</td>
<td>Cameroon</td>
<td>Fisheries/ aquaculture</td>
<td>Ornamental tropical freshwater fish</td>
<td>Cyrille Dening Touokong <a href="mailto:gulfaqautics@gmail.com">gulfaqautics@gmail.com</a></td>
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<td>HimalAsia (Seabuckthorn cooperatives)</td>
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<td>NTFPs</td>
<td>Sea-buckthorn juices</td>
<td>Susanne von der Heide <a href="mailto:susanne.v.d.heide@gmx.de">susanne.v.d.heide@gmx.de</a></td>
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<td>Keystone Foundation</td>
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<td>Honey</td>
<td>T. Samraj <a href="mailto:samraj@keystone-foudation.org">samraj@keystone-foudation.org</a></td>
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<td>Ndumberi Coffee Growers Cooperative Society</td>
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<td>Agriculture</td>
<td>Sustainable shade-grown coffee</td>
<td>Raymond Gitau Wanyugi <a href="mailto:rgitauh@yahoo.com">rgitauh@yahoo.com</a></td>
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<td>Nsangi Coffee Farmers Association</td>
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<td>Agriculture</td>
<td>Organic shade-grown coffee</td>
<td>Buule Ronald <a href="mailto:nsangi_cfa@yahoo.com">nsangi_cfa@yahoo.com</a></td>
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<td>Santiago Paz López <a href="mailto:santiagonorandino@yahoo.es">santiagonorandino@yahoo.es</a></td>
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<td>Todd Lemons <a href="mailto:todd@infinite-earth.com">todd@infinite-earth.com</a></td>
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<td>Agriculture</td>
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<td>Swazi Indigenous Products</td>
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<td>Natural skin care products from wild-harvested Marula, Ximenia, and Trichilia nuts</td>
<td>John Pearce <a href="mailto:john@swazisecrets.com">john@swazisecrets.com</a></td>
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<td>Unión de Cooperativas Agropecuarias de San Juan del Río Coco</td>
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</table>
Annex 2. List of determinant variables

Determinant variables used in questionnaire

- Main Product/Service Type
- Sector of main product/service
- Year of biodiversity business establishment
- Certification, type of label(s)
- Partnerships, number and type of organisations
- Integration in the international market (ranking)
- Local community organisation (ranking)
- Access to financial capital (ranking)
- Access to natural capital (ranking)
- Policy context on biodiversity (ranking)
- Dependence on local biodiversity (ranking)
- Uniqueness of main product/service (ranking)
- Influence of employees on management (ranking)
- Local ownership (ranking)
- Local management (ranking)
- Compatibility with local cultural values (ranking)
- Women empowerment strategy (ranking)
- Business planning (ranking)
- Business management (ranking)
- Market analysis (ranking)
- Marketing (ranking)
- Financial management and accounting (ranking)
- Monitoring of product & market performance (ranking)
- Monitoring of social performance (ranking)
- Monitoring of ecological performance (ranking)
- Sustainability reporting (ranking)
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